Sept., 2022

CURRICULUM VITAE

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I. ACADEMIC RECORD

2018-present **Professor,** University of Kentucky, Department of Biology
DOE: 50% research, 40% teaching, 10% service (2021-present)
DOE: 45% research, 40% teaching, 10% service, 5% Admin (2018-2021)
Chellgren Endowed Professorship, 7/1/19 - 6/30/22

2001-2018 **Associate Professor,** University of Kentucky, Department of Biology
Distribution of Effort (DOE): 50% research, 40% teaching, 10% service: 1996-2012
DOE: 35% research, 55% teaching, 10% service: 2012-2013
DOE: 50% sabbatical, 15% research, 25% teaching, 10% service: 2013-2014 (Sp)
DOE: 50% research, 40% teaching, 10% service: Fall 2014-2017
DOE: 45% research, 40% teaching, 10% service, 5% Admin: Fall 2017-2018

1996-2001 **Assistant Professor,** University of Kentucky, School of Biological Sciences,

1989 **Ph.D.**, Texas Tech University, Dept. of Physiology, Sch. of Medicine, Lubbock, Texas
1983 **B.S.**, (double major-**Chemistry & Zoology**), Texas Tech University, Lubbock, Texas

RESEARCH TRAINING

2006-summer and Fall **Sabbatical** at Seoul National University with Dr. Kaang's research group in the Department of Biological Sciences, College of Natural Sciences
1992-1996 **Postdoctoral** Fellow with Dr. H.L. Atwood
Univ. of Toronto School of Medicine, Dept. of Physiology, Toronto, Canada
1989-1992 **Postdoctoral** Fellow with Dr. J.G. Nicholls
Univ. of Basel, School of Medicine, Dept. of Pharmacology, Biocenter, Basel, Switzerland
1989 Summer research assistant with Dr. C.K. Govind. Marine Biological Laboratory, Woods Hole, Mass.

PROFESSIONAL CLINICAL EDUCATION

2011 Registered Nurse (**RN**) license in KY 2011-2018.
Volunteered monthly to keep an active license.
2012 **BSN**-College of Nursing, University of Kentucky, Lexington, KY

Who am I ?

In brief, I consider myself as an educator and researcher in the area of comparative physiology with an emphasis in neurobiology. Additionally, I enjoy outreaching activities with middle and high school science teachers as well as their students and the public. The accomplishments in regards to research have mainly focused more recently on modulation of synaptic transmission and behaviors using invertebrate models (crayfish and *Drosophila*). My lab group took a slight deviation the last few years off into the world of pharmacological identification of receptor subtypes of modulators on the larval *Drosophila* heart. In both research areas we have been productive with publications in the realm of comparative physiology.

As for teaching and instruction, my major accomplishments have been developing and publishing a number of articles for laboratory exercises in physiology and neurophysiology techniques which are used around the globe as indicated by the downloaded log and communications with fellow instructors. Developing wet labs for the physiology course in 2011 at Univ. of Kentucky, which had been devoid of a wet lab for years, as well as developing a neurophysiology lab based course has been rewarding and productive. Student feedback and productivity in developing published exercises as well as developing authentic scientific inquiry based research exercises for the students have resulted in student authored manuscripts submitted for peer review.

In the outreaching with middle and high school students as well as teachers is another proud accomplishment. I developed an ISEF Science fair which incorporated a 1/3 of the State of Kentucky and was the director for 5 years. I have worked with students and teachers to develop state wide Science based activities. I served as president of the Kentucky Academy of Sciences and president of the board for the State Science and Engineering Fair (ISEF- affiliated). High school students I have personally mentored have won international awards at ISEF (2^{nd} and 4^{th} places as well as special awards). Through grant funded activities I have worked with teachers throughout the state of Kentucky and have built relationships in which those students (NSF-REUs) and teachers (NSF-RETs) have later come to work in my research group when attending the university.

In serving our undergraduate and graduate students at the university in research based activities, my group has been very productive in publishing with undergraduates as 1^{st} or co-authors (>60 papers) and functioning as a team for research productivity (>200 papers total). Graduate students (PhD & MS) have been successfully in obtaining good postdoctoral positions or forms of employment. I strongly encourage students to attend local, national and international meetings to present their research and interact with faculty and students at other institutions (>650 abstracts for posters or oral presentations since at the Univ. of Kentucky).

II. GRANTS
Received

1. UK Noyce STEM PLUS: Producing Leaders for Urban/rUral Schools Track 1
   NSF National Science Foundation 04/01/2018 - 03/31/2023
   $1,200,000; 1.5% summer - 0.05 year (PI- Dr. Margaret Schroeder Dept. of STEM; Co-PI Robin Cooper + others)

2. **Funded July 2016-2017.** Dec 16, 2015 submitted to **The Research and Development**

Excellence Program is managed by the Kentucky Science and Engineering Foundation (KSEF) at the Kentucky Science and Technology Corporation. Title: "The influence in the development of the central nervous system with limiting sensory gravitational input in a fast developing animal model." Proposed 1 year for 23K. (**Cooper-PI**, No Co-PIs)

3. Start 01/01/15 End 06/30/16. KY Council on Postsecondary Education. "STEM PRIDE: Partnering with Research & Industry to Develop STEM Educators" PI Carol D Hanley. **Co-PI Robin Cooper** UK. $149,939

4. **Renewal of #4 below.** October **2014** to September **2015.** 3rd year renewal funded. Kentucky Department of Education. *MUSE - modeling for understanding in science and engineering*. Kentucky's Mathematics and Science Partnership (MSP) **$97,500**. PI. is Kimberly Zeidler-Watters, Partnership Inst. for Math and Science. **CO-PI Robin Cooper.**

5. **January 2014 to June 2015/2016.** Council on Postsecondary Education. Integrating Engineering in the Science (IES). Year 12 Improving Educator Quality. **$130,000.** The renewal for **$130,000,** if approved, will run from January 2015 to June 2016. PI. is Kimberly Zeidler-Watters, Partnership Inst. for Math and Science. **CO-PI Robin Cooper.**

6. **Feb. 11, 2013**. Kentucky Department of Education. *MUSE - modeling for understanding in science and engineering*. Kentucky's Mathematics and Science Partnership (MSP) 2013. Kentucky Department of Education **$140,000** for year 1 (March 25, 2013 to September 30, 2013) and at **$195,000** for the second year (October 1, 2013 to September 30, 2014), with a possible third year at **$97,500**. PI. is Kimberly Zeidler-Watters, Partnership Inst. for Math and Science. **CO-PI Robin Cooper**.

7. KY Department of Education. **Start 10/01/12 End 09/30/13.** Science Leadership Support Network - **Central Region** Year 3. # 3048109915. PI. is Kimberly Zeidler-Watters, Partnership Inst. for Math and Science. **CO-PI Robin Cooper.** Total **$97,500.**

8. KY Department of Education. **Start 10/01/12 End 09/30/13**. Science Leadership Support Network – **Eastern Region** Year 3. # 3048109914. PI. is Kimberly Zeidler-Watters, Partnership Inst. for Math and Science. **Only one CO-PI Robin Cooper**. Total **$97,500.**

9. Toyota Motor Manufacturing Kentucky for support of Kentucky Science and Engineering Fair. $3,000. Dec. 14, 2011. (PI. Cooper) Funds to support the science fair and students travel to attend INTEL. Grant ID: XX52454953

10. 2010-2012 The P-12 Math and Science Outreach Unit of PIMSER in partnership with OSPA, UK College of Ed, and UK was awarded 2 of the 5 state Math and Science Partnership projects to design and facilitate a Science Leadership Support Network in the Central and Eastern region of the state. UK will receive $195,000/project per year x 2 years so approx. $800,000 total. The higher ed partners for the funded projects are: Central KY (Christine Schnittka, Becky McNall, and Robin Cooper). [Kim Zeidler, University of Kentucky is the PI]. Awarded in 2010.

11. Council on Postsecondary Education (2006-2007). US. Dept. of Education to States to meet the

no child left behind act. The Teacher and Principal Training and Recruiting Fund authorizes allocations for the Improving Teacher Quality State Grant Program (CFDA #84.367B), which Kentucky calls the Improving Educator Quality Program. The program gives Kentucky the flexibility to fund high-quality teacher and principal training, grounded in scientifically based research, in all core academic subjects. In return, the state and the grant recipient will be held to stricter accountability measures to ensure improvement in the quality of educators and the performance of students. (**$120,000, PI. Carol Hanley; Lead UK Contact is Robin Cooper**).

My unpaid role was to conduct teacher workshops and provide on-site support to Wolf and Woodford county participating high schools. This amounted to 2 visits to each school as well as a 1 week teacher workshop at UK for the 15 teachers. Other grant instructional participants visited other schools that enrolled in the year long thematic topics.

12. NIH-KBRIN (Kentucky Biomedical Research Infrastructure Network) Support of the National Institutes of Health and the National Center for Research Resources Grant P20 RR16481, Summer 2004. $39,386. For teaching a 'hands-on' course in neurophysiology in conjunction with training students in use of transmission electron microscopy and statistical analysis of data.
13. NSF-IBN: **P.I., R.L. Cooper**; **August 2002 to July 2006**. $232,000.
    Presynaptic direct structure-function analysis.
14. NSF-OIB: **RET** Supplement to my NSF Grant for $20,000 for Summer 2005 [RET is **R**esearch **E**ducation for **T**eachers - Science teachers].
15. Kentucky Young Researchers Program (Univ of KY internal grant). Two awards provided for supplies related to mentoring research in the lab for high school students. $1,000 (2004-2005).
16. NSF-IBN: **P.I., R.L. Cooper** (No Co-PI's); August 1998 to July 2001. $140,000.
    Presynaptic mechanisms in synaptic differentiation. Added a 1 yr no-cost extension till July 2002.
17. Research Equipment Initiative within the University of Kentucky. Awarded $49,676 in February 2001 for creation of a confocal imaging and electrophysiology facility. **P.I. R.L. Cooper** and 4 participants.
18. NSF-ILI: Instrument and Laboratory Improvement. **P.I., R.L. Cooper**; with 3 Co-PI's. $102,000. (50% match from University) Dates July 1998 to July 2000. Obtained 10 computer workstations with electrophysiological equipment to compliment the comparative physiology courses taught in biology at the University of Kentucky.
19. NSF-IBN: **REU** Supplement to my NSF Grant for $5,000 for Aug. 2004 to July 2005 [REU is **R**esearch **E**ducation for **U**ndergraduates]
20. NSF-IBN: **REU** Supplement to my NSF Grant for $5,000 for January to Sept. 1999. (Laura Listerman) [REU is **R**esearch **E**ducation for **U**ndergraduates]
21. NSF-IBN: **REU** Supplement to my NSF Grant for $5,000 for January to Sept. 1999. (Jeff Strawn)
22. NSF-IBN: **REU** Supplement to my NSF Grant for $5,000 for June to Dec. 2000. (R. Chase Southard)
23. NIH Equipment proposal for a confocal microscope. Dr. K. Albers P.I. (Dept. of Anatomy and Neurobiology; **Co-PI's: R.L. Cooper** and others in Anatomy dept.); Submitted March, 1997. "Multiuser confocal microscope imaging system"
    Direct cost $272,068. Dates are 4/1/98 to 3/31/01.
24. Teaching and Learning Center's Travel Grant 1996
    University of Kentucky. To attend a meeting to incorporate innovative new ideas into the

classroom.

25. Renewal of a Postdoctoral Fellowship from Network of Centers of Excellence on Neural Regeneration and Functional Recovery. Canada — 1994-1995
26. Postdoctoral Fellowship from Network of Centers of Excellence on Neural Regeneration and Functional Recovery. Canada — 1992-1994
27. Initiated and succeeded in obtaining an IBRO international neuroscience hands-on workshop in Seoul, South Korea. Obtained funding ($25,000 USD) for this workshop from IBRO and Brain Research Foundation, Tokyo. — 1993 Summer
28. Postdoctoral Fellowship from Swiss National Fund ($45k USD/yr) — 1989-1992

Participant on Awarded Grants

1. 2006. Tiered Mentoring Grant from Kentucky Dept. of Education. PI-David Taylor (Science Coordinator Fayette County Public Schools). I serve as a participant on the grant. I am to mentor high school science teachers to learn laboratory and experimental techniques.

2. 2002-2005. At the University of Kentucky 5 faculty members are listed as mentors for **Beckman Scholars**. **The University benefits by having good mentors for undergraduate research so that the University** is eligible to receive funding from Arnold and Mabel Beckman Foundation to run a undergraduate **Beckman Scholars Program**. This has successfully been run from 2002-present with 3 renewals. I am listed as one of the mentors and have had four students as Beckman fellows work in my research group.

3. **NIH-NIMH Training Grant.** Title "Cellular and molecular neurosciences of sensory systems." Time period: July 1, 2001 to June 30, 2006. (**PI - Dr. Tom Getchell**, Dept of Physiology, UK. Med. Sch.). **Amount $703,122**. My role on the training grant is a **participant** (give guest lectures and aid in teaching/mentoring graduate and postdoctoral trainees).

4. **Science Alliance** which is part of ***Partnership Institute for Math and Science Education Reform (PIMSER)***. [Kim Zeidler, University of Kentucky is the PI]. I was placed on this grant as a scientist partner at UK. 2006- 2008. I was paid a summer salary from this grant to conduct high school teacher's workshops and lesion planning.

5. **Fayette County Public Schools: *Facilitating Operational Communities for Understanding in Science (FOCUS).*** I was placed on this grant as **the** scientist partner at the Univ of KY 2008-2009. (David Helm and Lori Bowen are the PI's on the grant). I obtain no salary. Only the teachers and staff are paid. This is an altruistic behavior on my part for our local public schools.

   Teachers often lack the skills and content knowledge to create in-depth instructional units based on state standards. The resulting low levels of relevance and rigor can cause students to be disengaged in what they are learning in science class. With little time available to work together with each other or across grade levels, teachers often work in isolation. The *Facilitating Operational Communities for Understanding in Science (*FOCUS) Project establishes an ongoing science education partnership among Fayette County Public Schools Primary – 8th grade science teachers, district support faculty, **higher education (University of KY)** and organizations in the community. Utilizing research proven strategies, the project focuses on:

A. improving student achievement in science

B. enhancing Primary – 8 science teachers' science content understanding

C. enhancing Primary – 8 science teachers' implementation of research-based instructional practices

D. enhancing Primary – 8 science teachers' access to high-quality curriculum resources

We have found that professional development and teacher collaboration is greatly enhanced when teachers and other stakeholders view their participation in an initiative as having application in their work. Project teachers are participating in a minimum of 80 hours of high quality PD per year, which includes 56 hours of job-embedded PD, 18 hours of content academy workshops, and at least 6 hours of field experiences. Participants are meeting 8 days this school year for job-embedded PD (56 hrs). We spend mornings developing content knowledge and learning specific elements for unit development using backwards design. With the support of lead teachers, participants spend afternoons in teams applying their new learning to constructing units of study, assessments, and congruent lessons. Participants work together to self- and peer-evaluate their work, looking at units across grade levels to ensure a tightly spiraled curriculum. The resulting high quality instructional resources are shared with the district and state to serve as models. Contacts: Lori Bowen and David Helm, Fayette County Schools.

6. **Toyota PEP Grant with Fayette County Public Schools (FCPS) 2011- 2012.** Title: "Biology Realignment and Curriculum Enhancement (BRACE)." I was placed on this grant as the scientist partner at the Univ of KY. No other faculty member at Univ of KY is a participant on the grant. (David Helm at FCPS is the PI's on the grant). $ 30,000

Goals of the grant are:

1 – Align the current Kentucky Program of Studies for Biology with the recently released ACT Quality Core which the Biology End of Course Assessments will be based on

2 – Training on implementation and use of equipment recently purchased DNA technology equipment (gel electrophoresis equipments, PCR thermo cycler, etc.)

3 – Continued work on the implementation of Science Literacy Standards released last year as a part of the career and college readiness standards for Language Arts

7. **Summer 2013** American Honda Foundation. "See Blue Mathematics Outreach Initiative". **Project Team:** The project team consisted of: Carl Lee, Professor of Mathematics in the Department of Mathematics, will serve as PI and Director of the Family Mathematics Night; Margaret Mohr-Schroeder, Assistant Professor of Mathematics Education in the Department of STEM Education, will serve as co-PI and Director of the Mathematics Clinic; Bruce Walcott, Professor of Electrical Engineering in the College of Engineering, will serve as co-PI and co-Director of the Middle School Summer STEM Camp; Craig Schroeder, Mathematics Coach for Fayette County Public Schools, will serve as co-PI and Director of the Middle School Summer STEM Camp; and Robin Cooper, Associate Professor of Biology in the Department of Biology, will serve as senior personnel and assist with the content modules for the summer STEM Camp. Submitted March 25, 2012.

8. **Toyota PEP Grant with Fayette County Public Schools (FCPS) 2014- 2015.** Title: " **Fayette County Public Schools District Professional Development Plan.**" I was placed on this grant as the scientist partner at the Univ. of KY. No other faculty member at Univ. of KY is a participant on the grant. (Mr. David Helm, Science coordinator for FCPS is the PI's on the grant). $ 14,000.

9. **Summer 2014** American Honda Foundation. "See Blue Mathematics Outreach Initiative". **Project Team:** The project team consisted of: Carl Lee, Professor of Mathematics in the Department of Mathematics; Margaret Mohr-Schroeder, Assistant Professor of Mathematics Education in the Department of STEM Education; Bruce Walcott, Professor of Electrical Engineering in the College of Engineering; Craig Schroeder, Mathematics Coach for Fayette County Public Schools; Robin Cooper, Associate Professor of Biology in the Department of

Biology, will serve as senior personnel and assist with the content modules for the summer STEM Camp. Submitted 2013.

10. **2018 - 2023** The grant is a collaboration with Colleges of Education, Arts & Sciences, and Engineering and Fayette County Public Schools. Below are the personnel are involved:
PI - Margaret Mohr-Schroeder (STEM Education)
Co-PIs - Brett Criswell (STEM Education); Bruce Walcott (Electrical and Computer Engineering); Stephen Testa (Chemistry); Jennifer Wilhelm (STEM Education)
K-12 Teacher Liaison - Craig Schroeder (Fayette County Public Schools STEM Teacher)
Robin Cooper (Biology); Lisa Amick (STEM Education); Jerzy Jaromczyk (Computer Science); David Royster (Mathematics); Molly Fisher (STEM Education); Jared Stallones (Curriculum & Instruction); David Helm (Fayette County Public Schools - Science Instructional Specialist); Natalee Feese (Fayette County Public Schools - Mathematics Instructional Specialist). The award is called - UK Noyce STEM PLUS Producing Leaders for Urban/rUral Schools Award amounts is $1,200,000 from 2018 - 2023

Grants submitted waiting to hear

1. March 2018. Letter of Intent: Resource Center for Muscle Biology submitted to NIH. Limited Submission - NIAMS Musculoskeletal Biology and Medicine Resource-based Centers (P30) RFA – AR- 19-002 (PI. Esther E. Dupont-Versteegden, Co-PIs and board members, Robin Cooper is one of a few listed)

Grants submitted in the past few years (not funded):

1. **NSF**. Title: Negative Feedback at Glutamatergic Motor Nerve Terminals in Drosophila. PI-Cooper and no Co-PIs. Request $118,516 and suggested starting date Summer of 2008/ Jan 2009. (*not funded*)

2. **Kentucky Department of Education**. 2009 Mathematics and Science Partnerships Grant; P-12 Math and Science Outreach Unit Director, PIMSER (PI- Kimberly Zeidler, UK) request $200,000. Submitted June 2008. (*not funded*)

3. **NSF**. Title: Olfactory system in crayfish: Sensitivity, development and autonomic response to olfaction in a sighted and blind cave species. PI-Cooper and no Co-PIs. Suggested starting date Summer of 2009. (*not funded*)

4. **NSF**. Title: The mechanistic effects of CO_2 on behavior and physiology at the skeletal NMJ of *Procambarus clarkii and Drosophila* as well as the larval heart of *Drosophila*. PI-Cooper and no Co-PIs. Suggested starting date Summer of 2009. (*not funded*)

5. **Kentucky Department of Education**. 2010. Kentucky's Mathematics and Science Partnership (MSP) program. P-12 Math and Science Outreach Unit Director, PIMSER (PI- Kimberly Zeidler, UK; I am the one science consultant and instructor on this proposal. I will be paid a salary). Total $200,000. Submitted July 2010. (*not funded*)

6. **NSF**. Title: Vesicle pools and packaging within high- and low-output nerve terminals. PI-Cooper and no Co-PIs. Total $124,345. Suggested starting date Summer of 2010. Submitted July 2010. (*not funded*)

7. Submission to Provost at Univ. of KY for internal vetting as a pre-proposal for HHMI. Only 1 proposal from the institution maybe put forth to HHMI. Proposed Project Title: **Sustaining Excellence through Research and Mentoring in Health Sciences and Science Education.** Dr. Gilson Capilouto, Director of Undergraduate Research, College of Human Health Sciences (PI); Dr. Rebecca McNall Krall, College of Education, Department of STEM Education (Co-PI); Dr. Robin Cooper, College of Arts and Sciences, Department of Biology (Co-PI); Dr. Geza Bruckner, Department of Human Health Sciences (Co-PI); Kim Zeidler-Watters, Partnership Institute for Math and Science Education Reform (PIMSER) (Co-PI). Submitted June 21, 2013. UK provost's office did not select this proposal for going forward.

8. **NSF**. Title: Neuromuscular transmission: Effects of intracellular and intravacuolar pH. Co-PI Dr. Lynn Hartzler at Wright State Univ., OH. Suggested starting date Summer of 2013. Submitted January 16, 2013. *(not funded)*

9. **2014-2015** Research on Learning in STEM Learning Environments + Broadening Participation Research (students from rural, low socioeconomic backgrounds in Kentucky). NSF 13-604. **Letter of intent filed. Nov 10, 2013.** PI is Christine Schnittka, Auburn University. The Co-PIs are Robin Cooper, Diane Johnson, and Kim Zeidler-Watters, University of Kentucky. Did not go forward with the next step at this time.

10. Resubmission to **NSF**. Title: Neuromuscular transmission: Effects of intracellular and intravacuolar pH. Consultant. Dr. Lynn Hartzler at Wright State Univ., OH. Suggested starting date Summer of 2014. **Pre-proposal submitted January 2014.** PI-Cooper

11. Was listed as a **consultant on a NIH grant** proposal submitted in Nov 2013 for Dr. Carole Moncman (Dept of Biochemistry, UKY). Topic of Co-culture of muscle and motor neurons

12. **2014-2015 (1yr)** Kentucky Science and Engineering Foundation. SERF Gene Expression Increases Lifespan and Limits the Accumulation of Age-related Protein Aggregates **Letter of intent filed Nov. 19, 2013.** PI-Brian Rymond; Co-PI's Robin Cooper & Doug Harrison. $30,000; Filed grant January 2014. Not selected.

13. **Grant proposal for NIH, SEPA, 2014. NIH Science Education Partnership Award (SEPA) (R25) (PAR-14-228).** Internal summary submitted to Provost at Univ. of KY for internal vetting as a pre-proposal. The provost office at UK did not select it for going forward. **June 6, 2014. Project Title:** Integrated Biomedical Learning Experiences to Support Secondary Teaching, Student Learning, and Community Awareness. **Project Director and PI:** Robin Cooper and Kimberly Zeidler-Watters, (Director, Partnership Institute for Math and Science Education Reform/PIMSER). **Project Co-PIs**: Karyn Esser, Ph.D. (Director, Center for Muscle Biology); and Brett Criswell, Ph.D. (STEM Clinical Faculty, STEM Department, College of Education). **Participating Departments or Centers:** Center for Muscle Biology, Biology Department; PIMSER and the STEM Department in the College of Education. $1.25 million for 5 yrs.

14. **Grant proposal for NIH, SEPA, 2015. NIH Science Education Partnership Award (SEPA) (R25) (PAR-14-228). June 22, 2015- Submitted to NIH. Project Title: KY-Teach-Get Healthy**. **Project Director and PI:** Robin Cooper and Kimberly Zeidler-Watters, (Director, Partnership Institute for Math and Science Education Reform/PIMSER). **Participating Departments or Centers:** Biology Department; PIMSER, Physics, Engineering, and the STEM Department in the College of Education. $1,348, 230 for 5 yrs (direct & indirect). **January 16, 2016** is the funding decisions.

15. Renewal for 3rd year. January 1 - September 30, 2014. 2014-2015 (at $75,000). Middle School. Proposal provides an opportunity to improve student learning in science and create exemplars of middle school multi-disciplinary units of study aligned to NGSS with integrated engineering core ideas focused on Global Climate and human health-related issues. PI. is Kimberly Zeidler-Watters, Partnership Inst. for Math and Science. CO-PI Robin Cooper. % effort: 3.69% Academic Year 2013-14; 15.38% Summer 2014; 6.15% Academic Year 2014-15

16. **Oct. 15, 2014.** KY NSF EPSCoR funding. Internal summary submitted to Provost at Univ. of KY for internal vetting as a pre-proposal. KY EPSCoR Track-2 Pre-proposal for Understanding the Human Brain.
Title: "Kentucky/West Virginia (KYWV) Nerve-Net Group Proposal"
University of Kentucky Faculty
Dr. Robin Cooper, Associate Professor of Biology, Principal Investigator
Dr. Greg A. Gerhardt, Professor of Anatomy and Neurobiology, Co-Principal Investigator
Dr. Sridhar Sunderam, Assistant Professor of Bioengineering
Ms. Kimberly Zeidler-Watters, Director of PIMSER, College of Education, Co-Principal Investigator
West Virginia Group
Dr. Andrew Dacks, Assistant professor, Department of Biology.
Dr. Kevin Daly, Associate Professor, Department of Biology
Dr. Miranda Reed, Assistant Professor, Department of Psychology

17. June 30, 2016 submitted to **Kentucky Department of Education**. **2016 MATHEMATICS AND SCIENCE PARTNERSHIPS. "**ASSESS-East/Central: Assessments of Science Enabling Successful Students". (PI- Kim Zeidler-Watters, PIMSER). Robin Cooper (UK, Arts & Sciences partner) is to assist with the planning and facilitation of the teacher training meetings, providing content expertise in life sciences, as well as be available to provide virtual mentoring for teachers and administrators. **Years 2017-2019.** Total Requested Funds $205,000. Not funded.
18. Sept 16, 2016. Submitted. Health Sciences Bridges to Baccalaureate' to Sponsoring Agency **National Institute of Health** (PI is Geza G Bruckner; **CO-PI Robin Cooper** along with others. No salary but mentoring of undergrads with supply funds provided by grant). e-IAF is 003000017575.
19. Submitted Feb 2018. Student proposal for American Physiological Society summer research internship for 2018. Student Ms. Poynor from Binghamton Univ., NY, USA. Not funded.

20. **Nov. 5, 2018.** Submitted. English Pounds 504,240 (USD $ 654,019). “Humane stunning of crustaceans: demonstrate, validate & faciliate market uptake” To Humane Slaughter Association. United Kingdom. PI. Ace Aquatec Ltd./ Nathan Pyne-Carter (CEO). Host institution is Ace Aquatec Ltd. Trageted animals are decapod species (UK-lobsters and crabs; Spain-crayfish and Thailand-whiteleg shrimp). I am a consultant on the grant and funds are for travel to Spain and Thialand. Not funded.

III. PUBLICATIONS

Peer Reviewed Papers

1. Haesun, K.B., **Cooper, R.L.** and Holwerda, R.A. (**1985**) Stability of the Cu(II)-S bond in mercapto amino acid complexes of [2,2',2"Tris(dimethylamino) triethylamine] copper(II) and [Tris (2-pyridylmethyl) amine] copper(II). **Inorganic Chemistry** 24(7):1077-1081

2. **Cooper, R.L.**, McGrath, J.J., Dooley, S. and Kopetzky, M.T. (**1989**) Chronic exposure to carbon monoxide at high altitude: Effects on mean electrical axis. **Physiology and Behavior** 46:75-79

3. **Cooper, R.L.** and Govind, C.K. (**1991**) Axon composition of the proprioceptive PD nerve during growth and regeneration of lobster claws. **Journal of Experimental Zoology** 260:181-193

4. Fernández-de-Miguel, F., **Cooper, R.L.** and Adams, W.B. (**1992**) Synaptogenesis and calcium current distribution in cultured leech neurons. **Proceedings of the Royal Society (London)** B. 247:215-221

5. **Cooper, R.L.**, Fernández-de-Miguel, F., Adams, W.B. and Nicholls, J.G. (**1992**) Anterograde and retrograde effects of synapse formation on calcium currents and neurite outgrowth in cultured leech neurons. **Proceedings of the Royal Society (London)** B. 249:217-222

6. Hartman, H.B. and **Cooper, R.L.** (**1994**) Regeneration and molting effects on a proprioceptor organ in the Dungeness crab, *Cancer magister*. **Journal of Neurobiology** 25:461-471

7. **Cooper, R.L.** and Hartman, H.B. (**1994**) Responses of the bender apodeme tension receptors in the Dungeness crab, *Cancer magister*. **Comparative Biochemistry and Physiology** 109A:479-486

8. Atwood, H.L. and **Cooper, R.L.** (**1995**) Functional and structural parallels in crustaceans and *Drosophila* neuromuscular systems. **American Zoologist** 35(6):556-565

9. **Cooper, R.L.**, Stewart, B.A., Wojtowicz, J.M., Wang, S., and Atwood, H.L. (**1995**) Quantal measurement and analysis methods compared for crayfish and *Drosophila* neuromuscular junctions and rat hippocampus. **Journal of Neuroscience Methods** 61:67-78

10. **Cooper, R.L.**, Marin, L., and Atwood, H.L. (**1995**) Synaptic differentiation of a single motor neuron: conjoint definition of transmitter release, presynaptic calcium signals, and ultrastructure. **Journal of Neuroscience** 15:4209-4222

11. **Cooper, R.L.**, Hampson, D. and Atwood, H.L. (**1995**) Synaptotagmin-like expression in the motor nerve terminals of crayfish. **Brain Research** 703:214-216

12. Atwood, H.L. and **Cooper, R.L.** (**1996**) Assessing ultrastructure of crustacean and insect neuromuscular junctions. **Journal of Neuroscience Methods** 69:51-58

13. **Cooper, R.L.,** and Cooper, M.M. (**1996**) Red pepper induced dermatitis in breast fed infants. **Dermatology** 93:61-62

14. Atwood, H.L. and **Cooper, R.L.** (**1996**) Synaptic diversity and differentiation: Crustacean neuromuscular junctions. **Invertebrate Neuroscience** 1:291-307

15. **Cooper, R.L.**, Harrington, C. Marin, L., and Atwood, H.L. (**1996**) Quantal release at visualized terminals of crayfish motor axon: Intraterminal and regional differences. **Journal of Comparative Neurology** 375:583-600

16. Pekhletsky, R., **Cooper, R.L.**, Atwood, H.L., and Hampson, D. (**1996**) Expression profiling of mRNA obtained from single identified crustacean motor neurons:determination of specificity of hybridization. **Invertebrate Neuroscience** 1:341-349

17. **Cooper, R.L.**, Winslow, J., Govind, C.K. and Atwood, H.L. (**1996**) Synaptic structural complexity as a factor enhancing probability of calcium-mediated transmitter release. **Journal of Neurophysiology** 75:2451-2466

18. Bradacs, H., **Cooper, R.L.**, Msghina, M., and Atwood, H.L. (**1997**) Differential physiology and morphology of phasic and tonic motor axons in a crayfish limb extensor muscle. **Journal of Experimental Biology** 200:677-691

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19. Rastogi, K.S., **Cooper, R.L.**, Shi, J.Q. and Vranic, M. (**1997**) Quantitative measurement of islet glucagon response to hypoglycemia by confocal fluorescence imaging in diabetic rats: effects of phlorizin treatment. **Endrocrine** 7:367-375

20. **Cooper, R.L.** and Ruffner, M.E. (**1998**) Depression of synaptic efficacy at intermolt in crayfish neuromuscular junctions by 20-Hydroxyecdysone, a molting hormone. **Journal of Neurophysiology** 79:1931-1941
(Ruffner was an undergraduate student in my laboratory at UK)

21. **Cooper, R.L.**, Warren, W.M. and Ashby, H.E. (**1998**) Activity of phasic motor neurons partially transforms the neuronal and muscle phenotype to a tonic-like state. **Muscle & Nerve** 21:921-931
(Warren and Ashby were undergraduate students in my laboratory at UK)

22. **Cooper, R.L.** (**1998**) Development of sensory processes during limb regeneration in adult crayfish. **Journal of Experimental Biology** 201:1745-1752

23. Neckameyer, W.S. and **Cooper, R.L.** (**1998**) GABA transporters in *Drosophila melanogaster*: developmental expression, behavior, and physiology. **Invertebrate Neuroscience** 3:279-294

24. Ruffner, M.E., Cromarty, S.I., and **Cooper, R.L.** (**1999**) Depression of synaptic efficacy in *Drosophila* neuromuscular junctions by the molting hormone (20-Hydroxyecdysone). **Journal of Neurophysiology** 81:788-794
(Ruffner was an undergraduate student in my laboratory at UK, Dr. Cromarty visited my lab

while applying for a postdoctoral fellowship through the BEACON training grant at UK).

25. **Cooper, R.L.** and Hartman, H.B. (**1999**) Quantification of responses from proprioceptive neurons in the limbs of the crab, *Cancer magister*. **Journal of Experimental Zoology** 284: 629-636

26. **Cooper, R.L.** and Neckameyer, W.S. (**1999**) Dopaminergic neuromodulation of motor neuron activity and neuromuscular function in *Drosophila melanogaster*. **Comparative Biochemistry and Physiology** B 122:199-210

27. Crider, M.E. and **Cooper, R.L.** (**1999**) The importance of the stimulation paradigm in determining facilitation and effects of neuromodulation. **Brain Research** 842: 324-331
(Crider, M.E.-Thesis project done in my laboratory at UK)

28. He, P., Southard, R.C., Whiteheart, S.W. and **Cooper, R.L.** (**1999**) Role of α-SNAP in promoting efficient neurotransmission at the crayfish neuromuscular junction. **Journal of Neurophysiology** 82:3406-3416 *(He, P.-Thesis project done in my laboratory at UK; Southard is an undergraduate in my laboratory; Whiteheart is my collaborator in the Dept. of Biochemistry at UK. Proteins were made in his laboratory and all the physiology was done in my laboratory.)*

29. Crider, M.E. and **Cooper, R.L.** (**2000**) Differential facilitation of high- and low-output nerve terminals from a single motor neuron. **Journal of Applied Physiology** 88: 987-996
(Crider, M.E.-Thesis project done in my laboratory at UK)

30. LaFramboise, W., Griffis, B., Bonner, P., Warren, W., Scalise, D., Guthrie, R.D., and **Cooper, R.L.** (**2000**). Muscle type-specific myosin isoforms in crustacean muscles. **Journal of Experimental Zoology** 286: 36-48
(Dr. LaFramboise came to UK to give a talk on myosin expression in a mammalian model system. While he was here, we struck up a joint project with Dr. Bonner's laboratory and mine to examine myosin expression in crustacean muscles).

31. Listerman, L., Deskins, J., Bradacs, H., and **Cooper, R.L.** (**2000**) Measures of heart rate during social interactions in crayfish and effects of 5-HT. **Comparative Biochemistry and Physiology A**.125:251-264
(Listerman and Deskins were undergraduates in my laboratory at UK, Bradacs is collaborator from Austria).

32. Sohn, J., Mykles, D.L., and **Cooper, R.L.** (**2000**). The anatomical, physiological and biochemical characterization of muscles associated with the articulating membrane in the dorsal surface of the crayfish abdomen. **Journal of Experimental Zoology** 287:353-377.
(Sohn was my MS student, Dr. Mykles is a collaborator at Colorado State Univ.).

33. Southard, R.C., Haggard, J., Crider, M.E., Whiteheart, S.W. and **Cooper, R.L.** (**2000**) Influence of serotonin on the kinetics of vesicular release. **Brain Research** 871:16-28.
(Southard and Haggard were undergraduates in my laboratory; Whiteheart is my collaborator

in the Dept. of Biochemistry at UK., Crider-Thesis project done in my laboratory at UK).

34. Li, H., Listerman, L., Doshi, D., and **Cooper, R.L.** (**2000**) Use of heart rate to measure intrinsic state of blind cave crayfish during social interactions. **Comparative Biochemistry and Physiology A**.127:55-70.*(Listerman and Deskins were undergraduates in my laboratory at UK).*

35. Kim, S., Atwood, H.L. and **Cooper, R.L.** (**2000**) What are the real sizes of synaptic vesicles in nerve terminals. **Brain Research** 877:209-217.
(Kim is an Assistant Professor in Dept. of Mathematics at UK. I used data obtained in the laboratory of Dr. Atwood. I initiated the collaboration with Kim.)

36. Griffis, B., Bonner, P. and **Cooper, R.L.** (**2000**) Sensitivity of transformed (phasic to tonic) motor neurons to the neuromodulator 5-HT. **Comparative Biochemistry and Physiology A** 127: 495-504.

37. Strawn, J.R., Neckameyer, W.S., and **Cooper, R.L.** (**2000**) The effects of 5-HT on sensory, central and motor neurons driving abdominal superficial flexor muscles in the crayfish. **Comparative Biochemistry and Physiology B** 127:533-550.
(Strawn is an undergraduate in my laboratory at UK, Dr. Neckameyer is a collaborator in St. Louis).

38. Feuerverger, A., Menzinger, M., Atwood, H.L., and **Cooper, R.L.** (**2000**). Statistical methods for assessing the dimensions of synaptic vesicles in nerve terminals. **Journal of Neuroscience Methods** 103:181-190.
(Drs. Feuerverger and Menzinger are collaborators at Univ. of Toronto, Statistics and Physical Chemistry depts. respectively. I visited their labs in 1999 in order to complete this project. I used data obtained in the laboratory of Dr. Atwood).

39. Griffis, B., Moffett, S. and **Cooper, R.L.** (**2001**) Muscle phenotype remains unaltered after limb autotomy and unloading. **Journal of Experimental Zoology** 289:10-22.
(Griffis, B.- was a PhD student who won a BEACON Fellowship for one year to work on projects related to my research; Dr. Moffett (Univ. of Washington) is a friend of mine. We had planed to do this project together, but she allowed me to put a student on the project instead. She was a collaborator for this project).

40. Li, H., Harrison, D., Jones, G., Jones, D., and **Cooper, R.L.** (**2001**) Alterations in development, behavior, and physiology in *Drosophila* larva that have reduced ecdysone production. **Journal of Neurophysiology** 85:98-104. *(Li was my PhD student).*

41. **Cooper, R.L.**, Li, H., Long, L.Y., Cole, J., and Hopper, H.L. (**2001**) Anatomical comparisons of neural systems in sighted epigean & troglobitic crayfish species. **Journal of Crustacean Biology** 21:360-374. *(Li was my PhD student, Long (Li's wife) helped out in axon counting, Cole and Hopper helped with assessing the cave crayfish and conducting experiments within the cave environment).*

42. Li, H., and **Cooper, R.L.** (**2001**) Effects of the ecdysoneless mutant on synaptic efficacy and structure at the neuromuscular junction in *Drosophila* larvae during normal and prolonged development. **Neuroscience** 106:193-200. *(Li was my PhD student).*

43. Li, H. and **Cooper, R.L.** (**2001**) Spatial familiarity in the blind cave crayfish, Orconectes australis packardi. **Crustaceana** 74: 417-433. *(Li was my PhD student).*

44. Kellie, S., Greer, J. and **Cooper, R.L.** (**2001**) Alterations in habituation of the tail flip response in epigean and troglobitic crayfish. **Journal of Experimental Zoology** 290:163-176. *(Kellie and Greer were undergraduates in my laboratory at UK)*

45. Djokaj, S., **Cooper, R.L.** and Rathmayer, W. (**2001**) Effects of octopamine, serotonin, and cocktails of the two modulators on synaptic transmission at crustacean neuromuscular junctions. **Journal of Comparative Physiology A** 187 (2):145-154. *(The summer of 2000 I worked with Dr. Rathmayer at the Univ. of Konstanz, **Germany** to stimulate this joint project. Dr. Stefan Djokaj was a postdoctoral fellow in Dr. Rathmayer's group.)*

46. **Cooper, R.L.**, Chase, R.J., and Tabor, J. (**2001**) Altered responsiveness to 5-HT at the crayfish neuromuscular junction due to chronic p-CPA & m-CPP treatment. **Brain Research** 916:143-151.*(Rachel Chase and Jami Tabor were undergraduates in my laboratory at UK).*

47. Schapker, H., Breithaupt, T., Shuranova, Z., Burmistrov, Y. and **Cooper, R.L.** (**2002**) Heart rate and ventilatory correlative measures in crayfish during environmental disturbances & social interactions. **Comparative Biochemistry and Physiology A** 131:397-407. *(Schapker was a undergraduate student in my lab at the Univ. of KY. Dr. Breithaupt is a faculty member at the University of Konstanz, **Germany**. Drs. Shuranova and Burmistrov are a **Russian** husband and wife team that have been working on crayfish and other invertebrate behavior for over a half of century).*

48. Li, H. and **Cooper, R.L.** (**2002**) The effect of ambient light on blind cave crayfish: Social interactions. **Journal of Crustacean Biology** 22:449-458 *(Li was my PhD student).*

49. Strawn, J.R. and **Cooper, R.L.** (**2002**) The effects of ethanol on presynaptic components of synaptic transmission in a model glutamatergic synapse: The crayfish neuromuscular junction. **Comparative Biochemistry and Physiology C: Toxicology & Pharmacology** 131: 395-404. *(J.R. Strawn was undergraduate in my laboratory at UK).*

50. Mykles, D.L., Medler, S.A., Koenders, A., and **Cooper, R.L.** (**2002**) Myofibrillar protein isoform expression is correlated with synaptic efficacy in slow fibres of the claw and leg opener

muscles of crayfish and lobster. **Journal of Experimental Biology** 205 (4): 513-522. *(Dr. Mykles is a collaborator at Colorado State Univ. and an expert in running SDS gels of crustacean muscle as well as probing with specific antibodies to muscle proteins.)*

51. Tabor, J. and **Cooper, R.L.** (**2002**) Physiologically identified 5-HT_2 -like receptors at the crayfish neuromuscular junction. **Brain Research** 932:91-98. *(Jami Tabor was an undergraduate in my laboratory at UK).*

52. Brailoiu, E., **Cooper, R.L.**, and Dun, N.J. (**2002**) Sphingosine 1-phosphate enhances spontaneous transmitter release at the frog neuromuscular junction. **British Journal of Pharmacology** 136:1093-1097. *(Drs. Brailoiu and Dun are colleagues located at Dept. Pharm., College of Med., East Tenn. State Univ. The research was performed at East Tenn. State Univ.).*

53. Winslow, J.L., **Cooper, R.L.** and Atwood, H.L. (**2002**) Intracellular ionic concentration by calibration from fluorescence indicator emission spectra, its relationship to the Kd, Fmin, Fmax formula, and use Na-Green for presynaptic sodium. **Journal of Neuroscience Methods** 118:163-175. *(Dr. Winslow is a collaborator at Univ. of Toronto. I visited his lab in 1999 to complete this project).*

54. Li, H., Peng, X., and **Cooper, R.L.** (**2002**) Development of *Drosophila* larval neuromuscular junctions: Maintaining synaptic strength. **Neuroscience** 115:505-513.

55. **Cooper, R.L.**, Ward, E., Braxton, R., Li, H., and Warren, W.M. (**2003**) The effects of serotonin and ecdysone on primary sensory neurons in crayfish. **Microscopy Research and Technique** 60: 336-345. *(Ward, Braxton, and Warren were undergraduates and Li was a graduate student in my laboratory).*

56. Ball, R., Xing, B., Bonner, P., Shearer, J. and **Cooper, R.L.** (**2003**) Long-term maintenance of neuromuscular junction activity in cultured Drosophila larvae. **Comparative Biochemistry and Physiology A**. 134:247-255. *(Ryan Ball was an undergraduate in my laboratory at UK).*

57. Viele, K., Stromberg, A., and **Cooper, R.L.** (**2003**) Estimating the number of release sites within the nerve terminal by statistical analysis of synaptic charge. **Synapse** 47:15-25. *(Dr. Viele and Dr. Stromberg are in the Dept. of Statistics, Univ. of KY. We worked on this project together. Data collected in my lab. Statistical analysis done by them).*

58. Ziemba, R., Simpson, A., Hopper, R., and **Cooper, R.L.** (**2003**) A comparisons of antennule structure in surface and cave-dwelling crayfish. **Crustaceana** 76:859-869. *(Anna Simpson was an undergraduate in my laboratory at UK).*

59. Shuranova, Z.P., Burmistrov, Y.M., and **Cooper, R.L.** (**2003**). Bioelectric field potentials of the ventilatory muscles in the crayfish. **Comparative Biochemistry and Physiology A**. 134: 461-469. *(Drs. Shuranova and Burmistrov are a **Russian** husband and wife team and are collaborators).*

60. Harrison, D.A. and **Cooper, R.L.** (**2003**) Characterization of development, behavior, and neuromuscular physiology in the phorid fly: *Megaselia scalaris*. **Comparative Biochemistry**

and Physiology A. 136: 427-439.

61. **Cooper, R.L.**, Dönmezer, A., and Shearer, J. (**2003**) Intrinsic differences in sensitivity to 5-HT between high- and low-output terminals innervating the same target. **Neuroscience Research** 45:163-172. *(Ahmet Donmezer was an undergraduate in my laboratory at UK. Joe Shearer was a MS student in my laboratory)*.

62. Sparks, G.M., Brailoiu, E., Brailoiu, C., Dun, N.J., Tabor, J., and **Cooper, R.L.** (**2003**) Effects of m-CPP in altering neuronal function: Blocking depolarization in invertebrate motor & sensory neurons but exciting rat dorsal root neurons. **Brain Research** 969:14-26.

63. Tilden, A.R., Brauch, R., Ball, R., Janze, A.M., Ghaffari, A.H., Sweeney, K., Yurek, J.C. and **Cooper, R.L.** (**2003**) Modulatory effects of melatonin on behavior, hemolymph metabolites, and neurotransmitter release in crayfish. **Brain Research** 992:252-262.

64. Shuranova, Z.P., Burmistrov, Y.M., and **Cooper, R.L.** (**2003**). A hundred years ago and now: A short essay on the study of the crustacean hindgut. (Vor hundert Jahren und nun: Eine kurze Geschichte von die Forschung des Hinterdarmes der Crustaceen). **Crustaceana** 76:755-760. (Drs. Shuranova and Burmistrov are a husband and wife team and are collaborators in **Russia**).

65. Sparks, G.M., Dasari, S. and **Cooper, R.L.** (**2004**) Actions of MDMA at glutamatergic neuromuscular junctions **Neuroscience Research** 48:431-438.

66. Dasari, S. and **Cooper, R.L.** (**2004**) Modulation of sensory to motor circuits by serotonin, octopamine, and dopamine in semi-intact *Drosophila* larva. **Neuroscience Research** 48:221-227. *(Sameera Dasari was PhD student).*

67. Sparks, G. and **Cooper, R.L.** (**2004**) 5-HT offsets homeostasis of synaptic transmission during short-term facilitation. **J. of Applied Physiology** 96:1681-1690. *(Garrett Sparks was an undergraduate in my laboratory at UK. The summer of 2000 I worked with Dr. Dudel-Physiologishes Institute der Ludwig-Maximillians-Universität München, **Germany** to stimulate this project).*

68. Pagé, M.-P. and **Cooper, R.L.** (**2004**) Novelty stress and reproductive state alters responsiveness to sensory stimuli and 5-HT neuromodulation. **Comp. Biochem. Physiol.** 139A:149-158.

69. Cooper, A.-S. and **Cooper, R.L.** (**2004**) Growth of troglobitic (*Orconectes australis packardi*) and epigean (*Oroconectes juvenilis*) species of crayfish maintained in laboratory conditions. **Journal of the Kentucky Academy of Sciences** 65(2):108-115. *(This is my daughter's Middle School 6th grade science project. She conducted the measures, compiled and analyzed the data as well as reviewed the literature and drafted a first version of the manuscript.)*

70. Cooper, A.-S. and **Cooper, R.L.** (**2004**) Monitoring activity of *Drosophila* larvae: Impedance & video microscopy measures. **Drosophila Information Service** 87:85-87. *(This is my daughter's Middle School 8th grade science project. She conducted the measures, compiled and analyzed the data as well as reviewed the literature and drafted a first version of the manuscript.)*

71. **Cooper, R.L.** and McLetchie, D.N. (**2004**) Monitoring carbon dioxide production by *Drosophila* larvae. **Drosophila Information Service** 87:88-91.

72. Dasari, S. and **Cooper, R.L.** (**2004**) Monitoring heart rate in *Drosophila* larvae by various approaches. **Drosophila Information Service** 87:91-96.

73. Badre, N.H., Martin, M.E. and **Cooper, R.L.** (**2005**) The physiological and behavioral effects of carbon dioxide on *Drosophila* larvae. **Comparative Biochemistry and Physiology A**. 140:363-376.

74. Bhatt, D. and **Cooper, R.L.** (**2005**) The pharmacological and physiological profile of glutamate receptors at the *Drosophila* larval neuromuscular junction. **Physiological Entomology** 30:205-210.

75. Xing, B., Long, A.A., Harrison, D.A. and **Cooper, R.L.** (**2005**) Developmental consequences of NMJs with reduced presynaptic calcium channel function **Synapse** 57:132-147.

76. Dropic, A.J., Brailoiu, E., and **Cooper, R.L.** (**2005**) Presynaptic mechanism of action induced by 5-HT in nerve terminals: Possible involvement of ryanodine and IP_3 sensitive Ca^{2+} stores. **Comparative Biochemistry and Physiology A**. 142:355-361. *(J. Dropic - maiden name Fox- was an undergraduate in my laboratory at UK. Dr. Brailoiu is a colleague located at Temple University School of Med.)*

77. Logsdon, S., Johnstone, A.F.M., Viele, K. and **Cooper, R.L.** (**2006**) Regulation of synaptic vesicles pools within motor nerve terminals during short-term facilitation and neuromodulation. **J. of Applied Physiology** 100:662-671.

78. Viele, K., Lancaster, M., and **Cooper, R.L.** (**2006**) The self-modeling structure of evoked post-synaptic potentials. **Synapse** 60:32-44. **Impact factor: 3.220**

79. Dasari, S. and **Cooper, R.L.** (**2006**) Direct influence of serotonin on the larval heart of *Drosophila melanogaster.* **J. Comparative Physiology B** 176: 349–357.

80. Shuranova, Z.P., Burmistrov, Y.M., Strawn, J.R., and **Cooper, R.L.** (**2006**). Evidence for an Autonomic Nervous System in Decapod Crustaceans. **International Journal of Zoological Research** 2(3):242-283. (A review article with peer review. *Jeff Strawn was an undergraduate in my lab. Drs. Shuranova and Burmistrov are a Russian husband and wife team that have been working on crayfish and other invertebrate behavior for over a half of century).*

81. Johnstone, A.F.M., and **Cooper, R.L.** (**2006**) Direct innervation of the *Drosophila melanogaster* larval aorta. **Brain Research** 1083: 159-163.

82. Pagé, M.-P., Hailes, W., and **Cooper, R.L.** (**2007**) Modification of the tail flip escape response in crayfish by neuromodulation and behavioral state with and without descending CNS input. **International Journal of Zoological Research**. 3:132-144. **Impact factor: NA; New on line Journal with strong peer review (see chief editor: www page also Journal www page).**

83. Lancaster, M., Viele, K., Johnstone, A.F.M., and **Cooper, R.L.** (**2007**) Automated classification of evoked quantal events. **Journal of Neuroscience Methods** 159: 325–336. **Impact factor: 1.884**

84. Dasari, S., Viele, K., Turner, A.C. and **Cooper R.L.** (**2007**) Influence of p-CPA and MDMA on physiology, development and behavior in *Drosophila melanogaster*. **European Journal of Neuroscience**. 26: 424–438. **Impact factor: 3.673**

85. Johnstone, A.F.M., Kellie, S and **Cooper, R.L.** (**2008**) Presynaptic depression in phasic motor nerve terminals and influence of 5-HT on docked vesicles. **The Open Neuroscience Journal** 2: 16-23. *(Scott Kellie was an undergraduate in my laboratory at UK).* **Impact factor: NA; New on line Journal with strong peer review (see chief editor: http://www.ucl.ac.uk/ani/prof-GB.htm; Dr. Geoffrey Burnstock, FRS London,** Department of Anatomy and Developmental Biology,University College London,London, UK).

86. Badre, N.H., and **Cooper, R.L.** (**2008**) Reduced calcium channel function in *Drosophila* disrupts associative learning in larva, and behavior in adults. **International Journal of Zoological Research** 4 (3):152-164. **Impact factor: NA; New on line Journal with strong peer review (see chief editor: www page also Journal www page).**

87. **Cooper, R.L. (2008)** Proprioceptive neurons of chordotonal organs in the crab, Cancer magister dana (Decapoda, Brachyura). **Crustaceana** 81(4):447-475. **Impact factor: 0.390**

88. Desai-Shah, M., Viele, K., Sparks, G., Nadolski, J., Hayden, B., Srinivasan, V.K., and **Cooper, R.L.** (**2008**). Assessment of synaptic function during short-term facilitation in motor nerve terminals in the crayfish. **The Open Neuroscience Journal** 2:24-35. **Impact factor: NA; New on line Journal with strong peer review (see chief editor: http://www.ucl.ac.uk/ani/prof-GB.htm; Dr.Geoffrey Burnstock, FRS London,** Department of Anatomy and Developmental Biology,University College London, London, UK).

89. Dasari, S., Wang, L., Harrison, D.A. and **Cooper R.L.** (**2009**) Reduced and misexpression of 5-HT_2 receptors alters development, behavior and CNS activity in *Drosophila melanogaster*. **International Journal of Zoological Research** 5 (3):101-114.

90. Desai-Shah, M. and **Cooper, R.L.** (**2009**) Different mechanisms of Ca2+ regulation that influence synaptic transmission: Comparison between crayfish and *Drosophila* neuromuscular junctions. **SYNAPSE** 63:1100-1121. **Impact factor: 3.220**

91. Lee, J.-Y., Bhatt, D., Bhatt, D., Chung, W.-Y., and **Cooper, R.L.** (**2009**) Furthering pharmacological and physiological assessment of the glutamatergic receptors at the *Drosophila* neuromuscular junction. **Comparative Biochemistry and Physiology**, Part C 150:546-557.

92. Cooper, A.S., and **Cooper, R.L.** (**2009**) Historical view and physiological demonstration of synaptic transmission at the crayfish opener muscle. **Journal of Visualized Experiments (JoVE).** JoVE. 33. http://www.jove.com/video/1595/historical-view-physiology-demonstration-at-nmj-crayfish-opener doi: 10.3791/1595.

93. Bierbower, S.M. and **Cooper, R.L.** (**2009**) Measures of heart and ventilatory rates in freely moving crayfish. **Journal of Visualized Experiments (JoVE)** 32: http://www.jove.com/video/1594/measures-of-heart-and-ventilatory-rates-in-freely-moving-crayfish , doi: 10.3791/1594. New on line Journal with strong peer review (see editorial board http://www.jove.com/index/Editorial%20Board.stp)

94. Cooper, A.S., Rymond, K.E., Ward, M.A., Bocook, E.L. and **Cooper, R.L.** (**2009**) Monitoring heart function in larval *Drosophila melanogaster* for physiological studies. **Journal of Visualized Experiments (JoVE)** 32: http://www.jove.com/video/1596/monitoring-heart-function-larval-drosophila-melanogaster-for , New on line Journal with strong peer review (see editorial board http://www.jove.com/index/Editorial%20Board.stp)

95. Wigginton, A.J., **Cooper, R.L.**, Fryman, E. and Birge, W.J. (**2010**) Effects of cadmium and body mass on the anti-predator behaviors of five species of crayfish. **International Journal of Zoological Research** 6(2): 39-51.

96. Desai-Shah, M., Papoy, A.R., Ward, M., and **Cooper, R.L.** (**2010**) Roles of the SERCA, PMCA and NCX in calcium regulation in the *Drosophila* larval heart. **The Open Physiology Journal** 3:16-36.

97. Desai-Shah, M. and **Cooper, R.L.** (**2010**) Actions of NCX, PMCA and SERCA on short-term facilitation and maintenance of transmission in nerve terminals. **The Open Physiology Journal** 3:37-50. *(The summer of 2000 I worked with Dr. Dudel at the Physiologishes Institute der Technischen Universitat Munchen, Germany to stimulate this joint project).*

98. Bierbower, S.M. and **Cooper, R.L.** (**2010**) The effects of acute carbon dioxide on behavior and physiology in *Procambarus clarkii*. **Journal of Experimental Zoology** 313A:484-497.http://web.as.uky.edu/Biology/faculty/cooper/labWWW-PDFs/JEZ%20co2%20behavior-Cover%20photo.pdf
Made COVER of the issue http://onlinelibrary.wiley.com/doi/10.1002/jez.v313a:8/issuetoc

99. Wu, W.H. and **Cooper, R.L.** (**2010**) Physiological recordings of high and low output NMJs on the Crayfish leg extensor muscle. Journal of Visualized Experiments (JoVE). Jove. 45: http://www.jove.com/video/2319/physiological-recordings-high-low-output-nmjs-on-crayfish-leg doi:10.3791/2319.

100. Leksrisawat, B., Cooper, A.S., Gilberts, A.B. and **Cooper, R.L. (2010)** Muscle Receptor Organs in the Crayfish Abdomen: A Student Laboratory Exercise in Proprioception. Journal of Visualized Experiments (JoVE). Jove. 45: (for manuscript)
http://www.jove.com/video/2323/muscle-receptor-organs-crayfish-abdomen-student-laboratory-exercise doi:10.3791/2323

101. Johnstone, A.F.M., Viele, K., and **Cooper, R.L.** (**2011**) Structure/Function assessment of crayfish neuromuscular junctions. **SYNAPSE** 65(4):287-299. doi: 10.1002/syn.20847, Impact factor: 3.220

102. Cooper, A.S., Leksrisawat, B., Gilberts, A.B., Mercier, A.J. and **Cooper, R.L. (2011)** Physiological experimentations with the crayfish hindgut. Journal of Visualized Experiments (JoVE). Jove 47: http://www.jove.com/video/2324/physiological-experimentation-with-crayfish-hindgut-student doi: 10.3791/2324.

103. Robinson, M.M., Martin, J.M., Atwood, H.L. and **Cooper, R.L. (2011)** Modeling biological membranes with circuit boards and measuring conduction velocity in axons: Student laboratory exercises. Journal of Visualized Experiments (JoVE). Jove. 47: e2325 http://www.jove.com/video/2325/modeling-biological-membranes-with-circuit-boards-measuring doi: 10.3791/2325

104. Baierlein, B., Thurow, A.L., Atwood, H.L. and **Cooper, R.L. (2011)** Membrane potentials, synaptic responses, neuronal circuitry, neuromodulation and muscle histology using the crayfish: Student laboratory exercises. Journal of Visualized Experiments (JoVE). Jove 47: http://www.jove.com/video/2322/membrane-potentials-synaptic-responses-neuronal-circuitry doi: 10.3791/2325.

105 Cooper, R.M., Schapker-Finucane, H. Adami, H. and **Cooper, R.L.** (**2011**) Heart and ventilatory measures in crayfish during copulation. Open Journal of Molecular and Integrative Physiology 1(3): 36-42. http://www.scirp.org/journal/PaperInformation.aspx?paperID=8344

106. Holsinger, R.C., and **Cooper, R.L.** (**2012**). Effect of Environment and Modulators on Hindgut and Heart Function in Invertebrates: Crustaceans and *Drosophila*. *Tested Studies for Laboratory Teaching*, Volume 33 (K. McMahon, Editor). Proceedings of the 33rd Conference of the Association for Biology Laboratory Education (ABLE). **http://www.ableweb.org/volumes/vol-33/v33reprint.php?ch=7**

107. Wu, W.-H. and **Cooper, R.L. (2012)** The regulation and packaging of synaptic vesicles as related to recruitment within glutamatergic synapses. **Neuroscience** 225:185–198**. Impact 3.380**

108. Wu, W.-H. and **Cooper, R.L. (2012)** Serotonin and synaptic transmission at invertebrate neuromuscular junctions. **Experimental Neurobiology** 21(3):101-112.

109. Chung, Y-S. Cooper, R.M., Graff, J. and **Cooper, R.L.** (**2012**) The acute and chronic effect of low temperature on survival, heart rate and neural function in crayfish *(Procambarus clarkii)* and prawn *(Macrobrachium rosenbergii)* species. Open Journal of Molecular and Integrative Physiology 2:75-86.

110. Bierbower, S.M., Shuranova, Z. P., Viele, K. and **Cooper, R.L.** (**2013**) Comparative study of environmental factors influencing motor task learning and memory retention in sighted and blind crayfish. **Brain and Behavior** 3(1): 4–13. **4th year journal by John Wiley & Sons, Inc**. Impact factor should be high after 5th year ranking. http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%292157-9032/issues

111. Becnel, J., Johnson, O., Majeed, Z.R., Tran, V., Yu, B., Roth, B.L., **Cooper, R.L.,** Kerut, E.K., Nichols, C.D. (**2013**) DREADDs in Drosophila: A Pharmacogenetic Approach for Controlling Behavior, Neuronal Signaling, and Physiology in the Fly. **Cell Reports** 4(5):1049-59. doi: 10.1016/j.celrep.2013.08.003. The first impact factor (IF) for *Cell Reports* was just announced, and it is **7.2**. (see http://news.cell.com/cellreports/cell-reports/our-first-partial-impact-factor-and-our-continuing-full-story)

112. Wu, W.-H. and **Cooper, R.L.** (**2013**) Physiological separation of vesicle pools in low- and high-output nerve terminals. **Neuroscience Research** 75:275–282. 5-Year Impact Factor: 2.376

113. Bierbower, S.M., Nadolski, J. and **Cooper, R.L.** (**2013**) Sensory systems and environmental change on behavior during social interactions. **International Journal of Zoology**. Vol: 2013, Article ID 573802, 16 pages http://dx.doi.org/10.1155/2013/573802

114. Bierbower, S.M. and **Cooper, R.L.** (**2013**) The mechanistic action of carbon dioxide on a neural circuit and NMJ communication. **Journal of Experimental Zoology** 319A:340–354. http://onlinelibrary.wiley.com/doi/10.1002/jez.1798/full Impact Factor: 1.608.

115. Majeed, Z.R., Nichols, C.D., and **Cooper, R.L.** (**2013**) 5-HT stimulation of heart rate in *Drosophila* does not act through cAMP as revealed by pharmacogenetics. **Journal of Applied Physiology** 115: 1656-1665. 5 yr impact factor 4.156

116. Majeed, Z.R., Titlow, J., Hartman, H.B. and **Cooper, R.L.** (**2013**) Proprioception and tension receptors in crab limbs: Student laboratory exercises. **Journal of Visualized Experiments (JoVE)**. (80), e51050, doi:10.3791/51050 Professional movie and peer reviewed manuscript. http://www.jove.com/video/51050/proprioception-tension-receptors-crab-limbs-student-laboratory JoVE's calculated unofficial Impact Factor is 1.19 (http://www.jove.com/subscribe/faq)

117. Titlow, J., Majeed, Z.R., Nicholls, J.G. and **Cooper, R.L.** (**2013**) Intracellular recording, sensory field mapping, and culturing identified neurons in the leech, *Hirudo medicinalis*. **Journal of Visualized Experiments (JoVE).** (81), e50631, doi:10.3791/50631. Professional movie and peer reviewed manuscript. http://www.jove.com/video/50631/intracellular-recording-sensory-field-mapping-culturing-identified JoVE's calculated unofficial Impact Factor is 1.19 (http://www.jove.com/subscribe/faq)

118. Titlow, J., Majeed, Z.R., Hartman, H.B., Burns, E., and **Cooper, R.L.** (**2013**) Neural Circuit Recording from an Intact Cockroach Nervous System. **Journal of Visualized Experiments (JoVE)**. (81), e50584, doi:10.3791/50584 (2013). Professional movie and peer reviewed manuscript).http://www.jove.com/video/50584/neural-circuit-recording-from-an-intact-cockroach-nervous-system JoVE's calculated unofficial Impact Factor is 1.19 (http://www.jove.com/subscribe/faq)

119. Titlow, J.S., Rufer, J., King, K., and **Cooper, R.L.** (**2013**) Pharmacological analysis of dopamine modulation in the *Drosophila melanogaster* larval heart. **Physiological Reports** 1 (2), 2013, e00020, doi:10.1002/phy2.20. New part of American Physiological Society Press-no impact factor yet determined.

120. Cooper, A.-S., Johnstone, A.F.M. and **Cooper, R.L.** (**2013**) Motor nerve terminal morphology with unloading and reloading of muscle. **Journal of Crustacean Biology**. 33(6): 818-827. Impact factor 1.019

121. de Castro, C., Titlow, J., Majeed, Z.R., and **Cooper, R.L.** (**2014).** Analysis of various physiological salines for heart rate, CNS function, and synaptic transmission at neuromuscular junctions in *Drosophila melanogaster* larvae. **Journal of Comparative Physiology A**. 200:83–92, DOI 10.1007/s00359-013-0864-0 Impact factor 1.856

122. Majeed, Z.R., Stacy, A., and **Cooper, R.L.** (**2014)** Pharmacological identification of serotonin receptor subtypes on *Drosophila* larval heart. **Journal of Comparative Physiology B**. 184(2):205-219. Impact factor 2.024

123. Titlow, J.S., Rice, J., Majeed, Z.R., Holsopple, E., Biecker, S., and **Cooper, R.L. (2014)** Anatomical and genotype-specific mechanosensory responses in *Drosophila melanogaster* larvae. **Neuroscience Research** 83:54-63. Impact factor 2.249. doi: 10.1016/j.neures.2014.04.003.

124. Titlow, J.S., Anderson H. and **Cooper, R.L. (2014)**. Lights and Larvae: Using optogenetics to teach recombinant DNA and neurobiology. **The Science Teacher**, National Science Teacher Association, NSTA. 81(6):3-9. Cover of Issue. Also NSTA YOUTUBE https://www.youtube.com/watch?v=v-eyw6_GC9M

125. Szczesniak, R., Viele, K. and **Cooper, R.L.** (**2014**) Mixtures of Self-Modeling Regressions. **Journal of Biometrics and Biostatistics** 5 (4):1-8. doi: 10.4172/2155-6180.1000208. Impact factor 1.12

126. Majeed, Z.R., Ritter, K., Robinson, J., Blümich, S.L.E., Brailoiu, E., and **Cooper, R.L.** (**2015**). New insights into the acute actions from a high dosage of fluoxetine on neuronal and cardiac function: Drosophila, crayfish and rodent models. **Comparative Biochemistry and Physiology- Part C** 176–177:52–61. 5 year impact factor 2.819

127. Jackson, J.R., Kirby, T.J., Fry, C.S., **Cooper, R.L.,** McCarthy, J.J., Peterson, C.A., and Dupont-Versteegden, E.E. (**2015**) Reduced voluntary running performance is associated with impaired coordination as a result of muscle satellite cell depletion in adult mice **Skeletal Muscle** 5:41, DOI 10.1186/s13395-015-0065-3. Impact factor 5.14

128. Malloy, C., Ritter, K., Robinson, J., and **Cooper, R.L.** (**2016**). Pharmacological identification of cholinergic receptor subtypes on Drosophila melanogaster larval heart. **Journal of Comparative Physiology – B.** 186 (1):45-57. Impact factor 2. 619

129. Zhu, Y.-C., Yocom, E., Sifers, J., Uradu, H. and **Cooper, R.L.** (**2016b**) Modulatory effects on Drosophila larva hearts in room temperature, acute and chronic cold stress. **Journal of Comparative Physiology – B.** 186 (7):829-841. (Impact factor 2.619).

130. Zhu, Y.-C., Uradu, H. Majeed, Z.R., and **Cooper, R.L.** (**2016a**) Optogenetic stimulation of heart rate at different temperatures and Ca^{2+} concentrations. **Physiological Reports**. 4(3):e12695 New part of American Physiological Society Press- no impact factor yet determined.).

131. Majeed, Z.R., Abdeljaber, E., Soveland, R., Cornwell, K., Bankemper, A., Koch, F. and Cooper, R.L. (**2016).** Modulatory action of serotonergic system in behavior and sensory-motor circuit physiology in *Drosophila melanogaster*. **Neural Plasticity. Article ID 7291438, 23 pages** **http://dx.doi.org/10.1155/2016/7291438** Impact Factor for 3.582 Journal Citation Reports released by Thomson Reuters (ISI) in 2015 .

132. Potter, S., Krall, R.M., Mayo, S. Johnson, D., Zeidler-Watters, K., and **Cooper, R.L.** (**2016**). Population dynamics based on resource availability and founding effects: live and computational models. **The American Biology Teacher** 78(5): 396–403, ISSN 0002-7685, electronic ISSN 1938-4211.

133. Dayaram,V., Malloy, C., Martha, S., Alvarez, B., Chukwudolue, I., Dabbain, N., D.mahmood, D., Goleva, S., Hickey, T., Ho, A., King, M., Kington, P., Mattingly, M., Potter, S., Simpson, L., Spence, A., Uradu, H., Van Doorn, J.L., and **Cooper, R.L. (2017).** Stretch activated channels in proprioceptive chordotonal organs of crab and crayfish are sensitive to Gd3+ but not amiloride, ruthenium red or low pH. **IMPLUSE** The Premier Undergraduate Neuroscience Journal. https://impulse.appstate.edu/issues/2017

134. Malloy, C., Dayaram,V., Martha, S., Alvarez, B., Chukwudolue, I., Dabbain, N., D.mahmood, D., Goleva, S., Hickey, T., Ho, A., King, M., Kington, P., Mattingly, M., Potter, S., Simpson, L., Spence, A., Uradu, H., Van Doorn, J.L., Weineck, K. and **Cooper, R.L. (2017**). The effects of potassium and muscle homogenate on proprioceptive responses in crayfish and crab. **J. of Exp. Zoology.** 327(6):366–379.

135. Dayaram, V., Malloy, C., Martha, S., Alvarez, B., Chukwudolue, I., Dabbain, N., D.mahmood, D., Goleva, S., Hickey, T., Ho, A., King, M., Kington, P., Mattingly, M., Potter, S., Simpson, L., Spence, A., Uradu, H., Van Doorn, J.L., and **Cooper, R.L. (2017).** The effect of CO2, intracellular pH and extracellular pH on mechanosensory proprioceptor responses in crayfish and crab. **American Journal of Undergraduate Research**. 14(3):85-99. http://www.ajuronline.org/uploads/Volume_14_3/AJUR%20Vol%2014%20Issue%203%2011162017%20p85.pdf

136. **Cooper, R.L.,** Zeidler, K., Johnson, D. and Wilson, J. (**2017**) The Healthy Flea Market. *Connected Science Learning.* National Science Teachers Association (NSTA). On line January 16, 2017. Available at: http://csl.nsta.org/2017/01/the-healthy-flea-market/

137. Malloy, C., Sifers, J., Mikos, A., Samadi, A., Omar, A., Hermanns, C. and **Cooper, R.L. (2017)** Using optogenetics to assess neuroendocrine modulation of heart rate in Drosophila melanogaster larvae. **Journal of Comparative Physiology A.** 203(10), 791-806. **DOI** 10.1007/s00359-017-1191-7 (Impact factor 2.429)

138. Majeed, Z., Koch, F., Morgan, J., Anderson, H., Wilson, J., and **Cooper, R.L. (2017)** A novel educational module to teach neural circuits for college and high school students: NGSS-neurons, genetics, and selective stimulations. F1000Research. F1000Research: Immediate & Transparent Publishing for Life Scientists. F1000 Research Ltd, Middlesex House, 34-42 Cleveland St, London W1T 4LB, UK. https://f1000research.com/articles/6-117/v1

139. Higgins, J., Hermanns, C., Malloy, C. and **Cooper, R.L. (2017)**. Considerations in repetitive activation of light sensitive ion channels for long term studies: Channel rhodopsin in the *Drosophila* model. **Neuroscience Research** 125:1–10. http://www.sciencedirect.com/science/article/pii/S0168010217302882

140. Grau, E., Stanback, A.E., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Kinmon, C., Ortiz Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S., Cooper, R.L. (**2018**) Investigating the effects of homocysteine as a agonist on invertebrate glutamatergic synapses. **IMPLUSE**. pp. 1-12. https://impulse.appstate.edu/articles/2018/investigating-effects-homocysteine-agonist-invertebrate-glutamatergic-synapses

141. Wycoff, S., Weineck, K., Conlin, S., Grau, E., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Kinmon, C., Ortiz Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Ray, A., Fleckenstein, L., Piana, E., **Cooper, R.L.** (**2018**) Investigating potential effects of clove oil (eugenol) in model crustaceans. **IMPLUSE pp. 1-21** https://impulse.appstate.edu/articles/2018/effects-clove-oil-eugenol-proprioceptive-neurons-heart-rate-and-behavior-model-crustac

142. Mattingly, M., Weineck, K., Costa, J., **Cooper, R.L.,** (**2018**) Hyperpolarization by activation of halorhodopsin results in enhanced synaptic transmission: Neuromuscular junction and CNS circuit. **PLOS one** 13(7): e0200107. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0200107

143. Zhu, Y.-C., de Castro, L. and **Cooper, R.L.** (**2018**) Effect of temperature change on synaptic transmission at crayfish neuromuscular junctions. **Biology OPEN**. 7(12): bio037820 doi: 10.1242/bio.037820 http://bio.biologists.org/content/early/2018/10/31/bio.037820

144. Zhu, Y.-C. and **Cooper, R.L.** (**2018**) Effects of cold exposure on the physiology of cardiac function and synaptic transmission at the neuromuscular junction in invertebrates: A review. International Journal of Zoological Research 14(2):49-60. DOI: 10.3923/ijzr.2018. https://scialert.net/fulltext/?doi=ijzr.2018.49.60&org=10

145. Weineck, K., Ray, A.J., Fleckenstein, L., Medley, M., Dzubuk, N., Piana, E., **Cooper, R.L.** (**2018**). Physiological changes as a measure of crustacean welfare under different standardized stunning techniques: Cooling and electroshock. **ANIMALS** 8(9),158; https://doi.org/10.3390/ani8090158. Impact Factor of 1.654

146. Thenappan, A., Dupont-Versteegden, E.E. and **Cooper, R.L. (2019)**. An educational model for understanding acute deep tissue injury of motor units: Common lab exercises with a new twist **Journal of Young Investigators 36(5): 62-71. (https://www.jyi.org/2019-may/2019/5/1/an-educational-model-for-understanding-acute-deep-tissue-injury-of-motor-units-common-lab-exercises-with-a-new-twist** This was an educational project by Ms. Thenappan to develop a novel laboratory exercise for the neurophysiology course (Bio446/650).

147. **Cooper, R.L.,** McNabb, M. and Nadolski, J. (**2019**) The effects of a bacterial endotoxin LPS on synaptic transmission at the neuromuscular junction. **Heliyon-Elsevier,** 5 (2019) e01430 https://www.heliyon.com/article/e01430

148. Anyagaligbo, O., Bernard, J., Greenhalgh, A. and **Cooper, R.L.** (**2019**) The effects of bacterial endotoxin (LPS) on cardiac function in a medicinal blow fly (*Phaenicia sericata*) and a fruit fly (*Drosophila melanogaster*. **Comparative Biochemistry and Physiology-Part C** 217:15-24. 5 year impact factor 2.819

149. Weineck, K. Stanback, A.E., and **Cooper, R.L. (2019)** The effects of eugenol as an anesthetic for an insect: Drosophila, adult, larval heart rate and synaptic transmission. Article 54. In: McMahon K, editor. Tested studies for laboratory teaching. Volume 40. Proceedings of the 39th Conference of the Association for Biology Laboratory Education (**ABLE**). **http://www.ableweb.org/volumes/vol-40/?art=#** Vol 40, Article 54, 2019 [PDF]

150. **Cooper, R.L.** Thenappan, A. and Dupont-Versteegden, E.E. (**2019**). Examining motor and sensory units as an educational model for understanding the impact of localized tissue injury on healthy cells. Article 6. In: McMahon K, editor. Tested studies for laboratory teaching. Volume 40. Proceedings of the 39th Conference of the Association for Biology Laboratory Education (**ABLE**). **http://www.ableweb.org/volumes/vol-40/?art=#** Vol. 40, Article 6, 2019 [PDF]

151. Potter, S., Sifers, J., Yocom, E., Blümich, S.L.E., Potter, R., Nadolski, J., Harrison, D.A. and **Cooper, R.L. (2019)** Acute and chronic effects of reducing TOR by rapamycin and genetically on development, behavior, and physiology in *Drosophila*. **Biology OPEN.** https://bio.biologists.org/content/early/2019/11/07/bio.046508 https://doi.org/10.1242/bio.046508 Five-year Impact Factor*:* 2.170

152. de Castro, C., Titlow, J.S., Majeed, Z.R., Malloy, C., King, K.E., and **Cooper, R.L. (2019)** Chemical and mechanical factors required for maintaining cardiac rhythm in *Drosophila melanogaster* larva. **Journal of Entomology** 16 (2): 62-73. https://scialert.net/fulltext/?doi=je.2019.62.73&org=11

153. Malloy, C., Somasundaram, E., Omar, A., Bhutto, U., Medley, M., Dzubuk Petterson, N. and **Cooper, R.L.** (**2019**). Pharmacological identification of cholinergic receptor subtypes: modulation of behavior and neural circuit excitability in Drosophila larvae. **Neuroscience IBRO** 411: 47-64. Impact factor of 3.244 https://www.sciencedirect.com/science/article/abs/pii/S030645221930332X

154. Saelinger, C.M., McNabb, M.C., Trent, S., Danley, M. and **Cooper, R.L.** (**2019**). Effects of eugenol on nerve conduction and synaptic transmission at neuromuscular junction in an amphibian. **IMPLUSE** https://impulse.appstate.edu/articles/2019/investigating-effects-eugenol-nerve-conduction-and-synaptic-transmission-neuromuscular

155. McNabb, M.C., Saelinger, C.M., Danley, M. and **Cooper, R.L.** (**2019**). The effects of bacterial endotoxin (LPS) on synaptic transmission at neuromuscular junction in an amphibian. **International Journal of Zoological Research** 15(2):35-42.

156. Stanback, M., Stanback, A.E., Akhtar, S., Basham, R., Chithrala, B., Collis, B., Heberle, B.A., Higgins, E., Lane, A., Marella, S., Ponder, M., Raichur, P., Silverstein, A., Stanley, C., Vela, K. and **Cooper, R.L. (2019).** The effect of lipopolysaccharides on primary sensory neurons in crustacean models. **IMPLUSE** https://impulse.appstate.edu/articles/2019/effect-lipopolysaccharides-primary-sensory-neurons-crustacean-models

157. Stanley, C.E., Mauss, A., Borst, A. and **Cooper, R.L. (2019)** Effects of optogenetically driving a chloride channel and a chloride pump on cardiac function in a fruit fly (*Drosophila melanogaster*). **Methods and Protocols** (ISSN 2409-9279). https://www.mdpi.com/2409-9279/2/3/73

158. Istas, O., Greenhalgh, A. and **Cooper, R.L.** (**2019**) The effects of a bacterial endotoxin on behavior and sensory-CNS-motor circuits in *Drosophila melanogaster*. **Insects** https://www.mdpi.com/2075-4450/10/4/115 Impact Factor: 1.848 from 2017.

159. Saelinger, C.M., McNabb, M.C., McNair, R., Bierbower, S. and **Cooper, R.L. (2019)** Effects of bacterial endotoxin (LPS) on the cardiac function, neuromuscular transmission and sensory-CNS-motor nerve circuit: A crustacean model. **Comparative Biochemistry and Physiology, Part A.** 237: 110557. https://doi.org/10.1016/j.cbpa.2019.110557 5 year impact factor 2.173

160. Adams, R., Stanley, C.E., Piana, E. and **Cooper, R.L. (2019)** Physiological and behavioral indicators to measure crustacean welfare. **ANIMALS**. *9*(11), 914; **https://www.mdpi.com/2076-2615/9/11/914** Impact Factor of 1.654

161. Stanley, C.E., Adams, R., Nadolski, J., Amrit, E., Barrett, M., Bohnett, C., Campbell, K., Deweese, K., Dhar, S., Gillis, B., Hill, C., Inks, M., Kozak, K., Larson, A., Murtaza, I., Nichols, D., Roberts, R., Tyger, H., Waterbury, C. and Cooper, R.L. (2020). The effects of tricaine mesylate on arthropods: Crayfish, crab and Drosophila. **Invertebrate Neuroscience**. 20, Article number: 10 (2020) https://doi.org/10.1007/s10158-020-00243-5 [Corrected graphical abstract]

162. O'Neil, A.S., Kim, C. and Cooper, R.L. (**2020**) Learning and Memory retention in larval Drosophila. **Journal of Entomology** 17 (2): 36-47. https://scialert.net/fulltext/?doi=je.2020.36.47&org=11

163. Ballinger-Boone, C., Anyagaligbo, O., Bernard, J., Bierbower, S.M., Dupont-Versteegden, E.E., Ghoweri, A., Greenhalgh, A., Harrison, D., Istas, O., McNabb, M., Saelinger, C., Stanback, A., Stanback, M., Thibault, O., and Cooper, R.L. (**2020**) The effects of bacterial endotoxin (LPS) on cardiac and synaptic function in various animal models: Larval Drosophila, crayfish, crab, and rodent. International Journal of Zoological Research 16: 33-62. DOI: 10.3923/ijzr.2020.33.62 https://scialert.net/abstract/?doi=ijzr.2020.33.62

164. de Castro, N.S. and Cooper, R.L. (**2020**). Useful techniques for measures with Drosophila: larval movements, heart rate, and imaging. **Methods and Protocols** 3(1), 12; https://doi.org/10.3390/mps3010012

165. Holsinger, R.C. and Cooper, R.L. (**2020**) Regional phenotypic differences of the opener muscle in Procambarus clarkii: sarcomere length, fiber diameter, and force development. **Biology** 2020, 9(6), 118 https://www.mdpi.com/2079-7737/9/6/118 (Made cover of issue)

166. McCubbin, S., Jeoung, A., Waterbury, C., and Cooper, R.L. (**2020**) Pharmacological profiling of stretch activated channels in proprioceptive neuron. **Comparative Biochemistry and Physiology Part C** 233 (2020) 108765. 5 year impact factor 2.819 https://www.sciencedirect.com/science/article/abs/pii/S153204562030065X

167. Istas, O., Greenhalgh, A. and Cooper, R.L. (**2020**) Repetitive exposure to bacterial endotoxin LPS alters synaptic transmission. **Journal of Pharmacology and Toxicology**. 15: 65-72. DOI: 10.3923/jpt.2020.65.72

168. Bernard, J., Marguerite, N., Inks, M. and Cooper, R.L. (**2020**) Opposing responses of bacterial endotoxin lipopolysaccharide (LPS) and TRPA1 thermal receptors on synaptic transmission and resting membrane potential. **Current Research in Bacteriology** 13(1): 10-21. DOI: 10.3923/crb.2020.10.21 http://docsdrive.com/pdfs/ansinet/crb/2020/10-21.pdf

169. Stanley C, Krall RM, Zeidler-Watters K, Johnson D, Blackwell RR, Cooper RL. (**2020**). STEM & health: stressors on the circulatory system. Article 82 In: McMahon K, editor. Advances in biology laboratory education. Volume 41. Publication of the 41st Conference of the Association for Biology Laboratory Education (ABLE). https://doi.org/10.37590/able.v41.art82

170. O'Neil A, Krall RM, Sanden M, Cooper RL. (**2020**) Developing algebraic and geometric understanding of stereology in biological contexts. Article 77 In: McMahon K, editor. Advances in biology laboratory education. Volume 41. Publication of the 41st Conference of the Association for Biology Laboratory Education (ABLE). https://doi.org/10.37590/able.v41.art77

171. Cooper RL, Krall RM, Schultz MP, O'Neil AS, Dupont-Versteegden EE. (**2020**). Educational modules of skeletal muscle anatomy and function with models and active data gathering related to muscular dystrophy. Article 64 In: McMahon K, editor. Advances in biology laboratory education. Volume 41. Publication of the 41st Conference of the Association for Biology Laboratory Education (ABLE). https://doi.org/10.37590/able.v41.art64

172. Bernard, J., Greenhalgh, A., Istas, O., Marguerite, N.T. and Cooper, R.L. (**2020**) The effect of bacterial endotoxin LPS on serotonergic modulation of glutamatergic synaptic transmission. **Biology 2020.** *9*, 210. https://doi.org/10.3390/biology9080210

173. Greenhalgh, A., Istas, O., Cooper, R.L. (**2021**). Bacterial endotoxin lipopolysaccharide enhances synaptic transmission at low-output glutamatergic synapses. **Neuroscience Research** 170: 59-65 doi: 10.1016/j.neures.2020.08.008. PMID: 32987087. Impact Factor: **2.645**

174. Stanley, C. and Cooper, R.L. (**2021**). The effect of pH on synaptic transmission at the neuromuscular junction in *Drosophila melanogaster.* **Current Research in Neuroscience** Neuroscience 11: 1-17. [PDF] doi:10.3923/crn.2021.1.17 https://scialert.net/fulltext/?doi=crn.2021.1.17&org=10

175. Marguerite, N.T., Bernard, J., Harrison, D., Harris, D. and Cooper, R.L. (**2021**). The effect temperature on heart rate for the medicinal blow fly (Phaenicia sericata) and Drosophila melanogaster with altered expression of TRPA1 receptors. **Insects** 12(1):38. https://doi.org/10.3390/insects12010038. Impact Factor: 2.22.

176. Nethery, B., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Naidugari, J., Russell, W., Sommers, N., and Cooper, R.L. (**2021)** The effects of Riluzole on sensory and motor nerve function. **IMPULSE**. This was a Bio446 class project for Fall 2020.https://impulse.appstate.edu/articles/2021/effects-riluzole-sensory-and-motor-nerve-function [PDF]This was a Bio446 class project for Fall 2020.

177. McCubbin, S., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., Meredith, N., Naidugari, J., Nethery, B., Russell, W., Sommers, N., and Cooper, R.L. (**2021)** The effects of Levetiracetam on glutamatergic synaptic transmission. **IMPULSE.** This was a Bio446 class project for Fall 2020. https://impulse.appstate.edu/articles/2021/effects-levetiracetam-glutamatergic-synaptic-transmission [PDF] This was a Bio446 class project for Fall 2020.

178. Pankau, C., McCubbin, S., Cooper, R.L. (**2021**) The effect of optogenetically activating glia on neuronal function. **Neuroglia** 2(1): 57-67. https://www.mdpi.com/2571-6980/2/1/7/htm

179. Marguerite, N.T., McCubbin, S., and Cooper, R.L. (**2021**) Mechanosensitive receptors in regulating heart rate in larval Drosophila. **Journal of Pharmacology and Toxicology** 16: 37-46.

180. Pankau, C., Nadolski, J., Tanner, H., Cryer, C., Di Girolamo, J., Haddad, C., Lanning, M., Miller, M., Neely, D., Wilson, R. Whittinghill, B. and Cooper, R.L. (**2022**) Effects of manganese on physiological processes in Drosophila, crab and crayfish: Cardiac, neural and behavioral assays. **Comparative Biochemistry and Physiology Part C**. vol. 251, 2022, 109209. ISSN 1532-0456, https://doi.org/10.1016/j.cbpc.2021.109209. (5 year impact factor 3.228)

181. Potter, R., Meade, A., Potter, S. and Cooper, R.L. (**2021**) Rapid and direct action of lipopolysaccharides (LPS) on skeletal muscle of larval *Drosophila*. **Biology**, 2021, 10(12), 1235; https://doi.org/10.3390/biology10121235 . Current Impact Factor: 5.079

182. Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Tanner, H., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2021**). The effect of calcium on mechanosensation and neuronal activity in proprioceptive neurons. Neurosci. *2:* 353-371. https://doi.org/10.3390/neurosci2040026 or https://www.mdpi.com/2673-4087/2/4/26/htm (Bio 446 class publication).

183. Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2022**) The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. Journal of Pharmacology and Toxicology. 17: 14-27. (Bio 446 class publication).

184. McCubbin, S., Harrison, D. and Cooper, R.L. (**2022**) Glia excitation in the CNS modulates intact behaviors and sensory-CNS-motor circuitry. **Neuroglia** 3: 23-40. https://doi.org/10.3390/neuroglia3010002

185. Pankau, C. and Cooper, R.L. (**2022**) Molecular physiology of manganese in insects. Current Opinion in Insect Science 2022, 100886, ISSN 2214-5745. doi.org/10.1016/j.cois.2022.100886.

186. Smith, L.A., Nadolski, J., Jacobs, G. et al., (**2022**) Examining the reproducibility in analysis of social interactions related to aggression in crayfish. (In Manuscript).

187. Jacobs, G., Nadolski, J., Odle, J.M., Smith, L.A., Shenoy, K., Srinivasan, M.P. and Cooper, R.L. (**2022**) Social interactions of intraspecies pairs of Australian crayfish (*Cherax quadricarinatus*) and interspecies pairs of Louisiana red swamp crayfish (*Procambarus clarkii*): Invasive species alert. (In Manuscript).

188. Jacobs, G., et al., Slane Steen, Maggie Barnes, Sarah Foster, Lacey Gordon, Sheridan Oldham, Nyla Parker, Jawad Saleem, Elizabeth Steele, Oscar Istas, Jacobs, G., Shenoy, K., Srinivasan,

M.P., Nadolski, J. and Robin Cooper (**2022**) Characterization of behavior and survival of the Australian crayfish (*Cherax quadricarinatus*) to cold.

189. Naidugari, J., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Nethery, B., Russell, W., Sommers, N., Dupont-Versteegden, E.E., Krall, R., Sharp, K., Chalfant, J., Brown, M., Danley, M. and Cooper, R.L. (**2022**) Temperature dependence on the passive effects of K+ on membrane potential of skeletal muscle as an educational module. Article 67. In: Advances in Biology Laboratory Education. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). [PDF]. This was a Bio446 class project for Fall 2020.

190. Aguayo-Williams, T., Subramaniam, V., Harrison, D., Cooper, R.L. and Criswell, B. (**2022**) Bridging optogenetics, metabolism, and animal behavior for student-driven inquiry at high school and college levels. Article 52. In: Advances in Biology Laboratory Education. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). [PDF] [poster] [movie]

191. Chalfant, J., Cooper, R.L., Aguayo-Williams, T., Holtzclaw, L., Loveless, M., Wilson, J. and Harrison, D. (**2022**) . Revisiting Mendel: Use of a behavioral assay to examine inheritance of traits in Drosophila. Article 56. In: Advances in Biology Laboratory Education. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). [PDF] [poster]

192. Slabach, B.L., and Cooper, R.L. (**2022**) . An active learning approach to teach aspects of human dietary health using the classic Drosophila model. Article ?. In: Advances in Biology Laboratory Education. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). Workshop presentation are **1-hour in length**. https://www.ableweb.org/conferences/viable-2021-presentations/ (Acknowleged helpers: Aguayo-Williams, T., Byrd, L.S., Ho, A., Ho, J., Wilson, J., Rama, S., Veeraragavan, G., Middleton, D., Armstrong, K., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Stevens,K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Cooper R.M., Noble, T., Ott, S., Robertson, R., Sweatt, C., Dixon, J., and Biragane, J.) [PDF] Link to workshop content [ppt]

193. Istas, O., Richard, E.E., Bernard, J., Krall, R., Aguayo, T., Cooper, R.L. (**2022**) Forensics for the body farm: Preferences for the medicinal blow fly (*Phaenicia sericata*) and fruit fly (*Drosophila melanogaster*). Article 61. In: Advances in Biology Laboratory Education. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). [PDF] [poster]

194. Bernard, J., Danley, M., Krall, R., Sharp, K., Cooper, R.L. (**2022**). Authentic curriculum undergraduate research experimentation to learn about the effects of septicemia on cardiac function: frog and larval Drosophila models. Article 53. In: Advances in Biology Laboratory Education. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). [PDF] [poster]

195. Sharp, K.A., Krall, R.M., Cooper, R.L., Danley, M., Barnard, J. (**2022**). What do animal physiology students learn from a cure investigating the effects of septicemia on cardiac function: frog and larval Drosophila models. Article 69. Volume 42. In: Advances in Biology Laboratory Education. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). [PDF] [poster]

196. Sharp, K.A., Cooper, R.L., and Carter, D. (**2022)**. Semester-long Projects. Article 50; Volume 42. In: Advances in Biology Laboratory Education. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). **[PDF]**

197. McCubbin, S., Meade, A. Harrison, D. and Cooper, R.L. (**2022**) Lipopolysaccharide (LPS) hyperpolarizes membrane independent of 4-AP, TEA and $K_{(Ca)}$ channels as well as blocks glutamate receptors. (In Review).

198. Cooper, R.L., Thomas, M., Vascassenno, R.M., Brock, K.E., McLetchie, D.N. (**2022**) Measuring electrical responses during acute exposure of compounds to roots and rhizoids of plants by using a flow-through system. Methods and Protocols. 5(4): 62. https://www.mdpi.com/2409-9279/5/4/62/htm

199. Cooper, R.L., Thomas, M., McLetchie, D.N. (**2022**) Impedance measures for detecting electrical responses during acute injury and exposure of compounds to roots. Methods and Protocols. 5(4):56. https://doi.org/10.3390/mps5040056

200. Thomas, M., Cooper, R.L. (**2022**) Building bridges: Mycelium mediated plant electrophysiological communication. (**In Press**: The impact score (IS) 2021 of **Plant Signaling and Behavior** is **2.53**)

201. Vacassenno, R.M., Haddad, C.N. and Cooper, R.L., (**2022**) The effects on resting membrane potential and synaptic transmission by Doxapram (blocker of K2p channels) at the *Drosophila* neuromuscular junction. (In review).

202. Vacassenno, R.M., Haddad, C.N. and Cooper, R.L., (**2022**) Lipopolysaccharide (LPS) action on hyperpolarizing membrane potential: Antagonized by the K2p channel blocker, Doxapram, and independent of calcium activated potassium channels. (In review).

203. Cooper, R.L. and Krall, R.M. (**2022**) Hyperpolarization induced by LPS, but not by chloroform, is inhibited by Doxapram, an inhibitor of two-P-domain K+ channel (K2p). (In review).

204. Ison, B.J., Abul-Khoudoud, M.P., Ahmed, S., Alhamdani, A.W., Ashley, C., Bidros, P.C., Bledsoe, C.O., Bolton, K.E., Capili, J.G., Henning, J.N., Moon, M., Phe, P., Stonecipher, S.B., Tanner, H.N., Taylor, I.N., Turner, L.T., Wagers, M., West, A.K and Cooper, R.L. (**2022**). The effect of Doxapram, a K2p channel blocker, on proprioceptive neurons: Invertebrate model. (In review).

205. Brock, K.E., Vascassenno, R.M., Thomas, M., McLetchie, D.N. and Cooper, R.L. (**2022**) Examining desensitization of electrical responses induced by glutamate exposure to roots. (In review).

Piedade, W.P., Majeed, Z.R., Blümich, S.L.E., Brailoiu, E. and Cooper, R.L. (**2021**) Alterations in synaptic transmission by acute changes in pH: Extracellular and cytoplasmic. (In Manuscript).

Malloy, C., Sifers, J., Mikos, A., Somasundaram, E., Omar, A., and Cooper, R.L. (**2021**) Assessing optogenetics in glutamic acid decarboxylase (GAD) containing skeletal and cardiac muscle. (In Manuscript).

Titlow, J.S., Biecker, S. and Cooper, R.L. (2021). Mechanosensory habituation in Drosophila melanogaster larvae. (In Manuscript).

O'Neil, A.S., Krall, R.M., Vascassenno, R. and Cooper, R.L. (**2022 submitted**) Exploring mechanisms in a medical treatment for a disease: A teaching/learning module. Volume 43. Proceedings of the 42st Conference of the Association for Biology Laboratory Education (ABLE). (To be published in 2023)

Book Chapters

1. Atwood H.L., **Cooper R.L.**, Wojtowicz J.M. (**1994**) Non-uniformity and plasticity of quantal release at crustacean motor nerve terminals. In: Advances in Second Messenger and Phosphoprotein Research. Molecular and Cellular Mechanisms of Neurotransmitter Release. (Stjärne L, Greengard P, Grillner SE, Hökfelt TGM, and Ottoson DR, eds), pp 363-382. New York: Raven Press.

2. From the International Symposium, Frontiers in Crustacean Neurobiology, Conference in Hamburg - Blankenese, (Germany. July 8-11, 1999) Dr. Konrad Wiese (Univ. of Hamburg, Conference Organizer).
   Cooper, R.L., Southard, R.C., He, P., and Whiteheart, S.W. (**2002**) Influence of neuromodulators and vesicle docking related proteins on quantal release. In, *The Crustacean Nervous System*. Konrad Wiese (Ed.) Springer-Verlag, Heidelberg, Germany. Pp. 63-82.

3. Titlow J.S., Cooper R.L. (2018) Glutamatergic Synthesis, Recycling, and Receptor Pharmacology at *Drosophila* and Crustacean Neuromuscular Junctions. In: Parrot S., Denoroy L. (eds) Biochemical Approaches for Glutamatergic Neurotransmission. Neuromethods, vol 130. Humana Press, New York, NY. https://doi.org/10.1007/978-1-4939-7228-9_9 [PDF]

Manual

Atwood, H.L. and **Cooper, R.L.** (**1993**) A laboratory manual on experimental neurophysiology written for the "6th INTENSIVE IBRO WORKSHOP ON BASIC NEUROSCIENCE" which was held in July 1993, Seoul, South Korea. (Available upon request)

Papers written in the lab on projects conducted under my supervision

1. Cooper, A.S. (**2007**) Methods to measure circadian pattern in isolated adults. **Drosophila Information Service** 90:139-140.

IV. ABSTRACTS

1. **Cooper, R.L.**, Dooley, B.S., McGrath, J.J., McFaul, S.J. and Kopetzky, M.T. (**1985**) Heart weights and electrocardiograms in rats breathing carbon monoxide at altitude. Fed. Proc. 44:1048
2. Strahlendorf, J.C., Netzeband, J., Lee, M., **Cooper, R.L.** and Strahlendorf, H. (**1986**) Pharmacological evidence suggesting an involvement of chloride in serotonin mediated inhibition. Abst. Soc. Neurosci. 12:1237
3. Lee, M., Strahlendorf, H.K., **Cooper, R.L.** and Strahlendorf, J.C. (**1987**) Evidence suggesting differential effects of N-methyl-D-aspartic acid (NMDA) and L-homocysteic acid (LH) on cerebellar Purkinje neurons. Abst. Soc. Neurosci. 13:1561
4. **Cooper, R.L.** and Hartman, H.B. (**1987**) Tension receptors associated with the productor and reductor muscles at the CP joint in the crab. Amer. Zool. 27:128A
5. **Cooper, R.L.** and Hartman, H.B. (**1988**) Crustacean proprioception: Single cell analysis of chordotonal organs. Abst. Soc. Neurosci. 14:378
6. Hartman, H.B. and **Cooper, R.L.** (**1988**) Tension receptors on the opener, productor and reductor tendons of the Dungeness crab, *Cancer magister*. Abst. Soc. Neurosci. 14:378
7. **Cooper, R.L.** and Hartman, H.B. (**1989**) Effects of neuromodulators on proprioceptive neurons in the limbs of the crab, *Cancer Magister*. Abst. Soc. Neurosci. 15:565
8. Hartman, H.B., Wright, S.N. and **Cooper, R.L.** (**1989**) Crustacean proprioceptor organ retains normal sensory responses in culture. Abst. Soc. Neurosci. 15:292
9. Hartman, H.B., **Cooper, R.L.** and Cooper, H.W. (**1989**) Sensory cell number in joint receptors of normal and regenerated walking legs of the Dungeness crab. Amer. Zool. 29:(A)52
10. **Cooper, R.L.**, Fernandez-de-Miguel, F. and Nicholls, J.G. (**1991**) Synapse formation induces changes in the distribution of calcium currents in leech neurons in culture. J. Physiol. (Lond.) 446:255P
11. **Cooper, R.L.**, Fernandez-de-Miguel, F. and Adams, W.B. (**1991**) Synapse formation induces changes in the distribution of calcium currents in leech neurons in culture. Abst. Soc. Neurosci. 17:901
12. Fernandez-de-Miguel, F., **Cooper, R.L.**, Adams, W.B. and Nicholls, J.G. (**1992**) Efecto anterogrado y retrogrado de la formation de sinapsis, en la distribution de corrientes de calcio en neuronas pre- y post-sinapticas. Congress Nacional de Ciencias Fisiológicas. Sept. 1992 in Mexico.
13. Tryba, A.K., Hartman, H.B. and **Cooper, R.L.** (**1992**) Crab chordotonal organ output is unaffected by neuromodulators. Amer. Zool. 32:133A
14. Fernandez-de-Miguel, F., **Cooper, R.L.**, Adams, W.B. and Nicholls, J.G. (**1992**) Anterograde and retrograde effects of synapse formation on calcium current distribution in pre- and post-synaptic cells. Abst. Soc. Neurosci. 18:187.6
15. **Cooper, R.L.**, Wojtowicz, J.M., and Atwood, H.L. (**1993**) Characteristics of synaptic strength variability of a single motor neuron by quantal recordings, Ca^{2+} imaging and ultrastructure. Network Centres of Excellence meeting in May, 1993 in Montréal, Canada.
16. **Cooper, R.L.**, Wojtowicz, J.M., and Atwood, H.L. (**1993**) Characterization of high- and low-output synapses from a single motor neuron. Abst. Soc. Neurosci. 19:88.1
17. **Cooper, R.L.**, Chang, J.J., and Ito, M. (**1993**) A report on the, "SIXTH INTENSIVE IBRO WORKSHOP ON BASIC NEUROSCIENCE", held in July 1993, Seoul, South Korea. Abst. Soc. Neurosci. 19:116.3
18. Winslow, J.L., **Cooper, R.L.**, Shayan, A., Marin, L., Govind, C.K. and Atwood, H.L. (**1994**)

Adjacent active zones on a synapse can result in facilitation. Frontiers in Physiology and Pharmacology. April 20, 1994. University of Toronto, Toronto, Canada.

19. **Cooper, R.L.**, Winslow, J.L., Shayan, A., Marin, L., Govind, C.K. and Atwood, H.L. (**1994**) Correlation of synaptic efficacy and ultrastructure. Frontiers in Physiology and Pharmacology. April 20, 1994. University of Toronto, Toronto, Canada.
20. Winslow, J.L., **Cooper, R.L.**, Shayan, A., Marin, L., Govind, C.K. and Atwood, H.L. (**1994**) Synaptic facilitation may be enhanced by adjacent presynaptic active zones. Ann. Mtg. Clinical Res. Soc. April 16, 1994. University of Toronto, Toronto, Canada.
21. Winslow, J.L., **Cooper, R.L.**, and Atwood, H.L. (**1994**) Modelling of calcium reaction-diffusion in presynaptic structures to evaluate facilitation of neurotransmitter release. Hebb Symposium on Neurons and Biological Dynamics. Held at the Univ. of Toronto from May 15 - 20, 1994.
22. **Cooper, R.L.**, Pekhletski, R., Hampson, D. and Atwood H.L. (**1994**) Assessing gene expression in single identified neurons that show long term adaption from increased activity. Network Centres of Excellence meeting in June, 1994 in Toronto, Canada.
23. **Cooper, R.L.**, Winslow, J.L., Govind, C.K., Marin, L. and Atwood, H.L. (**1994**) Interaction of calcium domains in complex synapses. Network Centres of Excellence meeting in June, 1994 in Toronto, Canada.
24. Winslow, J.L., **Cooper, R.L.**, and Atwood, H.L. (**1994**) Analysis of facilitation in early stages of neurotransmitter release. Advances in Biomedical Engineering and Biosystems Science symposium held at the Univ. of Toronto from June 13-17, 1994.
25. **Cooper, R.L.**, Winslow, J.L., Govind, C.K., Pearce, J., Marin, L. and Atwood, H.L. (**1994**) Structural correlates of quantal parameters at crustacean neuromuscular junction. Abst. Soc. Neurosci. 20:550.6
26. Stewart, B.A., **Cooper, R.L.**, Wojtowicz, J.M., Wang, S. and Atwood, H.L. (**1994**) Comparison of quantal analysis methods at crayfish, *Drosophila* and rat hippocampal synapses: Measurements of charge, amplitude and direct counts of events. Abst. Soc. Neurosci. 20:549.7
27. Winslow, J.L., **Cooper, R.L.**, Govind, C.K., Pearce, J., Marin, L. and Atwood, H.L. (**1994**) Close presynaptic active zones may enhance facilitation. Abst. Soc. Neurosci. 20:550.5
28. Pekhletsky, R., **Cooper, R.L.**, Hampson, D. and Atwood, H.L. (**1994**) Changes in crayfish mRNA expression during motor neuron adaptation. Amer. Zool. annual meeting (St. Louis, Jan. 4-8, 1995). Amer. Zool. 34(5):66A
29. Winslow, J.L., **Cooper, R.L.**, Govind, C.K., Pearce, J., Marin, L. and Atwood, H.L. (**1995**) Presynaptic active zone structure influences neurotransmitter release. Advances in Biomedical Engineering and Biosystems Science symposium held at the Univ. of Toronto from May 31-June 1, 1995.
30. **Cooper, R.L.**, Winslow, J.L., Govind, C.K., Pearce, J., Marin, L. and Atwood, H.L. (**1995**) Structural correlates of quantal parameters at crustacean neuromuscular junction. Advances in Biomedical Engineering and Biosystems Science symposium held at the Univ. of Toronto from May 31-June 1, 1995.
31. **Cooper, R.L.**, Pekhletsky, R., Hampson, D. and Atwood, H.L. (**1995**) Differential gene expression in single identified neurons which exhibit long term adaptation due to increased activity. Network Centres of Excellence meeting in June, 1995 in Sainte-Adèle, Québec, Canada.
32. Pekhletsky, R., **Cooper, R.L.**, Hampson, D. and Atwood, H.L. (**1995**) Differential display of single identified neurons showing long term adaptation due to increased electrical activity. Differential Display of Gene Expression Symposium (Dalhousie Univ., Halifax, Nova Scotia, Canada, July 16-18, 1995).
33. **Cooper, R.L.**, Bradacs, H., Msghina, M., and Atwood, H.L. (**1995**) Differential physiology and

morphology of phasic and tonic motor axons in a crayfish leg muscle. Annual meeting of the Austrian Neuroscience Association. Graz, Austria, Sept. 22-23, 1995.

34. **Cooper, R.L.**, Feuerverger, A., Menzinger, M., Marin, L. and Atwood, H.L. (**1995**) Measurement problems associated with the reconstruction of synaptic structures at the electron microscopic level. Abst. Soc. Neurosci. 21:709.5.
35. Pekhletski, R., **Cooper, R.L.**, Pekhletskaia, E., Hampson, D. and Atwood, H.L. (**1995**) Differential display of gene expression in single identified neurons showing long term adaptation due to increased electrical activity. Abst. Soc. Neurosci. 21:72.9 .
36. Bradacs, H., **Cooper, R.L.**, Msghina, M., and Atwood, H.L. (**1995**) Divergent synaptic transmission and fine structure of phasic and tonic crustacean motor nerve endings to the same postsynaptic targets. Abst. Soc. Neurosci. 21:138.14.
37. Winslow, J.L., **Cooper, R.L.**, Govind, C.K., Pearce, J., and Atwood, H.L. (**1995**) Influence of active zone dimensions, Ca^{2+} channel density, and adjacent zones on neurotransmitter release. Abst. Soc. Neurosci. 21:138.13.
38. **Cooper, R.L.**, Winslow, J.L., Govind, C.K., Bradacs, H., and Atwood, H.L. (**1995**) Differential synaptic strength of motor neurons. 3rd Annual Neuropharmacology Conference (Nov. 1995, San Diego, Ca.).
39. Rastogi, K.S., **Cooper, R.L.**, Shi, J.Q. and Vranic, M. (**1996**) Insulin independent normalisation of glycemia in diabetic rats increased islet glucagon in response to hypoglycemia quantified by confocal microscopy. 75th Anniversary: Celebrating the discovery of insulin. (Oct. 6-9; Univ. of Toronto, Sch. of Medicine, Dept. of Physiology, Toronto, Canada).
40. Winslow, J.L., **Cooper, R.L.**, and Atwood, H.L. (**1996**) Accounting of Ca^{2+} and Na^{+} in presynaptic axon varicosities. Abst. Soc. Neurosci. 22: 494.12
41. Quigley, P.A., **Cooper, R.L.**, Govind, C.K., and Atwood, H.L. (**1996**) Recruitment of active synapses at the crayfish neuromuscular junction visualized with the fluorescent dye FM1-43. Abst. Soc. Neurosci. 22: 309.9

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42. Crider, M.E., and **Cooper, R.L.** (**1996**) Modulation of transmitter release by 5-HT at phasic and tonic neuromuscular junctions in crayfish: Quantal parameters assessed. Abst. Soc. Neurosci. 22: 309.13
43. Dityatev, A.E., and **Cooper, R.L.** (**1996**) Quantal analysis based on spectral methods of high-output, phasic & low-output, tonic neuromuscular junctions in crayfish. Abst. Soc. Neurosci. 22:309.14
44. Crider, M.E., and **Cooper, R.L.** (**1997**) Modulation of transmitter release by 5-HT at phasic and tonic neuromuscular junctions in crayfish: Quantal parameters assessed. Spring Neuroscience day at the University of Kentucky. Local chapter of Society for Neuroscience.
45. **Cooper, R.L.** and Crider, M.E. (**1997**) Effects of neuromodulators on synaptic transmission of phasic and tonic motorneurons: quantal analysis. East Coast Nerve Net, 23rd Annual meeting. April 4-6 at MBL, Woods Hole, MA.
46. Neckameyer, W.S., van Kanegan, M. and **Cooper, R.L.** (**1997**) Differential GABA transporter immunoreactivity in three invertebrate species. Abst. Soc. Neurosci. 797.6
47*. Spohn, B.G., Neckameyer, W.S., Peretz, B. and **Cooper, R.L.** (**1997**) Characterization of aggressive & submissive behavior among male crayfish related to the endogenous levels of 5-HT & other neuromodulators. Abst. Soc. Neurosci.313.7
48*$^{+}$. He, P., Whiteheart, S.W., Porter, J.D. and **Cooper, R.L.** (**1997**) Immunohistochemistry identification and assessment of the physiological role of synaptic vesicle docking related proteins, γ-SNAP and α-SNAP at the crayfish NMJ. Abst. Soc. Neurosci. 148.9
49*$^{+}$. Crider, M.E. and **Cooper, R.L.** (**1997**) The effects of 5-HT and octopamine as dual

neuromodulators at the crayfish neuromuscular junction. Abst. Soc. Neurosci.148.7

50*+. Hao, L., Ward, E., Bradacs, H. and **Cooper, R.L.** (**1997**) Neuromodulator effects on primary sensory neurons: rapidly and slowly adapting proprioceptors. Abst. Soc. Neurosci. 313.8

51 +. **Cooper, R.L.**, Cromarty, S.I., Dityatev, A.E. and Zolman, J.F. (**1997**) Modulation of synaptic release at the crayfish NMJ by ecdysone, a molt related hormone. Abst. Soc. Neurosci.148.5

52*+. Warren, W., Ashby, H., Bonner, P. and **Cooper, R.L.** (**1997**) Effects of inducing neuronal Long-Term Adaptation on muscle fiber transformation and its sensitivity to neuromodulators. Abst. Soc. Neurosci. 148.8

53. Dityatev, A. and **Cooper, R.L.** (**1997**) Assessing the mechanisms of synaptic depression in phasic neuromuscular junctions of the crayfish. Abst. Soc. Neurosci. 148.6

***** The above five posters were also presented at the Univ. of Kentucky Life Sciences Day, Nov. 12, 1997.

+ The above five posters were also presented at the Univ. of Kentucky Neurosciences Day, March. 9, 1998.

54. Ruffner, M.E. and **Cooper, R.L.** (**1997**) Modulation of synaptic release at the crayfish NMJ by ecdysone, a molt related hormone. Kentucky Academy of Science, Morehead State University, Morehead, KY. Nov. 15, 1997 (talk).

55. Huffman, M.P., Li, H. and **Cooper, R.L.** (**1998**) Negative phototactic behavior of the blind cave learning of blind cave crayfish. Tri-State Animal Learning and Behavior Conference held at the Univ. of Kentucky on March 27-28, 1998.

56. Li, H., Huffman, M.P., and **Cooper, R.L.** (**1998**) Spatial learning of blind cave crayfish in different sized environments. Tri-State Animal Learning and Behavior Conference held at the Univ. of Kentucky on March 27-28, 1998.

57. Griffs, B., LaFramboise, W., Bonner, P., Warren, W. and **Cooper, R.L.** (**1998**) Myosin isoforms are differentially expressed in crayfish muscle. Abst Soc. Neurosci. 656.6.

58. Deskins, J. Li, H., Bradacs, H. and **Cooper, R.L.** (**1998**) Measures of heart rate during given behaviors in crayfish. Abst Soc. Neurosci.177.17.

59. Southard, R.C., Winslow, J.L., He, P., Chen, D., Whiteheart, S.W. and **Cooper, R.L.** (**1998**) Influence of neuromodulators and vesicle docking related proteins on the kinetics of vesicular release. Abst Soc. Neurosci. 327.10.

60. Bing, Z., Dickey, B., Crowley, P. and **Cooper, R.L.** (**1998**) The non-genomic effects of ecdysone (20-HE) on crayfish abdominal muscles: in vitro and in vivo studies. Abst Soc. Neurosci.177.16.

61. **Cooper, R.L.**, Li, H., Cole, J.E. and Hopper, H.L. (**1998**) The neuroecology of cave crayfish: Behavioral & anatomical comparisons of vision in blind epigean species raised in a cave & troglobitic species. Abst Soc. Neurosci. 468.10.

62. Neckameyer, W.S. and **Cooper, R.L.** (**1998**)The effects of neuromodulators on synaptic transmission at the *Drosophila* neuromuscular junctions. Abst Soc. Neurosci.327.11

63. Li, H., Huffman, P., Cole, J.L., Hopper H.L., and **Cooper, R.L.** (**1998**) The neuroecology of cave crayfish: Spatial learning among the of blind cave crayfish. Abst Soc. Neurosci.468.8.

64. Huffman, P. Li, H., Cole, J.L., Hopper H.L., Peretz, B., and **Cooper, R.L.** (**1998**) The neuroecology of cave crayfish: Social interactions. Abst Soc. Neurosci.468.9

65. He, P., Li, H., Bonner, P.H., Harrison, D., Jones, G., Jones, D., and **Cooper, R.L.** (**1998**) Non-genomic physiological responses of ecdysone (20-HE) at the neuromuscular junctions of larval *Drosophila* that lack the ability to produce ecdysone. Abst Soc. Neurosci.327.12.

66. Winslow, J.L., **Cooper, R.L.**, and Atwood, H.L. (**1998**) Presynaptic vesicles: Ca2+ diffusion barriers enhance transmitter release. Abst Soc. Neurosci.227.1.

67. Cole, J.L., Li, H., Hopper H.L., and **Cooper, R.L.** (**1998**) The neuroecology of cave crayfish: The importance of tactile vs. visual cues in determining behavior as related to spatial learning & social interaction. National Speleological Convention. Sewannee, TN. August 3-7,1998.
68. Listerman, L., and **Cooper, R.L.** (**1998**) The effects of neuromodulators on synaptic transmission: Crayfish neuromuscular junction. Kentucky Academy of Science 84th Annual Meeting. Louisville, KY Nov. 14, 1998.
69. Li, H. and **Cooper, R.L.** (**1999**) The neuroecology of the blind cave crayfish: social interactions. American Zoologist 38:201A
70. Doshi, D., Li, H., Listerman, L., and **Cooper, R.L.** (**1999**) Measures of heart rate during social interactions in visual epigean and blind cave crayfish. American Zoologist 38:199A
71. Griffis, B., LaFramboise, W., Bonner, P., Warren, W. and **Cooper, R.L.** (**1999**) Myosin isoforms are differentially expressed in crayfish muscle. American Zoologist 38:200A
(Honourable Mention for best student presentation)
72. Sohn, J. and **Cooper, R.L.** (**1999**) The anatomical and physiological characterization of muscles in the dorsal surface of the crayfish abdomen. American Zoologist 38:202A
73. Listerman, L., Doshi, D., and **Cooper, R.L.** (**1999**) Measures of heart rate during social interactions and injections of serotonin in visual epigean and blind cave crayfish. East Coast Nerve Net, 25th Annual meeting. April 9-11 at **MBL, Woods Hole, MA.**
74. Strawn, J.R. and **Cooper, R.L.** (**1999**) The effects of serotonin on the control of motor neuron activity in crayfish. East Coast Nerve Net, 25th Annual meeting. April 9-11 at **MBL, Woods Hole, MA.**
75. Griffis, B., Bonner, P.H., and **Cooper, R.L.** (**1999**) Increased sensitivity of transformed (phasic to tonic-like) motoneurons to the neuromodulator 5-HT. Abst Soc. Neurosci. 25: 792.13
76. Strawn, J.R., Bonner, P.H., and **Cooper, R.L.** (**1999**) Motor command and synaptic transmission: Roles of CNS, sensory systems, and neuromodulation. Abst Soc. Neurosci.25: 792.12
77. Kellie, S., Wagner, T.L.E., and **Cooper, R.L.** (**1999**) Habituation of the crayfish tail flip response. Abst Soc. Neurosci.25: 792.15
78. Li, H., Harrison, D.A., and **Cooper, R.L.** (**1999**) Development of *Drosophila* larvae neuromuscular junction: Maintaining synaptic strength. Abst Soc. Neurosci.25: 792.9
79. Listerman, L.R., Atwood, H.L., Marin, L., Bradacs, H. and **Cooper, R.L.** (**1999**) Does serotonin (5-HT) increase the pool of synaptic vesicles at the crayfish neuromuscular junction? Abst Soc. Neurosci.25: 792.11
80. Sohn, J., Mykles, D.L., and **Cooper, R.L.** (**1999**) The anatomical, physiological and biochemical characterization of muscles associated with the articulating membrane in the dorsal surface of the crayfish abdomen. Abst Soc. Neurosci.25: 792.14
81. Southard, R.C., Whiteheart, S.W., Zolman, J.F., and **Cooper, R.L.** (**1999**) Serotonin (5-HT) increases the rate of evoked neurotransmission at the crayfish NMJ. Abst Soc. Neurosci.25: 792.10
82. Cole, J.L., Li, H., Long, L.Y., Hopper H.L., and **Cooper, R.L.** (**1999**) The neuroecology of cave crayfish: Behavioral & anatomical comparisons of visual systems in sighted epigean & troglobitic species. National Speleological Convention. Filer, Idaho. July 12-16
83. Griffis, B., Moffett, S. and **Cooper, R.L.** (**1999**) Load does not influence muscle phenotype in crayfish. American Zoologist 39:246
84. Strawn, J.R., Neckameyer, W.S., and **Cooper, R.L.** (**1999**) The effects of 5-HT on sensory neurons, CNS command, and neuromuscular junctions of the crayfish abdominal superficial flexor. American Zoologist 39:245
85. Southard, R.C., Haggard, J., Whiteheart, S.W. and **Cooper, R.L.** (**1999**) Serotonin (5-HT) increases

the rate of evoked neurotransmission at the crayfish NMJ. American Zoologist 39:243A

86. Shearer, J. and **Cooper, R.L.** (**1999**) The differential effects of 5-HT on tonic and phasic motor nerve terminals. American Zoologist 39:244A
87. Sohn, J., Mykles, D.L., and **Cooper, R.L.** (**1999**) The anatomical, physiological and biochemical characterization of muscles associated with the articulating membrane in the dorsal surface of the crayfish abdomen. American Zoologist 39:248A
88. Kellie, S. P. and **Cooper, R.L.** (**1999**) Mechanisms of synaptic depression in high output phasic motor neurons. American Zoologist 39:247A
89. Li, H., Harrison, D.A., and **Cooper, R.L.** (**1999**) Development of *Drosophila* larvae neuromuscular junction: Maintaining synaptic strength. American Zoologist 39:249A
90. **Cooper, R.L.**, Li, H., Southard, R.C. (**2000**) The non-genomic actions of 20-HE in *Drosophila* & crustaceans. Symposium 'Ecdysone 2000' July, 2000 in Rapperswil, **Switzerland**. **Invited presenter**.
91. Strawn, J.R., and **Cooper, R.L.** (**2000**) Ethanol induced changes in synaptic transmission: roles of pre- and post-synaptic mechanisms. Abst Soc. Neurosci.26: 331.1
92. Li, H., Harrison, D., Jones, G., Jones, D. and **Cooper, R.L.** (**2000**) Alterations in development, behavior, and physiology in *Drosophila* larva that have reduced ecdysone production. Abst Soc. Neurosci.26: 128.5
93. Kellie, S. P., Bradacs, H. and **Cooper, R.L.** (**2000**) Mechanisms of synaptic depression in high output phasic motor neurons. Abst Soc. Neurosci.26: 518.10
94. Shearer, J., Zolman, J.F., and **Cooper, R.L.** (**2000**) The differential effects of 5-HT on tonic and phasic motor nerve terminals. Abst Soc. Neurosci.26: 331.17
95. Winslow, J.L., **Cooper, R.L.**, and Atwood, H.L. (**2000**) Presynaptic sodium in response to low frequency stimulation measured using the fluorescence spectral ratio method. Abst Soc. Neurosci.26: 35.14
96. Shuranova, Zh., Burmistrov, Yu., **Cooper, R.L.** and Strawn, J.R. (**2000**) Autonomic nervous system in the crayfish? Presented at "Simpler Nervous Systems" VI East European Conference of the International Society for Invertebrate Neurobiology. Sept. 21-25, 2000, Moscow, **Russia**.
97. Tabor, J., Chase, R.J., and **Cooper, R.L.** (**2000**) Altered responsiveness to 5-HT at the crayfish neuromuscular junction. Kentucky Academy of Science. 86th Annual Meeting, Lexington, KY. December 2, 2000.
98. Strawn, J.R., and **Cooper, R.L.** (**2000**) Ethanol modulates presynaptic transmission at the neuromuscular junction. Kentucky Academy of Science 86th annual meeting, Lexington, KY. Dec. 2, 2000.
99. Schapker, H., **Cooper, R.L.**, Shuranova, Zh., Burmistrov, Yu., and Breithaupt, T. (**2000**) Heart rate and respiratory correlative measures in crayfish during social interaction and environmental cues. Kentucky Academy of Science 86th annual meeting, Lexington, KY. Dec. 2, 2000.
100. Kellie, S. P. and **Cooper, R.L.** (**2000**) Mechanisms of synaptic depression in high output phasic motor neurons. Kentucky Academy of Science 86th annual meeting, Lexington, KY. Dec. 2, 2000.
101. **Cooper, R.L.**, Tabor, J, and Chase, R.J. (**2001**) Altered responsiveness to 5-HT at the crayfish neuromuscular junction: receptor up- & down-regulation. American Zoologist. (Society for Integrative and Comparative Biology annual meeting. Chicago, IL., January 3-7).
102. (Translation: Shuranova, Zh., Burmistrov, Yu., Strawn, J.R., and **Cooper, R.L.** (**2001**) Evidence for an Invertebrate Autonomic Nervous System.18th Annual Russian Physiological Meeting.)
103. **Cooper, R.L.**, Tabor, J.N., Fox, A.J., and Brailoiu, E. (**2001**) 5-HT receptor subtype and potential mechanisms of 5-HT action at the crayfish NMJ. Abst Soc. Neurosci.27. (Society meeting Nov.

2001).

104. **Cooper, R.L.**, Tabor, J.N., Fox, A.J., and Brailoiu, E. (**2001**) 5-HT receptor subtype and potential mechanisms of 5-HT action at the crayfish NMJ. The 11th Neuropharmacology Conference. San Diego, CA.(Nov.).
105. **Cooper, R.L.**, H. Li, L. R. Listerman, S.P. Kellie, J. Greer, J. L. Cole, and H. L. Hopper (**2001**) Differences in behaviors, physiological responses and neural structure of cave crayfish to those of epigean species. National Speleological Convention. Sommerset, KY. July, 2001.
106. Shuranova, Zh., Burmistrov, Yu., **Cooper, R.L.** and Strawn, J.R. (**2001**) Do decapods possess an Autonomic Nervous System. 28th Göttingen Neurobiology Conference, Germany. Proceedings of the 4thn meeting of the German Neurosci. Society. 2:357.
107. Schapker, H., Breithaupt, T., Shuranova, Z., Burmistrov, Y. and **Cooper, R.L.** (**2002**) Heart and ventilatory measures in crayfish during environmental disturbances & social interactions. American Zoologist. (Society for Integrative and Comparative Biology annual meeting. Anaheim, CA., January 2-6).
108. **Cooper, R.L.**, Shuranova, Z., Burmistrov, Y. (**2002**) Evidence for the autonomic nervous system in decapod crustaceans. American Zoologist. (Society for Integrative and Comparative Biology annual meeting. Anaheim, CA., January 2-6).
109. Sparks, G., **Cooper, R.L.** and Dudel, J. (**2002**) Serotonin offsets saturation of synaptic release in crayfish motor nerve terminals.American Zoologist. (Society for Integrative and Comparative Biology annual meeting. Anaheim, CA., January 2-6).
110. Xing, B., Shearer, J. and **Cooper, R.L.** (**2002**) The influence of culture media on synaptic transmission at larval *Drosophila* neuromuscular junction. American Zoologist. (Society for Integrative and Comparative Biology annual meeting. Anaheim, CA., January 2-6).
111. Ball, R., Xing, B., Bonner, P., Shearer, J. and **Cooper, R.L.** (**2002**) The influence of culture medium on synaptic transmission at larval *Drosophila* neuromuscular junction. South East Nerve Net. 18th Annual meeting. Held at Georgia State University, Atlanta, GA.
112. Brauch, R., Tilden, A.R., and **Cooper, R.L.** (**2002**) The effects of melatonin on synaptic transmission in crayfish and *Drosophila*. South East Nerve Net. 18th Annual meeting. Held at Georgia State University, Atlanta, GA.
113. **Cooper, R.L.**, Tabor, J.N., Fox, A.J., Brailoiu, E. (**2002**) 5-HT receptor subtype and potential mechanisms of 5-HT action at the crayfish NMJ. South East Nerve Net. 18th Annual meeting. Held at Georgia State University, Atlanta, GA.
114. Brailoiu, E., **Cooper, R.L.** and Dun, N.J. (**2002**) Sphingosine 1-phosphate enhances spontaneous transmitter release at the frog neuromuscular junction. Abst Soc. Neurosci.28, 249.20 (Society meeting Nov. 2002).
115. Sparks, G., Dudel, J. and **Cooper, R.L** (**2002**) The influence of the Na/Ca exchanger during short-term facilitation in motor nerve terminals. Abst Soc. Neurosci.28, 439.10 (Society meeting Nov. 2002).
116. *Xing, B. and **Cooper, R.L.** (**2002**) The effects of reduced presynaptic calcium entry on development of motor nerve terminals in *Drosophila*. Abst Soc. Neurosci.28, 439.11 (Society meeting Nov. 2002).
117. *Sparks, G., Brailoiu, E., Brailoiu, G.C., Dun, N.J. and **Cooper, R.L.** (**2003**) Effects of m-CPP in altering neuronal function: Blocking depolarization in invertebrate motor & sensory neurons but exciting rat sensory neurons. (Society for Integrative and Comparative Biology annual meeting. Toronto, Canada, January 4-7).
118. Tilden, A.R., Brauch, R., Ball, R. Sweeney, K., Yurek, J. and **Cooper, R.L.** (**2003**) Modulatory effects of melatonin on neurotransmitter release and behavior in crayfish. (Society for Integrative

and Comparative Biology annual meeting. Toronto, Canada, January 4-7).

119. **Cooper, R.L.**, Viele, K., and Stromberg, A.J. (**2003**) Estimating the number of release sites and probability of firing within the nerve terminal by statistical analysis of synaptic charge. (Society for Integrative and Comparative Biology annual meeting. Toronto, Canada, January 4-7).
120. *Johnstone, A., Brailoiu E. and **Cooper, R.L.** (**2003**) Alteration in synaptic transmission at the neuromuscular junction in crayfish, *Drosophila* and frog by exogenous application of the second messenger, IP6. (Society for Integrative and Comparative Biology annual meeting. Toronto, Canada, January 2-6).
121. *Pagé, M.-P., Hailes, W., and **Cooper, R.L.** (**2003**) Modification of the tail flip escape response in crayfish by neuromodulation and behavioral state. Univ. of KY Neuroscience day.

* Also presented at UK neuroscience day. #'s 116, 117, 120

122. **Cooper, R.L.**, Sparks, G.M. and Dasari, S. (**2003**) CNS and NMJ actions of MDMA (Ecstasy): Cholinergic & Glutamatergic synapses. (Society for Neuroscience meeting Nov. 2003).
123. Mercier, A.J. and **Cooper, R.L.** (**2003**) Neuron-specfic modulation of chemical synapses in crayfish by a FLRFamide peptide. (Society for Neuroscience meeting Nov. 2003).
124. Johnstone, A., Brailoiu, E., Dun, N.J. and **Cooper, R.L.** (**2003**) Alterations in synaptic transmission were investigated at the neuromuscular junction in crayfish, *Drosophila* and frog by exogenous application of the second messenger, IP6. (Society for Neuroscience meeting Nov. 2003).
125. Dasari, S. and **Cooper, R.L.** (**2003**) Sensory stimulation in semi-intact *Drosophila* larva induces CNS activity and recruitment of discernable motor units. (Society for Neuroscience meeting Nov. 2003).
126. Sparks, G., Brailoiu, E., Brailoiu, G.C., Dun, N.J. and **Cooper, R.L.** (**2003**) Effects of m-CPP in altering neuronal function: Blocking depolarization in invertebrate motor & sensory neurons but exciting rat sensory neurons. Fifth Annual **Beckman Scholars Symposium**. Arnold and Mabel Beckman Foundation . Located at the Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering. Irvine, CA July 24 - 26.
127. Shuranova, Zh., Burmistrov, Yu., and **Cooper, R.L.** (**2003**) Crayfish behavior in novel environment: Maintenance of escape tendency? VII East European Conference of the International Society for Invertebrate Neurobiology. Sept. 12-16. Kaliningrad-Svetlogorsk-Otrandnoe, Russia.
128. Stoeppel, C. O'Connell, S., Hensley, A., Bhatt, D., Logsdon, S., Richardson, G., Johnstone, A., Lancaster, M., Viele, K., Kim, S., Dasari, S., **Cooper, R.L.** (**2004**) Integration of neurophysiology, anatomy and behavior with mathematics & statistics in a workshop course. Society for Neuroscience 2004 meeting SanDiego, CA.
129. Dasari, S., Nichols, R., **Cooper, R.L.** (**2004**) Effects of 5-HT and MDMA on heart rate of 3rd instar *Drosophila melanogaster*. Society for Neuroscience 2004 meeting SanDiego, CA.
130. Bhatt, D., Dasari, S., Brewer, L.D., **Cooper, R.L.** (**2004**) Characterization of Glutamate receptors at the *Drosophila* Neuromuscular Junction. Society for Neuroscience 2004 meeting SanDiego, CA.
131. Johnstone, A.F.M., Lancaster, M., Viele, K., Stromberg, A., **Cooper, R.L.** (**2004**) Structure/Function Assessment of Crayfish Neuromuscular Junction. Society for Neuroscience 2004 meeting SanDiego, CA.
132. Logsdon, S., Johnstone, A.F.M, **Cooper, R.L.** (**2004**) Differentially regulated pools of synaptic vesicles within motor nerve terminals. Society for Neuroscience 2004 meeting SanDiego, CA.
133. Long, A.A., Xing, B., Harrison, D.A., **Cooper, R.L. (2004)** Developmental consequences of NMJs with reduced presynaptic calcium channel function. Society for Neuroscience 2004 meeting San

Diego, CA.

134. Badre, N., Martin, M.E., Bradacs, H., **Cooper, R.L.** (**2004**) The Effects of CO_2 on *Drosophila* larvae: Possible neural components. Society for Neuroscience 2004 meeting SanDiego, CA.
135. Dasari, S., **Cooper, R.L.** (**2004**) Effects of serotonin and MDMA in modulating sensory-CNS-motor circuit in a semi-intact preparation of *Drosophila* larvae. An international meeting of *Drosophila* neurobiology. Neuchâtel, **Switzerland**. Sept. 4-8, 2004.
136. Cooper, A.-S., Cooper, H., **Cooper R.L.** (**2005**) Behavioral characterization of *Drosophila melanogaster* larvae in relation to circadian patterns. Society for Integrative and Comparative Biology annual meeting. San Diego, CA, January 4-8.
137. Logsdon, S., Johnstone, A.F.M, **Cooper, R.L.** (**2005**) Regulation of synaptic transmission by controlling pools of synaptic vesicles. Posters-at-The-Capitol. Oral presentation by Ms. Logsdon to the KY legislation and Governor. Feb. 2005.
138. Cooper, A.-S., Johnstone, A.F.M., Moffett, S. and **Cooper R.L.** (**2005**) Nerve terminal pruning in conjunction with muscle atrophy by disuse & unloading. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
139. Desai, M.S., G.M. Sparks, G.M. and **Cooper, R.L.** (**2005**) The influence of the na/ca exchanger during short-term facilitation in motor nerve terminals. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
140. Badre, N. and **Cooper, R.L**. (**2005**) Reduced calcium channel function in the *Drosophila* cacTS2 mutant on vision, olfaction and regulation of the heart. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
141. Logsdon, S., Johnstone, A.F.M., Viele, K. and R. L. **Cooper, R.L.** (**2005**) The regulation of synaptic vesicles pools within motor nerve terminals during short-term facilitation and neuromodulation. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
142. Johnstone, A.F.M., Kellie, S., Reneer, D.V., Viele, K., and **Cooper, R.L**. (**2005**) Presynaptic depression in phasic motor nerve terminals and influence of 5-HT on docked vesicles. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
143. Dasari, S. and **Cooper, R.L.** (**2005**) Influence of the serotonergic system on physiology, development and behavior of *Drosophila melanogaster*. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
144. Adami, M., Schapker, H., Breithaupt, T., Calosi, P., Bradacs, H., and **Cooper, R.L.** (**2005**) Heart and ventilatory measures in crayfish during social interactions. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
145. Cullman-Clark, B., Dasari, S. and **Cooper, R.L.** (**2005**) Influence of 5-HT receptors on behavior and heart rate in *Drosophila melanogaster* larvae. Society of Neuroscience annual meeting. Held in Washington, DC. in Nov.
146. Viele, K. and **Cooper. R.** (**2005**) Mixtures of Evoked Synaptic Potentials. Invited Talk. Joint Meetings of the Interface Society and the Classification Society of North America. Washington University School of Medicine, St. Louis, Missouri. June 8-12, 2005.
147. Turner, C., Dasari, S., and **Cooper, R.L.** (**2005**) Influence of the dopamine and serotonergic systems on physiology, development and behavior of *Drosophila melanogaster*. Kentucky Academy of Sciences. Annual meeting. Eastern KY University, Richmond, KY. Nov. 10-12.
148. Bhatt, D., Bhatt, D., **Cooper, R.L.** (**2005**) Characterization of glutamate receptors at the *Drosophila* neuromuscular junction. Kentucky Academy of Sciences. Annual meeting. Eastern KY University, Richmond, KY. Nov. 10-12.
149. Hill, J., Dasari, S., Badre, N., Blackburn, J.,Viele,K. 19 Middle School, 2 High School Teachers in Fayette County and **Cooper, R.L.** (**2005**) Influence of nicotine on physiology, development and

behavior of *Drosophila melanogaster*: Useful approaches for public school projects. Kentucky Academy of Sciences. Annual meeting. Eastern KY University, Richmond, KY. Nov. 10-12.

150. Viele, K. and **Cooper. R.** (**2005**) (November). Statistical Methods for the Analysis of Excitatory Post-Synaptic Potentials. Department of Statistics, Carnegie Mellon University.
151. Turner, C., Dasari, S., and **Cooper, R.L.** (**2006**) Influence of the dopamine and serotonergic systems on physiology, development and behavior of *Drosophila melanogaster*. Society for Integrative and Comparative Biology. Annual meeting. Orlando, FL. January 4-8.
152. **Cooper, R.L.**, Bhatt, D., Bhatt, D., and Viele, K. (**2006**) Pre- & post-synaptic actions of kainate: Negative feedback at glutamate-ergic nerve terminals. Society for Integrative and Comparative Biology. Annual meeting. Orlando, FL. January 4-8.
153. Cooper, A.-S., Moffett, S., Johnstone, A.F.M. and **Cooper, R.L.** (**2006**) Nerve terminal pruning in conjunction with muscle atrophy by disuse & unloading. Society for Integrative and Comparative Biology. Annual meeting. Orlando, FL. January 4-8.
154. Turner, C., Dasari, S. and **Cooper, R.L.** (**2006**) Influence of the Dopamine and Serotonergic System on Physiology, Development and Behavior of Drosophila melanogaster. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
155. Cooper, A.S., Johnstone, A.F.M., Moffett, S. and **Cooper, R.L.** (**2006**) Nerve terminal pruning in conjunction with muscle atrophy by disuse & unloading. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
156. Badre, N. and **Cooper, R.L.** (**2006**) Reduced Calcium Channel Function in the Drosophila cacTS2 mutant on Vision, Olfaction and Regulation of the Heart. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
157. Bhatt, D., Bhatt, D. and **Cooper, R.L.** (**2006**) Characterization of glutamate receptors at the *Drosophila* neuromuscular junction. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
158. Hill, J. and **Cooper, R.L.** (**2006**) Influence of nicotine on physiology, development and behavior of *Drosophila melanogaster*. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
159. Kolasa, J., Adami, M., Schapker, H. and **Cooper, R.L.** (**2006**) Heart and ventilatory measures in crayfish during social interactions. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
160. Desai, M.S., Sparks, G.M. and **Cooper, R.L.** (**2006**) The influence of the Na/Ca exchanger during short-term facilitation in motor nerve terminals. BlueGrass local chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 13.
161. Hughes, G., Kolasa, J., Bierbower, S., Adami, M. and **Cooper, R.L.** (**2006**) Heart and ventilatory measures in crayfish during altered environments and social interactions. Kentucky Academy of Sciences. Annual meeting. Moorehead Univ., Moorehead, KY. Nov. 9-11.
162. Turner, C., Pauly, J.R., and **Cooper, R.L.** (**2006**) Influence of the dopamine on physiology, development and behavior of *Drosophila melanogaster*. Society for Neuroscience annual meeting. Atlanta, GA.
163. Hill, J., Pauly, J.R., and **Cooper, R.L.** (**2006**) Influence of nicotine on physiology, development and behavior of *Drosophila melanogaster.* Society for Neuroscience annual meeting. Atlanta, GA.
164. Johnstone, A.F.M., Lancaster, M., Viele, K., and **Cooper, R.L.** (**2006**) Structure/function assessment of crayfish synapses at the neuromuscular junction. Society for Neuroscience annual meeting. Atlanta, GA.
165. Desai, M.S., Sparks, G.M. and **Cooper, R.L.** (**2006**) The influence of the Na/Ca exchanger during

short-term facilitation in motor nerve terminals. Society for Neuroscience annual meeting. Atlanta, GA.

166. Badre, N. and **Cooper, R.L.** (**2006**) Reduced calcium channel function in the Drosophila cacTS2 mutant on vision, olfaction and regulation of the heart. Society for Neuroscience annual meeting. Atlanta, GA.
167. Kolasa, J., Bierbower, S., Adami, M. and **Cooper, R.L.** (**2006**) Heart and ventilatory measures in crayfish during altered environments and social interactions. Society for Neuroscience annual meeting. Atlanta, GA.
168. Dasari, S., Turner, A.C., Cullman-Clark, B., White, J., and **Cooper, R.L.** (**2006**) Effects of the serotonergic system on physiology, development, learning and behavior of D*rosophila melanogaster*. Society for Neuroscience annual meeting. Atlanta, GA.
169. Bierbower, S., Shuranova, Zh., Burmistrov, Yu., and **Cooper, R.L.** (**2006**) Evidence for the autonomic nervous system in Decapod Crustaceans: A historical perspective. Society for Neuroscience annual meeting. Atlanta, GA.
170. Bhatt, D., Bhatt, D. and **Cooper, R.L.** (**2006**) Characterization of glutamate receptors at the Drosophila neuromuscular junction. Society for Neuroscience annual meeting. Atlanta, GA.
171. Cooper, A.-S., Viele, K. and **Cooper, R.L.** (**2006**) Differential regulation of synaptic transmission along the length of motor nerve terminals in larval *Drosophila*. Society for Neuroscience annual meeting. Atlanta, GA.
172. Hayden, B., Desai, M., Viele, K. and **Cooper, R.L.** (**2006**) The nature of quantal release during short-term facilitation at the crayfish NMJ. Society for Neuroscience annual meeting. Atlanta, GA.
173. Badre, N. and **Cooper, R.L.** (**2006**) Reduced calcium channel function in the Drosophila cacTS2 mutant on vision, olfaction and regulation of the heart. Eight Annual **Beckman Scholars Symposium**. Arnold and Mabel Beckman Foundation. Located at the Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering. Irvine, CA July 26 - 28.
174. **Cooper, R.L.**, Dasari, S., Turner, A.C., White, C. and White, J. (**2006**) Effects of the serotonergic system on physiology, development, learning and behavior of *Drosophila melanogaster*. 1st International Conference on Synapses, Memory, Drug Addiction, and Pain. Dept. of Physiology, University of Toronto, Toronto, **Canada**. August 21-23. (by invitation)
175. Desai, M.S., Sparks, G.M. **Cooper, R.L.** (**2006**) The influence of the Na^{+}/Ca^{2+} exchanger during short-term facilitation in motor nerve terminals. 1st International Conference on Synapses, Memory, Drug Addiction, and Pain. Dept. of Physiology, University of Toronto, Toronto, **Canada**. August 21-23. (by invitation)
176. Winslow, J.L., **Cooper, R.L**., Atwood, H.L.. (**2006**) Size and history matters: Large presynaptic active zones can cause larger calcium responses hence more evoked neurotransmitter release than small active zones. 1st International Conference on Synapses, Memory, Drug Addiction, and Pain. Dept. of Physiology, University of Toronto, Toronto, **Canada**. August 21-23. (by invitation)
177. Cooper, A.S., Johnstone, A.F.M., and **Cooper, R.L.** (**2006**) Nerve terminal pruning in conjunction with muscle atrophy by disuse & unloading. VIII East European Conference of the International Society for Invertebrate Neurobiology Simpler Nervous Systems. Kazan, **Russia**, Sept. 13-17. (by invitation).
178. **Cooper, R.L.**, Dasari, S., Turner, A.C., Cullman-Clark, B., White, J. (**2006**) Effects of the serotonergic system on physiology, development, learning and behavior of D*rosophila melanogaster*. VIII East European Conference of the International Society for Invertebrate

Neurobiology Simpler Nervous Systems. Kazan, **Russia**, Sept. 13-17. (by invitation).

179. **Cooper, R.L.**, Dasari, S. and Turner, A.C. (**2007**) Effects of the serotonergic system on physiology, development, learning and behavior of *Drosophila melanogaster*. *S*ociety for Integrative and Comparative Biology. Annual meeting. January 3-7. AZ, USA.
180. Papoy, A.R., Desai, M.S., **Cooper, R.L.** (**2007**) Regulation of calcium by the SERCA, PMCA and NCX. Univ. of KY, Showcase of Scholars (2nd annual undergraduate research event).
181. Turner, C., Dasari, S., and **Cooper, R.L.** (**2007**) Influence of the dopamine on physiology, development and behavior of *Drosophila melanogaster*. Univ. of KY, Showcase of Scholars (2nd annual undergraduate research event).
182. McLaurine, T., Bierbower, S., **Cooper, R.L.** (**2007**) CO_2 environment: How bad could it be ? Univ. of KY, Showcase of Scholars (2nd annual undergraduate research event).
183. Spence, T. Bierbower, S., **Cooper, R.L.** (**2007**) Sensory: Do species do it differently? Univ. of KY, Showcase of Scholars (2nd annual undergraduate research event).
184. Bierbower, S.M., **Cooper, R.L.** (**2007**) The mechanistic effects of CO_2 on physiology and behavior in *Procambarus clarkii*. Society for Neuroscience Annual Meeting. San Diegio, CA. 359.1
185. Desai, M.S., Viele, K. Hayden, B.J., **Cooper, R.L.** (**2007**) Quantal release during short-term facilitation in motor nerve terminals of the crayfish. Society for Neuroscience Annual Meeting. San Diego, CA. 359.2
186. Spence, T., McLaurine, T., Bierbower, S., **Cooper, R.L.** (**2007**) Sensory: Do species do it differently? Kentucky Academy of Sciences. Annual meeting. Univ. of Louisville, KY. Nov. 8-10.
187. Papoy, A.R., Desai, M.S., **Cooper, R.L.** (**2007**) Roles of the SERCA, PMCA and NCX in calcium regulation in the *Drosophila* larval heart. Kentucky Academy of Sciences. Annual meeting. Univ. of Louisville, KY. Nov. 8-10.
188. Cooper, A.S., **Cooper, R.L.,** Chae, H., Kim, C. (**2008**) The effects of capsaicin on Drosophila. Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2008, San Antonio, TX.
189. Lee, J.Y., Chung, W.Y., Logsdon, S., Johnstone, A. F. M., **Cooper, R.L.** (**2008**) The regulation of synaptic vesicle pools within motor nerve terminals. Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2008, San Antonio, TX.
190. Spence, T., McLaurine, T., Bierbower, S., **Cooper, R.L.** (**2008**) Chemosensory induced behavioral and physiological responses in crayfish. NCUR- National Council on Undergraduate Research. Salisbury University, Salisbury, MD.
191. Turner, C., Dasari, S., and **Cooper, R.L.** (**2008**) Influence of the serotonin and dopamine on physiology, development and behavior of *Drosophila melanogaster*. NCUR- National Council on Undergraduate Research. Salisbury University, Salisbury, MD.
192. Papoy, A.R., Desai, M.S. and **Cooper, R.L.** (**2008**) Roles of the SERCA, PMCA and NCX in calcium regulation in the Drosophila larval heart. NCUR- National Council on Undergraduate Research. Salisbury University, Salisbury, MD.
193. Desai, M.S., Sparks, G.M. **Cooper, R.L.** (**2008**) The influence of the Na^+/Ca^{2+} exchanger and the PMC ATPase pump during short-term facilitation in motor nerve terminals. Annual meeting of the BlueGrass Chapter of the Society for Neuroscience. March12, 2008. Univ. of KY.
194. Bierbower, S.M., **Cooper, R.L.** (**2008**) The mechanistic effects of CO_2 on physiology and behavior in P*rocambarus clarkii.* Annual meeting of the BlueGrass Chapter of the Society for Neuroscience. March12, 2008. Univ. of KY.
195. Lee, J.Y., Chung, W.Y., Logsdon, S., Johnstone, A. F. M., **Cooper, R.L.** (**2008**) The regulation of

synaptic vesicle pools within motor nerve terminals. Annual meeting of the BlueGrass Chapter of the Society for Neuroscience. March12, 2008. Univ. of KY.

196. Cooper, A.S., **Cooper, R.L.,** Chae, H., Kim, C. (**2008**) The effects of capsaicin on *Drosophila*. Annual meeting of the BlueGrass Chapter of the Society for Neuroscience. March12, 2008. Univ. of KY.
197. Stephens, D., Bierbower, S., Kolasa, J., Adami, M. and **Cooper, R.L.** (**2008**) Heart and ventilatory measures in crayfish during altered environments. Annual meeting of the BlueGrass Chapter of the Society for Neuroscience. March12, 2008. Univ. of KY.
198. Turner, C. and **Cooper, R.L.** (**2008**) The effects of an altered dopaminergic and serotoninergic system on behavior, development, and physiology in *Drosophila melanogaster*. Annual meeting of the BlueGrass Chapter of the Society for Neuroscience. March 12, 2008. Univ. of KY.
199. Turner, C. and **Cooper, R.L.** (**2008**) The effects of an altered dopaminergic and serotoninergic system on behavior, development, and physiology in *Drosophila melanogaster*. 2008 South East Nerve Net meeting. Georgia State University, Atlanta, GA., USA.
200. Cooper, A.S., **Cooper, R.L.,** Chae, H., Kim, C. (**2008**) The effects of capsaicin on *Drosophila*. 15th Annual meeting. Center for the Integrative Study of Animal Behavior Conference on Friday April 25th at Indiana University.
201. Bierbower, S.M., **Cooper, R.L.** (**2008**) Comparative study of environmental modulation of intrinsic behavior in blind and sighted crayfish. 15th Annual meeting. Center for the Integrative Study of Animal Behavior Conference on Friday April 25th at Indiana University.
202. Stephens, D., Bierbower, S.M. and **Cooper, R.L.** (**2008**) The effect of CO2 on behavior and physiology in crayfish. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
203. Allen, C., Naik, S., Bierbower, S.M. and **Cooper, R.L.** (**2008**) Task learning and memory retention in blind crayfish, *Orconectes australis packardi*. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
204. McLaurine, T., Robinson, M., Spence, T., Bierbower, S.M. and **Cooper, R.L.** (**2008**) The role of olfactory: comparison of the autonomic response of multiple sensory modalities in crayfish. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
205. Naik, S., Bierbower, S.M., Shuranova, Z., Burmistrov, Y. and **Cooper, R.L.** (**2008**) Task learning and memory retention in crayfish. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
206. Holmes, K.N., Bierbower S.M. and **Cooper, R.L.** (**2008**) Effect of exercise duration and environment on the autonomic response in crayfish, *Procambarus clarkii*. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
207. Wright, M.C., Bierbower, S.M. and **Cooper, R.L.** (**2008**) Effects of olfaction and environment on agonistic behavior in the crayfish, *procambarus clarkii*. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
208. Papoy, A.R., Desai, M.S. and **Cooper, R.L.** (**2008**) Roles of the SERCA, PMCA and NCX in calcium regulation in the *Drosophila* larval heart. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
209. Bocook, E. Bierbower, S.M. and **Cooper, R.L.** (**2008**) A quantifiable measure of interaction intensity influenced by environmental factors in blind crayfish. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
210. Shrinivasan, V., Desai, M.S., Viele, K. and **Cooper, R.L.** (**2008**) Determining the characteristics of quantal events during short-term facilitation. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).

211. Turner, A.C. and **Cooper, R.L.** (**2008**) The effects of an altered dopaminergic system on behavior, development, and physiology in *Drosophila melanogaster*. Univ. of KY, Showcase of Scholars (3rd annual undergraduate research event).
212. Cooper, A.S., Kim, C. and **Cooper, R.L.** (**2008**) The effects of enhanced sensory perception on learning and memory retention in *Drosophila*. Annual meeting of Society for Neuroscience. Washington, DC.
213. Lee, J.-Y., Bhatt, D., Bhatt, D., Chung, W.-Y., Lee, N.-T. and **Cooper, R.L.** (**2008**) Pre- & Post-synaptic Actions of Kainate: Negative Feedback at Glutamatergic Nerve Terminals. Annual meeting of Society for Neuroscience. Washington, DC.
214. Bierbower, S.M. and **Cooper, R.L. (2008)** The effect of CO_2 on the neural circuitry of an identified behavior. Annual meeting of Society for Neuroscience. Washington, DC.
215. Desai, M. and **Cooper, R.L.** (**2008**) Roles of the Sodium Calcium Exchanger (NCX), the Plasma Membrane Ca^{2+}-ATPase (PMCA) and the Sarcoplasmic/Endoplasmic Reticulum Ca^{2+}-ATPase (SERCA) in synaptic transmission at the Crayfish and Drosophila Neuromuscular Junctions. Annual meeting of Society for Neuroscience. Washington, DC.
216. Turner, A.C. and **Cooper, R.L.** (**2008**) The Effects of an Altered Dopaminergic System on Behavior, Development, and Physiology in *Drosophila melanogaster*. Annual meeting of Society for Neuroscience. Washington, DC.
217. Robinson, M., McLaurine, T., Spence, T., Bierbower, S.M. and **Cooper, R.L.** (**2008**) Comparison of the autonomic response of multiple sensory modalities in crayfish. Annual meeting of Society for Neuroscience. Washington, DC.
218. Turner, A.C. and **Cooper, R.L.** (**2008**) The Effects of an altered dopaminergic system on behavior, development, and physiology in *Drosophila melanogaster*. The national annual meeting of TriBeta (Biology Honor Society). Held at Northern KY University.
219. VanDyke, R., Viele, K. and **Cooper, R.L.** (**2008**) Classifying Self-Modeling Regressions in Synaptic Transmission Data. 4th conference on the Statistical Analysis of Neurological Data, **Pittsburgh, PA**. May 29-31, 2008.
220. Turner, A.C. and **Cooper, R.L.** (**2008**) The effects of an altered dopaminergic system on behavior, development, and physiology in *Drosophila melanogaster*. Neurofly 2008 12th European *Drosophila* Neurobiology Conference. September 6 to 10, 2008. University of Würzburg, **Germany.**
221. Wu, W.-H. Hill, J. and **Cooper, R.L.** (**2008**) Influence of nicotine on physiology, development and behavior of *Drosophila melanogaster*. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
222. Ward, M., Desai-Shah, M., Papoy, A.R., and **Cooper, R.L.** (**2008**) Roles of the SERCA, PMCA and NCX in calcium regulation in the *Drosophila* larval heart. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
223. Lee, J.-Y., Bhatt, D., Bhatt, D., Chung, W.-Y., Lee, N.-T. and **Cooper, R.L.** (**2008**) Pre- & Post-synaptic Actions of Kainate: Negative Feedback at Glutamatergic Nerve Terminals. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
224. Srinivasan, V.K. Desai-Shah, M. Viele, K., Sparks, G., Nadolski, J., Hayden, J. and **Cooper, R.L.** (**2008**) Assessment of synaptic function during short-term facilitation in motor nerve terminals in the crayfish. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
225. Kerbl, D., Desai, M.S., Papoy, A.R., Ward, M. and **Cooper, R.L.** (**2008**) Regulation of larval *Drosophila* heart rate by calcium ion channels. Kentucky Academy of Sciences. Annual

meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).

226. Turner, A.C. and **Cooper, R.L.** (**2008**) The effects of an altered dopaminergic system on behavior, development, and physiology in *Drosophila melanogaster*. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
227. Bocook, E., Liberty, B., McQuerry, J., Bierbower, S.M. and **Cooper, R.L.** (**2008**) Social Interactions: Influence of sensory cues and environmental conditions on fighting strategy in blind crayfish. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
228. Liberty, B., McQuerry, J., Bocook, E., Bierbower, S.M. and **Cooper, R.L.** (**2008**) The role of sensory cues and environmental conditions on the fighting strategy in sighted crayfish. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
229. Allen, C., Naik, S., Bierbower, S.M. and **Cooper, R.L.** (**2008**) Can blind crayfish learn a motor task? Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
230. Robinson, M., Mando, J., Baker, M., Bierbower, S.M. and **Cooper, R.L.**. (**2008**) Across species comparison of the autonomic response of multiple sensory modalities in crayfish. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
231. Boyechko, Y., Galperin, V., Bierbower, S.M. and **Cooper, R.L.** (**2008**) Long-Term Memory Retention in Crayfish. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
232. Kelly, B., Bierbower, S.M. and **Cooper, R.L.** (**2008**) The Effects of CO2 on Behavior and Physiology in Crayfish. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ. of KY campus).
233. Bierbower, S.M., Holmes, K. and **Cooper, R.L.** (**2009**) Effect of exercise and environment on the autonomic response in crayfish, *Procambarus clarkia.* Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2009, **Boston, Mass**.
234. Wu, W.-H. Hill, J. and **Cooper, R.L.** (**2009**) Influence of nicotine on physiology, development and behavior of *Drosophila melanogaster*. Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2009**, Boston, Mass**.
235. Lee, J.-Y., Bhatt, D., Bhatt, D., Chung, W.-Y., Lee, N.-T. and **Cooper, R.L.** (**2009**) Pre- & Post-synaptic Actions of Kainate: Negative Feedback at Glutamatergic Nerve Terminals. Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2009, **Boston, Mass.**
236. Turner, A.C. and **Cooper, R.L.** (**2009**) The effects of an altered dopaminergic system on behavior, development, and physiology in *Drosophila melanogaster*. Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2009, **Boston, Mass.**
237. Ward, M., Desai-Shah, M., Papoy, A.R., and **Cooper, R.L.** (**2009**) Roles of the SERCA, PMCA and NCX in calcium regulation in the *Drosophila* larval heart. Posters at the Capital. Frankfort, KY. February, 2009.
238. Bierbower, S.M., and **Cooper, R.L.** (**2009**) Motor Task Learning and Retention in Crayfish. 2nd Annual UK Cognitive Science Symposium. March 7, 2009.
239. Turner, A.C. and **Cooper, R.L.** (**2009**) The effects of an altered dopaminergic system on behavior, development, and physiology in *Drosophila melanogaster*. Society for Neuroscience Bluegrass chapter. March 18, 2009 Univ. of KY.
240. Lee, J.-Y., Bhatt, D., Bhatt, D., Chung, W.-Y., Lee, N.-T. and **Cooper, R.L.** (**2009**) Pre- & Post-synaptic Actions of Kainate: Negative Feedback at Glutamatergic Nerve Terminals. Society for

Neuroscience Bluegrass chapter. March 18, 2009 Univ. of KY.

241. Wu, W.-H. Hill, J. and **Cooper, R.L.** (**2009**) Influence of nicotine on physiology, development and behavior of *Drosophila melanogaster*. Society for Neuroscience Bluegrass chapter. March 18, 2009 Univ. of KY.
242. Cooper, A.S., Kim, C. and **Cooper, R.L.** (**2009**) The effects of enhanced sensory perception on learning and memory retention in *Drosophila*. Society for Neuroscience Bluegrass chapter. March 18, 2009 Univ. of KY.
243. Robinson, M., McLaurine, T., Spence, T., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Comparison of the autonomic response of multiple sensory modalities in crayfish. Society for Neuroscience Bluegrass chapter. March 18, 2009 Univ. of KY.
244. Northcutt, C., Viele, K. and **Cooper, R.L.** (**2009**) Kinetics of the vesicle fusion pore regarding the physiological function at the neuromuscular junction of crayfish. Society for Neuroscience Bluegrass chapter. March 18, 2009 Univ. of KY.
245. Bierbower, S.M., and **Cooper, R.L.** (**2009**) Motor Task Learning and Retention in Crayfish. Center for the Integrative Study of Animal Behavior Conference on Friday April 10th at **Indiana University**.
246. Cooper, A.S., Kim, C., **Cooper, R.L.** (**2009**) The effects of enhanced sensory perception to learning and memory retention in *Drosophila.* 16th Annual meeting. Center for the Integrative Study of Animal Behavior Conference on Friday April 10th at **Indiana University**.
247. Ward, M., Desai-Shah, M., Papoy, A.R., and **Cooper, R.L.** (**2009**) Roles of the SERCA, PMCA and NCX in calcium regulation in the Drosophila larval heart. 23rd National Conference on Undergraduate Research (**NCUR**), University of Wisconsin-La Crosse, La Crosse, Wisconsin. April 17, 2009.
248. Turner, A.C. and **Cooper, R.L.** (**2009**) The Effects of an Altered Dopaminergic System on Behavior, Development, and Physiology in Drosophila melanogaster. 23rd National Conference on Undergraduate Research (**NCUR**), University of Wisconsin-La Crosse, La Crosse, Wisconsin. April 17, 2009.
249. Robinson, M., Mando, J., Baker, M., Bierbower, S.M. and **Cooper, R.L. (2009)** Across species comparison of the autonomic response of multiple sensory modalities in crayfish. 23rd National Conference on Undergraduate Research (**NCUR**), University of Wisconsin-La Crosse, La Crosse, Wisconsin. April 17, 2009.
250. Kelly, B., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Paralytic effect of carbon dioxide on an identified behavior: Role of CNS. 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.
251. Gilberts, A., Bierbower, S.M. and **Cooper, R.L.** (**2009**) CNS control of scaphognathite patterns during a 'sympathetic-like' response in crayfish. 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.
252. Forsythe, L., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Environmental factors influencing motor task learning and retention in crayfish. 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.
253. Galperin, V. Bierbower, S.M. and **Cooper, R.L.** (**2009**) Stress response due to inhibiton of completing a learned motor task in crayfish. 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.
254. Baker, M., Robinson, M., Bierbower, S. M., and **Cooper, R. L.** (**2009**) Across species comparison of the autonomic response of multiple sensory modalities in crayfish. 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.
255. Liberty, B., McQuerry, J., Bocook, E., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Comparative

study of quantifiable environmental factors modulating intrinsic behavior in crayfish . 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.

256. Turner, A.C. and **Cooper, R.L.** (**2009**) The Effects of an Altered Dopaminergic System on Behavior, Development, and Physiology in *Drosophila melanogaster*. 4th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky.
257. *ditto. Turner, A.C. and **Cooper, R.L.** (**2009**) The Effects of an Altered Dopaminergic System on Behavior, Development, and Physiology in *Drosophila melanogaster*. Eleventh Annual **Beckman Scholars Symposium**. Arnold and Mabel Beckman Foundation. Located at the Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering. Irvine, CA July 24 - 27.
258. Bierbower, S.M. and **Cooper, R.L.** (**2009**) Synaptic mechanisms of action explaining carbon dioxide induced paralysis. Annual meeting of Society for Neuroscience. Chicago, USA.
259. Cooper, A.S., Kim, C., **Cooper, R.L.** (**2009**) The effects of enhanced sensory perception to learning and memory retention in *Drosophila*. Annual meeting of Society for Neuroscience. Chicago, USA.
260. Robinson, M., Mando, J., Baker, M., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Using heart rate as a bioindex to assess various sensory perceptions in sighted and non-sighted crayfish. Annual meeting of Society for Neuroscience. Chicago, USA.
261. Cooper, A.S., Kim, C., **Cooper, R.L.** (**2009**) The effects of enhanced sensory perception to learning and memory retention in *Drosophila*. Kentucky Academy of Sciences annual meeting. Nov. 2009 at Northern Kentucky University.
262. Robinson, M., Mando, J., Baker, M., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Using heart rate as a bioindex to assess various sensory perceptions in sighted and non-sighted crayfish. Kentucky Academy of Sciences annual meeting. Nov. 2009 at Northern Kentucky University.
263. Baker, M., Robinson, M., Bierbower, S.M. and **Cooper, R.L.** (**2009**) Autonomic response to multiple sensory modalities in crayfish. Kentucky Academy of Sciences annual meeting. Nov. 2009 at Northern Kentucky University.
264. VanDyke, R., Viele, K., **Cooper, R.** (November **2009**). Mixtures of Self-Modeling Regressions. University of Pennsylvania Biostatistics Seminar Series
265. Cooper, A.S., Robinson, M., Baker, M., Bierbower, S.M. and **Cooper, R.L.** (**2010**) The effects of enhanced sensory perception to learning and memory retention in Drosophila. / Autonomic response to multiple sensory modalities in crayfish. Dual poster at the annual POSTERS -AT-THE -CAPITAL. Frankfort, KY. Jan. 2010.
266. Cooper, A.S. and **Cooper, R.L.** (**2010**) The effects of enhanced sensory perception on learning and memory retention in *Drosophila.* American Association for the Advancement of Science (AAAS), San Digeo, CA., Annual meeting. Feb. 2010. (poster and oral presentation).
267. Wu, W.-H. and **Cooper, R.L.** (**2010**) The regulation of synaptic vesicles within crayfish NMJ. Annual meeting. Society for Neuroscience Bluegrass Chapter. March 17, 2010 Univ. of KY.
268. Leksrisawat, B., Cooper, A.S., and **Cooper, R.L.** (**2010**) Response properties in the crayfish abdomen: Educational aspects. Annual meeting for Society for Neuroscience Bluegrass Chapter. March 17, 2010 Univ. of KY. **(* won an $100 award at the meeting. Best undergrad poster**).
269. Tucker, M., Bierbower, S.M. and **Cooper, R.L.** (**2010**) The effect of CO_2 on the neural circuitry of an identified behavior. 5th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 2010.
270. Gilberts, A., Wigginton, A.J., Bierbower, S.M., Xu, S. and **Cooper, R.L.** (**2010**) Effects of environmental Cd2+ on crayfish: Behavior and physiology. 5th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 2010.

271. Armbruster, J., Wu, W.-H. and **Cooper, R.L.** (**2010**) The regulation of synaptic vesicles pool in nerve terminals. 5th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 2010.
272. Martin, J.M., Robinson, M., **Cooper, R.L. (2010)** Modeling of biological cell membranes using a classroom-practical laboratory setup, with emphasis on neuronal axon ion exchange. 5th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 2010.
273. Robinson, M., Bierbower, S., **Cooper, R.L.** (**2010**) Assessing various sensory perceptions in sighted and non-sighted crayfish using heart rate as a bioindex. 5th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 2010.
274. Cooper, A.S. and **Cooper, R.L.** (**2010**) The effects of enhanced sensory perception on learning and memory retention in *Drosophila.* 5th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 2010.
275. Robinson, M., **Cooper, R.L.,** Bierbower, S. (**2010**) Using heart rate as a bioindex to assess various sensory perceptions in sighted and non-sighted crayfish. The 19th Annual Meeting of International Behavioral Neuroscience Society. **Sardinia, Italy**. June 8-13, 2010.
276. Cooper, A.S., Johnstone, A.F.M., and **Cooper, R.L.** (**2010**) Nerve terminal pruning in conjunction with muscle atrophy by disuse & unloading. The Center for Muscle Biology symposium. University of Kentucky. June 1, 2010.
277. Robinson, M., **Cooper, R.L.**, and Bierbower, S. (**2010**) Using heart rate as a bioindex to assess various sensory perceptions in sighted and non-sighted crayfish. Twelfth Annual **Beckman Scholars Symposium**. Arnold and Mabel Beckman Foundation. Located at the Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering. Irvine, CA July.
278. Wu,W.-H. and **Cooper, R.L.** (**2011**) Packaging and physiological separation of the RRP and RP of vesicles within various types of presynaptic terminals. Annual meeting. Society for Neuroscience Bluegrass Chapter. March 31. University of Kentucky, Lexington, Kentucky.
279. Robinson, A.D., Wu, W.H, and **Cooper, R.L.** (**2011**) Ephaptic transmission between motor neurons. Annual meeting. Society for Neuroscience Bluegrass Chapter. March 31. University of Kentucky, Lexington, Kentucky.
280. Cooper, A., Gilberts, A., Baierlein, B., Leksrisawat, B., Thurow, A., Robinson, M.M., Martin, J.M. and **Cooper, R.L.** (**2011**) Creating Interactive Neurophysiology Laboratory Experiments for the Students at the University of Kentucky. Annual meeting. Society for Neuroscience Bluegrass Chapter. March 31. University of Kentucky, Lexington, Kentucky.
281. Cooper, A., Gilberts, A., Baierlein, B., Leksrisawat, B., Thurow, A., Robinson, M.M., Martin, J.M. and **Cooper, R.L.** (**2011**) Creating Interactive Neurophysiology Laboratory Experiments for the Students at the University of Kentucky. 6th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April.
282. Chung, Y.S., Graff, J., Cooper, R.M., **Cooper, R.L.** (**2011**) The acute and chronic effect of temperature on heart and ventilatory rate in prawns. 6th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April.
283. Robinson, A.D., Wu, W.H, **Cooper, R.L.** (**2011**) Ephaptic transmission between motor neurons. Univ. of KY, Showcase of Scholars. 6th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April.
284. Wu,W.-H. and **Cooper, R.L.** (**2011**) Packaging and physiological separation of the RRP and RP of vesicles within various types of presynaptic terminals. Annual meeting of Society for Neuroscience. Washington, DC, USA.

285. Robinson, A.D., Wu, W.H, **Cooper R.L.**(**2011**) Ephaptic transmission between motor neurons. Annual meeting of Society for Neuroscience. Washington, DC, USA.
286. Majeed, Z.R., **Cooper, R.L.** and Nichols, C.D. (**2011**) Effect of DREADD receptor activation in *Drosophila* motoneurons on synaptic transmission. Annual meeting of Society for Neuroscience. Washington, DC, USA.
287. Cooper, A., Gilberts, A., Baierlein, B., Leksrisawat, B., Thurow, A., Robinson, M.M., Martin, J.M. Holsinger, R.C., and **Cooper, R.L.** (**2011**) Creating Interactive Neurophysiology Laboratory Experiments for the Students at the University of Kentucky. Annual meeting of Society for Neuroscience. Washington, DC, USA.
288. Cooper, R.M., Chung, Y.S. Holsinger, R.C. and **Cooper, R.L.** (**2011**) Development of neurophysiology laboratory experiments for high schools in Kentucky. Annual meeting of Society for Neuroscience. Washington, DC, USA.
289. Crum M., Robinson, M.M. and **Cooper, R.L.** (**2011**) Model of hypercalcemia in crayfish with correlates to a human pathophysiological condition. Annual meeting of Society for Neuroscience. Washington, DC, USA.
290. Potenza, J.B., Mercier, A.J. and **Cooper, R.L.** (**2011**) Physiological investigations with the crayfish hindgut. The Center for Muscle Biology Univ. of KY., Modeling Workshop for trainees in Muscle Biology. July 27, 2011. *(JBP won an award for best presentation).*
291. Wu,W.-H. and **Cooper, R.L.** (**2011**) Packaging and physiological separation of the RRP and RP of vesicles within various types of presynaptic terminals. 26th Meeting of the Ohio Physiological Society, University of Cincinnati, October 6–7, Cincinnati, Ohio.
292. Holsinger, R.C., Potenza, J.B., LeBlancq, M.J., Mercier, A.J. and **Cooper, R.L.** (**2011**) Modulating the neural control and direct actions on the crayfish hindgut: Serotonin, octopamine and dopamine. 26th Meeting of the Ohio Physiological Society, University of Cincinnati, October 6–7, Cincinnati, Ohio.
293. Cooper, A.S., Johnstone, A.F.M., and **Cooper, R.L.** (**2011**) Nerve terminal pruning in conjunction with muscle atrophy by disuse & unloading. 26th Meeting of the Ohio Physiological Society, University of Cincinnati, October 6– 7, Cincinnati, Ohio.
294. Cooper, R.M., Schapker-Finucane, H. Adami, H. and **Cooper, R.L.** (**2011**) Heart and ventilatory measures in crayfish during copulation. The Kentucky Academy of Science annual meeting. Nov. 4-5, 2011, Murray State University, Murray, Kentucky.
295. Potenza, J.B., Holsinger, R.C., LeBlancq, M.J., Mercier, A.J. and **Cooper, R.L.** (**2011**) Crayfish hindgut: A model system for examining central and peripheral control mechanisms. The Kentucky Academy of Science annual meeting. Nov. 4-5, 2011, Murray State University, Murray, Kentucky.
296. Cooper, A.S. and **Cooper, R.L.** (**2011**) Transection of a motor nerve results in a rapid synaptic depression. The Kentucky Academy of Science annual meeting. Nov. 4-5, 2011, Murray State University, Murray, Kentucky.
297. Crum M., Robinson, M.M., Robinson, A.D. and **Cooper, R.L.** (**2011**) Pathophysiological conditions with hypercalcemia: Neuron, CNS, intestine, and behavior. The Kentucky Academy of Science annual meeting. Nov. 4-5, 2011, Murray State University, Murray, Kentucky.
298. Cooper, R.M., Schapker-Finucane, H. Adami, H. and **Cooper, R.L.** (**2012**) Heart and ventilatory measures in crayfish during copulation. Society for Integrative and Comparative Biology. Annual meeting. January 3-7, 2012**,** Charleston, South Carolina.
299. Holsinger, R.C., Potenza, J.B., Mercier, A.J. and **Cooper, R.L.** (**2012**) Physiological investigations with the crayfish hindgut. Society for Integrative and Comparative Biology. Annual meeting. January 3-7, 2012, Charleston, South Carolina.

300. **Cooper, R.L.**, Nadolski, J., Smith, L.A., Krall, R.M., Cooper, H.W. and Holsinger, R.C (**2012**) Providing a simple understanding of respiration-related buffering for nurses and their clients. The Southern Nursing Research Society, 26th Annual Conference. February 22-25, 2012. New Orleans, LA.
301. Burns, E., Potenza, J.B., Holsinger, R.C., LeBlancq, M.J., Maslink, C., Mercier, A.J., and **Cooper, R.L.** (**2012**). Crayfish hindgut: A model system for examining central and peripheral control mechanisms. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
302. Cooper, A.S. and **Cooper, R.L.** (**2012**). Transection of a motor nerve results in a rapid synaptic depression. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
303. Wu,W.-H. and **Cooper, R.L.** (**2012**) Packaging and physiological separation of the RRP and RP of vesicles within various types of presynaptic terminals. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
304. Majeed, Z.R., Nichols, C.D. and **Cooper, R.L.** (**2012**) Effect of DREADD receptor activation in *Drosophila* motoneurons on synaptic transmission. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
305. Crum, M., Robinson, M.M., Robinson, A.D. and **Cooper, R.L.** (**2012**). Pathophysiological conditions with hypercalcemia: Neuron, CNS, intestine, and behavior. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
306. Titlow, J., Ghosh, S., **Cooper, R.L.**, Harrison, D. and Rymond, B. (**2012**). A modifier of spinal muscular atrophy may be involved in motor behavior and stress response. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
307. **Cooper, R.L.**, Titlow, J. and Majeed, Z.R. (**2012**) Introduction of a new neurophysiology laboratory for students at the University of Kentucky. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. March 29, 2012.
308. Ghosh, S., Titlow, J., **Cooper, R.L.**, Harrison, D. and Rymond, B. (**2012**). SERF1 gene function in *Drosophila melanogaster*. 53rd Annual Drosophila Research Conference. Chicago, IL March 7-11, 2012.
309. Chung, Y.S., Graff, J., Cooper, R.M., **Cooper, R.L.** (**2012**) The acute and chronic effect of temperature on heart and ventilatory rate in prawns. Korean Student Technical & Leadership Conference. Chicago, IL March 16-18, 2012.
310. LeBlancq, M.J., Maslink, C., Burns, E., Potenza, J.B., Holsinger, R.C., **Cooper, R.L.**, Mercier, A.J. (**2012**) Neural control of the crayfish hindgut. East Coast Nerve Net. Woods Hole Marine Biological Laboratory. Woods Hole, MA. March 22-24, 2012.
311. **Cooper, R.L.,** Sipe, G., Nadolski, J., Smith, L.A., Holsinger, R.C., Cooper, H., Krall, R.M., Johnson, D. and Zeidler-Watters, K. (**2012**). Classroom activity on buffering related to respiration for high school and introductory college courses in biological sciences. UK College of Nursing 8th Annual Student Scholarship Showcase. March 30, 2012. (Oral presentation).
312. Dixon, R., Spitz, N., Holsinger, R.C., Rose, S., Cooper, H., Krall, R.M., Johnson, D. and Zeidler-Watters, K., **Cooper, R.L.** (**2012**). STEM & Health: Stressors on the circulatory system. 7th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. Lexington, Kentucky. April 25, 2012.
313. Sipe, G., Nadolski, J., Smith, L.A., Holsinger, R.C., Cooper, H., Krall, R.M., Johnson, D. and Zeidler-Watters, K., **Cooper, R.L.** (**2012**). Classroom activity on buffering related to respiration for high school and introductory college courses in biological sciences. 7th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 25, 2012.

314. Cooper, A.S. and **Cooper, R.L.** (**2012**). Transection of a motor nerve results in a rapid synaptic depression. 7th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 25, 2012.
315. Burns, E., Potenza, J.B., Holsinger, R.C., LeBlancq, M.J., Maslink, C., Mercier, A.J., and **Cooper, R.L.** (**2012**). Crayfish hindgut: A model system for examining central and peripheral control mechanisms. 7th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 25, 2012.
316. Crum, M., Robinson, M.M., Robinson, A.D. and **Cooper, R.L.** (**2012**). Pathophysiological conditions with hypercalcemia: Neuron, CNS, intestine, and behavior. 7th Annual Showcase of Undergraduate Scholars, University of Kentucky, Lexington, Kentucky. April 25, 2012.
317. Nichols, C.D., Becnel, J., Johnson, O., Majeed, Z.R., Tran, V., Yu, B., Roth, B.L. and **Cooper, R.L.** (**2012**). DREADD receptor control of behavior, signalling, and physiology in the model organism *Drosophila melanogaster*. Meeting on: Optogenetics and Pharmacogenetics in Neuronal Function and Dysfunction. Hilton Riverside, New Orleans, LA, USA. 11-12 October 2012. Sponored by Thorlabs (Photonics).
318. Majeed, Z.R., **Cooper, R.L.**, and Nichols, C.D. (**2012**). The influence of DREAD receptors activation in the CNS of *Drosophila melanogaster*. Annual meeting of Society for Neuroscience. New Orleans, LA., USA.
319. **Cooper, R.L**., Titlow, J. and Majeed, Z.R. (**2012**). Introduction of a new neurophysiology laboratory for students at the University of Kentucky. Annual meeting of Society for Neuroscience. New Orleans, LA., USA.
320. Titlow, J., Turner, C.A. and **Cooper, R.L**. (**2012**).Come discuss DA's involvement in *Drosophila* behavior and development Annual meeting of Society for Neuroscience. New Orleans, LA., USA.
321. Crum, M., DeCastro, L., Robinson, M.M., Robinson, A.D. and **Cooper, R.L.** (**2012**). Effects of hypercalcemia in a crayfish model : Neuron, CNS, intestine, and behavior. Annual meeting of Society for Neuroscience. New Orleans, LA., USA.
322. Cooper, A.S. and **Cooper, R.L.** (**2012**). Transection of a motor nerve results in a rapid synaptic depression. Annual meeting of Society for Neuroscience. New Orleans, LA., USA.
323. Wu,W.-H. and **Cooper, R.L.** (**2012**) The regulation and packaging of synaptic vesicles related to recruitment within glutamatergic synapses. Annual meeting of Society for Neuroscience. New Orleans, LA., USA.
324. Titlow, J., and **Cooper, R.L**. (**2012**). Behaviors and neural circuits modulated by dopamine. Sept. 30-Oct.3, 2012. Behavioral Neurogenetics of *Drosophila* larva. HHMI Janelia Conference. Virginia, USA.
325. Cooper, A.S. and **Cooper, R.L.** (**2012**) Transection of a motor nerve results in a rapid synaptic depression. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
326. Rufer, J.M, King, K., Titlow, J. and **Cooper, R.L.** (**2012**). Ritalin and other dopaminergic drugs affect CNS function and development in *Drosophila* larvae. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
327. Majeed, Z.R., Nichols, C.D. and **Cooper, R.L.** (**2012**). Pharmacogenetic approach in directing inhibition of the larval heart in *Drosophila melanogaster*. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
    ** Won 1st place.
328. Wu,W.-H. and **Cooper, R.L.** (**2012**). The regulation and packaging of synaptic vesicles related

to recruitment within glutamatergic synapses. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.

329. Stacy, A., Majeed, Z.R. and **Cooper, R.L.** (**2012**). Characterization of 5-HT (serotonin) receptor subtypes in *Drosophila melanogaster* larval heart. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
330. Burns, E. Potenza, J.B., Holsinger, R.C., LeBlancq, M.J., Maslink, C., Mercier, A.J. and **Cooper, R.L.** (**2012**). Crayfish hindgut: A model system for examining central and peripheral control mechanisms. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
331. Krall, R.M., Rose, S., Cooper, H., Mayo, S., Johnson, D., Zeidler-Watters, K. and **Cooper, R.L.** (**2012**). STEM & Health: Stressors on the circulatory system. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
332. King, K., Rufer, J.M, Titlow, J. and **Cooper, R.L.** (**2012**). Pharmacological analysis of dopamine modulation in the developing fruit fly heart. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
333. Keathley, J. Titlow, J. and **Cooper, R.L.** (**2012**). Carbohydrate energy considerations for cardiac function in *Drosophila melanogaster* larvae. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
334. Titlow, J.S., Smith, J. and **Cooper, R.L.** (**2012**).Genotyping abnormal behavior- Lessons from the fruit fly. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
335. Kong, W.-K.,Wu,W.-H. and **Cooper, R.L.** (**2012**). The action of stimulating adenylyl cyclase within motor nerve terminals in the regulation of synaptic vesicles. The Kentucky Academy of Science annual meeting. Oct.19-20, 2012, Eastern Kentucky University, Richmond, Kentucky.
336. Majeed, Z.R., Nichols, C.D. and **Cooper, R.L.** (**2012**). Pharmacogenetic approach in directing inhibition of the larval heart in Drosophila melanogaster. The Center for Muscle Biology Univ. of KY. Oct. 25, 2012.
337. Stacy, A., Majeed, Z.R. and **Cooper, R.L.** (**2012**). Characterization of 5-HT (serotonin) receptor subtypes in Drosophila melanogaster larval heart. The Center for Muscle Biology Univ. of KY. Oct. 25, 2012.
338. Titlow, J., King, K., Rufer, J.M, and **Cooper, R.L.** (**2012**). Fruit fly heart rate is modulated by dopamine through canonical metabotropic pathways. The Center for Muscle Biology Univ. of KY. Oct. 25, 2012.
339. Keathley, J. Titlow, J. and **Cooper, R.L.** (**2012**). Influence of carbohydrate transport in Drosophila cardiac function. The Center for Muscle Biology Univ. of KY. Oct. 25, 2012.
340. Holsinger, R.C. and **Cooper, R.L.** (**2013**). The effect of regional phenotypic differences of *Procambarus clarkii* opener muscle on sarcomere length, fiber diameter, and force development. Society for Integrative and Comparative Biology. Annual meeting. January 3-7, 2013, San Francisco, California.
341. Zhu, Y., Wu,W.-H. and **Cooper, R.L.** (**2013**). The action of stimulating adenylyl cyclase within motor nerve terminals in the regulation of synaptic vesicles. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
342. Crosthwaite, T., Majeed, Z. and **Cooper, R.L.** (**2013**) Role of PLC-IP3-PKC pathway in 5-HT mediated heart rate modulation in *Drosophila* larvae. Annual meeting of the Ky chapter of

the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.

343. Kenney, S. and **Cooper, R.L. (2013)** A laboratory exercise in quantifying synaptic transmission: Quantal measures and analysis. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
344. Potts, D., Titlow, J.S., and **Cooper, R.L.** (**2013**) Dopamine's influence on nervous system anatomy during juvenile development. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013
345. Boyechko, T. and **Cooper, R.L. (2013)** Educating the Public on the Association between COPD and Oxygen Therapy. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
346. Krall, R.M., Cooper, H., Mayo, S., Johnson, D., Zeidler-Watters, K., Rose, S., Dixon, R. and **Cooper, R.L.,** (**2013**) STEM & Health: Stressors on the circulatory system. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
347. Burns, E., Dupont-Versteegden, E.E. and **Cooper, R.L.** (**2013**). The effects of K^+ on skeletal muscle, synaptic transmission and the relationship with deep tissue injury of muscle. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
348. Titlow,J., Majeed, Z.R., Nicholls, J.G. and **Cooper, R.L.** (**2013**) Teaching with leeches- An undergraduate neurophysiology module. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
349. Majeed, Z.R., Titlow,J., Hartman, H.B. and **Cooper, R.L.** (**2013**) Teaching with crabs- An undergraduate physiology module. Annual meeting of the Ky chapter of the American Physiological Society, Univ of Kentucky, Lexington, Ky. March 25, 2013.
350. Bankemper, A., Majeed, Z. and **Cooper, R.L.** (**2013**) Characterization of 5-HT receptor subtype in sensory-CNS-motor circuit in *Drosophila* larvae. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
351. Zhu, Y., Wu,W.-H. and **Cooper, R.L.** (**2013**). The action of stimulating adenylyl cyclase within motor nerve terminals in the regulation of synaptic vesicles. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
352. Burns, E., Dupont-Versteegden, E.E. and **Cooper, R.L.** (**2013**). The effects of K^+ on skeletal muscle, synaptic transmission and the relationship with deep tissue injury of muscle. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
353. Majeed, Z. R., Swoveland, R. and **Cooper, R. L.** (**2013**) The influence of serotonin alteration on behavior and development in *Drosophila*. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
354. Titlow, J.S., Majeed, Z. R., Nicholls, J.G. and **Cooper, R.L.** (**2013**) Teaching with Leeches- An Undergraduate Neuroscience Module. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
355. Browne, J, Titlow, J.S., and **Cooper, R.L**. (**2013**) What fruit fly behavior teaches us about dopamine homeostasis, and vice versa.. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
356. Potts, D., Titlow, J.S., and **Cooper, R.L.** (**2013**) Dopamine's influence on nervous system anatomy during juvenile development. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.

357. Kenney, S. and **Cooper, R.L. (2013)** A laboratory exercise in quantifying synaptic transmission: Quantal measures and analysis. Spring Neuroscience Day, University of Kentucky, Lexington, Kentucky. April 8, 2013.
358. **Cooper, R.L.,** Majeed, Z.R., Titlow, J., Stacy, A., King, K., Rufer, J.M., Nichols, C.D. (**2013**) Pharmacogenetic approaches in altering heart rate in *Drosophila* larvae. The American Physiological Society annual meeting. April 20-24, 2013. Boston, MA. USA
359. **Cooper, R.L.,** Krall, R.M., Cooper, H., Mayo, S., Johnson, D., Zeidler-Watters, K. and Rose, S. (**2013**) STEM & Health: Stressors on the circulatory system. The American Physiological Society annual meeting. April 20-24, 2013. Boston, MA. USA.
360. Stacy, A., Majeed, Z.R. and **Cooper, R.L.** (**2012**). Characterization of 5-HT (serotonin) receptor subtypes in Drosophila melanogaster larval heart. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
361. Crosthwaite, T., Majeed, Z. and **Cooper, R.L.** (**2013**) Role of PLC-IP3-PKC pathway in 5-HT mediated heart rate modulation in *Drosophila* larvae. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
362. Bankemper, A., Majeed, Z. and **Cooper, R.L.** (**2013**) Characterization of 5-HT receptor subtype in sensory-CNS-motor circuit in *Drosophila* larvae. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
363. Burns, E., Dupont-Versteegden, E.E. and **Cooper, R.L.** (**2013**). The effects of K^+ on skeletal muscle, synaptic transmission and the relationship with deep tissue injury of muscle. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
364. Browne, J, Titlow, J.S., and **Cooper, R.L**. (**2013**). What fruit fly behavior teaches us about dopamine homeostasis, and vice versa. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
365. Potts, D., Titlow, J.S., and **Cooper, R.L.** (**2013**) Dopamine's influence on nervous system anatomy during juvenile development. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
366. Kenney, S. and **Cooper, R.L. (2013)** A laboratory exercise in quantifying synaptic transmission: Quantal measures and analysis. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
367. Boyechko, T. and **Cooper, R.L. (2013)** Educating the Public on the Association between COPD and Oxygen Therapy. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 24, 2013.
368. de Castro, C., Majeed, Z.R., Titlow, J. and **Cooper, R.L. (2013**). Analysis of various physiological salines for heart rate, CNS function, and synaptic transmission at NMJs in *Drosophila melanogaster* larvae. University of Kentucky Gill Heart Institute Cardiovascular Research Day. Oct. 11, 2013
369. Titlow, J.S., King, K.E., Majeed, Z.R. and **Cooper, R.L. (2013)** Additive stimulatory effects of monoamines on *Drosophila melanogaster* heart rate. University of Kentucky Gill Heart Institute Cardiovascular Research Day. Oct. 11, 2013
370. Majeed, Z.R., Stacy, A., Crosthwaite, T. and **Cooper, R.L. (2013)** 5-HT receptor subtypes and associated intracellular signaling pathway that mediate heart rate modulation in *Drosophila* larvae. University of Kentucky Gill Heart Institute Cardiovascular Research Day. Oct. 11, 2013.
371. Bigdeliazari, S., Zeidler-Watters, K., Dixon, R., Rose, S., Cooper, H., Krall, R.M., Johnson, D., Mayo, S., and **Cooper, R.L. (2013).** STEM & Health: Stressors on the circulatory system. Gill Heart Institute Cardiovascular Research Day. University of Ky. Lexington, KY.

Convention Center. Oct. 11, 2013.

372. Burns, E., Bigdeliazari, S. Dupont-Versteegden, E.E. and **Cooper, R.L.** (**2013**). The effects of K^+ on skeletal muscle, synaptic transmission and the relationship with deep tissue injury of muscle. Annual meeting of the Kentucky Academy of Sciences. Nov.8-9, 2013 at Morehead Univ.
373. Zhu, Y., Wu, W-H., and **Cooper, R.L.** (**2013**). The action adenylyl cyclase within motor nerve terminals of *Drosophila* and crayfish in synaptic transmission. Annual meeting of the Kentucky Academy of Sciences. Nov.8-9, 2013 at Morehead Univ.
374. Rice, J. Majeed, Z.R., Titlow, J. and **Cooper, R.L. (2013)** Development of the Jordan HAT assay to study mechanosensation: Selective modulation of a neural circuit in larval Drosophila melanogaster. Annual meeting of the Kentucky Academy of Sciences. Nov.8-9, 2013 at Morehead Univ. (talk)
375. Rayens, E., Holsopple, E., Titlow, J. and **Cooper, R.L. (2013)** Differences in Drosophila dopamine receptor expression drive metabolic regulation of a gustatory circuit. Annual meeting of the Kentucky Academy of Sciences. Nov.8-9, 2013 at Morehead Univ. (talk)
376. Wang, C., Hill, J., Wu, W.-H. and **Cooper, R.L.** (**2013**) The pharmacological profile and actions of cholinergic system in larval Drosophila: Behavior, development, CNS activity, and heart. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
377. Potts, D., Titlow, J.S., and **Cooper, R.L. (2013)** The Role of Dopamine Homeostasis on Dopaminergic Neuron Morphology, Function, and Fate in *Drosophila*. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
378. Holsopple, E., Rayens, E., Titlow, J. and **Cooper, R.L. (2013)** Genetic and pharmacological modulators of mechanosensory behavior in fruit fly larvae, *Drosophila melanogaster*. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
379. Dabbain, N., Graff, J., Majeed, Z.R., and **Cooper, R.L. (2013)** The effects of GABA on development, behavior and survival in *Drosophila*. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY. (talk)
380. King, K, Majeed, Z.R., Titlow, J. and **Cooper, R.L. (2013)** Additive stimulatory effects of octopamine and serotonin on *Drosophila melanogaster* heart rate. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
381. Crosthwaite, T., Majeed, Z.R., and **Cooper, R.L. (2013)** The modulatory mechanism of action of serotonin in *Drosophila* larval heart. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
382. Cornwell, K., Majeed, Z.R., and **Cooper, R.L. (2013)** The effect of evolutionarily conserved neuromodulator, serotonin, on behavior in *Drosophila melanogaster*. Annual meeting of the Tennessee Academy of Sciences. Nov. 15, 2013 at Motlow State Community College in Tullahoma, TN. 3rd place in poster presentation.
383. Abdeljaber, E., Majeed, Z.R., and **Cooper, R.L. (2013)** Role of 5-HT2B in *Drosophila* development and behavior. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY. 1st place Poster award-undergrad.
384. Stacy, A., Majeed, Z.R., and **Cooper, R.L. (2013)** Serotonin and heart: How serotonin modulates the heart rate in *Drosophila* larvae. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
385. Bankemper, A., Majeed, Z.R., and **Cooper, R.L. (2013)** Studying the role of serotonin in neural circuit modulation and behavior in *Drosophila melanogaster*. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY.
386. de Castro, C., Majeed, Z.R., Titlow, J. and **Cooper, R.L. (2013**). Analysis of various physiological

salines for heart rate, CNS function, and synaptic transmission at neuromuscular junctions in Drosophila melanogaster larvae. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY. 2nd place Poster award-undergrad.

387. Titlow, J. and **Cooper, R.L. (2013**). Photo-activation of flight and jump motor neurons in adult flies: A teaching lab to investigate synaptic transmission and action potential waveforms. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY. 2nd place oral award Sci. Ed - grad student.
388. Majeed, Z.R., Cornwell, K., Bankemper A., Abdeljaber, E. and **Cooper, R.L.** (**2013**).The effect of serotonergic system dysfunction on neural circuitry and behavior in *Drosophila melanogaster*. Annual meeting of the Kentucky Academy of Sciences. Nov. 8-9, 2013 at Morehead Univ. KY. 2nd place oral award-grad student.
389. **Cooper, R.L.,** Majeed, Z.R., Santin, J.M. and Hartzler, L.K. (**2014**) Alteration in synaptic transmission by CO_2: Glutamate insensitivity. Society for Integrative and Comparative Biology. Annual meeting. January 3-7, 2014, Austin, Texas.
390. Wycoff, S. and **Cooper, R.L. (2014)** The behavioral and physiological effects of nicotine on crayfish. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
391. Thenappan, A., Burns, E., Vaughn, M., Bigdeliazari, S., Dupont-Versteegden, E.E. and **Cooper, R.L. (2014)** The effects of muscle injury on synaptic transmission, axon conduction and muscle in relation to K^+ in deep tissue injury. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
392. Malloy, C., Wang, C., Hill, J., Wu, W.-H and **Cooper, R.L. (2014)** The pharmacological profile and actions of cholinergic system in larval Drosophila: Behavior, development, CNS activity, and heart. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
393. Majeed, Z.R., Santin, J., Hartzler, L. and **Cooper, R.L.** (**2014**) How CO_2 suppresses synaptic transmission: Changing in glutamate sensitivity. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
394. Dabbain, N., Graff, J., Majeed, Z.R. and Cooper, R.L (2014) The effects of GABA on sensory-motor circuit activity, behavior and development in *Drosophila.* Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
395. Abdeljaber, E., Majeed, Z.R., and **Cooper, R.L. (2014)** Modulatory role of serotonergic system in locomotion neural circuitry and behavior in *Drosophila melanogaster*. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
396. Titlow, J.S., Biecker, S. and **Cooper, R.L.** (**2014**) Firing-rate plasticity in sensory-evoked motor output. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
397. Bankemper, A., Majeed, Z.R. and Cooper**, R.L. (2014)** Studying the role of serotonin in neural circuit modulation and behavior in Drosophila melanogaster. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
398. Potts, D., Titlow, J.S. and **Cooper, R.L. (2014**) *Drosophila* dopamine receptor mutants exhibit locomotion abnormalities in response to light-touch stimuli. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
399. Biecker, S., Titlow, J.S. and Cooper, R.L (2014) A Novel System to Investigate Sensory Habituation. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 27.
400. Bankemper, A., Majeed, Z.R. and Cooper**, R.L. (2014)** Studying the role of serotonin in neural

circuit modulation and behavior in Drosophila melanogaster. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.

401. Rayens, E., Holsopple, E., Titlow, J.and **Cooper, R.L.. (2014)** Differences in Drosophila dopamine receptor expression drive metabolic regulation of a gustatory circuit. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
402. Rice, J. Majeed, Z.R., Titlow, J. and **Cooper, R.L. (2014)** Development of the Jordan HAT assay to study mechanosensation: Selective modulation of a neural circuit in larval *Drosophila melanogaster*. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
403. Bigdeliazari, S., Thenappan, A., Burns, E., Vaughn, M. Dupont-Versteegden, E.E. and **Cooper, R.L. (2014)** The effects of K^+ on skeletal muscle and synaptic transmission in relation to deep tissue injury of muscle. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
404. Abdeljaber, E., Majeed, Z.R., and **Cooper, R.L. (2014)** Role of 5-HT2B in *Drosophila* development and behavior. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
405. Potts, D., Titlow, J.S. and **Cooper, R.L. (2014)** The Role of Dopamine Homeostasis on Dopaminergic Neuron Morphology, Function, and Fate in *Drosophila*. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
406. Dabbain, N., Graff, J., Majeed, Z.R. and **Cooper, R.L. (2014)** The effects of GABA on development, behavior and survival in *Drosophila*. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
407. Biecker, S., Holsopple, E., Titlow, J., **Cooper, R.L. (2014)**. Transmitters and second messengers involved in *Drosophila melanogaster* habituation to tactile stimuli. NCUR-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
408. Vaughn, M., King, K., Majeed, Z.R., Titlow, J.S. de Castro, C., and **Cooper, R.L. (2014).** The effects of combined modulators on *Drosophila melanogaster* heart physiology: dopamine, octopamine and serotonin. **NCUR**-National Council on Undergraduate Research. April 5-7. Univ of KY, Lexington, KY.
409. Dabbain, N., Graff, J., Majeed, Z.R. and **Cooper, R.L. (2014)**. Inhibitory neurotransmitter GABA: its role in locomotive neural circuit activity and behavior in Drosophila melanogaster. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
410. Bankemper, A., Majeed, Z.R. and **Cooper, R.L. (2014)**. The role of various serotonin receptor subtypes in modulation of neural circuitry and behavior in Drosophila melanogaster. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
411. Potts, D., Titlow, J.S. and **Cooper, R.L. (2014)**. *Drosophila* dopamine receptor mutants exhibit locomotion abnormalities in response to light-touch stimuli. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
412. Abdeljaber, E., Majeed, Z.R. and **Cooper, R.L. (2014)**. Serotonin modulates locomotion neural circuitry and behavior in *Drosophila melanogaster*. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
413. Biecker, S., Titlow, J.S., Rice, J., Majeed, Z.R., Holsopple, E. and **Cooper, R.L. (2014)**. A novel system to investigate sensory habituation. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
414. Potter, S., Crowley, P.H., Krall, R.M., Mayo, S., Johnson, D., Zeidler-Watters, K., Cooper, R.M.

and **Cooper, R.L. (2014)**. Educational material which integrates math and biology for middle school, high school, and introductory college sciences classes: Life survival and physiology of *Drosophila*. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.

415. Schultz, M.P., Krall, R.M., Dupont-Versteegden, E.E, Mayo, S., Johnson, D., Zeidler-Watters, K. and **Cooper, R.L. (2014).** Educational modules of skeletal muscle anatomy and function for middle and high school students with models and active data gathering. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
416. Thenappan, A., Burns, E., Vaughn, M., Bigdeliazari, S., Dupont-Versteegden, E.E and **Cooper, R.L. (2014)**. The effects of K^+ on synaptic transmission, axon conduction and muscle in relation to deep tissue injury of muscle. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
417. Titlow, J.S., Biecker, S. and **Cooper, R.L. (2014)**. Firing-rate plasticity in sensory-evoked motor output. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
418. Majeed, Z.R., Santin, J., Hartzler, L. and **Cooper, R.L. (2014)**. Synaptic transmission suppression by carbon dioxide: Glutamate receptor sensitivity. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
419. Malloy, C., Wang, C., Hill, J., Wu, W.-H and **Cooper, R.L. (2014)**. The pharmacological profile and actions of cholinergic system in larval *Drosophila*: Behavior, development, CNS activity, and heart. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014.
420. DeCastro, C., Titlow, J., Majeed, Z.R., Vaughn, M., and **Cooper, R.L. (2014)**. Maintaining the Drosophila larval heart for physiological measures: Modulators and cocktails. 2nd Annual meeting of the Ky chapter of the American Physiological Society, Univ. of Louisville, Ky. March 31, 2014. 1st place Poster award - $100.
421. Schultz, M.P., Krall, R.M., Dupont-Versteegden, E.E, Zeidler-Watters, K. and **Cooper, R.L. (2014).** Educational modules of skeletal muscle anatomy and function for middle and high school students with models and active data gathering. Center for Muscle Biology Research Day. October 30, 2014 Lexington, KY
422. Zhu, Y., Confides, A., **Cooper, R.L.** and Dupont-Versteegden, E., (**2014**) Attenuated RBM3 induction by cold shock in myotubes compared to myoblasts. Center for Muscle Biology Research Day. October 30, 2014 Lexington, KY
423. Malloy, C. Hill, J., Wu, W.-H. and **Cooper, R.L.** (**2014**). The pharmacological profile and actions of cholinergic system in larval Drosophila: Behavior, development, CNS activity, and heart. Annual meeting of Society for Neuroscience.Washington, D.C, USA.
424. **Cooper, R.L.,** Majeed, Z.R.,Malloy, C., Blümich, S.L.E. and Putnam, R.W. (**2014**). Synaptic transmission: Effects of intracellular and intravacuolar pH. Annual meeting of Society for Neuroscience. Washington, D.C, USA.
425. Potts, D., Titlow, J.S., Rice, J. and **Cooper, R.L.** (**2014**). Specific mechanosensory defects caused by manipulating dopamine pathways in *Drosophila melanogaster* larvae. Annual meeting of Society for Neuroscience. Washington, D.C, USA.
426. **Cooper, R.L.,** Majeed, Z.R., Malloy, C., Potts, D., Zeidler-Watters, K., Krall, R.M., Johnson, D., Mayo, S., Zwanzig, G., Anderson, H., Colgan III, W., Chung, W.-Y., Megighian, A. and Dupont-Versteegden, E.E. (**2014**). Citizen science with high school students and adults from around the world participating in analysis of synaptic transmission. Annual meeting of Society for Neuroscience. Washington, D.C, USA.

427. Ritter, K., Majeed, Z.R., Robinson, J., Blümich, S.L.E., Brailoiu, E. and **Cooper, R.L. (2014).** Acute actions of fluoxetine (Prozac) on neuronal and cardiac function. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
428. Malloy, C. Hill, J., Ritter, K., Robinson, J., Wu, W.-H. and **Cooper, R.L. (2014).** The pharmacological profile and actions of cholinergic system in larval Drosophila: Behavior, development, CNS activity, and heart. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
429. Schultz, M.P., Krall, R.M., Dupont-Versteegden, E.E, Mayo, S., Johnson, D., Zeidler-Watters, K. and **Cooper, R.L. (2014).** Educational modules of skeletal muscle anatomy and function for middle and high school students with models and active data gathering. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
430. Potter, S., Krall, R.M., Mayo, S., Johnson, D., Zeidler-Watters, K. and **Cooper, R.L. (2014).** Educational material which integrates math and biology for middle school, high school, and introductory college sciences classes: Life survival and physiology of *Drosophila*. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
431. Potts, D., Titlow, J.S., Rice, J. and **Cooper, R.L.** (**2014**). Specific mechanosensory defects caused by manipulating dopamine pathways in *Drosophila melanogaster* larvae. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
432. Uradu, H., Malloy, C. Hill, J., Ritter, K., Robinson, J., Wu, W.-H. and **Cooper, R.L. (2014)**. The pharmacological profile of the cholinergic system on larval Drosophila heart. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
433. Zhu, Y., Confides, A. **Cooper, R.L.** and Dupont-Versteegden, E. (**2014**) Attenuated RBM3 induction by cold shock in myotubes. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
434. Dabbain, N., Schwarcz, E., Graff, J., Majeed, Z.R. and **Cooper, R.L. (2014)** How the inhibitory modulator GABA alters development, behavior and survival and heart function in *Drosophila*. Annual meeting of the Kentucky Academy of Sciences. Nov. 14-16, 2014 at Lexington, KY.
435. **Cooper, R.L.,** Majeed, Z.R., Malloy, C., Blümich, S.L.E., Chung, W.-Y., and Putnam, R.W. (**2015**). Effects of intracellular pH on synaptic transmission: Differences in evoked and spontaneous release. Poster. Society for Integrative and Comparative Biology. Annual Meeting. January 3-7, 2015 West Palm Beach, FL.
436. **Cooper, R.L.,** deCastro, C., Titlow, J., Majeed, Z.R., Malloy, C., Vaughn, M., and King, K. (**2015**). Maintaining the *Drosophila* larval heart in situ: Modulators and stretch activated channels. Oral. Society for Integrative and Comparative Biology. Annual Meeting. January 3-7, 2015 West Palm Beach, FL.
437. **Cooper, R.L.,** Majeed, Z.R., Malloy, C., Zeidler-Watters, K., Krall, R.M., Johnson, D., Mayo, S., Colgan III, W., Chung, W.-Y., Megighian, A. and Dupont-Versteegden, E.E. (**2015**). Citizen science with high school students and adults from around the world participating in analysis of synaptic transmission. Oral. Society for Integrative and Comparative Biology. Annual Meeting. January 3-7, 2015 West Palm Beach, FL.
438. Blümich, S.L.E., Ritter, K., Majeed, Z.R., Robinson, J., Brailoiu, E. and **Cooper, R.L. (2015).** Acute actions of fluoxetine (Prozac) on behavior and neuronal activity. 11th Göttingen Meeting of the German Neuroscience Society 2015. March 18 - 21, 2015 Göttingen, **Germany.**
439. Middleton, D., Krall, R.M., Zeidler-Watters, K., Johnson, D., Mayo, S., **Cooper, R.L.** (**2015**). The healthy flea model: Public health education with 7-12 grades. 3rd Annual meeting of the KY chapter of the American Physiological Society, Sullivan University College of Pharmacy, Louisville, KY. March 23, 2015. * won 1st place in poster presentation

440. deCastro, C., Titlow, J., Majeed, Z.R., Vaughn, M., King, K. and **Cooper, R.L.** (**2015**) Maintaining the Drosophila larval heart in situ: Modulators and stretch activated channels. 3rd Annual meeting of the KY chapter of the American Physiological Society, Sullivan University College of Pharmacy, Louisville, KY. March 23, 2015. * won 1st place in oral presentation
441. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L.** (**2015**). Role of cAMP in synaptic vesicle recruitment to synapses at high and low output neuromuscular junctions. Annual meeting of the KY chapter of the American Physiological Society, Sullivan University College of Pharmacy, Louisville, KY. March 23, 2015.
442. Thenappan, A., Burns, E., Vaughn, M., Dupont-Versteegden, E.E. and **Cooper, R.L.** (**2015**) An undergraduate education module based on a research question: The effects of muscle injury on synaptic transmission, axon conduction and muscle physiology in relation to deep tissue injury. Annual meeting of the KY chapter of the American Physiological Society, Sullivan University College of Pharmacy, Louisville, KY. March 23, 2015.
443. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2015)** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila*. Annual meeting of the KY chapter of the American Physiological Society, Sullivan University College of Pharmacy, Louisville, KY. March 23, 2015.
444. Morgan, J.P., Greene, E., Pomerleau, F., Huettl, P., Gerhardt, G., and **Cooper, R.L. (2015).** Measures of serotonin and dopamine dynamics within intact animals using *in vivo* electrochemistry. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
445. Thenappan, A., Burns, E., Vaughn, M., Dupont-Versteegden, E.E. and **Cooper, R.L. (2015).** An undergraduate education module based on a research question: The effects of muscle injury on synaptic transmission, axon conduction and muscle physiology in relation to deep tissue injury. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
446. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L. (2015).** Role of cAMP in synaptic vesicle recruitment to synapses at high and low output neuromuscular junctions. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
447. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2015).** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila* . Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
448. Sanden, M., Krall, R.M., Cooper, A.S., **Cooper, R.L.** (**2015**) Stereology in a biological context with the integration of mathematics, design and modeling. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
449. English, C., Hill, J., Malloy, C., and **Cooper, R.L. (2015).** Cholinergic system in regulation of behaviors in *Drosophila* larvae. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25. * won a $100 as Undergraduate poster presenter
450. Wycoff, S.H., Nadolski, J., and **Cooper, R.L. (2015).** Modulation of habituation in autonomic control of heart rate and tail flips in crayfish. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
451. Malloy, C., English, C., and **Cooper, R.L. (2015).** The role of acetylcholine in neural circuit modulation, behavior and development in Drosophila melanogaster. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
452. Zhu, Y.C. de Castro, L., **Cooper, R.L. (2015).** Neuromuscular physiology in chronic and acute cold exposed crayfish. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. March, 25.
453. Uradu, H. and **Cooper, R.L. (2015)** Acute & chronic effects of cold on Drosophila larval heart

rates. NCUR conference. April 16 to April 18, 2015 in Cheney, WA. (Accepted…)

454. Potter, R., Potter, S., Wu, W.-H., and **Cooper, R.L. (2015)** Role of cAMP in synaptic vesicle recruitment to synapses at high and low output neuromuscular junctions. NCUR conference. April 16 to April 18, 2015 in Cheney, WA. (Abstract accepted but withdrew due to lack of funds to go to meeting).
455. Potter, S., Krall, R.M., Mayo, S., Johnson, D., Zeidler-Watters, K. and **Cooper, R.L. (2015).** Population dynamics based on resource availability and founding effects: live and computational models. NCUR conference. April 16 to April 18, 2015 in Cheney, WA.
456. Schultz, M.P., Krall, R.M., Dupont-Versteegden, E.E, Mayo, S., Johnson, D., Zeidler-Watters, K. and **Cooper, R.L. (2015).** Educational modules of skeletal muscle anatomy and function for middle and high school students with models and active data gathering. NCUR conference. April 16 to April 18, 2015 in Cheney, WA.
457. English, C., Malloy, C., and **Cooper, R.L. (2015).** Role determination of cholinergic receptors on development of Drosophila melanogaster. NCUR conference. April 16 to April 18, 2015 in Cheney, WA. (Abstract accepted but withdrew due to lack of funds to go to meeting).
458. Schultz, M.P., Blümich, S.L.E., Majeed, Z.R., Malloy, C., Putnam, R.W. and **Cooper, R.L**. (**2015**) Synaptic transmission: Effects of intracellular and intravacuolar pH. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
459. Wycoff, S.H., Nadolski, J., and **Cooper, R.L. (2015)**. Modulation of habituation in autonomic control of heart rate and tail flips in crayfish. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
460. deCastro, C., Titlow, J., Majeed, Z.R., Vaughn, M., King, K. and **Cooper, R.L. (2015)**. Maintaining the Drosophila larval heart in situ: Modulators and stretch activated channels. . Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
461. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L.** (**2015**). Role of cAMP in synaptic vesicle recruitment to synapses at high and low output neuromuscular junctions. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
462. Thenappan, A., Burns, E., Vaughn, M., Dupont-Versteegden, E.E. and **Cooper, R.L. (2015).** An undergraduate education module based on a research question: The effects of muscle injury on synaptic transmission, axon conduction and muscle physiology in relation to deep tissue injury. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
463. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2015).** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila* . Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
464. Sanden, M., Krall, R.M., Cooper, A.S., **Cooper, R.L.** (**2015**) Stereology in a biological context with the integration of mathematics, design and modeling. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
465. English, C., Hill, J., Malloy, C., and **Cooper, R.L. (2015).** Cholinergic system in regulation of behaviors in *Drosophila* larvae. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
466. Morgan, J.P., Greene, E., Pomerleau, F., Huettl, P., Gerhardt, G., and **Cooper, R.L. (2015).** Measures of serotonin and dopamine dynamics within intact animals using *in vivo* electrochemistry. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
467. Middleton, D., Krall, R.M., Zeidler-Watters, K., Johnson, D., Mayo, S., **Cooper, R.L.** (**2015**). The healthy flea model: Public health education with 7-12 grades. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.

468. Uradu, H. and **Cooper, R.L. (2015)** Acute & chronic effects of cold on Drosophila larval heart rates. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
469. Harris, H.L. and **Cooper, R.L. (2015)** The effects of diet on development, behavior neural-muscular function. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 29, 2015.
470. deCastro, C., Titlow, J., Majeed, Z.R., Malloy, C. Zhu, Y.-C., Vaughn, M., King, K. and **Cooper, R.L.** (**2015**). Maintaining the *Drosophila* larval heart in situ: Modulators and stretch activated channels. The 9th International Congress of Comparative Physiology and Biochemistry. August 23-28, **Kraków, Poland.**
471. Piedade, W.P., Koch, F. Majeed, Z., Brailoiu, E., Blümich, S.L.E., Putman, R., and **Cooper, R.L. (2015)**. Sensitivity of presynaptic pH on synaptic transmission: Differences in evoked and spontaneous release. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015
472. Thenappan, A., Burns, E., Vaughn, M., Dupont-Versteegden, E.E. and **Cooper, R.L. (2015).** An undergraduate education module based on a research question: The effects of muscle injury on synaptic transmission, axon conduction and muscle physiology in relation to deep tissue injury. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015
473. **Cooper, R.L.,** Sanden, M., Cooper, A.S, and Krall, R.M. (**2015**) Stereology in a biological context with the integration of mathematics, design and modeling: Synaptic structures and organelles to tissue tumors. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015
474. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2015).** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila*. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015
475. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L.** (**2015**).The role of cAMP in presynaptic synaptic vesicle recruitment at high and low output neuromuscular junctions. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015
476. English, C., Malloy, C., Hill, J., Wu, W.-H., **Cooper, R.L. (2015**) Cholinergic system regulation of behavior in drosophila melanogaster larvae. Annual meeting of Society for Neuroscience. Chicago, IL., USA Oct 17-21, 2015
477. Malloy, C., English, C., **Cooper, R.L. (2015).** The role of acetylcholine in neural circuit modulation, behavior and development in *Drosophila* melanogaster. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015
478. Zhu, Y.C. de Castro, L., **Cooper, R.L. (2015).** Neuromuscular physiology in chronic and acute cold exposed crayfish. Annual meeting of Society for Neuroscience. Chicago, IL., USA Oct 17-21, 2015
479. DMahmood, D., Dabbain, N., Graff, J., Majeed, Z.R., Zhu, Y.-C. and **Cooper, R.L. (2015).** How the inhibitory modulator GABA alters development, behavior and neuronal circuit function in *Drosophila*. Annual meeting of Society for Neuroscience. Chicago, IL., USA. Oct 17-21, 2015.
480. Behrendt, S., Poeppelman, S., Krall, R., Johnson, D., Zeidler-Watters, K., and **Cooper, R.L. (2015)**. Session Title: High school educational health module with in class and distance learning: Guided inquiry in modeling cardiovascular health risks. Kentucky Science Teachers Association. Nov. 5, 6 & 7, 2015 Lexington Civic Center. (Oral)
481. Goff, P., Whitaker, F., Poeppelman, S., Anderson, H., Krall, R., Capilouto, G.J. and **Cooper, R.L. (2015)**. Session Title: Middle and High school distance science learning with college student mentors: On line blogging and video communication. Kentucky Science Teachers Association. Nov. 5, 6 & 7, 2015 Lexington Civic Center. (Oral).
482. Sifers, J., D.Mahmood, D., Dabbain, N., Graff, J., Majeed, Z.R. and **Cooper, R.L. (2015).**

GABA's action modulating development, behavior and survival as well as heart function in *Drosophila.* Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.

483. Yocom, E., Sifers, J., Uradu, H., Zhu, Y.-C. and **Cooper, R.L. (2015).** The effect of cold exposure & influence of modulators on the larval Drosophila heart. Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.
484. deCastro, C., Titlow, J., Majeed, Z.R., Malloy, C. Zhu, Y.-C., Vaughn, M., King, K. and **Cooper, R.L.** (**2015**). Maintaining the *Drosophila* larval heart in situ: Modulators and stretch activated channels. Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.
485. Zhu, Y.C. de Castro, L., **Cooper, R.L. (2015).** Neuromuscular physiology in chronic and acute cold
exposed crayfish. Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.
486. Piedade, W.P., Koch, F. Majeed, Z., Brailoiu, E., Blümich, S.L.E., Putman, R., and **Cooper, R.L**. (**2015**). Sensitivity of presynaptic pH on synaptic transmission: Differences in evoked and spontaneous release. Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.
487. **Cooper, R.L.,** Behrendt, S., Poeppelman, S., Goff, P., Capilouto, G.J., Anderson, H., Whitaker, F., Krall, R., Johnson, D., and Zeidler-Watters, K. (**2015**). Middle and High school distance science learning with college student and faculty mentors: On line blogging and video communication. Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.
488. Malloy, C., English, C., **Cooper, R.L. (2015).** The role of acetylcholine in neural circuit modulation, behavior and development in *Drosophila* melanogaster. Annual meeting of the Kentucky Academy of Sciences. Nov. 13-14, 2015 at Northern Kentucky University.
489. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L.** (**2016**). The role of cAMP in presynaptic synaptic vesicle recruitment at high and low output neuromuscular junctions. National Conference on Undergraduate Research.University of North Carolina Asheville. April 7-9, 2016
490. Uradu, H., Zhu,Y.-C., Yocom, E., Sifers, J., and **Cooper, R.L.** (**2016**) Modulatory effects on Drosophila larva hearts: Room temperature, acute and chronic cold stress. National Conference on Undergraduate Research. University of North Carolina Asheville. April 7-9, 2016
491. Somasundaram, E., Malloy, C., English, C., Omar, A., **Cooper, R.L.** (**2016**) Modulatory action of acetylcholine in somatosensory processing in *Drosophila melanogaster*: behavior, development, and sensory-motor circuit physiology. National Conference on Undergraduate Research. University of North Carolina Asheville. April 7-9, 2016
492. Omar, A., Malloy, C., English, C., Somasundaram, E., **Cooper, R.L.** (**2016**) Pharmacological identification of cholinergic receptor subtypes in modulation of a *Drosophila melanogaster* sensory-motor circuit. National Conference on Undergraduate Research. University of North Carolina Asheville. April 7-9, 2016
493. Spence, A. Goff, P. Poeppelman, S., McNall Krall, R., Capilouto, G.J., **Cooper, R.L**. (**2016**) Middle and High school distance learning with college student mentors: On line blogging and video communication. National Conference on Undergraduate Research. University of North Carolina Asheville. April 7-9, 2016
494. Koch, F., Majeed, Z.R., Morgan, J., and **Cooper, R.L.** (**2016**) Manipulation of various neural circuits and the effect on locomotion behavior in Drosophila using optogenetics. Leipzig Veterinary Congress, Leipzig, Germany. January 14 to 16, 2016

495. Martha, S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu, H.S., Spence, A.E., Simpson, L. C., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Hickey, T.N., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) The effect of CO2, intracellular and extracellular pH on mechanosensory proprioceptor responses in crayfish and crab. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY (all the students in the neurophysiology class Bio446/Bio650). * All equal authors.
496. Hickey, T.N., Thenappan, A., Martha S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu H.S., Spence, A.E., Simpson, L. C., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) An undergraduate education module based on a research question: The effects of neighboring muscle injury on proprioception responses in crayfish and crab. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY (all the students in the neurophysiology class Bio446/Bio650). * All equal authors.
497. Simpson, L. C., Martha S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu, H.S., Spence, A.E., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Hickey, T.N., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) Examining the pharmacology of stretch activated ion channels on mechanosensory proprioceptor responses in crayfish, crab and Drosophila. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY (all the students in the neurophysiology class Bio446/Bio650). * All equal authors.
498. Spence, A., Pallotti, A., Gosser, S., Allen, K., Hall, K., Perrotti, Z., Fritz, M., Rama, S., Ho, A., Malloy, C., Goff, P., Poeppelman, S., McNall Krall, R., Capilouto, G.J., and **Cooper, R.L.** (**2016**) Middle and High school distance learning with college student mentors: On line blogging and video communication. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
499. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L.** (**2016**). The role of cAMP in presynaptic synaptic vesicle recruitment at high and low output neuromuscular junctions. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
500. Somasundaram, E., Malloy, C.A., Omar, A., **Cooper, R.L.** (**2016**) Modulatory action of acetylcholine in mechanosensory processing in Drosophila melanogaster: behavior, development, and sensory-motor circuit physiology. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
501. Malloy, C.A., Omar, A., Somasundaram, E., **Cooper, R.L.** (**2016**) Pharmacological identification of cholinergic receptor subtypes in modulation of a Drosophila melanogaster sensory-motor circuit. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
502. Piedade, W.P., Koch, F. Majeed, Z., Brailoiu, E., Blümich, S.L.E., Putman, R., and **Cooper, R.L**. (**2016**). Sensitivity of presynaptic pH on synaptic transmission: Differences in evoked and spontaneous release. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
503. Uradu, H., Zhu,Y.-C., Yocom, E., Sifers, J., and **Cooper, R.L.** (**2016**) Modulatory effects on Drosophila larva hearts in room temperature, acute and chronic cold stress. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
504. Zhu,Y.-C., Yocom, E., Sifers, J., Uradu, H. and **Cooper, R.L.** (**2016**) Optogenetic stimulation of

heart rate at different temperatures and Ca^{2+} concentrations. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.

505. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2016).** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila*. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
506. deCastro, C., Titlow, J., Majeed, Z.R., Malloy, C. Zhu, Y.-C., Vaughn, M., King, K. and **Cooper, R.L.** (**2016**). Maintaining the *Drosophila* larval heart in situ: Modulators and stretch activated channels. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
507. Demers, B., Koch, F., Majeed, Z.R., Morgan, J., Anderson, H., **Cooper, R.L. (2016).** Manipulation of various neural circuits and the effect on behavior in Drosophila using optogenetics: NGSS-Neurons, genetics, and selective stimulations. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
508. Greene, E., Demers, B., Majeed, Z.R., Morgan, J., and **Cooper, R.L. (2016)** Manipulation of the serotonin neural circuit and the effect on locomotion behavior and physiology in Drosophila using optogenetics. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
509. Hall, K., D.Mahmood, D., Dabbain, N., Graff, J., Majeed, Z.R., and Cooper, R.L. (2016) Optogenetic and pharmacological alteration in the GABAergic system within Drosophila melanogaster affects development, feeding behavior and locomotion. Annual Meeting of the Kentucky Chapter of the American Physiological Society, March 24, 2016, Univ of KY., Lexington, KY.
510. Koch, F., Majeed, Z.R., Morgan, J., and **Cooper, R.L.** (**2016**) Manipulation of various neural circuits and the effect on locomotion behavior in Drosophila using optogenetics. 8th European Conference on Comparative Neurobiology (ECCN). April 7-9, 2016. Munich, Germany.
511. Martha, S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu, H.S., Spence, A.E., Simpson, L. C., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Hickey, T.N., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) The effect of CO2, intracellular and extracellular pH on mechanosensory proprioceptor responses in crayfish and crab. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21. (all the students in the neurophysiology class Bio446/Bio650). * All equal authors.
512. Hickey, T.N., Thenappan, A., Martha S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu H.S., Spence, A.E., Simpson, L. C., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) An undergraduate education module based on a research question: The effects of neighboring muscle injury on proprioception responses in crayfish and crab. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21. (all the students in the neurophysiology class Bio446/Bio650). * All equal authors.
513. Simpson, L. C., Martha S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu, H.S., Spence, A.E., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Hickey, T.N., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) Examining the pharmacology of stretch activated ion channels on mechanosensory proprioceptor responses in crayfish, crab and Drosophila. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21. (all the students in the neurophysiology class Bio446/Bio650). * All equal authors.

514. Somasundaram, E., Malloy, C.A., Omar, A., **Cooper, R.L.** (**2016**) Modulatory action of acetylcholine in mechanosensory processing in Drosophila melanogaster: behavior, development, and sensory-motor circuit physiology. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21.
515. Omar, A., Malloy, C.A., Somasundaram, E., **Cooper, R.L.** (**2016**) Pharmacological identification of cholinergic receptor subtypes in modulation of a Drosophila melanogaster sensory-motor circuit. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21. Won an award and cash prize as undergrad student.
516. Demers, B., Koch, F., Majeed, Z.R., Morgan, J., Anderson, H., **Cooper, R.L.** (**2016**) Manipulation of various neural circuits and the effect on behavior in Drosophila using optogenetics: NGSS-Neurons, genetics, and selective stimulations. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21.
517. Greene, E., Demers, B., Majeed, Z.R., Morgan, J., and **Cooper, R.L. (2016)** Manipulation of the serotonin neural circuit and the effect on locomotion behavior and physiology in Drosophila using optogenetics. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21.
518. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2016).** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila*. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21.
519. D.Mahmood, D., Hall, K., Dabbain, N., Graff, J., Majeed, Z.R., and Cooper, R.L. (2016) Optogenetic and pharmacological alteration in the GABAergic system within Drosophila melanogaster affects development, feeding behavior and locomotion. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21.
520. Piedade, W.P., Koch, F. Majeed, Z., Brailoiu, E., Blümich, S.L.E., Putman, R., and **Cooper, R.L**. (**2016**) Sensitivity of presynaptic pH on synaptic transmission: Differences in evoked and spontaneous release. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21.Won an award and cash prize as Grad student.
521. **Cooper, R.L.,** Poeppelman, S., Behrendt, S., McNall Krall, R., Spence, A., Capilouto, G.J., Martha, S.R., Johnson, D., and Zeidler-Watters, K. (**2016**) High school educational health module with in class and distance learning: Guided inquiry in modeling cardiovascular health risks. 11th Annual CCTS Spring Conference. UK Center for Clinical and Translational Science (CCTS). Lexington, KY. April, 21.
522. Malloy, C.A., Somasundaram, E., Omar, A., **Cooper, R.L.** (**2016**) Cholinergic modulation of locomotion and feeding behaviors in Drosophila melanogaster larvae. Bluegrass Chapter of Society for Neuroscience annual meeting. Lexington, KY. April, 21. Won an award and cash prize as Grad student.
523. deCastro, C., Titlow, J., Majeed, Z.R., Malloy, C. Zhu, Y.-C., Vaughn, M., King, K. and **Cooper, R.L.** (**2015**). Maintaining the *Drosophila* larval heart in situ: Modulators and stretch activated channels. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
524. Spence, A., Pallotti, A., Gosser, S., Allen, K., Hall, K., Perrotti, Z., Fritz, M., Rama, S., Ho, A., Malloy, C., Goff, P., Poeppelman, S., McNall Krall, R., Capilouto, G.J., and **Cooper, R.L.** (**2016**) Middle and High school distance learning with college student mentors: On line blogging and video communication. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
525. Potter, S., Potter, R., Blümich, S.L.E. and **Cooper, R.L. (2016).** Acute and chronic effects of inhibiting mTOR by rapamycin on development, behavior and physiology in *Drosophila*.

Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.

526. Potter, R., Potter, S., Wu, W.-H, and **Cooper, R.L.** (**2016**). The role of cAMP in presynaptic synaptic vesicle recruitment at high and low output neuromuscular junctions. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
527. Somasundaram, E., Malloy, C.A., Omar, A., **Cooper, R.L.** (**2016**) Modulatory action of acetylcholine in mechanosensory processing in Drosophila melanogaster: behavior, development, and sensory-motor circuit physiology. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
528. Omar, A., Malloy, C.A., Somasundaram, E., **Cooper, R.L.** (**2016**) Pharmacological identification of cholinergic receptor subtypes in modulation of a Drosophila melanogaster sensory-motor circuit. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
529. English, C., Malloy, C., Hill, J., Wu, W.-H., **Cooper, R.L. (2016**) Cholinergic system regulation of behavior in drosophila melanogaster larvae. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
530. Hall, K., D.Mahmood, D., Dabbain, N., Graff, J., Majeed, Z.R., and **Cooper, R.L. (2016)** Optogenetic and pharmacological alteration in the GABAergic system within Drosophila melanogaster affects development, feeding behavior and locomotion. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
531. Mattingly, M.X., Martha, S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu, H.S., Spence, A.E., Simpson, L.C., Potter, S.J., Kington, P.D., King, M., Ho, A., Hickey, T.N., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) The effect of CO2, intracellular and extracellular pH on mechanosensory proprioceptor responses in crayfish and crab. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
532. Hickey, T.N., Thenappan, A., Martha S.R., Malloy C., DMahmood, D., Dabbain, N., Van Doorn, J., Uradu H.S., Spence, A.E., Simpson, L. C., Potter, S.J., Mattingly, M.X., Kington, P.D., King, M., Ho, A., Goleva, S.B., Chukwudolue, I.M., Alvarez, B.A., **Cooper, R.L.** (**2016**) An undergraduate education module based on a research question: The effects of neighboring muscle injury on proprioception responses in crayfish and crab. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
533. Van Doorn, J., Koch, F., Majeed, Z.R., and **Cooper, R.L.** (**2016**) Examining neuromuscular junctions in Drosophila by optogenetics. Undergraduate Showcase of Scholars, Univ of Kentucky, Lexington, Ky. April 27, 2016.
534. Malloy, C., Omar, A., Somasundaram, E., and **Cooper, R.L. (2016)** Pharmacological identification of cholinergic receptor subtypes in modulation of *Drosophila melanogaster* sensory-motor circuits. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
535. Somasundaram, E., Omar, A., Malloy, C., and **Cooper, R.L. (2016)** Activity-dependent modulation of somatosensory processing in *Drosophila melanogaster*: behavior, development, and sensory-motor circuit physiology. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville. 2nd place poster competition
536. **Cooper, R.L.,** Dayaram, V., Malloy, C., McNall Krall, R. (**2016**) Experiences with course-based undergraduate research experience (CURE) to address authentic research questions for a neurophysiology laboratory class. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
537. Dayaram, V., Malloy, C., **Cooper, R.L.** (**2016**) Stretch activated channels in proprioceptive organs of crab and crayfish are sensitive to gadolinium but not amiloride, ruthenium red or low pH. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of

Louisville.

538. Sifers, J., Malloy, C., Mikos, A., Samadi, A., Omar, A., and **Cooper, R.L. (2016)** Optogenetic expression and activation of rhodopsins in *glutamic acid decarboxylase (GAD)* containing skeletal and cardiac muscle. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
539. Byrd, LS, Ho, J., Ho, A., Rama, S., Veeraragavan, G., Wilson, J., Zeidler, K., Johnson, D., and **Cooper, R.L.(2016)** Attempting to improve the health of Kentucky citizens through educating the youth with integrating school work and health content. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville. 3rd place oral competition.
540. Hickey, T., Majeed, Z.R., Dupont-Versteegden, E.E., and **Cooper, R.L. (2016)** Course-based undergraduate research experience (CURE) with on line interactions for a neurobiology class in Iraq and in the USA: Alterations in synaptic transmission. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville. 3rd place oral competition.
541. Higgins, J., Hermanns, C. and **Cooper, R.L. (2016)** Homeostatic synaptic regulation at neuromuscular junctions: Altered activity selectivity in pre- and post-synaptic cells. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
542. Ho, J., Byrd, LS, Ho, A., Rama, S., Veeraragavan, G., and **Cooper, R.L.(2016)** The effects of extreme diets on development, survival and physiology using the fruit fly as a model. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
543. Hall, K., D.Mahmood, D., Dabbain, N., Graff, J., Majeed, Z.R., and **Cooper, R.L. (2016)** Optogenetic and pharmacological alteration in the GABAergic system within Drosophila melanogaster affects development, feeding behavior and locomotion. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
544. Mikos, A., Malloy, C., Sifers, J., Samadi, A., Omar, A., Hermanns, C., and **Cooper, R.L.** (**2016**) Using optogenetics to assess neural influence on heart rate in Drosophila melanogaster larvae. Annual meeting of the Kentucky Academy of Sciences. Nov. 4-5, 2016 at University of Louisville.
545. Malloy, C., Omar, A., Somasundaram, E., and **Cooper, R.L. (2016)** Pharmacological identification of cholinergic receptor subtypes in modulation of *Drosophila melanogaster* sensory-motor circuits. Society for Neuroscience Annual Meeting. International meeting. **San Diego, Calif.** Nov. 11-15, 2016.
546. de Castro, C., Titlow, J., Majeed, Z.R., Malloy, C., King, K., and **Cooper, R.L. (2017)** Mechanical and chemical factors required for maintaining cardiac rhythm in *Drosophila melanogaster* larva. American Physiological Society. Annual meeting, **Chicago, IL**. April 22-26.
547. Cooper, R.M, Byrd, LS., Ho, J., Wilson, J., McNall Krall, R., Capilouto, G.J., and **Cooper, R.L. (2017)** Attempting to improve the health of rural Kentucky citizens through educating the youth with integrating school work and health content via on line mentoring and interactions. American Physiological Society. Annual meeting, **Chicago, IL.** April 22-26.
548. **Cooper, R.L.,** Malloy, C., Majeed, Z.R., Titlow, J., D.Mahmood, D., Somasundaram, E., Omar, A., Hermanns, C., Higgins, J., Hall, K. **(2017)** Effects in altering activity of sensory systems, motor output, skeletal muscle and neurons containing ACH, dopamine, 5-HT and GABA in *Drosophila melanogaster*. American Physiological Society. Annual meeting, **Chicago, IL.** April 22-26.
549. Somasundaram, E., Omar, A., Malloy, C., and **Cooper, R.L. (2017)** Activity-dependent modulation of somatosensory processing in *Drosophila melanogaster*: behavior, development, and sensory-motor circuit physiology. National Conference on Undergraduate Research (NCUR). University of Memphis, Memphis, TN, April 6-8, 2017.
550. Omar, A., Malloy, C., Somasundaram, E., and **Cooper, R.L. (2017)** Pharmacological identification

of cholinergic receptor subtypes in modulation of Drosophila melanogaster sensory-motor circuits. National Conference on Undergraduate Research (NCUR). University of Memphis, Memphis, TN, April 6-8, 2017.

551. Davis, T., Nelson, J., LaRue, K. (mentors: Jennifer Wilson, Robin Cooper) (**2017**) The effects of diet on *Drosophila* larval development. Pulaski County High School, Project Lead the Way High School Science projects for Posters at the Capital, Frankfort, KY.
552. Sroufe, J., and Waddle, A., (mentors: Jennifer Wilson, Robin Cooper) (**2017**) Observing epigenetic effects in *Drosophila*. Pulaski County High School, Project Lead the Way High School Science projects for Posters at the Capital, Frankfort, KY.
553. Higgins, J., Hermanns, C. Malloy, C., and **Cooper, R.L. (2017)** Considerations in repetitive activation of light sensitive ion channels for long-term studies: Channel rhodopsin in the *Drosophila* model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
554. Kohlbrand, A., Kallik, C., Conrad, M., Hart, L., Helton, J., Hickey, L., Johnson, G., Knabel, M., McVay, N., Stoltz, D., Turba, B., Zhu,Y.-C., and **Cooper, R.L. (2017)** Examining the pharmacology of stretch activated ion channels on mechanosensory proprioceptor responses in crayfish and crab: Actions of capsaicin. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
555. Hall, K., D.Mahmood, D., Dabbain, N., Graff, J., Majeed, Z.R., and **Cooper, R.L. (2017)** Optogenetic and pharmacological alteration in the GABAergic system within Drosophila melanogaster affects development, feeding behavior and locomotion. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
556. Zhu,Y.-C., and **Cooper, R.L. (2017)** The effect of chronic and acute cold temperature on synaptic transmission at Crayfish neuromuscular junction. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
557. Byrd, LS, Ho, J., Wilson, J., Code, S., Capilouto, G.J., Armstrong, K., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Stevens, K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Cooper, R.M., Noble, T., Ott, S., Robertson, R., Sweatt, C., Dixon, J., Biragane, J., and **Cooper, R.L. (2017)** Attempting to improve the health of Kentucky citizens through educating the youth with integrating school work and health content. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
558. Ho, A., Ho, J., Byrd, LS., Armstrong, K., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Rama, S., Veeraragavan, G., Wilson, J., Code, S., and **Cooper, R.L. (2017)** The effects of extreme diets on development, survival and physiology using the fruit fly as an educational model to address human health issues. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
559. Cooper, R.M., Byrd, LS, Ho, J., Wilson, J., McNall Krall, R., Capilouto, G.J., Code, S., Armstrong, K., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Stevens, K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Noble, T., Ott, S., Robertson, R., Sweatt C., Dixon, J., Biragane, J., Spence, A., Rabin, S., Soni, J., Sriyanshi Suryadevara, C., English, M., Martha, S.R., and **Cooper, R.L. (2017)** Guided inquiry in modeling health risks with in class and distance learning. Annual Meeting of the Kentucky Chapter of the American

Physiological Society, Western Kentucky University, March 18, 2017.

560. Hickey, T., Majeed, Z.R., Ballingerboone, C., Cornelius, M., Donovan, T., Garrigus, H., Higgins, E., Labarre, M., Larson, A., Mcnabb, M., Monticello, K., Shumard, R., Stockwell, B., Boachie, P., Ho, A., Cooper, A., Slabach, B., Melody, M., and **Cooper, R.L. (2017).** Course-based undergraduate research experience (CURE) with online interactions for a neurobiology class in Iraq and in the USA: Alterations in synaptic transmission. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Western Kentucky University, March 18, 2017.
561. Bowers, L., Byrd, LS, Ho, J., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Stevens, K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Cooper, R.M., Noble, T., Ott, S., Robertson, R., Sweatt, C., Dixon, J., Biragane, J., Wilson, J., Code, S., Capilouto, G.J. and **Cooper, R.L. (2017)** Attempting to improve the health of Kentucky citizens through educating the youth with integrating school work and health content. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
562. Hickey, T., Majeed, Z.R., Ballinger Boone, C., Donovan, T., Higgins, E., Labarre, M., Larson, A., McNabb, M., Monticello, K., Shumard, R., Stockwell, B., Boachie, P., Ho, A., Cooper, A., Slabach, B., Melody, M., and **Cooper, R.L. (2017).** Course-based undergraduate research experience (CURE) with online interactions for a neurobiology class in Iraq and in the USA: Alterations in synaptic transmission. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
563. Ho, J., Ho, A., Byrd, LS., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Rama, S., Veeraragavan, G., Wilson, J., Code, S., and **Cooper, R.L. (2017)** The effects of extreme diets on development, survival and physiology using the fruit fly as an educational model to address human health issues. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
564. Cooper, R.M., Byrd, LS, Ho, J., Wilson, J., McNall Krall, R., Capilouto, G.J., Code, S., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Stevens, K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Noble, T., Ott, S., Robertson, R., Sweatt C., Dixon, J., Biragane, J., Spence, A., Rabin, S., Soni, J., Sriyanshi Suryadevara, C., English, M., Martha, S.R., and **Cooper, R.L. (2017)** Guided inquiry in modeling health risks with in class and distance learning. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
565. Higgins, E., Ballinger Boone, C., Donovan, T., Labarre, M., Larson, A., McNabb, M., Monticello, N., Shumard, R., Stockwell, B., Boachie, P., Ho, A., Cooper, A., Melody, M., Slabach, B., and **Cooper, R.L. (2017).** Optogenetically stimulating motor neurons and implications on synaptic transmission: addressing long term consequences. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
566. Shumard, R., Cooper, A., Melody, M., Hickey, T., Hermanns, C., Majeed, Z.R., Ballinger Boone, C., Donovan, T., Higgins, E., Labarre, M., Larson, A., McNabb, M., Monticello, K., Stockwell, B., Boachie, P., Ho, A., Slabach, B., and **Cooper, R.L. (2017).** The dependence on nerve evoked conditions in relation to the occurrence of spontaneous quantal events at *Drosophila* neuromuscular junctions. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
567. Ballinger Boone, C., Donovan, T., Boachie, P., Stockwell, B., Cooper, A., Shumard, R., Melody, M., Higgins, E., Monticello, K., Ho, A., LaBarre, M., McNabb, M., Slabach, B., and **Cooper, R.L. (2017).** Poked, prodded, and bothered: Dangers of poor diet. Undergraduate Showcase of

Scholars at the University of KY. April 26, 2017.

568. Rotkis, E., Johnson, K., Ho, J., Ho, A., Byrd, LS., Cole, C., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Saelinger, C., Stanback, M., Overly, B., Cooper, R.M., Stevens, K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Noble, T., Ott, S., Robertson, R., Sweatt, C., Dixon, J., Biragane, J. and **Cooper, R.L. (2017).** The effects of a high protein diet: Modeling the topic in fruit flies for educational (9-12 grades) experiences. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
569. Kallik, C., Kohlbrand, A., Conrad, M., Hart, L., Helton, J., Hickey, L., Johnson, G., Knabel, M., McVay, N., Stoltz, D., Turba, B., Zhu,Y.-C., and **Cooper, R.L. (2017)** Does Riluzole have anti-glutamatergic action at the Drosophila and crayfish neuromuscular junctions and does it block the production of action potentials? Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
570. Kohlbrand, A., Kallik, C., Conrad, M., Hart, L., Helton, J., Hickey, L., Johnson, G., Knabel, M., McVay, N., Stoltz, D., Turba, B., Zhu,Y.-C., and **Cooper, R.L. (2017)** Examining the pharmacology of stretch activated ion channels on mechanosensory proprioceptor responses in crayfish and crab: Actions of capsaicin. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
571. Hermanns, C., Higgins, J., Malloy, C., and **Cooper, R.L. (2017)** Considerations in repetitive activation of light sensitive ion channels for long-term studies: Channel rhodopsin in the *Drosophila* model. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
572. Omar, A., Malloy, C., Somasundaram, E., and **Cooper, R.L. (2017)** Pharmacological identification of cholinergic receptor subtypes in modulation of Drosophila melanogaster sensory-motor circuits. Undergraduate Showcase of Scholars at the University of KY. April 26, 2017.
573. Diane Johnson, Patty Works and **Robin L. Cooper (2017)** Description of the Healthy Flea Market. Connected Science Learning Session at the NSTA conference. Oral presentation. **National Science Teachers Association. March 30, 2017. LA, Calif.,** USA.
574. Kohlbrand, A., Kallik, C., Conrad, M., Hart, L., Helton, J., Hickey, L., Johnson, G., Knabel, M., McVay, N., Stoltz, D., Turba, B., Zhu,Y.-C., and **Cooper, R.L. (2017)** Actions of capsaicin in blocking stretch activated channels in a model invertebrate preparations. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
575. Kallik, C., Kohlbrand, A., Conrad, M., Hart, L., Helton, J., Hickey, L., Johnson, G., Knabel, M., McVay, N., Stoltz, D., Turba, B., Zhu,Y.-C., and **Cooper, R.L. (2017)** Does riluzole have anti-glutamatergic action at invertebrate neuromuscular junctions and does it block the production of action potentials? Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
576. Conrad, M., Kohlbrand, A., Kallik, C., Hart, L., Helton, J., Hickey, L., Johnson, G., Knabel, M., McVay, N., Stoltz, D., Turba, B., Zhu,Y.-C., and **Cooper, R.L. (2017)** Actions of piperine on stretch activated channels in model invertebrate preparations. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
577. Zhu,Y.-C., and **Cooper, R.L. (2017)** The effect of chronic and acute cold temperature on synaptic transmission at crayfish neuromuscular junction. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017
578. Hermanns, C., Higgins, J., Malloy, C., and **Cooper, R.L. (2017)** Considerations in repetitive activation of light sensitive ion channels for long-term studies: Channel rhodopsin in the *Drosophila* model. Annual Meeting of the Kentucky Chapter, Bluegrass Society for

Neuroscience, Lexington, KY April 21, 2017.

579. Hickey, T., Majeed, Z.R., Ballinger Boone, C., Donovan, T., Higgins, E., Labarre, M., Larson, A., McNabb, M., Monticello, K., Shumard, R., Stockwell, B., Boachie, P., Ho, A., Cooper, A., Slabach, B., Melody, M., and **Cooper, R.L. (2017).** Course-based undergraduate research experience (CURE) with online interactions for a neurobiology class in Iraq and in the USA: Alterations in synaptic transmission. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
580. Somasundaram, E., Omar, A., Malloy, C., and **Cooper, R.L. (2017)** Activity-dependent modulation of somatosensory processing in *Drosophila melanogaster*: behavior, development, and sensory-motor circuit physiology. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
581. Higgins, E., Ballinger Boone, C., Donovan, T., Labarre, M., Larson, A., McNabb, M., Monticello, N., Shumard, R., Stockwell, B., Boachie, P., Ho, A., Cooper, A., Melody, M., Slabach, B., and **Cooper, R.L. (2017).** Optogenetically stimulating motor neurons and implications on synaptic transmission: addressing long term consequences. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
582. Shumard, R., Cooper, A., Melody, M., Hickey, T., Hermanns, C., Majeed, Z.R., Ballinger Boone, C., Donovan, T., Higgins, E., Labarre, M., Larson, A., McNabb, M., Monticello, K., Stockwell, B., Boachie, P., Ho, A., Slabach, B., and **Cooper, R.L. (2017).** The dependence on nerve evoked conditions in relation to the occurrence of spontaneous quantal events at *Drosophila* neuromuscular junctions. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
583. Ballinger Boone, C., Donovan, T., Boachie, P., Stockwell, B., Cooper, A., Shumard, R., Melody, M., Higgins, E., Monticello, K., Ho, A., LaBarre, M., McNabb, M., Slabach, B., and **Cooper, R.L. (2017).** Poked, prodded, and bothered: Dangers of poor diet. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
584. Malloy, C.,Sifers, J., Mikos, A., Samadi, A., Omar, A. and **Cooper, R.L. (2017)** Optogenetic expression and activation of rhodopsins in glutamic acid decarboxylase (GAD) containing skeletal and cardiac muscle. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
585. Hall, K., D.Mahmood, D., Dabbain, N., Graff, J., Majeed, Z.R., and **Cooper, R.L. (2017)** Optogenetic and pharmacological alteration in the GABAergic system within Drosophila melanogaster affects development, feeding behavior and locomotion. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
586. Wycoff, S., Nadolski, J., and **Cooper, R.L. (2017)** Modulation of habituation in the heart rate response in crayfish. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
587. Johnson, K., Cole, C., Rotkis, E., Ho, J., Byrd, LS., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Saelinger, C., Stanback, M., Overly, B., and **Cooper, R.L. (2017)** The effects of a diet high in protein or amino acids on the nervous system: modeling in fruit flies for educational experiences (9-12 grade). Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
588. Maxwell, H., Cole, C., Johnson, K., Rotkis, E., Ho, J., Byrd, LS., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Saelinger, C., Stanback, M., Overly, B., and **Cooper, R.L. (2017)** The effects of a ketogenic diet observed through behavior: two neural circuits in the fruit fly model (educational 9-12 grades). Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.

589. Noble,T., Stevens, K., Bender, A., Terry, L., Bowers, L., Butcher, B., Vance, A., Klein, A., McGraw, E., Cooper, R.M., Ott, S., Robertson, R., Sweatt, C., Dixon, J., Biragane, J., Byrd, L., Ho, J., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B., Wilson, J., Capilouto, G.J., and **Cooper, R.L. (2017)** Maintaining a healthy nervous system through educating youth (high schoolers) by integrating school work and health content: on line mentoring. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 21, 2017.
590. **Cooper, R.L.,** Majeed, Z.R., Hickey, T., Ballinger Boone, C., Donovan, T., Higgins, E., Labarre, M., Larson, A., McNabb, M., Monticello, K., Shumard, R., Stockwell, B., Boachie, P., Ho, A., Melody, M., Cooper, A., and Slabach, B. **(2017).** Course-based undergraduate research experience (CURE) with online interactions for a neurobiology class in Iraq and in the USA: Alterations in synaptic transmission. Society for Neuroscience, **Washington, DC,** Nov. 11-15 2017.
591. Mattingly, M., Dayaram, V., Malloy, C., Zhu, Y.-C., McNall-Krall, R., and **Cooper, R.L. (2017)** Experiences with course-based undergraduate research experience (CURE) to address authentic research questions for a neurophysiology laboratory class. Society for Neuroscience, **Washington, DC.** Nov. 11-15 2017.
592. Mattingly, M., Hermanns, C., Higgins, J. Malloy, C., and **Cooper, R.L. (2017)** Considerations in repetitive activation of light sensitive ion channels for long-term studies: Channel rhodopsin in the *Drosophila* model. Society for Neuroscience, **Washington, DC.** Nov. 11-15 2017.
593. McCall, J., Mattingly, M., Hermanns, C., Ballinger Boone, C., Donovan, T., Slabach, B., Weineck, K., Medley, M., Dzubuk Pettersson, N., Somasundaram, E., Malloy, C., and **Cooper, R.L. (2017**). Retrograde signaling depends on electrical activity of target tissue. Society for Neuroscience, **Washington, DC**. Nov. 11-15 2017.
594. Donovan, T., Ballinger Boone, C., Slabach, B., Weineck, K., Medley, M., Dzubuk Pettersson, N., McCall, J., Somasundaram, E., Malloy, C., and **Cooper, R.L. (2017**). Examining temporary loss of sensory perception over development in altering long-term function and neural circuitry effects behavioral responses. Society for Neuroscience, **Washington, DC.** Nov. 11-15 2017.
595. Ballinger Boone, C., Donovan, T., Shumard, R., Cooper, A., Melody, M., Hickey, T., Majeed, Z.R., Cornelius, M., Garrigus, H., Higgins, E., LaBarre, M., Larson, A., McNabb, M., Monticello, Stockwell, B., Boachie, P., Ho, A., Slabach, B., Weineck, K., Medley, M., Dzubuk Pettersson, N., McCall, J., Somasundaram, E., Malloy, C., and **Cooper, R.L. (2017**). The dependence on nerve evoked conditions in relation to the occurrence of spontaneous quantal events at *Drosophila* neuromuscular junctions. Society for Neuroscience, **Washington, DC.** Nov. 11-15 2017.
596. Hermanns, C., Weineck, K., Mattingly, M., Costa, J., Higgins, J., and **Cooper, R.L. (2017)** Potential use and limitations with optogenetics for therapeutic applications. Neuroscience Clinical-Translational Research Symposium, University of KY, Lexington, KY., Sept. 29, 2017
597. Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Grau, E., Hall, K., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S., Weineck, K., and **Cooper, R.L. (2017)** Investigating potential mechanisms of clove oil (eugenol) in model systems. Neuroscience Clinical-Translational Research Symposium, University of KY, Lexington, KY., Sept. 29, 2017.
598. Medley, M., Dzubuk, N. Malloy, C., Somasundaram, E. and **Cooper, R.L. (2017).** Examining the role of muscarinic acetylcholine receptors in regulation of larval *Drosophila melanogaster* feeding and locomotion. Annual meeting of the Kentucky Academy of Sciences. November 3-4. Murray State University. Murray, KY.

599. Grau, E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S., Weineck, K., and **Cooper, R.L. (2017)** Investigating potential mechanisms of clove oil (eugenol) in model systems. Annual meeting of the Kentucky Academy of Sciences. November 3-4. Murray State University. Murray, KY.
600. Stanback, M.A., Stanback, A.E., Ballinger Boone, C., Donovan, T., Boachie, P., Stockwell, B., Cooper, A., Shumard, R., Melody, M., Higgins, E., Monticello, K., Ho, A., LaBarre, M., McNabb, M., Slabach, B., and **Cooper, R.L. (2017).** Dietary effects on behaviors for Drosophila: behaviors, survival and physiological responses. Annual meeting of the Kentucky Academy of Sciences. November 3-4. Murray State University. Murray, KY.
601. Stanback, A.E., Maxwell, H., Cole, C., Johnson, K., Rotkis, E., Ho, J., Byrd, LS., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Saelinger, C., Stanback, M.A., Overly, B., and **Cooper, R.L. (2017).** The effects of a ketogenic diet on behavior and synaptic transmission in a Drosophila model. Annual meeting of the Kentucky Academy of Sciences. November 3-4. Murray State University. Murray, KY.
602. Somasundaram, E., Omar, A., Malloy, C., and **Cooper, R.L. (2017)** Pharmacological identification of cholinergic receptor subtypes in modulation of Drosophila melanogaster sensory-motor circuits. Annual meeting of the Kentucky Academy of Sciences. November 3-4. Murray State University. Murray, KY.
603. Grau, E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S., Weineck, K., Conlin, S., Ray, A., Fleckenstein, L., Piana, E., and **Cooper, R.L. (2018).** Investigating potential mechanisms of clove oil (eugenol) in model crustaceans. AQUACULTURE AMERICA 2018. February 19 - 22, 2018 **- Las Vegas, Nevada.**
604. Sumanasekera, W., **Cooper, R.L.,** Winchester, L., Andrade, F., Tyagi, S., Joshua, I., (**2018**) Kentucky Chapter of The American Physiological Society's involvement in science outreach. Experimental Biology annual meeting. April 21–25, 2018 **- San Diego, CA.**
605. Mattingly, M., Hermanns, C., Higgins, J. Malloy, C., and **Cooper, R.L. (2018)** Considerations in repetitive activation of light sensitive ion channels for long-term studies: Channel rhodopsin in the *Drosophila* model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018.
606. Hawthorne, D., Grau, E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S., Weineck, K., Conlin, S., Ray, A., Fleckenstein, L., Piana, E., and **Cooper, R.L. (2018).** Investigating potential mechanisms of clove oil (eugenol) in model crustaceans. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018. (oral presentation, Best Oral presentation $100).
607. Grau, E., Stanback, A.E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S. and **Cooper, R.L. (2018).** Investigating the effects of homocysteine as an agonist on invertebrate glutamatergic synapses. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018.
608. Stanback, A.E., Maxwell, H., Cole, C., Johnson, K., Rotkis, E., Ho, J., Byrd, LS., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Saelinger, C., Stanback, M., Overly, B., and **Cooper, R.L. (2018)** The effects of a ketogenic diet on behavior and synaptic transmission in a Drosophila model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Uni

versity of Louisville, Shelbyville Campus, April 7, 2018.

609. Donovan, T., Ballinger-Boone, C., McNabb, M., and **Cooper, R.L. (2018)** Examining temporary loss of sensory perception over development in altering long-term function and neural circuitry effects behavioral responses. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018.
610. Paneitz, Z., Istas, O., Greenhalgh, A., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., McNabb, M., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on neural circuits in a Drosophila model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018.
611. Greenhalgh, A., Paneitz, Z., Istas, O., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on cardiac function in a Drosophila model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018.
612. Istas, O., Greenhalgh, A., Paneitz, Z., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., McNabb, M., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on sensory perception in a Drosophila model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018. (Best poster presentation $100).
613. McNabb, M., Istas, O., Greenhalgh, A., Paneitz, Z., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., Ballinger Boone, C., Byrd L., **Cooper, R.L. (2018**). The effects of a bacterial endotoxin on synaptic transmission at the neuromuscular junction: Drosophila and blowfly models. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Louisville, Shelbyville Campus, April 7, 2018.
614. Ballinger Boone, C., Donovan, T., Shumard, R., Cooper, A., Melody, M., Hickey, T., Majeed, Z.R., Cornelius, M., Garrigus, H., Higgins, E., LaBarre, M., Larson, A., McNabb, M., Monticello, Stockwell, B., Boachie, P., Ho, A., Slabach, B., Weineck, K., and **Cooper, R.L. (2018**). The dependence on nerve evoked conditions in relation to the occurrence of spontaneous quantal events at *Drosophila* neuromuscular junctions. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
615. Paneitz, Z., Istas, O., Greenhalgh, A., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., McNabb, M., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on neural circuits in a Drosophila model. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
616. Stanback, A.E., Grau, E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S. and **Cooper, R.L. (2018).** Investigating the effects of homocysteine as an agonist on invertebrate glutamatergic synapses. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
617. Suryadevara, C., Hawthorne, D., Grau, E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Ortiz-Guerrero, P., Patel, B., Samuels, K., Valdes, G., Wycoff, S., Weineck, K., Conlin, S., Ray, A., Fleckenstein, L., Piana, E., and **Cooper, R.L. (2018).** Investigating potential mechanisms of clove oil (eugenol) in model crustaceans. Annual Meeting

of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018. (Best poster presentation $100).

618. Istas, O., Greenhalgh, A., Paneitz, Z., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., McNabb, M., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on sensory perception in a Drosophila model. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
619. McNabb, M., Istas, O., Greenhalgh, A., Paneitz, Z., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., Ballinger Boone, C., Byrd L., **Cooper, R.L. (2018**). The effects of a bacterial endotoxin on synaptic transmission at the neuromuscular junction: Drosophila and blowfly models. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
620. Somasundaram, E., Omar, A., Malloy, C.A. and **Cooper, R.L. (2018)** Activity dependent formation of a somatosensory circuit in Drosophila melanogaster. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
621. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., **Cooper, R.L. (2018)** Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster***.** Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
622. Hermanns, C., Higgins, J., Malloy, C., and **Cooper, R.L. (2018)** Considerations in repetitive activation of light sensitive ion channels for long-term studies: Channel rhodopsin in the *Drosophila* model. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
623. Donovan, T., Ballinger-Boone, C., McNabb, M., and **Cooper, R.L. (2018)** Examining temporary loss of sensory perception over development in altering long-term function and neural circuitry effects behavioral responses. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018.
624. Wycoff, S., Nadolski, J., and **Cooper, R.L. (2018)** Modulation of habituation in the heart rate response in crayfish. Annual Meeting of the Kentucky Chapter, Bluegrass Society for Neuroscience, Lexington, KY April 13, 2018. (Best poster presentation $100).
625. Greenhalgh, A., Paneitz, Z., Istas, O., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on cardiac function in a Drosophila model. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
626. Hall, K., Grau, E., Stanback, A.E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Samuels, K., Suryadevara, C., Valdes, G., Wycoff, S. and **Cooper, R.L. (2018).** Investigating potential mechanisms of clove oil (eugenol) in model crustaceans. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
627. Stanback, A.E., Maxwell, H., Cole, C., Johnson, K., Rotkis, E., Ho, J., Byrd, LS., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Saelinger, C., Stanback, M., Overly, B., and **Cooper, R.L. (2018)** The effects of a ketogenic diet on behavior and synaptic transmission in a Drosophila model. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
628. Samuels, K., Stanback, A.E., Grau, E., Kinmon, C., Bradley, A., Cantrell, D., Eversole, S., Grachen, C., Hall, K., Hawthorne, D., Ortiz-Guerrero, P., Patel, B., Suryadevara, C., Valdes, G., Wycoff, S. and **Cooper, R.L. (2018).** Investigating the effects of homocysteine as an agonist on invertebrate glutamatergic synapses. Univ. of KY Undergraduate Research Showcase. April 25,

2018.

629. Istas, O., Greenhalgh, A., Paneitz, Z., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., McNabb, M., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on sensory perception in a Drosophila model. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
630. Paneitz, Z., Istas, O., Greenhalgh, A., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., McNabb, M., Byrd L., **Cooper, R.L. (2018)** The effects of a bacterial endotoxin on neural circuits in a Drosophila model. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
631. McNabb, M., Istas, O., Greenhalgh, A., Paneitz, Z., Casto Jr W., Gilbert, S., Katta, P., Amaya, A., Conrad, G., Criswell, O., Hieneman, S., Middleton, J., Murphy, J., Ordono, C., Roach, H., Thornberry, H., Ballinger Boone, C., Byrd L., **Cooper, R.L. (2018**). The effects of a bacterial endotoxin on synaptic transmission at the neuromuscular junction: Drosophila and blowfly models. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
632. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., **Cooper, R.L. (2018)** Pharmacological identification of muscarinic receptor subtypes in Drosophila melanogaster**.** Univ. of KY Undergraduate Research Showcase. April 25, 2018.
633. Penrose, E.M., Piana, E. and **Cooper, R.L. (2018**) The blight of shrimp: Ideas of potentially saving the industry. Univ. of KY Undergraduate Research Showcase. April 25, 2018.
634. **Cooper, R.L.,** Dayaram, V., Wycoff, S., and Grau, E. (**2018**) Experiences with course-based undergraduate research experience (CURE) to address authentic research questions for a neurophysiology laboratory class. 2018 Pedagogicon meeting. Eastern Kentucky University, Noel Studio. May 18, 2018.
635. **Cooper, R.L.,** McNabb, M., Anyagaligbo, O. and Greenhalgh, A. (**2018**) The effects of a bacterial endotoxin LPS: neuromuscular junction and cardiac function in fruit fly (*Drosophila melanogaster*) and blowfly (*Phaenicia sericata*) larvae. 2018 American Physiological Society Intersociety Meeting, Comparative Physiology: Complexity and Integration. New Orleans, Louisiana, USA. Oct. 2018
636. McNabb, M., Anyagaligbo, O., Greenhalgh, A., and **Cooper R.L. (2018)** The effects of a bacterial endotoxin LPS: neuromuscular junction and cardiac function in fruit fly (*Drosophila melanogaster*) and blowfly (*Phaenicia sericata*) larvae. Clinical-Translational Research Symposium at the University of Kentucky. October 5, 2018.
637. Stanback, A.E., Maxwell, H., Cole, C., Johnson, K., Rotkis, E., Ho, J., Byrd, LS., Danyi, S., Dixit, S., Subheeswar, M., Sifuma, R., Saelinger, C., Stanback, M.A., Overly, B., and **Cooper, R.L. (2018)** The effects of a ketogenic diet on behavior and synaptic transmission in a Drosophila model. Clinical-Translational Research Symposium at the University of Kentucky. October 5, 2018.
638. Vela, K., Basham, R., Stanback , A.E., Stanback, M., Heberle, B.A., Silverstein, A., Lane, A., Collis, B., Chithrala, B., Stanley, C., Higgins, E., Ponder, M., Raichur, P., Akhtar, S., Marella, S. and **Cooper, R.L. (2018).** The influence of endotoxic (LPS) on primary sensory neurons in crustaceans: Impact on human proprioception. Clinical-Translational Research Symposium at the University of Kentucky. October 5, 2018.
639. Lane, A., Vela, K., Basham, R., Stanback, A.E., Stanback, M., Heberle, B.A., Silverstein, A., Collis, B., Chithrala, B., Stanley, C., Higgins, E., Ponder, M., Raichur, P., Akhtar, S., Marella, S. and **Cooper, R.L. (2018).** Effects of TEA and 4-AP on firing frequency of proprioceptive neurons in crustaceans. Clinical-Translational Research Symposium at the University of

Kentucky. October 5, 2018.

640. Higgins, E., Vela, K., Basham, R., Stanback, A.E., Stanback, M., Heberle, B.A., Silverstein, A., Lane, A., Collis, B., Chithrala, B., Stanley, C., Ponder, M., Raichur, P., Akhtar, S., Marella, S. and **Cooper, R.L. (2018).** Effects of TEA and 4-AP on Firing Frequency of Proprioceptive Neurons in Crustaceans. Annual meeting of the Kentucky Academy of Sciences. Nov. 2-3, 2018 at Western Kentucky University. Bowling Green, KY.
650. Stanback, M., Higgins, E., Vela, K., Basham, R., Stanback , A.E., Heberle, B.A., Silverstein, A., Lane, A., Collis, B., Chithrala, B., Stanley, C., Ponder, M., Raichur, P., Akhtar, S., Marella, S. and **Cooper, R.L. (2018).** The Influence of Endotoxic LPS on Primary Sensory Neurons in Crustaceans. Annual meeting of the Kentucky Academy of Sciences. Nov. 2-3, 2018 at Western Kentucky University. Bowling Green, KY.
651. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., **Cooper, R.L. (2018)** Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster***.** Annual meeting of the Kentucky Academy of Sciences. Nov. 2-3, 2018 at Western Kentucky University. Bowling Green, KY.
652. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., **Cooper, R.L. (2019)** Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster***.** Posters-at-the-Capitol. Frankfort, KY. February 21, 2019
653. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., **Cooper, R.L. (2019)** Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster***.** Experimental Biology 2019 American Physiological Society annual meeting. Orlando, Florida, USA. April 6-9, 2019.
654. **Cooper, R.L.,** McNabb, M., Saelinger, C., Greenhalgh, A., Istas, O., Stanback, M., Stanback, A., Anyagaligbo, O., Bernard, J., Danley, M.L., Bierbower, S.M., Ghoweri, A. and Thibault, O. (**2019**) The effects of bacterial endotoxin (LPS) on cardiac and neural function in various animal models. **Experimental Biology 2019** American Physiological Society annual meeting. Orlando, Florida, USA. April 6-9, 2019.
655. Saelinger, C.M., McNabb, M.C., McNair, R., Bierbower, S. and Cooper, R.L. (2019) Effects of bacterial endotoxin LPS on the neuronal regulation of the heart, a sensory-CNS-motor nerve circuit as well as at neuromuscular junctions: Crustacean model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 1st place Oral $75
656. McNabb, M., and Cooper, R.L. (2019) The effects of bacterial endotoxin LPS on synaptic transmission at the neuromuscular junction of larval Drosophila. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019.
657. Istas, O., Greenhalgh, A. and Cooper, R.L. (2019) The effects of a bacterial endotoxin (LPS) on behavior and sensory-CNS-Motor circuits. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 1st place poster $50
658. Stanley, C.E., Mauss, A., Borst, A. and Cooper, R.L. (2019) Effects of optogenetically driving a chloride channel and a chloride pump on cardiac function in a fruit fly (*Drosophila melanogaster*). Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 2nd place Oral $50
659. Akhtar, S., Lane, A., Vela, K., Basham, R., Stanback, A.E., Stanback, M., Heberle, B.A., Silverstein, A., Collis, B., Chithrala, B., Stanley, C., Higgins, E., Ponder, M., Raichur, P. Marella, S. and Cooper, R.L. (2018). Effects of TEA and 4-AP on firing frequency of proprioceptive

neurons in crustaceans. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019.

660. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., Cooper, R.L. (2019) Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster*. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019.
661. Ballinger-Boone, C., Harrison, D. and Cooper, R.L. (2019) The role of peptidoglycans receptors in the response to bacterial endotoxin LPS on body wall muscle and cardiac function in larval *Drosophila*. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 2nd place poster $35
662. Craft, C., Franklin, B., Wilson, J., Harrison, D. and Cooper, R.L. (2019) Effects of temperature on an optogenetic response system in Drosophila. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 1st place poster $50 High school
663. Holtzclaw, L., Loveless, M., Wilson, J., Harrison, D. and Cooper, R.L. (2019) Revisiting Mendel: Use of a behavioral assay to examine inheritance of traits in *Drosophila*. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 2nd place poster $35 High school
664. deCastro, N. and R.L. Cooper, R.L. (2019) Examining the effects on neural developmental and behavior with altered gravitational sense in developing larval *Drosophila*. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019. 3rd place poster $25 High school
665. Raichur, P., Vela, K., Basham, R., Stanback , A.E., Stanback, M., Heberle, B.A., Silverstein, A., Lane, A., Collis, B., Chithrala, B., Stanley, C., Higgins, E., Ponder, M., Akhtar, S., Marella, S. and Cooper, R.L. (2019). The influence of endotoxic (LPS) on primary sensory neurons in crustaceans: Impact on human proprioception. Annual Meeting of the Kentucky Chapter of the American Physiological Society, Northern Kentucky Univ. Highland Heights, KY. March 23, 2019.
666. Stanley, C., Akhtar, S., Lane, A., Vela, K., Basham, R., Stanback, A.E., Stanback, M., Heberle, B.A., Silverstein, A., Collis, B., Chithrala, B., Higgins, E., Ponder, M., Raichur, P. Marella, S. and Cooper, R.L. (2018). Effects of TEA and 4-AP on firing frequency of proprioceptive neurons in crustaceans. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
667. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., Cooper, R.L. (2019) Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster*. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
668. Ballinger-Boone, C., Harrison, D. and Cooper, R.L. (2019) The role of peptidoglycans receptors in the response to bacterial endotoxin LPS on body wall muscle and cardiac function in larval *Drosophila*. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
669. Saelinger, C.M., McNabb, M.C., McNair, R., Bierbower, S. and Cooper, R.L. (2019) Effects of bacterial endotoxin LPS on the neuronal regulation of the heart, a sensory-CNS-motor nerve circuit as well as at neuromuscular junctions: Crustacean model. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
670. McNabb, M., and Cooper, R.L. (2019) The effects of bacterial endotoxin LPS on synaptic

transmission at the neuromuscular junction of larval Drosophila. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019. Won a $100

671. Istas, O., Greenhalgh, A. and Cooper, R.L. (2019) The effects of a bacterial endotoxin (LPS) on behavior and sensory-CNS-Motor circuits. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
672. Somasundaram, E., Malloy, C., Omar, A., Bhutto, U. and Cooper, R.L. (2019) Pharmacological identification of cholinergic receptor subtypes: modulation of locomotive and feeding behavior and neural circuit excitability in drosophila larvae. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
673. deCastro, N. and R.L. Cooper, R.L. (2019) Examining the effects on neural developmental and behavior with altered gravitational sense in developing larval *Drosophila*. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
674. Raichur, P., Vela, K., Basham, R., Stanback , A.E., Stanback, M., Heberle, B.A., Silverstein, A., Lane, A., Collis, B., Chithrala, B., Stanley, C., Higgins, E., Ponder, M., Akhtar, S., Marella, S. and Cooper, R.L. (2019). The influence of endotoxic (LPS) on primary sensory neurons in crustaceans: Impact on human proprioception. Clinical-Translational Research Symposium at the University of Kentucky. Bluegrass Neuroscience day. Lexington, KY. April 15, 2019.
675. Somasundaram, E., Malloy, C., Omar, A., Bhutto, U. and Cooper, R.L. (2019) Pharmacological identification of cholinergic receptor subtypes: modulation of locomotive and feeding behavior and neural circuit excitability in Drosophila larvae. University of Kentucky Undergraduate Research Showcase April 24, 2019.
676. Ballinger-Boone, C., Harrison, D. and Cooper, R.L. (2019) The role of peptidoglycans receptors in the response to bacterial endotoxin LPS on body wall muscle and cardiac function in larval *Drosophila*. University of Kentucky Undergraduate Research Showcase April 24, 2019.
677. McNabb, M., and Cooper, R.L. (2019) The effects of bacterial endotoxin LPS on synaptic transmission at the neuromuscular junction of larval Drosophila. University of Kentucky Undergraduate Research Showcase April 24, 2019.
678. Saelinger, C.M., McNabb, M.C., McNair, R., Bierbower, S. and Cooper, R.L. (2019) Effects of bacterial endotoxin LPS on the neuronal regulation of the heart, a sensory-CNS-motor nerve circuit as well as at neuromuscular junctions: Crustacean model. University of Kentucky Undergraduate Research Showcase April 24, 2019.
679. Stanley, C.E., Mauss, A., Borst, A. and Cooper, R.L. (2019) Effects of optogenetically driving a chloride channel and a chloride pump on cardiac function in a fruit fly (*Drosophila melanogaster*). University of Kentucky Undergraduate Research Showcase April 24, 2019.
680. Stanley, C., Krall, R.M., Zeidler-Watters, K., Johnson, D., and Cooper, R.L. (2019) STEM & Health: Stressors on the circulatory system. ABLE (Association for Biology Laboratory Education) Conference workshop. Qubec, Canada. June 18-21, 2019.
681. Cooper, R.L., Krall R.M., Schultz, M.P., O'Neil, A.S. and Dupont-Versteegden, E.E. (2019) Educational modules of skeletal muscle anatomy and function for middle, high school and college students with models and active data gathering. ABLE (Association for Biology Laboratory Education) Conference workshop. Qubec, Canada. June 18-21, 2019.
682. O'Neil, A.S., Krall, R.M., Sanden, M. and Cooper, R.L. (2019) Developing algebraic and geometric understanding of stereology in biological and astronomy contexts. ABLE (Association for Biology Laboratory Education) Conference workshop. Qubec, Canada. June 18-21, 2019.
683. McNabb, M.C., Saelinger, C.M., McNair, R., Bierbower, S. and Cooper, R.L. (2019) Effects of

bacterial endotoxin LPS on the neuronal regulation of the heart, a sensory-CNS-motor nerve circuit as well as at neuromuscular junctions: Crustacean model. Society for Neuroscience 2019 annual meeting. Chicago, IL, USA. October.

684. Cooper, R.L., McNabb, M., Saelinger, C., Greenhalgh, A., Istas, O., Stanback, M., Stanback, A., Anyagaligbo, O., Bernard, J., Danley, M.L., Bierbower, S.M., Ghoweri, A. and Thibault, O. (2019) The effects of bacterial endotoxin (LPS) on cardiac and neural function in various animal models. Society for Neuroscience 2019 annual meeting. Chicago, IL, USA. October.
685. Bhutto, U.F. Somasundaram, E.V., Malloy, C.A., Omar, A., Cooper, R.L. (2019) Pharmacological identification of cholinergic receptor subtypes in modulation of neural circuits in *Drosophila melanogaster*. Society for Neuroscience 2019 annual meeting. Chicago, IL, USA. October.
686. Ballinger-Boone, C., Harrison, D. and Cooper, R.L. (2019) The role of peptidoglycans receptors in the response to bacterial endotoxin LPS on synaptic transmission: NMJ and CNS. Society for Neuroscience 2019 annual meeting. Chicago, IL, USA. October.
687. deCastro, N., Cooper, R.L. (2019) Monitoring activity of Drosophila larvae with impedance measures. Society for Neuroscience 2019 annual meeting. Chicago, IL, USA. October.
688. McCubbin, S., Jeoung, A. and Cooper, R.L. (2019) Pharmacological profiling of stretch activated channels in proprioceptive neurons. Kentucky Neuroscience Institute Clinical-Translational Research Symposium at the University of Kentucky. Oct. 4, 2019 Univ of Kentucky Medical School.
689. Ballinger-Boone, C., Harrison, D. and Cooper, R.L. (2019) The role of peptidoglycans receptors in the response to bacterial endotoxin LPS on synaptic transmission: NMJ and CNS. Kentucky Neuroscience Institute Clinical-Translational Research Symposium at the University of Kentucky. Oct. 4, 2019 Univ of Kentucky Medical School.
690. Aguayo-Williams, T., Cooper, R.L. and Criswell, B. (2019) Bridging optogenetics, metabolism, and animal behavior for student-driven inquiry at high school and college levels. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
691. Saelinger, C.M., McNabb, M.C., McNair, R., Bierbower, S. and Cooper, R.L. (2019) Effects of bacterial endotoxin (LPS) on the cardiac function, neuromuscular transmission and sensory-CNS-motor nerve circuit: A crustacean model. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
692. Adams, R., Stanley, C.E., Piana, E. and Cooper, R.L. (2019) Physiological and behavioral indicators to measure crustacean welfare. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
693. Campbell, K., Stanley, C.E., Adams, R., Nadolski, J., Amrit, E., Barrett, M., Bohnett, C., Deweese, K., Dhar, S., Gillis, B., Hill, C., Inks, M., Kozak, K., Larson, A., Murtaza, I., Nichols, D., Roberts, R., Tyger, H., Waterbury, C. and Cooper, R.L. (2019). The effects of tricaine mesylate (MS-222) on arthropods: Crayfish, crab and *Drosophila*. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
694. Suryadevara, V., McLetchie, D.N. and Cooper, R.L. (2019) The effects of glutamate exposure on roots growth and physiology of *Arabidopsis thaliana*: Pharmacological and electrophysiological measures. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
695. Greenhalgh, A, Istas, O. and Cooper, R.L. (2019) The effects of a bacterial endotoxin on behavior and sensory-cns-motor circuits in *Drosophila melanogaster*. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
696. McNabb, M.C., Saelinger, C.M., Danley, M. and Cooper, R.L. (2019). The effects of bacterial endotoxin Lipopolysaccharides (LPS) on synaptic transmission at neuromuscular junction in an

amphibian. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.

697. Marguerite, N.T., Harrison, D., Harris, D., and Cooper, R.L. (2019). Behavioral effects to heat in the blow fly (*Phaenicia sericata*). Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
698. McCubbin, S., Jeoung, A., Schneider, E.R. and Cooper, R.L. (2019) Pharmacological profiling of stretch activated channels in proprioceptive neurons. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
699. Jeoung, A., McCubbin, S., Schneider, E.R. and Cooper, R.L. (2019) Pharmacological profiling of proprioceptive neurons associated with muscle: Muscle receptor organ. Annual meeting of the Kentucky Academy of Sciences. Nov. 1-2, 2019 at Berea College. Berea, KY.
698. deCastro, N., Cooper, R.L. (**2020**) Monitoring activity of Drosophila larvae with impedance measures. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University , Frankfork, KY. June 19, 2020. Zoomed conference (1st Place in High School)
699. Nethery, B., Cooper, R.L. (**2020**) Mechanism of action of Riluzole. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University, Frankfork, KY. June 19, 2020. Zoomed conference (1st Place in Undergraduate)
700. Marguerite, N.T., Bernard, J., Harris, D., Cooper, R.L. (**2020**) Effect of temperature on heart rate for Phaenicia sericata and Drosophila melanogaster with altered expression of the TRPA receptors. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University, Frankfork, KY. June 19, 2020. Zoomed conference (2nd Place in Undergraduate)
701. Stanback, A.E., Nadolski, J., Cooper, R.L. (**2020**) The effects of the ketone acetoacetate on synaptic transmission. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University, Frankfork, KY. June 19, 2020. Zoomed conference (1st Place in Graduate).
702. Krall, R., Cooper, R.L., Johnson, D., Aguayo-Williams, T. (**2020**). Educational modules of skeletal muscle anatomy and function with models and active data gathering related to muscular dystrophy. Wednesday, July 29, 2020. 05:14 PM - 05:54 PM. National Science Teaching Association Virtual meeting. A 30 minute workshop to be presented and then Q&A period afterwards. Cincinnati, OH
703. Cooper, R.L., Krall, R., Istas, O., Greenhalgh, A., Richard, E.E., Bernard, J., Johnson, D., Aguayo-Williams, T. (**2020**). Forensics for the body farm: preferences for the medicinal blow fly (Lucilia sericata) and fruit fly (Drosophila melanogaster). Wednesday, July 29, 2020. 06:03 PM - 06:43 PM. National Science Teaching Association Virtual meeting. A 30 minute workshop to be presented and then Q&A period afterwards.
704. Nethery, B., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Naidugari, P., Russell, W., Sommers, N., and Cooper, R.L. (**2020**) The effects of Riluzole on sensory and motor nerve function. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 1-6, 2020. Q&A period afterwards.
705. Marguerite, N.T., Bernard, J., Harrison, D.A., Harris, D. and Cooper, R.L. (**2020**) Effect of temperature on heart rate for *Phaenicia sericata* and *Drosophila melanogaster* with altered expression of the TRPA1 receptors. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 1-6, 2020. Q&A period afterwards
706. Buendia Castillo, D, Stanley, C., Naidugari, J., McCubbin, S., Nethery, B., Dupont-Versteegden, E.

and Cooper, R.L. (**2020**) Conducting authentic curriculum undergraduate research experiences (ACUREs) in teaching laboratories. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 1-6, 2020. Q&A period afterwards.

707. Naidugari, P., Buendia Castillo, D., Dupont-Versteegden, E.E. and Cooper, R.L. (**2020**). Temperature dependence on the passive effects of K+ on membrane potential of skeletal muscle: Educational module. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 1-6, 2020. Q&A period afterwards.
708. McCubbin, S., de Castro, N. and Cooper, R.L. (**2020**) The effects of levetiracetam on glutamatergic synaptic transmission: Crayfish and *Drosophila* NMJs. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 1-6, 2020. Q&A period afterwards.
709. Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Cooper, R.L. (**2020**) Social interactions of intraspecies pairs of Australian crayfish (*Cherax quadricarinatus*) and interspecies pairs of Louisiana red swamp crayfish (*Procambarus clarkii*): Invasive species alert. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 1-6, 2020. Q&A period afterwards.
710. McCubbin, S., de Castro, N. and Cooper, R.L. (**2021**) The effects of levetiracetam on glutamatergic synaptic transmission: Crayfish and *Drosophila* NMJs. Society for Integrative and Comparative Biology (SICB) annual meeting. Washington, D.C. but held virtually due to COVID-19. January 3-4, 2021. Q&A period afterwards.
711. Marguerite, N.T., Bernard, J., Harrison, D.A., Harris, D. and Cooper, R.L. (**2021**) Effect of temperature on heart rate for *Phaenicia sericata* and *Drosophila melanogaster* with altered expression of the TRPA1 receptors. Society for Integrative and Comparative Biology (SICB) annual meeting. Washington, D.C. but held virtually due to COVID-19. January 3-4, 2021. Q&A period afterwards.
712. Buendia Castillo, D, Stanley, C., Naidugari, J., McCubbin, S., Nethery, B., Dupont-Versteegden, E. and Cooper, R.L. (**2021**) Conducting authentic curriculum undergraduate research experiences (ACUREs) in teaching laboratories. Society for Integrative and Comparative Biology (SICB) annual meeting. Washington, D.C. but held virtually due to COVID-19. January 3-4, 2021. Q&A period afterwards.
713. deCastro, N., Marguerite, N.T., Bernard, J., Harrison, D.A., Harris, D. and Cooper, R.L. (**2021**) Behavioral effects to heat in larval *Drosophila* with and without TRPA1 receptors in sensory neurons and the medicinal blow fly (*Phaenicia sericata*). Society for Integrative and Comparative Biology (SICB) annual meeting. Washington, D.C. but held virtually due to COVID-19. January 3-4, 2021. Q&A period afterwards.
714. Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Cooper, R.L. (**2021**) Social interactions of intraspecies pairs of Australian crayfish (*Cherax quadricarinatus*) and interspecies pairs of Louisiana red swamp crayfish (*Procambarus clarkii*): Invasive species alert. Society for Integrative and Comparative Biology (SICB) annual meeting. Washington, D.C. but held virtually due to COVID-19. January 3-4, 2021. Q&A period afterwards.
715. Marguerite, N.T., Bernard, J., Greenhalgh, A., Istas, O., Ballinger-Boone, C., Bierbower, S.M., Dupont-Versteegden, E.E., Ghoweri, A., Harrison, D., McNabb, M., Saelinger, C., Thibault, O. and Cooper, R.L. (**2021**). The effect of bacterial endotoxin LPS on synaptic transmission in various models. The Society of Neuroscience virtual meeting January 11-13.
716. Buendia Castillo, D., Naidugari, J., Dupont-Versteegden, E.E. and Cooper, R.L. (**2021**). Temperature dependence on the passive effects of K+ on membrane potential and synaptic transmission. The Society of Neuroscience virtual meeting January 11-13.
717. Cooper, R.L., McCubbin, S. and deCastro, N. (**2021**) Using the motor units of Drosophila to screen

pharmacological therapeutic agents- riluzole and levetiracetam. The Society of Neuroscience virtual meeting January 11-13.

718. Russell, W., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Naidugari, J., Nethery, B., Sommers, N., and Cooper, R.L. (**2021**) The effects of Riluzole on sensory and motor nerve function. National Conferences on Undergraduate Research (NCUR)
719. Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Naidugari, J., Nethery, B., Russell, W., Sommers, N., and Cooper, R.L. (**2021**) The effects of levetiracetam on glutamatergic synaptic transmission: Crayfish and *Drosophila* NMJs. National Conferences on Undergraduate Research (NCUR)
720. Naidugari, J., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Nethery, B., Russell, W., Sommers, N., Dupont-Versteegden, E.E. and Cooper, R.L. (**2021**). Temperature dependence on the passive effects of K+ on membrane potential of skeletal muscle: Educational module. National Conferences on Undergraduate Research (NCUR).
721. Buendia Castillo, D., Naidugari, J., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Nethery, B., Russell, W., Sommers, N., Dupont-Versteegden, E.E., Krall, R., Sharp, K., Chalfant, J., Brown, M. and Cooper, R.L. (**2021**). Temperature dependence on the passive effects of K+ on membrane potential of skeletal muscle: Educational module. The annual meeting of the **American Physiological Society**. Virtual meeting due to COVID-19. April 27-30, 2021.
722. Pankau, C.L. and Cooper, R.L. (**2021**). Developing an ACURE to investigate the effects of manganese on physiological processes. The annual meeting of the **American Physiological Society**. Virtual meeting due to COVID-19. April 27-30, 2021.
723. McCubbin, S., de Castro, N. and Cooper, R.L. (**2021**) The effects of levetiracetam on glutamatergic synaptic transmission: Crayfish and *Drosophila* NMJs. The annual meeting of the **American Physiological Society**. Virtual meeting due to COVID-19. April 27-30, 2021.
724. Christine Haddad, Carlie Cryer, John Di Girolamo, Matthew Lanning, Mason Miller, Devan Neely, Reece Wilson, BreAnna Whittinghill, Cecilia Pankau and Robin Cooper. (**2021**) Effects of Mn2+ on cardiac function in larval Drosophila. University of Kentucky Showcase of Scholars. April 2021.
725. Carlie Cryer, John Di Girolamo, Christine Haddad, Matthew Lanning, Mason Miller, Devan Neely, Reece Wilson, BreAnna Whittinghill, Cecilia Pankau and Robin Cooper. (**2021**) Effects of Mn2+ on behavior of larval Drosophila. University of Kentucky Showcase of Scholars. April 2021.
726. Reece Wilson, Carlie Cryer, John Di Girolamo, Christine Haddad, Matthew Lanning, Mason Miller, Devan Neely, BreAnna Whittinghill, Cecilia Pankau and Robin Cooper. (**2021**) Effects of Mn2+ on sensory neurons in crustaceans. University of Kentucky Showcase of Scholars. April 2021.
727. John Di Girolamo, Carlie Cryer, Christine Haddad, Matthew Lanning, Mason Miller, Devan Neely, Reece Wilson, BreAnna Whittinghill, Cecilia Pankau and Robin Cooper. (**2021**) The effects of manganese on survival and behavior of Drosophila. University of Kentucky Showcase of Scholars. April 2021.
728. Nyla Parker, Maggie Barnes, Sarah Foster, Lacey Gordon, Sheridan Oldham, Jawad Saleem, Elizabeth Steele, Slane Steen, Oscar Istas, Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Robin Cooper. (**2021**) Survival and behavioral responses of the Australian crayfish (*Cherax quadricarinatus*) to acute and long-term exposure to cold: Limitation on potential invasiveness.

University of Kentucky Showcase of Scholars. April 2021.

729. Sarah Foster, Maggie Barnes, Lacey Gordon, Sheridan Oldham, Nyla Parker, Jawad Saleem, Elizabeth Steele, Slane Steen, Oscar Istas, Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Robin Cooper. (**2021**) Behavioral analysis in social aggression among pairs of crayfish in examination of potential displacement of local species: juvenile Australian crayfish (*Cherax quadricarinatus*), Adult Australian crayfish, and *Faxonius virilis* (North American species). University of Kentucky Showcase of Scholars. April 2021.
730. Slane Steen, Maggie Barnes, Sarah Foster, Lacey Gordon, Sheridan Oldham, Nyla Parker, Jawad Saleem, Elizabeth Steele, Oscar Istas, Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Robin Cooper (**2021**) Comparison in habituation rates to tail flipping among Red Swamp crayfish (*Procambarus clarkii*) of North American and Australian crayfish (*Cherax quadricarinatus*). University of Kentucky Showcase of Scholars. April 2021.
731. Jawad Saleem, Maggie Barnes, Sarah Foster, Lacey Gordon, Sheridan Oldham, Nyla Parker, Elizabeth Steele, Slane Steen, Oscar Istas, Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Robin Cooper (**2021**) The effect of cold and sensory stimuli on cardiac function in Australian crayfish (*Cherax quadricarinatus*). University of Kentucky Showcase of Scholars. April 2021.
732. Elizabeth Steele, Maggie Barnes, Sarah Foster, Lacey Gordon, Sheridan Oldham, Nyla Parker, Jawad Saleem, Slane Steen, Oscar Istas, Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Robin Cooper. (**2021**) The effect of acute cold exposure on proprioceptive function in Australian crayfish (*Cherax quadricarinatus*). University of Kentucky Showcase of Scholars. April 2021.
733. Cecilia Pankau, Carlie Cryer, John Di Girolamo, Christine Haddad, Matthew Lanning, Mason Miller, Devan Neely, Reece Wilson, BreAnna Whittinghill and Robin Cooper. (**2021**) Developing an ACURE to investigate the effects of manganese on physiological processes. University of Kentucky Showcase of Scholars. April 2021
734. Jacobs, G., Shenoy, K., Srinivasan, M.P., Nadolski, J. and Cooper, R.L. (**2021**) Social interactions of intraspecies pairs of Australian crayfish (*Cherax quadricarinatus*) and interspecies pairs of Louisiana red swamp crayfish (*Procambarus clarkii*): Invasive species alert. University of Kentucky Showcase of Scholars. April 2021.
735. Shelby McCubbin, Nicole T. Marguerite and Robin L. Cooper (**2021**) Stretch activated channels maintain heart rate in larval Drosophila. University of Kentucky Showcase of Scholars. April 2021.
736. Marguerite, N.T., Bernard, J., Harrison, D.A., Harris, D. and Cooper, R.L. (**2021**) Effect of temperature on heart rate for *Phaenicia sericata* and *Drosophila melanogaster* with altered expression of the TRPA1 receptors. University of Kentucky Showcase of Scholars. April 2021.
737. Subramaniam, V., and Cooper, R.L. (**2021**) Bridging optogenetics, metabolism, and animal behavior for student-driven inquiry. University of Kentucky Showcase of Scholars. April 2021.
738. Aguayo-Williams, T., Subramaniam, V., Cooper, R.L. and Criswell, B. (**2021**) Bridging optogenetics, metabolism, and animal behavior for student-driven inquiry. ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.
739. Chalfant, J., Cooper, R.L., Aguayo-Williams, T., Holtzclaw, L., Loveless, M., Wilson, J. and Harrison, D. (**2021**). Revisiting Mendel: Use of a behavioral assay to examine inheritance of traits in *Drosophila*. ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.
740. Slabach, B.L., Aguayo-Williams, T., Byrd, L.S., Ho, A., Ho, J., Wilson, J., Rama, S., Veeraragavan, G., Middleton, D., Armstrong, K., Cole, C., Danyi, S., Johnson, K., Dixit, S., Subheeswar, M., Sifuma, R., Maxwell, H., Rotkis, E., Saelinger, C., Stanback, M., Overly, B.,

Stevens,K., Bender, A., Terry, L., Bowers, L., Newcomer, A., Butcher, B., Vance, A., Klein, A., McGraw, E., Cooper R.M., Noble, T., Ott, S., Robertson, R., Sweatt, C., Dixon, J., Biragane, J. and Cooper, R.L. (**2021**). An active learning approach to teach aspects of human dietary health using the classic *Drosophila* model. ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.

741. Istas, O., Greenhalgh, A., Richard, E.E., Bernard, J., Krall, R., Aguayo, T., Cooper, R.L. (**2021**) Forensics for the body farm: Preferences for the medicinal blow fly (Phaenicia sericata) and fruit fly (Drosophila melanogaster). ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.
742. Bernard, J., Danely, M., Krall, R., Sharp, K., Cooper, R.L. (**2021**). Authentic curriculum undergraduate research experimentation to learn about the effects of septicemia on cardiac function: frog and larval Drosophila models. ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.
743. Naidugari, J., Abou El-Ezz, M., Brown, C., Calderaro, T., Evans, C., Grant, T., Hazelett, R., High, C., Buendia Castillo, D., Ilagan, T., Klier, J., Marguerite, N., Marino, F., McCubbin, S., Meredith, N., Nethery, B., Russell, W., Sommers, N., Dupont-Versteegden, E.E., Krall, R., Sharp, K., Chalfant, J., Brown, M, and Cooper, R.L. (**2021**). Temperature dependence on the passive effects of K+ on membrane potential of skeletal muscle as an educational module. ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.
744. Sharp, K., Krall, R., Cooper, R.L. Danely, M., Bernard, J., (**2021**). Implementing a course-based undergraduate research experience (CURE) derived from septicemia medical case in standardized physiology laboratory to create authentic learning experiences: A pilot study. ABLE (Association for Biology Laboratory Education) Conference workshop. June 2021.
745. Pankau, C. and Cooper, R.L. (**2021**). Developing an ACURE to investigate the effects of manganese on physiological processes. **2021 Sigma Xi** Annual Meeting. Virtual meeting.
746. Pankau, C.L. and Cooper, R.L. (**2021**) Involving Freshman in Neurobiology Research as a Class. Neuroscience Teaching Conference. July 22-23, 2021.Virtual meeting organized by Dr. Melissa Maffeo, PhD. Wake Forest University.
747. Cooper, R.L., McCubbin, S., Marguerite, N. and Pankau, C.L. (**2021**) Creating Interactive Novel Experiments for a Neurophysiology Laboratory. Neuroscience Teaching Conference. July 22-23, 2021.Virtual meeting organized by Dr. Melissa Maffeo, PhD. Wake Forest University.
748. McCubbin, S., Pankau, C., Cooper, R.L. (**2021**) The effect of optogenetically activating glia on neuronal function. Society for Neuroscience Annual Meeting. Nov. 13-17, 2021. **Chicago, IL**, USA (In person presentation).
749. Pankau, C., Nadolski, J., Tanner, H., Cryer, C., Di Girolamo, J., Haddad, C., Lanning, M., Miller, M., Neely, D., Wilson, R., Whittinghill, B. and Cooper, R.L. (**2021**). Examining the effect of manganese on physiological processes. Society for Neuroscience Annual Meeting. Nov. 13-17, 2021. **Chicago, IL**, USA (In person presentation).
750. Marguerite, N., Harrison, D.A., Harris, D. and Cooper, R.L. (**2021**) Behavioral effects to heat in the blow fly (*Phaenicia sericata*). (**2021**) Society for Neuroscience Annual Meeting. Nov. 13-17, 2021. **Chicago, IL**, USA (In person presentation).
751. Tanner, H. and Cooper, R.L. (**2021**) The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. Society for Neuroscience Annual Meeting. Nov. 13-17, 2021. **Chicago, IL**, USA (In person presentation).
752. Parker, N., Tanner, H. and Cooper, R.L. (**2021**) The effect of calcium on mechanosensation and neuronal activity in proprioceptive neurons. Society for Neuroscience Annual Meeting. Nov. 13-17, 2021. **Chicago, IL**, USA.

753. O'Neil, A.S., Krall, R.M. and Cooper, R.L. (**2021**) Exploring mechanisms leading to symptomatic effects of 4-AP pharmacological treatments in patients with MS: A teaching/learning module. Society for Neuroscience Annual Meeting. Nov. 13-17, 2021. **Chicago, IL**, USA.
754. McCubbin, S., Pankau, C., Cooper, R.L. (**2021**). The effect of optogenetically activating glia on neuronal function. Neuroscience Clinical Translational Research Symposium. University of Kentucky School of Medicine. October 8, 2021. Lexington, KY.
755. Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2021**). The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. Neuroscience Clinical Translational Research Symposium. University of Kentucky School of Medicine. October 8, 2021. Lexington, KY.
756. Daniels, S.E, Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2021**). The effect of calcium on mechanosensation and neuronal activity in proprioceptive neurons. Neuroscience Clinical Translational Research Symposium. University of Kentucky School of Medicine. October 8, 2021. Lexington, KY.
757. Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2021**). The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. Annual meeting of the Kentucky Academy of Sciences. Virtually due to COVID-19. Nov 5-6, 2021. Q&A period afterwards.
758. McCubbin, S. and Cooper, R.L. (**2021**). Good Health and Well-Being: Animal Models to Healthcare. UK Sustainability Showcase. October 5, 2021. University of Kentucky, Lexington, KY. USA.
759. Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2021**). The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University, Frankfort, KY. October 16, 2021. In person conference. 2nd place Oral $75
760. Mowery, T., Shakhashiro, Y., Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Pankau, C.L., Serrano, M.E., Ward R.A., Wehry, A.H.,and Cooper, R.L. (**2021**). The effect of calcium on mechanosensation and neuronal activity in proprioceptive neurons. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University, Frankfort, KY. October 16, 2021. In person conference.
761. Pankau, C., Nadolski, J., Tanner, H., Cryer, C., Di Girolamo, J., Haddad, C., Lanning, M., Miller, M., Neely, D., Wilson, R., Whittinghill, B. and Cooper, R.L. (**2021**). Examining the effect of manganese on physiological processes: Invertebrate models. Annual Meeting of the Kentucky Chapter of the American Physiological Society, KY State University, Frankfort, KY. October 16, 2021. In person conference. 2nd place Poster $75
762. McCubbin, S., Pankau, C., Cooper, R.L. (**2022**). The effect of optogenetically activating glia on neuronal function. Society for Integrative and Comparative Biology (SICB) annual meeting (SICB). **Phoenix, AZ**, January 3-7, 2022.

763. Neely, D., Donovan, T., Spedding, V., Hermanns, C. and Cooper, R.L. (**2022**). Potential use and limitations with optogenetics for controlling cellular function and therapeutic applications. Society for Integrative and Comparative Biology (SICB) annual meeting (SICB). **Phoenix, AZ**, January 3-7, 2022.
764. Tanner, H. and Cooper, R.L. (**2022**) The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. Society for Integrative and Comparative Biology (SICB) annual meeting (SICB). **Phoenix, AZ**, January 3-7, 2022.
765. Pankau, C., Nadolski, J., Tanner, H., Cryer, C., Di Girolamo, J., Haddad, C., Lanning, M., Miller, M., Neely, D., Wilson, R., Whittinghill, B. and Cooper, R.L. (**2022**). Examining the effect of manganese on physiological processes: Invertebrate models. Society for Integrative and Comparative Biology (SICB) annual meeting (SICB). **Phoenix, AZ**, January 3-7, 2022.
766. Meade, A., Potter, R. and Cooper, R.L. (2022). The mechanisms of hyperpolarization in skeletal muscle by exposure to bacterial endotoxin (LPS) in larval *Drosophila* and crayfish. Society for Integrative and Comparative Biology (SICB) annual meeting (SICB). **Phoenix, AZ**, January 3-7, 2022.
767. Salaimeh, A.A. and Cooper, R.L. (**2022**)**.** Old are hot young are not, Thermal assessment of medicinal blow fly larvae behavior in cold environment from hatching to pupating. Society for Integrative and Comparative Biology (SICB) annual meeting (SICB). **Phoenix, AZ**, January 3-7, 2022.
767. Pankau, C., Nadolski, J., Tanner, H., Cryer, C., Di Girolamo, J., Haddad, C., Lanning, M., Miller, M., Neely, D., Wilson, R., Whittinghill, B. and Cooper, R.L. (**2022**). Examining the effect of manganese on physiological processes: Invertebrate models. National Conference on Undergraduate Research (**NCUR**). April 4-8, 2022. virtual.
768. Daniels, S.E, Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2022**). The effect of calcium on mechanosensation and neuronal activity in proprioceptive neurons. National Conference on Undergraduate Research (**NCUR**). April 4-8, 2022. virtual.
769. Tanner, H., Atkins, D.E., Bosh, K.L., Breakfield, G.W., Daniels, S.E, Devore, M.J., Fite, H.E., Guo, L., Henry, D., Kaffenberger, A., Manning, K.S., Mowery, T., Pankau, C.L., Serrano, M.E., Shakhashiro, Y., Ward R.A., Wehry, A.H., and Cooper, R.L. (**2022**). The effect of TEA, 4-AP and in combination on primary sensory neurons in a marine crustacean model. National Conference on Undergraduate Research (**NCUR**). April 4-8, 2022. virtual.
770. Brock, K.E. and Cooper, R.L. (**2022**). The effect of postsynaptic receptor desensitization during repetitive synaptic activation. Neuroscience Undergraduate Research Virtual Symposium (FUN NURVS II). April 9, 2022**.**
771. Starks, A. and Cooper, R.L. (**2022**) The effects of iron (ferric) on physiological processes. University of Kentucky, Undergraduate Showcase of Scholars. April 26, 2022.
772. Haddad, C. and Cooper, R.L.(**2022**) How the permeability varies in relation to external K+ concentration and temperature in fitting curves to the Goldman-Hodgkin-Katz equation for muscle. University of Kentucky, Undergraduate Showcase of Scholars. April 26, 2022.
773. Brock, K.E. and Cooper, R.L. (**2022**). The effect of postsynaptic receptor desensitization during repetitive synaptic activation. University of Kentucky, Undergraduate Showcase of Scholars. April 26, 2022.
774. Cooper, R.L., McCubbin, S. and Harrison, D.A. (**2022**). Enigmatic actions of lipopolysaccharides (LPS) on membrane potential and glutamate receptors. Society for Neuroscience Annual Meeting.

Nov. 12-16, 2022. San Diego, CA. USA.

775. Brock, K.E., Vascassenno, R., Haddad, C.& Cooper, R.L. (**2022**) The effects on resting membrane potential and synaptic transmission by Doxapram (blocker of K2p channels) at the *Drosophila* neuromuscular junction. Society for Neuroscience Annual Meeting. Nov. 12-16, 2022. San Diego, CA. USA.
776. Brock, K.E., Thomas, M.A., McLetchie, D.N. & Cooper, R.L. (**2022**) Developing an understanding in measurement techniques to monitor bioelectricity and changes in electrical signals due to physiological perturbations. Society for Neuroscience Annual Meeting. Nov. 12-16, 2022. San Diego, CA. USA.
777. Wagers, M., Starks, A. & Cooper, R.L. (**2022**) Developing an ACURE to investigate the effects of iron on physiological processes. Society for Neuroscience Annual Meeting. Nov. 12-16, 2022. San Diego, CA. USA.
778. Wagers, M., Vekaria, H., Sullivan, P., Starks, A.R. & Cooper R.L. (**2022**) Examining the effect of iron (ferric) on physiological processes: Invertebrate models. Society for Neuroscience Annual Meeting. Nov. 12-16, 2022. San Diego, CA. USA.
779. Vascassenno, R., Piedade, W., Majeed, Z.R.,Blumich, S.L.E., Brailoiu, E., & Cooper R.L. (**2022**) Alterations in synaptic transmission by acute changes in pH: extracellular and cytoplasmic. Society for Neuroscience Annual Meeting. Nov. 12-16, 2022. San Diego, CA. USA.
780. Haddad, C. & Cooper, R. L. (**2022**) How the permeability varies in relation to external K+ concentration and temperature in fitting the curves to the Goldman-Hodgkin-Katz equation for muscle. Society for Neuroscience Annual Meeting. Nov. 12-16, 2022. San Diego, CA. USA.
781. Ison, B.J., Abul-Khoudoud, M.P., Ahmed, S., Alhamdani, A.W., Ashley, C., Bidros, P.C., Bledsoe, C.O., Bolton, K.E., Capili, J.G., Henning, J.N., Moon, M., Phe, P., Stonecipher, S.B., Tanner, H.N., Taylor, I.N., Turner, L.T., Wagers, M., West, A.K and Cooper, R.L. (**2022**). The effect of Doxapram, a K2p channel blocker, on proprioceptive neurons: Invertebrate model. Neuroscience Clinical Translational Research Symposium. University of Kentucky School of Medicine. Sept. 30, 2022. Lexington, KY. USA.
782. Wagers, M., Starks, A., Vekaria, H.J., Sullivan, P.G., Abul-Khoudoud, M.P., Ahmed, S., Alhamdani, A.W., Ashley, C., Bidros, P.C., Bledsoe, C.O., Bolton, K.E., Capili, J.G., Ison, B.J. Henning, J.N., Moon, M., Phe, P., Stonecipher, S.B., Taylor, I.N., Turner, L.T., West, A.K. and Cooper, R.L. **(2022**). Examining the effect of iron (ferric) on physiological processes: Invertebrate models. Neuroscience Clinical Translational Research Symposium. University of Kentucky School of Medicine. Sept. 30, 2022. Lexington, KY. USA.
783. Brock, K.E. , Nadolski, J. Ison, B.J., and Cooper, R.L. (**2022**). The effect of postsynaptic receptor desensitization during repetitive synaptic activation. Neuroscience Clinical Translational Research Symposium. University of Kentucky School of Medicine. Sept. 30, 2022. Lexington, KY. USA.
784. Ison, B.J., Abul-Khoudoud, M.P., Ahmed, S., Alhamdani, A.W., Ashley, C., Bidros, P.C., Bledsoe, C.O., Bolton, K.E., Capili, J.G., Henning, J.N., Ison, B.J., Moon, M., Stonecipher, S.B., Tanner, H.N., Taylor, I.N., Turner, L.T., Wagers, M., West, A.K and Cooper, R.L. (**2022**). The effect of Doxapram, a K2p channel blocker, on proprioceptive neurons: Invertebrate model. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Kentucky, Oct.1, 2022. Lexington, KY. USA.
785. Wagers, M., Starks, A., Vekaria, H.J., Sullivan, P.G., Abul-Khoudoud, M.P., Ahmed, S., Alhamdani, A.W., Ashley, C., Bidros, P.C., Bledsoe, C.O., Bolton, K.E., Capili, J.G., Ison, B.J. Henning, J.N., Moon, M., Phe, P., Stonecipher, S.B., Taylor, I.N., Turner, L.T., West, A.K. and

Cooper, R.L. **(2022**). Examining the effect of iron (ferric) on physiological processes: Invertebrate models. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Kentucky, Oct.1, 2022. Lexington, KY. USA.

786. Ison, B.J., Brock, K.E. , Nadolski, J. and Cooper, R.L. (**2022**). The effect of postsynaptic receptor desensitization during repetitive synaptic activation. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Kentucky, Oct.1, 2022. Lexington, KY. USA.
787. Haddad, C.N., Vacassenno, R.M., and Cooper, R.L., (**2022**) Lipopolysaccharide (LPS) action on hyperpolarizing membrane potential: Antagonized by the K2p channel blocker, Doxapram, and independent of calcium activated potassium channels. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Kentucky, Oct.1, 2022. Lexington, KY. USA.
788. Vacassenno, R.M., Haddad, C.N. and Cooper, R.L., (**2022**) The effects on resting membrane potential and synaptic transmission by Doxapram (blocker of K2p channels) at the *Drosophila* neuromuscular junction. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Kentucky, Oct.1, 2022. Lexington, KY. USA.
789. Elliott, E.R., Hensley, N., and Cooper, R.L. (**2022**)2-Aminoethoxydiphenyl borate (2-APB) hyperpolarizes membrane in skeletal muscle and altering heart rate: Potential activation of K2p and voltage-gated Ca2+ channels. Annual Meeting of the Kentucky Chapter of the American Physiological Society, University of Kentucky, Oct.1, 2022. Lexington, KY. USA.

Abstracts of projects conducted under my supervision

1. Cooper, A.S. (**2008**) The effects of serotonin on circadian pattern and behaviors in *Drosophila*. Kentucky Academy of Sciences. Annual meeting. November 1, 2008, Lexington, KY (Univ of KY campus).
2. Cooper, A.S. (**2009**) The effects of serotonin on circadian pattern and behaviors in *Drosophila*. Society for Integrative and Comparative Biology. Annual meeting. January 2-6, 2009, Boston, Mass.

Reports/newsletter articles in non-peer reviewed publications

1. **Cooper, R.L.,** Cole, J., and Hopper, H.L. (**1998**) The plight of the blind cave crayfish: A caver advisory. National Speleological Society News. 56(3):75.
2. **Cooper, R.L.** (**1998**) Ectoparasites (branchiobdellids) on egg hatching. International Association of Astacology newsletter, Crayfish News. 20:20-21.
3. Li, H., Sohn, J. and **Cooper, R.L**. (**1999**) The Blue Swamp Crayfish ? International Association of Astacology newsletter, Crayfish News. 21:3-4
4. **Cooper, R.L.** (**2001**) Our Backyard Journal. Warren County Citizens for Managed Growth. This was a short report on the concerns of the cave species that will be in danger by the development of the transpark in Warren Co., KY. *(Parts of my report were used in the newspaper).*
5. **Cooper, R.L.** (**1999-2001**) The Society for Integrative and Comparative Biology (Formerly known as American Society of Zoologists) Spring newsletter write up. I wrote notes commenting on the highlights of events within our group. As Secretary for the Division of Neurobiology (DNB) of this society, I have to send out electronic mail to all our constituents on the events and news within our international organization.
6. **Cooper, R.L**. and Cooper, Ann-Simone. (**2002**) Self mutilation in crayfish *Procambarus clarkii.* International Association of Astacology Newsletter, ISSN 1023-8174, Crayfish News. 24:4-5.
7. Satterlie, R.A. and **Cooper, R.L.** (**2004**) Recent Developments In Neurobiology: Introduction To The Symposium. Text is a dedication of the symposium to the years of research by Dr. H. L. Atwood in the field of synaptic transmission. Society for Integrative and Comparative Biology 44:1-3.
8. Cooper, R.M. and **Cooper, R.L**. (**2007**) A method to measure associative learning for different size larvae. **Drosophila Information Service** 90:45-47.
9. **Cooper, R.L**. (**2011**) Respecting a Korean health custom in a Western society. Nursing Reports 1: e6. doi: 10.4081/nursrep.2011.e6
10. **Cooper, Robin L. (2013)** "Mentoring High School Students," *Kaleidoscope*: Vol. 11, Article 94. Available at: http://uknowledge.uky.edu/kaleidoscope/vol11/iss1/94
11. **Robin L. Cooper,** Kim Zeidler, Diane Johnson, and Jennifer Wilson (**2017**) The Healthy Flea Market. *Connected Science Learning.* National Science Teachers Association (NSTA) On line January 16, 2017. Available at: http://csl.nsta.org/2017/01/the-healthy-flea-market/
12. **Cooper, R.L**. (**2018)** Time in the realm of Harold (1992–1996). Journal of Neurogenetics. doi: 10.1080/01677063.2018.1491972. https://doi.org/10.1080/01677063.2018.1491972
13. Piana, E., Gautier, D. and **Cooper, R.L. (2018)** Stunning methods in tropical shrimp farming: Thermal shock induces insensibility fast and electric shock is likely to provide a good alternative. Global Aquaculture Alliance, Advocate Nov. 2018
    https://www.aquaculturealliance.org/about-gaa/
    Evaluating stunning methods in tropical shrimp aquaculture - Responsible Seafood Advocate (globalseafood.org)
14. Sharp, K.A., **Cooper, R.L.,** and Carter, D. (**2022**) Semester-long Projects. Volume 42. Proceedings of the 41st Conference of the Association for Biology Laboratory Education (ABLE). (Submitted, August, 2021)

Laboratory exercises for Bio350 (Animal Physiology) at the Univ of KY.

1. Robinson, M.M., Martin, J.M., Atwood, H.L. and **Cooper, R.L.** (**2010**) Modeling biological

membranes with circuit boards and measuring electrical signals in axons: Student laboratory exercises.

2. Baierlein, B., Thurow, A.L. and **Cooper, R.L.** (**2010**) Human ECG laboratory experiment.
3. Martin, J.M., Robinson, M.M., Atwood, H.L. and **Cooper, R.L.** (**2010**) Conduction properties of nerve cells
4. Leksrisawat, B., Cooper, A.S. and **Cooper, R.L.** (**2010**) Muscle receptor organs in the crayfish abdomen: A student laboratory exercise in proprioception.
5. Cooper, A.S., Leksrisawat, B., Cooper, R.M. and **Cooper, R.L.** (**2010**) Mechanosensory input & integration in the central nervous system: A student laboratory exercise.
6. Robinson, M.M., Martin, J.M. and **Cooper, R.L.** (**2010**) Heart rate response to induced stimuli in freshwater shrimp: A student laboratory exercise.
7. Baierlein, B. Thurow, A.L. Atwood, H.L. and **Cooper, R.L.** (**2010**) Membrane potentials, synaptic responses, neuronal circuitry, neuromodulation and muscle histology using the crayfish: Student laboratory exercises.
8. Thurow, A.L., Baierlein, B. and **Cooper, R.L.** (**2010**) Human ECG laboratory experiment.
9. Holsinger, R. and **Cooper, R.L.** (**2010**) Responses to hormones in invertebrates: Student laboratory exercises.
10. Leksrisawat, B., Cooper, A.S. and **Cooper, R.L.** (**2010**) A laboratory exercise in osmoregulation.
11. Cooper, A.S., Leksrisawat, B., Mercier, A.J. and **Cooper R.L.** (**2010**) Physiological experimentation with the crayfish hindgut: A student laboratory exercise.

Sept., 2022

Laboratory exercises for Bio450 (Neurophysiology Lab) at the Univ of KY,

All of these labs will have a movie of "how to do the lab" in time. Currently, each one has a detailed protocol.

1. Robinson, M.M., Martin, J.M., Atwood, H.L. and **Cooper, R.L.** (**2012**) Modeling biological membranes with circuit boards and measuring electrical signals in axons: Student laboratory exercises. (*updated version from the Bio350 lab that was developed*)
2. Hartman, H.B. and **Cooper, R.L.** (**2012**) Properties of annelid giant axons. {Movie made how to do the lab by Burns, E. Stacy, A.L., and **Cooper, R.L. 2012**)
3. **Cooper, R.L.,** Baierlein, B., Holsinger, R.C., Thurow, A.L. Atwood, H.L. (**2012**) The effects of K+ and Na+ on resting membrane potentials using the crayfish: Student laboratory exercises
4. **Cooper, R.L.,** Atwood, H.L. (**2012**) Synaptic Responses, Neuronal Circuitry and Neuromodulation Using the Crayfish: Student Laboratory Exercises. (some parts taken from the lab developed for Bio350 experimental labs in Baierlein, et al., 2010)
5. Majeed, Z.R., Titlow, J., Hartman, H.B., Burns, E., and **Cooper, R.L.** (**2012**) Proprioception: Response properties of joint receptors.
6. Majeed, Z.R., Titlow, J., Hartman, H.B., Burns, E., and **Cooper, R.L.** (**2012**) Tension receptors in crab limbs: Responses related to muscle force.
7. Stacy, A.L., Burns, E. and **Cooper. R.L (2012)** Electroencephalogram (EEG) lab. {Movie made on how to do the lab. Posted on YouTube **http://youtu.be/IsDLbXH9e4Q }**
8. **Cooper, R.L.,** and Atwood, H.L. (**2012**) Quantal analysis of synaptic transmission: Crayfish NMJ record quantal responses.
9. Titlow, J., Majeed, Z.R., Nicholls, J.G. and **Cooper, R.L.** (**2012**) Identifiable neurons in the central nervous system of a leech.
10. Majeed, Z.R., Titlow, J., Nicholls, J.G. and **Cooper, R.L.** (**2012**) Sensory field maps in the skin of a leech for touch, pressure and nociceptive neurons.
11. Titlow, J., Majeed, Z.R., Nicholls, J.G. and **Cooper, R.L.** (**2012**) Electrophysiological examining synapse formation in culture between identifiable neurons: Central neurons of leech.
12. Titlow, J., Majeed, Z.R., Hartman, H.B., Burns, E., and **Cooper, R.L.** (**2012**) Mechanosensory integration: Input and output of mechanosensory information in the cockroach wind escape reflex
13. Brock, K., Thomas, M., McLetchie, D.N., **Cooper, R.L.** (**2022**) Bioelectricity in plants: Laboratory Protocol University of Kentucky. (For Bio 446-Neurophysiology laboratory & Bio 430-Plant Physiology)

Conferences attended without presenting an abstract or paper (Continuing Education – Nursing)

2011 - Annual Meeting. American Assembly for Men in Nursing. Oct.20th. Lexington, KY
2012 - Annual Meeting. The Kentucky Public Health Association http://www.kpha-ky.org/Home.aspx. Louisville, KY. March 27-30, 2012
2014 - Advances in Skeletal Muscle Biology in Health and Disease Conference, March 5-7, 2014, University of Florida. http://apk.hhp.ufl.edu/index.php/departments-centers/advances-in-skeletal-muscle-biology-in-health-and-disease/

2014 - May 9-10. 20th Annual Preparing Health Professionals for the 21st Century: New Directions in Health Professions Education & Kentucky Practice-Based Research Networks Collaborative Conference. Lexington, KY.

V. RESEARCH STATEMENT

The research goals of my program are focused on understanding the physiological mechanisms underlying synaptic plasticity of neurons, especially motor neurons which make synapses on muscle fibers. My research program is a multifaceted approach to the study of specific neuromodulatory molecules whose actions are relevant to the whole animal.

At a social level, animals show distinct differences in behavior and in responses to sensory cues. For example, among human siblings there may be dominant, outgoing individuals, as well as shy and introverted ones. The focus of much research in this broad area has been on the central nervous system and has recently expanded into studies of the expression of particular genes in the nervous system, in a variety of animal species. The hope is to be able to get a handle on the mechanisms of how neurons are activated or turned off and how they communication with each other are be modulated to elicit particular responses.

Such research in higher animals has proven to be a daunting task and many of the breakthroughs in neuroscience have arisen due to understanding of basic principles in simpler systems and then extrapolating to more highly evolved organisms, such as humans. The invertebrate arthropods have long provided key models, especially crayfish and *Drosophila* (T.H. Huxley, The Crayfish.1880; T.H. Morgan, 1900) for investigating neurophysiological principles. One advantage of invertebrates is that individual cells can be examined by a range of techniques from anatomical analysis to molecular genetics and electrophysiology, to obtain insights that are not possible, at present, in higher-animal model systems. In particular, the neuromuscular junctions of crayfish and *Drosophila* serve as models to investigate the basics principles of chemical synaptic transmission relevant to all chemical synapses in all animals.

The neuromuscular junctions (NMJs) in these preparations lend themselves to experimentation on synaptic plasticity. The activity of individual varicosities on identified single cells can be analyzed, the varicosities and cells marked, and those same synaptic sites later identified for structural investigation by electron microscopy. These techniques allow us to study synaptic differences during **development** of the animal and **short term plasticity** of synapses due to activity and/or actions of **neuromodulators** which can lead to altered behavioral states.

The past **NSF funded research** in my laboratory was concerned with the actions of neuromodulators (substances that can alter neuronal activity) on chemical communication of motor neurons with muscles using the crayfish as the model system. Because of the wide variety of behavioral effects which they elicit, neuromodulators are recognized as important signaling molecules in all animals. Many modulators can serve as either a neurotransmitter or a paracrine signaling factor in central or peripheral nervous systems. One neuromodulator in particular, serotonin (5-HT), has received considerable attention in both the news media and in the scientific literature because it has been implicated in the behavioral expression of dominance, aggression, and assertiveness in many animals, including humans.

The main two **specific aims of my NSF funded research** were: (1) To investigate differences in short-term facilitation among synapses of a single neuron innervating two target muscle fiber types (fast and slow) in the absence and presence of neuromodulators; and (2) To investigate the hypothesis that the identified intrinsic differences in release mechanisms among tonic motor neurons are more susceptible to

neuromodulation than are those of phasic motor neurons.

In addition while investigating these topics, several off-shoot projects developed from this main focus. The additional, primarily undergraduate projects, provide a better understanding of the bigger picture in neuromodulator action on whole animal behavior and how it relates to the alterations that we had already quantified at synapses of neuromuscular junctions. We have now published several papers in this research area, to prime for additional future NSF proposals.

The widespread distribution of 5-HT in the peripheral nervous systems of invertebrates implies that the transmitter is not directed at a discrete target tissue but rather over a wide area; interactions with receptors on several different target cells are possible. This could result in relatively fast, as well as slow, long-lasting modifications of transmission efficacy at synapses where other transmitters are released. Previous studies of the crustacean nervous system have demonstrated correlation of the physiology of relatively few neurons and muscles with particular behaviors. The drive of the motor neurons can readily be examined by stimulation of various known sensory neurons, enabling one to assess their role in altering motor neuron activity. In addition, the integration of sensory information in the ventral nerve cord which affects the motor output is accessible for study. Lastly, the biophysical properties of muscle fibers that can affect the postsynaptic response are readily approachable. Thus, the crustacean nervous system enables one to investigate each component in a behavior-eliciting pathway from sensory neurons -to- ganglia- to- motor neurons - to- muscle fibers (Strawn et al., 2000-in press). We have taken an active interest in assessing actions of neuromodulators in modulation of whole-animal behavior. We want to determine whether or not behavioral states feed back over time and alter neuronal function. Since there are indeed circular aspects in understanding synaptic plasticity one must tackle this problem in multiple ways.

Over the last year we have also been focusing in on how animals can alter properties of neurotransmission by behaviors expressed during both development and as adults, which is partially related to neuroendocrine factors. These kinds of studies can be approached by subjecting animals to various physiological and ecological stresses. This line of research encompasses genetic, physiological, behavioral and evolutionary aspects of the organisms under investigation (visual crayfish, blind cave crayfish, and *Drosophila*). An example of one aspect of this broad, life-cycle encompassing research interest is that when 2 crayfish are placed together they will fight until one of the combatants withdraws. The success is based largely on physical size. The establishment of dominant and submissive behavior by individuals has effects on their survival and reproduction and thus of the species as a whole.

A number of recent findings have implicated the levels of neuromodulators in the nervous system to be the sole factor in establishing dominant or submissive status. Serotonin (5-HT) in particular has been implicated in the control of aggression in crustaceans and most vertebrate species, including humans. There is growing skepticism in the research community to the magnitude of importance that has been placed on 5-HT alone. I plan to substantiate if 5-HT is really a major player in establishing the behavioral status of crayfish by developing bioassays which monitor the levels in the blood while the animals are establishing their social status. I have recently published two papers related to this matter by monitoring heart rate in socially behaving animals. Various factors such as hunger, visual cues, parasitism and pheromones are currently being addressed in relation to social status among crayfish in my laboratory. I am also addressing learned verus innate behaviors among visual, visually impaired and cave-adapted blind crayfish in establishing combats and posturing positions. This will bring the works full circle to genetic variations over evolutionary time scales among species and the effects of neuromodulators on neural circuits which have evolved to carry out given behaviors. The pilot investigations have opened new horizons to be tackled in the terms of neuromodulators actions on neuronal function that results in altered behaviors as well as abnormal development of the nervous system.

The investigation of neuromodulation in the crayfish has made me aware of the limitations in genetic manipulability of key factors when trying to address slightly different factors such as selective regulation of hormone levels. For this reason I embarked on projects making use of *Drosophila* as a tool to investigate the actions of the neuromodulator ecdysone in rapid non-genomic and long-term genomic actions on synaptic transmission at the NMJ. Preliminary phases of this project have already been published in three manuscripts.

I am joined by various investigators around the world in addressing the mechanisms underlying maintenance and modulation of synaptic strength during development and maturation. Many aspects still remain to be uncovered, in particular the cellular physiology which transduces electrical signals regulating vesicle release in presynaptic neurons to issues dealing with receiving and responding to the neurotransmitter signals on the postsynaptic cells.

Future directions:

Through the use of recently developed proteins and fluorescent dyes, we have begun to investigate mechanistic questions of neurotransmitter release. Intracellular injection of vesicular docking proteins into the large axons of crustacean motor neurons in the absence or presence of neuromodulators allows one to investigate if the intracellular signaling systems involved work independently or synergistically to affect synaptic efficacy and ultrastructure. The crayfish leg opener muscle has provided a great deal of insight into the basic mechanisms of synaptic transmission because it allows neurotransmitter release to be directly related to synaptic physiology and structure (Atwood et al., 1994; Atwood and Cooper, 1995, 1996a, b; Cooper et al., 1995a,b; 1996a,b). In this preparation, the relatively low output of each varicosity along the nerve terminals allows the use quantal analysis and statistical evaluation of individual vesicular release events.

The initial investigations of a synaptically-relevant molecule, alpha-SNAP (He et al., 1999; MS Thesis from my lab) suggest that other molecules may be used similarly to address their functional significance in synaptic transmission. Molecules that dock synaptic vesicles are of special interest. There is particular current interest in molecules like 5-HT and octopamine (OA) (and their attendant signaling cascades) because of their ability to alter synaptic transmission. When applied singly to the NMJ, 5-HT and OA enhanced transmission, but if 5-HT is applied after OA, synaptic efficacy is reduced. Since these compounds co-exist in the hemolymph, I decided to investigate their effects at the neuromuscular junction following sequential and combined exposure in order to better understand their actions within the animal. To my surprise, we found that in some preparations, OA showed the well known enhancement of transmitter release, but there was also a number of junctions that showed reduced transmitter output. This is in accord with a recent finding that OA also reduces transmitter release at larval *Drosophila* neuromuscular junctions (Nishikawa and Kikodoro 1999), although for other insect preparations an increase of EJP amplitudes by OA is reported (for review see Roeder, 1999). In crayfish and crab NMJs, 5-HT always potentiated transmitter release and this effect was invariably reduced in the presence of OA, suggesting that when the two amines are present together they antagonistically modulate transmitter release. We address, with quantal analysis, the presynaptic actions of 5-HT, OA and a mixture of the two neuromodulators to begin to understand the underlying mechanisms of action. I currently have a manuscript in preparation with Dr. Rathmayer (Univ. of Konstanz, Germany) on this matter. It is thus likely, considering our recent physiological results that activation of the cAMP mediated processes from initial OA stimulation can dampen the subsequent IP_3 mediated responses induce by the rapid actions of 5-HT. The long term action of 5-HT mediated through

cAMP (Dixon and Atwood, 1989) may also be reduced if the same downstream actions are already activated by the prior presence of OA and a complete recovery has not been allowed to occur.

Much work remains to determine which proteins and/or additional cytoplasmic messenger systems may be recruited into or out of action in the presence of just 5-HT or OA alone. This may then lead to an understanding of the antagonist actions of OA to subsequent 5-HT applications as we have reported. Besides 5-HT and OA there are numerous other neuromodulators working in concert that influence synaptic function and which ultimately may also help to regulate the behavior of the whole animal.

In the future, I intend to address the interactions of various cascades with calcium regulation inside nerve terminals and their relation to neural activity.

Regulation of Receptors for Neuromodulators

It is well established that receptors undergo up- and down-regulation via alteration of their expression levels and/or densities on cell surfaces (Azaryan et al., 1998). Altered cellular activity as well as the action of agonists or antagonists being bound to a receptor can induce regulation in the levels of functional receptors (Kokay and Mercer, 1997; Welner et al., 1989; Fone et al., 1998). For example it has been shown that 5-HT1A receptors will demonstrate desensitization when either an agonist or antagonist is present (Hensler and Truett, 1998). Even naturally induced down regulation of 5-HT2c receptors can be induced as a result of exercise (Broocks et al., 1999). The 5-HT1 and 5-HT2 receptor agonist 1-(3- Chlorophenyl) piperazine dihydrochloride (m-CPP) has been observed in rats to down regulate receptor numbers (Fone, et al., 1998). The precise mechanism of action in regulation of the 5-HT receptors has not yet been elucidated.

The purpose of this project is to address the issue of up- and down-regulation of the sensitivity of responsiveness to exogenously applied 5-HT at the neuromuscular junctions of crayfish which have reduced endogenous 5-HT levels (enzymatic inhibition of the synthesis of 5-HT) or have chronic presence of an agonist in their hemolymph. Reduction of systemic levels of 5-HT in the crayfish is likely to result in up-regulation of 5-HT receptors since these animals normally contain 5-HT in their hemolymph (open circulatory system). In contrast, chronic high levels of the 5-HT agonist m-CPP, would likely result in a down-regulation of the 5-HT receptors so that exogenous application of 5-HT would show reduced responsiveness as compared to sham injected animals. In preliminary studies, we have demonstrated alterations in the sensitivity to exogenous application of 5-HT at the crayfish neuromuscular junction after altering levels of the endogenous production of 5-HT and exposure to a 5-HT agonist. Future work will be focused at identifying the types of 5-HT receptors present that the crayfish NMJ and the mechanisms behind the physiological responses that we have observed in sensitivity to 5-HT.

Several other projects will be pursued simultaneously in the future related to developing novel methods to assess synaptic transmission. Past methods of quantal analysis that I have developed have been well-received by the scientific community. At present I am developing novel statistical methods to describe fluctuation in synaptic responses. These responses are examined with the concept in mind that structural elements of the synapse may be the basis for differences in fluctuation among the various types of synapses. In order to develop this line of study, I needed to further establish new ways to more accurately quantify synaptic structures observed in electron micrographs. These studies have recently been published in Kim et al., 2000 and Feurverger et al., 2000. It is very important to understand, quantitatively, the scale of morphological features in 3-D when viewing the morphology in 2-D in order to draw comparisons between specimens. This is especially relevant to my projects of ultrastructural differences in high- and low-output synapses and interconversion of phasic to tonic motor neurons as

well as developmental issues of the neuromuscular junctions.

Multiple research disciplines are being examined separately but they are **all interrelated and focus** on the issue of **synaptic function**. With the successful outcome of published findings over the years from my research program, I believe this approach will continue to bear fruit and be extramurally funded.

VI. STUDENT TRAINING

PhD degrees awarded from my laboratory

1. Li Hao, 1997-2001 *Current position working for GlaxoSmithKline (Mgr Analytics) Biotech company in Research Triangle Park, North Carolina.*
   (i) Neuromodulator effects on the function of primary sensory neurons. (ii) Cave crayfish behavior. (iii) Development of NMJs in *Drosophila*.
2. Andrew Johnstone, 2002 -2007. Current position: *Postdoctoral Fellow at EPA in a neurobiology unit North Carolina*
   Physiological and anatomical assessment of synapses at the crayfish neuromuscular junction.
3. Sameera Dasari, 2003-2007. *Current position: 2nd Postdoctoral Fellow in the Physiology Department at Dartmouth. 1st postdoc was at Michigan State University in neurobiology.*
   Influence of the serotonergic system on physiology, development, and behavior of *Drosophila melanogaster.*
4. Mohati Desai, Spring 2005-2008 (defended in 2008, graduated in 2009).
   The influence of Ca2+ regulation in synaptic facilitation of motor nerve terminals in crayfish and *Drosophila* as well as in the physiological regulation of larval *Drosophila* heart. *Current position: Postdoctoral Fellow at Rutgers University in Dr. Jorge Golowasch.*
5. Sonya Bierbower, 2006-Spring 2010
   Environmental effects on behavior and physiology in crayfish.
   Postdoctoral Fellow at UT Health Sciences Center in San Antonio with Dr Mark Shapiro. Current position: Assistant Professor at William Paterson University, Wayne, New Jersey.
6. Wen Hui Wu, Fall 2008-Spring 2013. The regulation and packaging of synaptic vesicles related to recruitment within crayfish and fruit fly neuromuscular junctions: variations in low- and high-output terminals. Went on for*: PhD student in Dept of Statistics, Univ of KY.* Current Position: Biostatistician at MD Anderson in Houston, TX.
7. Josh Titlow, Fall 2011-Spring 2014. Dopaminergic and activity-dependent modulation of mechanosensory responses in Drosophila melanogaster larvae. *Current position: Postdoctoral Fellow at Oxford, England.*
8. Zana R. Majeed, Spring 2011-Spring 2016. Modulatory actions of serotonergic system in cardiac function, behavior, and sensorimotor circuit activity in *Drosophila melanogaster.* Faculty member at University of University of Salahaddin, Erbil, Iraq.
9. Cole Malloy, 2014-Summer 2017. Profiling the action of acetylcholine in the Drosphila melanogaster larval model: heart, behavior, and the development and maintenance of sensorimotor circuits. Postdoctoral fellow at NIH for a 3 year appointment.
10. Yue Chen Zhu, 2014-Summer 2017. The effect of cold on the physiology of Drosophila larva heart and synaptic transmission on crayfish neuromuscular junction. Looking for an internship in a biomedical health related area.

MS degrees awarded from research done in my laboratory

1. Misty Crider 1996-1998; **Advisor**
   Short term facilitation and the neuromodulation of synaptic transmission at the crayfish opener neuromuscular junction
2. Ping He 1997- 1998; **Advisor**
   Role of α-SNAP in promoting efficient neurotransmission at the crayfish neuromuscular junction
3. Johann Sohn 1998-1999; **Advisor**
   The anatomical and physiological characterization of muscles in the dorsal surface of the crayfish abdomen
4. Joe Kramer 1998-1999; Member (advisor- Dr. Bonner); Thesis project done in my lab.
   Neural control of muscle phenotype in the crayfish
5. Joe Shearer Fall 1999-2001 (MS student, after rotations switched to plan B - MS) **Advisor**
   1. Synaptic differentiation of motor neurons in crayfish. 2. Developmental mechanisms of motor neurons in *Drosophila*.
6. Bin Xing 2002-2003; **Advisor**
   Synaptic plasticity at the *Drosophila* NMJ
7. Amanda Ashleigh Long 2003-2004; **Advisor**
   Synaptic plasticity at the *Drosophila* NMJ
8. Capt. Junyoung Lee 2007-2009; **Advisor** (Stipend paid by the Korean Government)
   Furthering pharmacological and physiological assessment of the glutamatergic receptors at the *Drosophila* neuromuscular junction.
9. Rachel C. Holsinger Summer 2011-2013; **Advisor,** The effect of regional phenotypic differences of *Procambarus clarkii* opener muscle on sarcomere length, fiber diameter, and force development.
10. Dlovan D. Mahmood, Rotation Summer 2014 (Plan B, MS)
11. Alexandra (Alex) Stanback, Summer 2018- Spring 2019 (MS-Thesis)
12. Catherine Stanley, Summer 2019-Summer 2020 (MS-Thesis)

Graduate students ***(rotating or some of their work done in my lab)***

1. Bruce Griffis	1997-1998 (PhD student with Dr. Bonner) Regulation of muscle phenotype.
2. Emily Neiman	Spring-Summer 1999, (PhD BEACON rotation graduate student).
3. Bryan Spohn	Spring 1997, (BEACON rotation graduate student).
4. Laura Listerman	Fall 2001 (MS graduate student in the Physical Therapy program) Came back to the lab to finish up a project.
5. Gina Richardson	2006, rotation graduate student.
6. Antony Kariuki	2008 Fall
7. Jessica Laswell	Mentoring for MIC graduate student project at UK. Dept of Education (summer 2010)
8. Weikai Kong	Rotating Graduate student, summer 2012 (will pursue a non-thesis MS by May 2013)
9. Sandra Blümich	GERMAN exchange student. Summer 2014. Paid for by DAAD - German Academic Exchange Service.
10. Felicitas Koch	GERMAN exchange student. Summer 2015. Paid for by DAAD - German Academic Exchange Service
11. Douglas Potts	Graduate student, Rotation Summer 2014 & Spring 2015 (PhD rotation student; prequals. Took leave of absence from graduate school)
12. Warlen Pereira Piedade	Graduate student, Rotation Fall 2015 (PhD student)

13. Samuel J. Potter Medical School student conducting a research lab elective. Spring 2017
14. Matthew Mattingly Bio795 as a postbac to gain more research experience. Spring 2017
15. Kristin Weineck GERMAN exchange student. Summer 2017. Paid for by DAAD - German Academic Exchange Service
16. Dara Buendia Castillo MCB Rotation Student, Fall 2020-spring 2021.

Current Graduate Students

1. Hannah Tanner 2022-present MS plan A . Advisor. Master in Science in Medical Sciences student in the UK-Med School MSMS program

Undergraduate students

(present & future)

1. Christine Haddad Spring 2022, Fall 2022. Ribble Scholar -fellowship for undergraduate research, A&S summer fellowship
2. Kaitlyn Brock Spring 2022, Fall 2022- Neuroscience fellowship
3. Jodi Ogle Summer & Fall 2022
4. Nicole Hensley Fall 2022
5. Mikaela Wagers Summer and Fall 2022 A&S summer fellowship
6. Elizabeth (Beth) Elliott Fall 2022 (Volunteering)

Bio199 Students (These are NON-STEMCATS Freshman students, Spring 2017):

1. Hunter Maxwell
2. Emma Rotkis
3. Christa Saelinger
4. Katelyn Armstrong
5. Maddie Stanback
6. Eden Janesch
7. Kaitlyn Stevens
8. Leah Terry
9. Amanda Newcomer

(past)

1. Harty Ashby, Spring 1996 (Undergraduate Research)
2. Dan Franklin, Fall 1997 (Undergraduate Research)
3. Wendy Warren, Spring, Summer & Fall 1997 (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship).
4. Marvin Ruffner, Spring, Summer & Fall 1997 (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship).
5. J. Deskin, Spring 1998 (Undergraduate Research)
6. Devan Doshi, Summer 1998 (**Volunteer for Undergraduate Research**) Biology student at The George Washington University, Washington D.C.
7. Elizabeth Ward, Summer, Fall 1997 and Spring 1998 (Undergraduate Research, Research and creativity grant for $ 2,500).
8. M.P. Huffman, Summer and Fall 1997, Spring 1998 (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship).
9. Laura Paula Ashby, Summer 1998 (Undergraduate Research)
10. Jarrett Greer, Fall 1998, Spring1999 (Undergraduate Research)
11. Rachel Chase, Spring, Summer and Fall 1998. (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship).
    Fall 1998 & Spring1999-**Ribble Scholar**.
12. Jenny Haggard, (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship- summer 1999)

13. Laura Listerman, Summer & Fall 1998, Spring & Fall 1999 (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship; **REU-NSF fellowship**).
14. Jeremy Dore, Fall 1999 (Undergraduate Research).
15. Jeffrey R. Strawn, Fall 1998, Spring & Fall 1999, Spring 2000 (Undergraduate Research; **REU-NSF fellowship**)
16. Ann Phan, Fall 1999, Spring, Fall 2000; & Spring 2001 (Undergraduate Research).
17. R. Chase Southard, Spring, Summer & Fall 1998; Spring & Fall 1999; Spring, Summer, Fall 2000;& Spring 2001. (Undergraduate Research, Howard Hughes Medical Institute Undergraduate Fellowship; **REU-NSF** fellowship).
18. Scott Kellie, Spring, Summer & Fall 1999; Spring & Fall 2000-**Ribble Scholar**; & Spring 2001 Howard Hughes Medical Institute Undergraduate Fellowship- summer 1999.
19. Amanda Fox, Fall 2000 & Spring 2001 -**Ribble Scholar**.
20. Jami Tabor, Fall 2000 & Spring 2001 -**Ribble Scholar**.
21. Recennah Braxton, Summer 2001, UK Outreach Center Student, She was from Alabama.
22. Carter Florence, Summer 2001, UK -Women in Science outreach program.
23. Kristin Adams, Summer 2001, UK -Women in Science outreach program.
24. Heidi Schapker, Fall 2000, Spring 2001 & Fall 2001
25. Ahmet Donmezer, Spring 2001, Summer 2001& Fall 2001
26. Rebecca Brauch, Spring 2002 & Fall 2003
27. Tara Willson, Spring 2002
28. Anna Simpson, Fall 2001 & Spring 2002
29. Ryan Ball, Fall 2001, Spring 2002 & (Research and creativity grant for Summer 2002)
30. Garrett Sparks, Fall 2001, Spring 2002, Summer 2002, Fall 2002, Spring 2003, Summer 2003 (Ribble Fellow & **Arnold and Mabel Beckman Foundation Fellow- $17,600/year**)
31. Walter Hailes, Fall 2002
32. Maurice Pagé, Fall 2002, Spring 2003, Summer 2003 (Ribble Fellow)
33. Mary Martin, Spring & Summer & Fall 2004 **Ribble Scholar** Dept. of Biology, **NSF**-REU funded.
34. Hye-Mi Lee, Fall 2003 & Spring & Fall 2004 (Undergraduate Research)
35. Justin L. Blackburn, Spring & Summer & Fall 2004 **Ribble Scholar** Dept. of Biology
36. Stephanie Logsdon, Fall 2003, Spring & Fall 2004-**Ribble Scholar**, Spring 2005 (Undergraduate Research, Research and creativity grant, UK for $ 2,500 & **Arnold and Mabel Beckman Foundation Fellow- $17,600/year**).
37. Deval Bhatt, Spring & Summer & Fall 2004 **Ribble Scholar**, Spring 2005. Dept. of Biology, **NSF**-REU funded.
38. Dexter V. Reneer, Spring 2005 (Internship- from Centre College, KY)
39. Megan D. Adami, Spring & Fall 2005, **NSF**-REU funded.
40. Joseph White, Spring 2006.
41. Forrest Harrison, Fall 2005, Spring 2006.
42. Blaire Cullman-Clark, Spring & Fall 2005, **NSF**-REU funded, Spring 2006.
43. Danielle Goulding, Spring 2006.
44. Chalice White, Summer 2006
45. Jessica Lane Hill, Fall 2005, Spring & Summer 2006, Fall 2006
46. Nicolas Badre, Fall 2003, Spring & Fall 2004; Spring, summer, Fall 2005; Summer & Fall 2006. **Arnold and Mabel Beckman Foundation Fellow- $19,000/year for**

2005-2006. Spring 2007

47. Devki Manan Bhatt, Fall 2005, Spring & Summer 2006, Fall 2006, Spring 2007
48. Brent Hayden, Spring 2006, Fall 2006, Spring 2007
49. Kaitlyn McClelland Spring 2007
50. Terry Williams Spring 2007
51. Geoffrey Hughes Fall 2006, Spring 2007
52. Thomas Cunningham Spring 2007
53. Marshal R. Detherage Summer and Fall 2007
54. Justin Kolasa Spring, Summer & Fall 2006, Spring, Summer & Fall 2007
55. Catherine Ormerod Summer & Fall 2007
56. Zachary Warriner Fall 2007
57. Garnett Coy Fall 2007
58. Tyler McLaurine Spring, Fall 2007, Spring 2008
59. Tori Spence Spring , Fall 2007, Spring 2008 **Ribble Scholar**
60. Doyle Stephens Jr. Spring, Fall 2007, Spring 2008 **Ribble Scholar**
61. Andrew Papoy Spring, Summer & Fall 2007, Spring 2008 **Ribble Scholar**
62. Keith Holmes Fall 2007, Spring 2008 **Ribble Scholar**
63. Mary C. Wright Fall 2007, Spring 2008
64. Jayme Mitchell Spring 2008
65. Courtney Allen Spring & Fall 2008;
66. David Kerbl Summer & Fall 2008
67. Jin-Young Kim Summer & Fall 2008
68. Joshua Eason Summer 2008
69. Madison Allen Summer 2008
70. Joe Mando Summer & Fall 2008
71. Jenifer Jackson Summer 2008
72. Ray Geyer Summer 2008
73. Vadim Galperin Summer 2008
74. Vinay Srinivasan Spring, Summer & Fall 2008; Ribble Scholar; Spring 2009
75. Sahill Naik Spring & Fall 2008; Ribble Scholar; Spring 2009
76. Becca Liberty Summer & Fall 2008; Spring 2009
77. Barbara G Kelly Summer & Fall 2008; Spring 2009
78. Yuri Boyechko Fall 2008 & Spring 2009
79. Jessica McQuerry Fall 2008 & Spring 2009
80. Logan Forsythe Spring 2009
81. A. Clay Turner Summer 2006, Fall 2006, Spring, Summer & Fall 2007, Spring, Summer & Fall 2008; Ribble Scholar; **Arnold and Mabel Beckman Foundation Fellow- $21,000/year 2008-2009**). Spring 2009, Summer 09
82. Easter Bocook Spring & Fall 2008; Ribble Scholar; Spring 2009, Summer 09 (UK Medical School fellowship for summer research for medical students)
83. Matthew Ward Summer & Fall 2008, Summer & Fall 09
84. Michael B. Baker Fall 2008 & Spring & Fall 2009
85. Zachary D Raney Summer & Fall 09
86. Martha Robinson Spring & Fall 2008; Ribble Scholar; Spring 2009, Summer 09; **Arnold and Mabel Beckman Foundation Fellow- $21,000/year 2009-2010**)
87. Allison Gilberts Spring & Fall 2009, Spring 2010
88. Alison Thurow Spring 2010

89. Jonathan Martin Spring 2010
90. Jessica Simpson Spring 2010
91. Justin Armbruster Spring 2010
92. Michelle Tucker Spring 2010
93. Brittany Baierlein Spring 2010, Fall 2010
94. Bonnie Leksrisawat Spring 2010, Fall 2010
95. Ashley K Buchanan Fall 2010
96. Sarah O'Nan Fall 2010
97. Randi (Randaline) Barnett Fall 2010
98. Jensen B. Potenza Summer 2011 (Student from Transylvania University, KY)
99. Chioma Anosike Fall 2011 (Bio395)
100. Emily Houston Fall 2011 (Bio199)
101. Ariel D. Robinson Fall 2010 (Ag Biotech), Spring, Fall 2011, Spring 2012
102. Michael Crum Summer & Fall 2011, Spring, summer 2012
103. Nathan Spitz Spring, summer 2012
104. Yoo Sun Chung Spring, Summer, Fall 2011, Spring, summer 2012
105. Jenna Mae Rufer Summer 2012 (KBRIN summer student)
106. Jeremy Keathley Fall 2012
107. Ann S. Cooper Summer & Fall 09, Spring, Summer 2010, Spring, Summer, Fall 2011, Spring, summer 2012, Spring 2013
108. Jessica Browne Spring 2013
109. Tania Boyechko Spring 2013
110. Ellen Burns Spring, summer 2012 (Bio395; UK Chellgren fellow), Fall 2012 **Ribble Scholar**, Spring & Fall & summer 2013
111. Kayla King Summer 2012 (UK medical school out reach program summer student), Fall 2012, Spring & summer 2013
112. Kristin Cornwell Summer 2013 (Bio395).
113. Justin Graff Summer 2013 – volunteering student back from Duke for the summer. Past high school student that use to be in the lab.
114. Emily Rayens Summer 2013 – visiting student from Wittenberg University (OH)
115. Audra Stacy Fall 2012. **Ribble Scholar**, Spring, Summer, Fall 2013, American Physiological Society summer fellowship award $5,000
116. Emily Holsopple Summer & Fall 2013 (Bio395).
117. Tripp Crosthwaite Spring & Fall 2013
118. Shirin Bigdeliazari Fall 2013, Spring 2014
119. Aubrey Bankemper Spring & Fall 2013, Spring 2014
120. Douglas Potts Spring & Summer & Fall 2013, **Ribble Scholar**, Spring 2014
121. Esraa Abdeljaber Fall 2013, Spring 2014 **Ribble Scholar**,
122. Stephanie Biecker Fall 2013, Spring 2014 **Ribble Scholar**,
123. Nadera Dabbain Fall 2013, Spring 2014 **Ribble Scholar**, Fall 2014
124. Madison Vaughn Winter break 2013, Spring 2014
125. Taylor Brown Spring 2014
126. Kyle Ritter KBRIN funded summer 2014
127. Jonathan Robinson KBRIN funded summer 2014
128. Sandra Blümich Exchange student from Germany. German government funded for summer 2014.
129. Michael Schultz Spring 2014, Fall 2014, Summer 2014, Spring 2015

130. Danielle Middleton Spring 2015
131. Hannah L. Harris Spring & Summer 2015
132. Gaaya Veeraghavan Summer 2015 (Bio199)
133. Emily Yocom KBRIN Summer 2015
134. Jacob Sifers KBRIN Summer 2015
135. Maddie Sanden Spring, Fall 2015
136. Connor English Spring & Summer, Fall 2015. UK summer Undergrad fellowship 2K.
137. Joshua Morgan Spring, Fall 2015
138. Jordan Tyler Wolfe Fall 2015 Science outreach project
139. Justin M.Lewis Fall 2015 Science outreach project
140. Emily Greene Fall 2015
141. Samuel J. Potter Spring 2014, Summer 2014, Fall 2014, (UK medical school outreach program summer student-Fellowship), Spring, Summer & Fall 2015 UK summer Undergrad fellowship 2K. Spring 2016
142. Henry Uradu Summer 2014, Fall 2014, Spring, Fall 2015, Spring 2016
143. Ashwatha Thenappan Spring 2014, Spring & Fall 2015, Spring 2016
144. Angel Ho Summer, Fall 2015, Spring 2016 (Bio 395)
145. Suraj Rama Summer, Fall 2015, Spring 2016 (Bio 395)
146. Angela Pallotti Fall 2015 Science outreach project, Spring 2016
147. Brianna Demers Spring 2016
148. Shannon Gosser Spring 2016 Public health outreach project
149. Keith Allen Spring 2016 Public health outreach project
150. Zachary Perrotti Spring 2016 Public health outreach project
151. Amanda Spence Spring 2016 Public health outreach project
152. Michael Fritz Spring 2016 Public health outreach project
153. Jay Van Doorn Spring 2016
154. Angie Mikos Summer 2016 KBRIN student.
155. Viresh Dayaram Summer 2016
156. Jacob Sifers Summer 2016 Pep program UK Med School
157. Leeza Khenner EXP 399 independent study. Spring 2017
158. Andrea Cooper Spring 2017
159. Jenni Ho Spring & summer 2016, Spring 2017
160. Aya Omar Spring & summer 2016, Spring 2017
161. Jenika Soni Summer & Fall 2016, Spring 2017
162. Tori Hicky Fall 2016, Spring 2017
163. Rachel Potter Spring, Fall 2015, Spring & summer 2016, Spring & Summer & Fall 2017, Spring 2018
164. Kaylee Hall Spring & summer 2016. Lab research neuro & public health outreach Project, Spring, Fall 2017, Spring 2018
165. Christina Hermanns Fall 2016, Spring & Fall 2017, Spring 2018
166. La Shay Byrd Spring & Fall 2017, Spring 2018
167. Alexandra (Alex) Stanback Fall 2017, Spring 2018
168. Victoria (Ali) Spedding Fall 2017, Spring 2018
169. Jennifer McCall (Costa) Summer & Fall 2017, Spring 2018
170. Ogechi Anyagaligbo Summer 2018
171. Juma Abdullah Baryaa Summer 2018
172. Jate Bernard Summer 2018, Volunteer from Univ. of Virginia.

173. Tristan Donovan — Fall 2017, Spring 2018
174. Maddie Stanback — Fall 2018
175. Samuel Wycoff — Summer, Fall 2015 (past high school student in the lab), Spring & summer 2016, Spring & Fall 2017, Spring & Fall 2018, Spring 2019
176. Eashwar Somasundaram — Spring & Fall 2016, Spring & Summer & Fall 2017, Spring and Fall 2018, Volunteer summer 2018, Spring 2019
177. Catherine E. Stanley — Spring 2019
178. Chinni Suryadevara — Fall 2018, Spring 2019

179. Micaiah McNabb — Spring 2018, Summer 2018, Spring 2019, Fall 2019
180. Carly Ballinger-Boone — Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019
181. Umair Bhutto — Spring 2018, Summer & Fall 2018 (UK summer fellowship $2K) Spring and Fall 2019
182. Abigail Greenhalgh — Fall 2018, Spring & Fall 2019
183. Oscar Istas — Fall 2018, Spring & Fall 2019
184. Christa Saelinger — Fall 2018, Spring & Fall 2019
185. Blair Nethery — Fall 2020
186. Grace Jacobs — Fall 2020
187. Tristan Donovan — Returning from past semesters. Fall 2019, Spring & Fall 2020, Spring 2021
188. Cecilia Pankau — Spring 2021- Bio398/395
189. Vaaragie Subramaniam — Spring 2021-Bio398/394
190. Nicole T. Marguerite — Fall 2019, Spring & Fall 2020, Spring 2021
191. Aubrey Wehry — Spring 2021 Bio398/Bio395
192. Nyla Parker — Summer 2021; Neuro Fellow, UK Neuroscience Institute (Summer 2021)
193. Hannah Tanner — Summer 2021-KBRIN fellowship
194. Devan Neely — Fall 2021
195. Shelby McCubbin — Fall 2019, Spring & Fall 2020, Spring and Fall 2021, Neuro Fellow, UK Neuroscience Institute, Spring 2022. 2021 won the UK Sandra Legan Neuroscience award for outstanding research.
196. Alexis (Lexie) Meade — Fall 2021, Spring 2022
197. Jawad Saleem — Spring 2022
198. Ashley Starks — Spring 2022
199. Lindsey E. Moffitt — Summer 2022- Joint with Dr. D.N. McLetchie
200. Rachael M. Vascassenno — Summer 2022 KBRIN summer fellowship

***Note:** 30+ of the above undergraduate students that worked one semester in the laboratory have come back to continue their projects for 1 full year or more.

High school science teachers or teachers in MIC training visiting the lab for a day or more to learn techniques or experiments:

1. Ms. Heidi Anderson (Dunbar high school) NSF-OIB: **RET** Supplement to my NSF Grant $10,000 for summer 2005.

2. Ms. Berry Hart (Dunbar high school) NSF-OIB: **RET** Supplement to my NSF Grant $10,000 for summer 2005.
3. Jennifer Wilson, High school teacher, Pulaski County, KY. July 20-24, 2015
4. Lydia Tiller, High school teacher, Lincoln County, KY. July 20-24, 2015
5. Logan Bartley, MIC student - Teacher, Grad student at UK. July 20-24, 2015
6. Jennifer Kirchner, MIC student - Teacher, Grad student at UK. July 20-24, 2015

High School/Middle School students

1. A. Clay Turner — Lafayette High School. Fall 2004-Spring 2005, 1st UKRP fellowship $500. Fall 2005- Spring 2006 (Sr. research project). UKRP fellowship 2nd $500. Won an Intel award at the International INTEL Sci. fair ($40K scholarship).

2. High school student that come to the lab for observing experiments. Ms. Jane Markowitz (Fall 2006)

3. Meagan Griffin — Sayer High School. Spring and Fall 2006. UKRP fellowship $500.

4. Braxton Adkins — Tates Creek High. He came to shadow the lab for 1 week in the summer of 2009 before starting at Univ of KY as a biology major.

5. Ann S. Cooper — Morton Middle School. Fall & Spring 2003, Fall & Spring 2004, UKRP 1st fellowship $500.
Lafayette High School. Summer, Fall 2005, UKRP fellowship 2nd $500, Fall 2006, Spring 2007; UKRP 3rd fellowship $500 for Fall 07-Spring 08. ; UKRP 4th fellowship $500 for Fall 08-Spring 09
Won **4th place International INTEL** in the category of Behavioral Science award at the International INTEL Sci. fair 2007.
Won **2nd place International INTEL** in the category of Animal Sciences at the International INTEL Sci. fair 2008.
Fall 2009 1st in category of Behavioral Sciences for all High Schools students at Regional UK sci fair

6. Richard Cooper — Morton Middle School. Fall 2006, Spring 2007, Fall 2007, Spring 2008
5th grade: Overall winner for all 5th through 8th grades- 2006 County Science Fair
6th grade: 2nd at the STATE sci fair held at EKU 2007 for Engineering
7th grade: 1st overall (all grades 5th-8th) at Regional Intel/Discovey Channel affiliated fair.

7. Shuang Xu — Spring 2008, Dunbar High School MSTC student. UKRP fellowship $500. Fall 2009 2nd Overall for all High Schools students at Regional UK sci fair. Won **3rd place International INTEL** in the category of Animal Sciences at the International INTEL Sci. fair 2009.

8. Maddie Delgado — Summer 2008, Lexington Catholic High School. UKRP fellowship $500

9. Curtis Northcutt — Summer 2008, Lafayette High School. UKRP fellowship $500
Fall 2009 3rd Overall for all High Schools students at Regional UK sci fair. Presented at **International INTEL.**

10. Justin Graff — 2008-2009, Henry Clay High School. UKRP fellowship $500
Fall 2009 2nd in category of Animal Sciences for all High Schools students at Regional UK sci fair
2009-2010, Second year in the lab on a new project. UKRP fellowship $500
Placed 2nd in division at County fair. Regional fair- placed 3rd OVERALL best of fair for all high schools in all categories.

11. Kylah Rymond — 2009-2010, Henry Clay High School. UKRP fellowship $500
Placed 1st in division at County fair. Regional fair- placed 3rd in Animal Science

12. Valarie Sarge — 2011-2012 Dunbar High School (sophomore). Won 3rd overall place at State Level. Presented at **International INTEL.**

13. Leo de Castro 2011-2013 Henry Clay High School (Junior)
1st Place, Regional Science fair. INTEL affiliated. Animal Science
1st Place, STATE Science fair. INTEL affiliated. Animal Science
1st Place Biological Sciences, Jr. Kentucky Academy of Sciences. STATE level Science fair.
14. Richard M. Cooper 2010-2013, Lafayette High School. UKRP fellowship $500
15. Robin Swoveland 2012-2013 Dunbar High School (Junior)
16. Elizabeth Schwarcz 2012-2015 Sayre High School (Sophomore - Senior)
3rd Place, Regional Science fair INTEL affiliated. Animal Science
2nd Place, STATE Science fair. INTEL affiliated. Animal Science
2013-2014
2nd in category of Animal Sciences for all High Schools students at Fayette County fair, Placed 2nd in Animal Sciences at Regional UK sci fair
17. Samuel Wycoff 2013-2015 Dunbar High School (Junior- Senior)
1st in category of Animal Sciences for all High Schools students at Fayette County fair, Placed at Regional UK sci fair and 3rd OVERALL at the STATE Science and Engineering fair. Won a free trip to compete at the International INTEL Sci. fair
2014, 1st place Junior Kentucky Academia of Science in Biological sciences
18. Jessica Nelson 2015-2016 (Henry Clay)
19. Natalie Fields 2015-2016 (Lafayette High School)
20. Clara de Castro 2012-2015 Sayre High School (Freshman - Junior)
Participant at both Regional and State science fairs.
2nd Place Biological Sciences, Jr. Kentucky Academy of Sciences. STATE level Science fair.
2013-2014 Sayre (Sophomore)
1st place Fy. County Science fair. Biochemistry.
2nd place, Regional Science fair (UK), Biochemistry. INTEL affiliated.
2nd place, STATE LEVEL Science fair (EKU), Biochemistry. INTEL affiliated.
21. Aya Samadi Summer 2016
22. Noah de Castro Spring 2019- present. Lafayette High School. 3rd place in Chemistry at the Central KY Regional Science INTEL fair 2021.
23. Venky Suryadevara Fall 2019- 2020. Lafayette High School. 1st place in Biochemistry at the Central KY Regional Science INTEL fair 2021.
Fall 2021-Spring 2022- continue Science fair projects in the lab.
24. Anna Jeoung Fall 2019- Spring 2020. Lafayette High School.
25. Kate Jacobs Fall 2021-spring 2022. Lexington Christian Academy (LCA). 8th grade science fair project. Won 1st place for LCA.

VII. Research Collaborations

Visiting colleagues to learn techniques in my laboratory or to interact:

1. Dr. Wendi Neckameyer (2 week visit 1997 & visit in March 1999). Dept. of Pharmacol. and Physiol., St Louis Univ. Sch. of Med., St. Louis, MO, USA. (She learned physiological techniques related to *Drosophila* neuromuscular transmission)
2. Mr. Markus Klose (week visit in March 2000). Dept. of Biological Sciences, Brock University, St.

Catharines, Ontario, **Canada**. (He came to learn quantal analysis related to neuromodulation of *Drosophila* neuromuscular transmission)

3. Dr. Thomas Breithaupt, Assistant Professor. University of Konstanz, Konstanz, **Germany**. Two week visit in August, 2000 to learn an approach of monitoring heart rate in crayfish while they undergo social interaction. In addition, we worked together on a joint project in the use of olfactory cues in cave crayfish during social interactions.
4. Dr. Joffre Mercier, Full professor. Department of Biological Sciences, Brock University, St. Catharines, Ontario, **Canada.** An 8 week visit in 2002. He came to work in my lab to learn some new preparations in which to investigate mechanisms of synaptic modulation by neuropeptides.
5. Mr. Hyun Sik Yang, Medical student at Seoul National University, Seoul, **South Korea**. He spent January through February 2004 in my lab to learn neurophysiology techniques related to measures of ephaptic communication between neurons.
6. Ms. Yulia Akbergenova, PhD graduate student from Lehigh University, PA. 2005. She came to the lab to learn *Drosophila* neurophysiology and dissection techniques. **Now a postdoc at MIT.**
7. Mr. Jong Hoon Lee. He visited during the summer of 2006. His home school was Yeungnam University in Daegu, **South Korea**. He came to my lab to learn neurophysiology and animal behavior related with fruit flies (*Drosophila*). He was a 2nd year undergraduate biology major at the time of his visit.
8. Mr. Hyoseok Chae. A visiting graduate student from Chonnam National University, Gwangju, **Korea**. His PhD mentor is Dr. Chang Kim at Chonnam National University. He came to my lab to conduct research on sensory neurons in Drosophila larvae. Electrophysiological recordings from primary sensory neurons is the focus. Dec. 5, 2006 to Feb 2007.
9. **Sabbatical Professor.** Dr. and Colonial WooYoung Chung. Korean Military Academy in Seoul, **Korea**. He spent 1 year (Spring 2007-2008) in the lab to learn more about physiological recordings at neuromuscular junctions. He was also responsible for bringing 1 graduate student, all expenses paid by the Korean Military Academy, to UK to complete a MS in my laboratory.
10. Ms. Erica Chao (PhD student) from Colorado State University spent 2 weeks in mine and Dr. Ken Campbell's (Dept of Physiology) lab learning techniques of single muscle fiber force recordings. (summer 2008)
11. **Sabbatical Professor.** Dr. and Colonial WooYoung Chung. Korean Military Academy in Seoul, **Korea**. He spent 6 months (Aug 2014-Feb 2015) in the lab to learn more about physiological recordings at neuromuscular junctions.
12. Jennifer Wilson, In–service teacher Pulaski County, KY. Summer 2015 research experience
13. Lydia Tiller, In–service teacher Lincoln County, KY. Summer 2015 research experience
14. Logan Bartley, Pre-service teacher at UK. Summer 2015 research experience
15. Jennifer Kirchner, Pre-service teacher at UK. Summer 2015 research experience

VIII. NATIONAL/INTERNATIONAL SERVICE - Editing & Reviewing

2007-2017. CHIEF EDITOR for *International Journal of Zoological Research*
This journal is published by Academic Journals Inc., NY, USA
Scope of the journal includes: behaviour, biochemistry and physiology, developmental biology, ecology, genetics, morphology and ultrastructure, parasitology and pathology, and systematics and evolution.
Academic Journals Inc. is dedicated to publishing the finest peer-reviewed research in all fields of science and technology on the basis of its originality, importance, interdisciplinary interest, timeliness, accessibility, elegance and surprising conclusions.
This also involves reviewing a number of submission myself and managing reviewers.
Please see new www site:
http://www.scialert.net/eboard.php?issn=1811-9778

2011-present. Editorial Board of Frontiers in Skeletal Muscle Physiology. http://community.frontiersin.org/people/RobinCooper_1/31932

2013-Present. A member of JoVE's Editorial Board in the Neurosciences.
(http://www.jove.com/editorial-boards). Please see the web page for more about this wonderful journal. http://www.jove.com/about Journal of Visualized Experiments (JoVE) is a peer reviewed, PubMed indexed journal devoted to the publication of biological, medical, chemical and physical research in a video format.

2011-2013. CHIEF EDITOR for Asian *Journal of Animal and Veterinary Advances*
This journal is published by Academic Journals Inc., NY, USA
Asian Journal of Animal and Veterinary Advances is a high-quality peer-reviewed well indexed scientific journal publishing original research findings on all aspects of animal and veterinary sciences. Scope of the journal includes: pathology, microbiology, parasitology, physiology, pharmacology, physiology, veterinary medicine, poultry science, animal genetics and breeding, animal husbandry, animal reproduction and animal nutrition. I asked to step down as I was not comfortable identifying good reviewers for the various types of manuscript submissions. Please see www site: http://scialert.net/jindex.php?issn=1683-9919. They kept me listed for some time even after I stepped down.

2015- Chair an oral session at the SICB meeting. Session "Muscle Cellular Physiology"
One day of the SICB meeting used for this activity. Society for Comparative and Integrative Biology (SICB). Society for Integrative and Comparative Biology. Annual Meeting. January 3-7, 2015 West Palm Beach, FL.

MANUSCRIPT REVIEWS

Reviewed manuscripts/chapters from the following journals or publishers since 1997.I stopped keeping track in 2020 as there are too many and I just turn them around quickly for reviewing.

Academic Press (2009 x 6) various manuscripts for their various journals.
ACS Chemical Neuroscience (2018)

Advances in Physiology Education (2019, 2022)
Acta Histochemica (2019)
ACS Chemical Neuroscience - American Chemical Society (2021)
African Journal of Biotechnology (2012)
American Journal of Physiology - Regulatory, Integrative and Comparative Physiology (2012, 2017x2, 2020)
Animal Physiology. From genes to organisms (2004) 3 chapters. Cited as a reviewer for textbook (editors Sherwood, Klandorf, and Yancy).
Animal Welfare (2022)
Annual Review & Research in Biology (2013)
Archives of Insect Biochemistry & Physiology (2018)
Applied Sciences -MDPI (2021, 2022)
Aquaculture Reports (2019)
Behaviour (2012, 2014, 2016, 2019)
Behavioral Neuroscience (a journal of the American Psychological Association) 2022
Biology http://www.mdpi.com/journal/biology/ (2014)
Biology OPEN 2020
Biomaterials. Impact factor 8.312 (2016)
The Biological Bulletin (2016)
BioFactors-John Wiley & Sons (2019)
BioMedical Central (2006, 2015)
Brain Research (2002, 2003x3, 2004, 2005x2, 2011, 2016)
Brain Research Bulletin (2002)
Brain Sciences-MDPI (2019)
British Biotechnology Journal (2016)
British Journal of Pharmaceutical Research (2016)
Canadian Journal of Zoology (2003)
Cells-MDPI- (2022x2)
Cell & Tissue Research (2001, 2003, 2006)
Circulation (2009)
Comparative Biochemistry and Physiology (1998,1999,2002,2003,2007,2008, 2011x2, 2014, 2016, 2019, 2021)

CRC Press- review potential book "The Senses of Animals" 2022 by Mark Hollins.
Crustacean Nervous System (2011) Peer reviewed a chapter for the editor of this book.
Development (2003)
Diagnostics-MDPI (2022)
DOVE Press Medical Research (2020)
Ecotoxicology and Environmental Safety (2013)
Environmental Science and Pollution Research (2022)
Ethology (2014)
European Journal of Neuroscience (2005, 2006, 2007, 2008)
Experimental & Molecular Medicine (2017)
FLY 2013 (x2)
Frontiers Pharmacology (2015)
Frontiers in Physiology (2016, 2017x2, 2018x2, 2019, 2022x4)
Frontiers in Physiology, section Striated Muscle Physiology (2017x2)

Frontiers in Cell and Developmental Biology (2021, 2022)
Genes, Brain and Behavior (2006, 2007)
Hormones and Behavior (2000, 2013)
Impulse (Journal for undergraduate research in Neuroscience, ISSN) (2005, 2006)
Insect Biochemistry and Molecular Biology (1997,1998)
Insect (2019)
International Journal of Environmental Research and Public Health (2020)
International Journal of Molecular Sciences, Basel, Switzerland (2018 x 2, 2019x3, 2022x2)
Journal of Pharmaceutical Research International (2021)
International Journal of Plant & Soil Science (2017)
International Journal of Tropical Disease & Health (2017)
Integrative Organismal Biology: A Journal of the Society for Integrative and Comparative Biology (2019)
Invertebrate Biology (2010)
Journal of Comparative Neurology (1998, 1999, 2001x3, 2003)
Journal of Comparative Physiology – A (2008, 2016x2; 2019)
Journal of Comparative Physiology – B (2013)
Journal of Crustacean Biology (2000, 2003, 2004, 2005)
Journal of Experimental Agriculture International (2022x2)
Journal of Experimental Biology (1998; 2007, 2008x2, 2012x2, 2014x2, 2018x2, 2021)
Journal of Experimental Zoology (2001x2; 2007)
Journal of European Neuroscience (2005, 2006, 2008)
Journal of Microscopy (2011)
Journal of Neurochemistry (2005)
Journal of Neurophysiology (1998, 2000, 2001x2, 2013x2, 2014, 2015, 2016, 2017x2)
Journal of Neurobiology (2000, 2003)
Journal of Neuroscience (2004, 2005x2, 2007, 2008x2)
Journal of Neuroscience Methods (2005x2, 2007x2; 2008; 2010)
Journal of Neuroscience Research (2014)
Journal of Pharmaceutical Research International (2021)
Journal of Physiology-London (2005, 2009)
Journal of Physiology-Paris (2014)
Journal of Taibah University for Science (2021)
Journal of Visualized Experiments (JoVE) (2011x3, 2013x2, 2014, 2015, 2022)
Marine Biology (2022)
Marine Biotechnology (2008x2)
Maryland Sea Grant (book chapter): Biology of Blue Crab (2000)
Medical Engineering & Physics (2007)
Metabolic Brain Disease (2021)
Molecular and Cellular Neuroscience (2010)
Molecular Pain (2017)
Molecular Brain (2018)
Neuroscience (2016)
Neuroscience Bulletin (2014)
Neuroscience IBRO (2000, 2001, 2008, 2009, 2010, 2012)
Neuroscience Letters (2002)
Neurosignals (2011x2)

Neural Plasticity (2017)
PEPTIDES (2007)
Pharmaceuticals (2022)
Physiological Genomics (2004)
Physiological Reports (2022)
Physiology & Behavior (2012, 2017)
PLoS ONE (2010x2, 2011, 2016x**3**, 2017x3, 2022)
Prentice Hall (reviewed 5 chapters, 150 pgs of a potential text book on animal behavior) (1998)
Royal Society Open Science (2017)
Royal Society Proceedings B (2022)
Scientific Reports (2014, 2015x2) published by Nature Publishing Group
Science of the Total Environment (2019)
Sensors & Actuators: B. Chemical. (2017)
Synapse (2005, 2012, 2019, 2022)
The Decapod Crustaceans book (2019)-Review chapters on animal care by Universities Federation for Animal Welfare (UFAW).
Toxin Reviews (2018)
The Biological Bulletin (1999, 2019)
The Journal of Insect Physiology (2009)
The Journal of Undergraduate Neuroscience Education (2006, 2014, 2015)
Toxins- MDPI (2019)
Vascular Pharmacology (2015)
Virulence (2022)
Zoological Studies (2001)

GRANT REVIEWS

1998-1999

1. NSF external grant reviewer, IBN- Neuroscience section. (Program director- Dr. Daniel K. Hartline).
2. NSF external grant reviewer, Computational Neuroscience section. (Program director - Dr. Daniel K. Hartline).
3. External grant reviewer, Thomas F. Kate Miller Jeffress Memorial Trust, Commonwealth of Virginia.

1999-2000

1. **NSF** external grant reviewer, Computational Neuroscience section. (Program director- Dr. Roy White).
2. **Natural Environment Research Council.** This granting agency is in the United Kingdom.

2000-2001

1. **NSF** external grant reviewer, Integrative Animal Biology. (Program dir. - Dr. W.E. Zamer).

2002-2003

1. **NSF** external grant reviewer, Computational Neuroscience section. (Program dir. - Dr. Chris Platt).
2. **NSF** external grant reviewer, Behavioural Neuroscience section. (Program dir.- Dr. Carol Van Hartesveldt).
3. **NSF** external grant reviewer, Neuronal and Glial mechanisms. (Program dir.- Dr. Soo-Siang Lim). Two different proposals.

4. **U.S. Dept. of State**. The International Science and Technology Center (ISTC), U.S. Civilian Research and Development Foundation. (Program director- Dr. Mark Porter, Arlington, VA).

2004

1. **United States-Israel Binational Science Foundation**: Review Research Proposals
2. **NSF** external grant reviewer. Faculty Early Career Development. (Program dir.- Fred Stollnitz).

2005

1. **NSF** external grant reviewer. (Program dir.- Ione Hunt Von Herbing).
2. **NSF** external grant reviewer. (Program dir.- Paul B. Farel).
3. **NSERC Canada**. External grant reviewer.

2006

1. **NSF** external grant reviewer. (Program dir.- Paul B. Farel).

2007

1. Panel reviewer for **National Science Foundation**. Course, Curriculum, and Laboratory Improvement (CCLI) program. Held in Arlington, VA. ~ 25 proposals.
2. **NSF** external grant reviewer. (Program dir.- Paul B. Farel).
3. **NSF** external grant reviewer. (Program dir.- Diane M. Witt).
4. **NSF** external grant reviewer. (Program dir.- J Steven de Belle).

2008

1. Panel reviewer for **NIH**. ZRG1 F03B-D study section. Reviews of new investigator grants. Held in Washington, DC. 44 proposals. Nov. 12-14, 2008. Michael A. Lang was the SRO.

2010

1. **Swiss National Science Foundation**. External reviewer. Topic: Neurobiology (Wendy Altherr)
2. **NSF** external grant reviewer. (Program dir.- Mark D. Kirk)

2011

1. **NSF** external grant reviewer. (Program dir.-Karen A. Mesce)

2013

1. **NSF** external grant reviewer. (Program dir.- Michelle Elekonich)
2. **NIH** external grant reviewer. (Program dir.- Joanne Fujii)
3. Reviewed grant for University of Missouri Research Board (Dr. Carole P. McArthur, Univ of Missouri-Kansas City)

2014

1. Reviewed grant for Natural Sciences and Engineering Research Council of Canada (Nathalie Séguin, Research Grants and Scholarships)
2. Reviewed grant for Kentucky Agricultural Experiment Station (KAES) and the USDA Cooperative State Research, Education, and Extension Service (CSREES). (Contact Cherryll Duncan).

2017

1. Reviewed neurobiology grants for Freiburg Institute for Advanced Studies (FRIAS, www.frias.uni-freiburg.de) and the University of Freiburg offer a range of Marie Curie Junior and Senior Fellowships for the academic year 2017/18.

2. Review grants for National Science Foundation (NSF) Experimental Program to Stimulate Competitive Research (EPSCoR) Program officers: Raffaella Montelli and Uma Venkateswaran.

ADMINISTRATIVE SOCIETY FUNCTIONS

1998-2001

Society for Integrative and Comparative Biology (Formally known as American Society of Zoologists)
I was elected, in an international ballot, as **Secretary** for the Division of Neurobiology (DNB) of this society. The term was for 3 years (1998-2001) and my role was to help in the annual meeting and send out electronic mail to all our constituents on the events and news within our international organization.

1998-2013

Served as the **Member at Large** (**1998-1999**), **President elect** (**2001-2002**) and **President** (**2002-2003**) for the Society for Neuroscience-Kentucky chapter. My role as Member at Large was to organize the national Brain Awareness Week among the local elementary, middle, and high schools and to help coordinate external events to better promote knowledge about the field of neuroscience (1998-1999). In **2002-2004,** I designed and maintained the WWW site for the Society for Neuroscience-Kentucky chapter. **2012-2013 Outreach Coordinator** for the chapter.

2003-2005

Society for Integrative and Comparative Biology (Formally known as American Society of Zoologists)
I was elected, in an international election, as **Chair** for the Division of Neurobiology (DNB) of this society.

2005-2007

Society for Integrative and Comparative Biology (Formally known as American Society of Zoologists). I was elected to serve as **Chair** for the Education Council on the executive board of SICB (Society wide-International, executive board member).

2003-2007. Director of the **Central KY Regional Science and Engineering Fair, Inc**. This is a new entity I brought to the University of KY. This provides an opportunity for 33 counties in KY to send their K4-12 students to compete in the **DISCOVERY CHANNEL CHALLEGE** or **INTEL-ISEF** recognized science fairs. This also provided UK with some credibility for PR into the community. **THIS TOOK A CONSIDERABLE AMOUNT OF TIME AND EFFORT.** (I would estimate 3 to 4 weeks of total time each year.)

2006-2007 Vice president for the Kentucky Academy of Sciences (KAS). This then leads by default to President Elect for 2007-2008 and then **President of the KAS for 2008-2009**. This is a state wide organization to promote science education in the state of KY.

2008-2009 President for the Kentucky Academy of Sciences (KAS). Organization of this year's annual meeting at UK Oct 31-Nov. 1st. 600 people attended this meeting. This is a state wide organization to promote science education in the state of KY.

2012-2014 Outreach Coordinator for the Society for Neuroscience-Kentucky chapter.

2012-2013 President for the Kentucky Chapter for the American Physiological Society (KY-PHYS). I started the state wide chapter in the summer of 2012 and organized our 1st state wide meetings. **2013-2014** Past President for KY-PHYS.

2014-present. Member of the Executive Committee for the Center of Muscle Biology (CMB) at the University of Kentucky. My role is to provide guidance for future research and educational opportunities for the CMB. CMB web site https://www.uky.edu/chs/center-for-muscle-biology/leadership

2016-2019 Treasurer (3 year term) Elected post. **Kentucky Chapter** for the American Physiological Society (KY-PHYS). I started the state wide chapter in the summer of 2012 and organizing our 1st state wide meetings. **2013-2014** Past President for KY-PHYS.

National Outreach Activity

1. **MadSci Network**
   WWW based group science help line for all ages (focus group Neurobiology).
   MadSci Network see http://www.madsci.org
   This site and distribution is run by faculty and grad students out of Washington Univ., St Louis, MO. I have answered questions and participated in discussion groups around the world on topics related to neuroscience. The answers to questions, in some cases, take a good deal of time to answer correctly with literature citations. The questions range from basic science to clinical relevant problems.

2. **Camp Quest**
   Since 2006 summer I have been actively involved in education at Camp Quest (OH camp). I spend 1 week each summer helping at the camp to teach kids about Biology with hands on activity as well as classroom type of setting with a lecture on various topics.

3. **Camp Quest, INC.** I am the registered agent for the INC. INC is filed in Fayette, Co, KY.

4. June 2011, **ABLE (Association for Biology Laboratory Education) Conference workshop.** I taught a workshop for university level biology teachers. "Effect of Environment and Modulators on GI and Heart Function in Invertebrates: Shrimp and *Drosophila*". This was a cost out of my own personal pocket for travel, registration and supplies for the workshop (~$1,000). http://www.ableweb.org/conf/able2011/index.htm

5. Submitted 4 workshop proposals for 2012 **National Science Teachers Association (NSTA)** Regional Conference in Louisville (October 18-20). Three were accepted and presented .

   (1) Cooper, R.L., Holsinger, R.C., Rose, S., Cooper, H., Krall, R.M., Johnson, D. and Zeidler-Watters, K. (2012). STEM & Health: Stressors on the circulatory system related with excess body fat. **PRESENTED**

   (2) Cooper, R.L., Holsinger, R.C., Krall, R.M., Johnson, D. and Zeidler-Watters, K. (2012). Human Respiration Laboratory Experiment with a Geometric Calibration.

   (3) Holsinger, R.C., Cooper, R.L., Krall, R.M., Johnson, D. and Zeidler-Watters, K. (2012). Effect of Environment and Modulators on Hindgut and Heart Function in Invertebrates: Crustaceans and *Drosophila*. **PRESENTED**

   (4) Holsinger, R.C., Cooper, R.L., Cooper, H., Krall, R.M., Johnson, D. and Zeidler-Watters, K.

(2012).Classroom activity on buffering related to respiration for high school and introductory college courses in biological sciences. **PRESENTED**

6. Submitted 2 workshop proposals for **2013 National Science Teachers Association (NSTA)** for two different regional meetings. Both were accepted.

(1) Cooper, R.L., Krall, R.M., Mayo, S., Johnson, D. and Zeidler-Watters, K. (2013). STEM & Health: Modeling the circulatory system related with excess body fat. STEM Forum & Expo, St. Louis, Missouri, 05/15/2013 - 05/18/2013.

(2) Johnson, D., Mayo, S., Zeidler-Watters, K. and Cooper, R.L. (2013) Session title: Engineering Understanding of a Health Crisis. Description: Engineer a table top model for use at a "health fair" to help educate students and the public about stressors on the circulatory system. Charlotte, North Carolina November 7–9, 2013.

7. National Neurotrauma Society. Set up and tear down the 100 Kiosks for the posters. This was a meeting hosted in part by UK held in Lexington. KY.
https://www.nationalneurotraumasociety.org/symposium/scientific-program/
A number of grad students and I managed this activity for the national society

8. **Dec. 2017.** Submitted 2 full workshop proposals and 2 short workshops for 2018. **ABLE (Association for Biology Laboratory Education) Conference workshop.**

The two all day workshop submissions: (1) A hands on educational module to teach aspects of human dietary health using fruit flies as a model. (2) Understanding acute deep tissue injury of motor units.

The two short (2 hr) workshops submissions: (1) Mechanical and olfactory responses of crayfish and lobsters: Antenna and antennule recordings with extracellular electrodes (kits from Backyard brains but a new educational model not yet advertised). (2) The effects of clove oil (i.e, eugenol) as an anesthetic for an insect: *Drosophila* adults and larval assays.

9. **Sept. 2019.** Submitted 2 full workshop proposals and 1 short workshops for 2020. **ABLE (Association for Biology Laboratory Education)** Conference workshop. San Degio, Calif. for June 2020.
The two all day workshop submissions: (1) An active learning approach to teach aspects of human dietary health using the classic Drosophila model (2) Revisiting Mendel: Use of a behavioral assay to examine inheritance of traits in *Drosophila*.

The one short (2 hr) workshop submissions: (1) Bridging Optogenetics, Metabolism, and Animal Behavior for Student-Driven Inquiry at High School and College Levels

SOCIETY MEMBERSHIPS

Society for Integrative and Comparative Biology (Formerly known as American Society of Zoologists) (Division of Neurobiology) July 1998 to June 2001 **Secretary** for the Division of Neurobiology and **Chair** from 2002 to 2005.

Society for Neuroscience
Blue Grass Grotto - as a biologist.
National Speleological Society - as a biologist
National League for Nursing, since 2011
American Nurses Association, since 2011
Southern Nursing Research Society (SNRS), since 2011

IX. Invited Lectures

March 1990 Dept. Seminar. Zoological Inst., Univ. of Basel, Basel, **Switzerland**
"Joint and tension receptors in the limbs of crustaceans"

April 1990 CNRS, Laboratoire de Neurosciences functionelles, Marseille, **France**
"Function and development of proprioceptors in the limbs of crustaceans"

July 1990 Faculty of Biology, Univ. of Konstanz, **Germany**
"Single unit analysis of proprioceptors in limbs of crustaceans"

Sept. 1990 Dept. of Physiol., Univ. of Bristol, Sch. of Veterinary Sci., Bristol, **England**
"Development and function of proprioceptors in crabs and lobsters"

Oct. 1990 "Biosymposium", A Ciba-Geigy sponsored event for the Biocenter, Univ. of Basel, Basel, **Switzerland** (Ciba-Geigy, Switzerland)
"How do cell-to-cell contacts influence the properties of ion channels in neurons?"

Sept. 1991 CNRS, Inst. de Pharm. Molec. et Cellulaire, Sophia-Antipolis, **France**
"Synapse formation induces changes in the distribution of calcium currents in leech neurons in culture"

Nov. 1991 Inst. of Neuroscience, Univ. of Oregon, Eugene, Oregon, USA
"Synaptogenesis and calcium current distribution in cultured leech neurons"

Jan. 1992 Pharma. Div. Preclinical Res., F Hoffmann-La-Roche Ltd. Basel, **Switzerland**
"Alterations in calcium current distribution induced by synapse formation"

Dec. 1992 Dept. of Physiol., MRC group seminar, Univ. of Toronto, Toronto, **Canada**.
"Calcium current distribution on neurons before and after synapse formation"

Dec. 1992 Dept. of Biol. Sci., Columbia Univ., N.Y., N.Y., USA.
"Calcium current distribution before and after synapse formation by leech neurons"

Jan. 1993 Dept. of Biol. Sci., Duquesne Univ., Pittsburgh, Penn., USA
"Calcium current distribution on neurons before and after synapse formation"

Feb. 1995 Dept. of Biology, York Univ., North York, Ontario, **Canada**
"Synaptic plasticity in crustaceans and *Drosophila*: On the search for synaptically

significant molecules"

March 1995 Playfair Neuroscience Seminar, The Toronto Hospital, Toronto Western division
"Synaptic plasticity: Interface between physiological and molecular approaches, with observations on amplification and analysis of genetic material from single identified neurons."

Nov. 1995 Dept. of Biology, Univ. of Kentucky, Lexington, Kentucky
"Synaptic plasticity of neurons: Interface between physiological, structure and molecular approaches, with observations on mRNA amplification obtained from single identified neurons."

May 1996 Dept. of Physiology, School of Medicine, Univ. of Montréal, Montréal, Québec, **Canada**
"Synaptic diversity and differentiation studied at physiological, morphological and molecular levels: Crustacean neuromuscular junctions"

Oct. 1996 Center for Biomedical Engineering, Univ. of Kentucky, Lexington, KY.
Joint and tension receptors in the limbs of crustaceans

Jan. 1997 Dept. Pharmacology, School of Medicine, Univ. of Saint Louis, St. Louis, MO.
Molecular clues to neuronal plasticity

Jan. 1997 Dept. Molecular and Cell Physiology, Univ. of Cincinnati Sch. of Medicine, Cinn., OH,
"Synapse formation induces changes in the distribution of calcium currents in leech neurons in culture"

Jan. 1998 Dept. of Biology, Georgia State University, Atlanta, GA.
Neurobiology Club Monthly Seminar
Physiological and morphological differentiation at Crustacean and *Drosophila* neuromuscular junctions
Departmental Seminar
The holistic effects of neuromodulators on crayfish and *Drosophila* behavior, neuromuscular transmission, and sensory function.

Feb. 1998 Dept. of Anatomy and Neurobiology, Univ. of Kentucky, Lexington, KY.
Physiological and morphological differentiation at Crustacean and *Drosophila* neuromuscular junctions

March 1998 Dept. of Biol. Sci., Duquesne Univ., Pittsburgh, Penn.
Physiological and morphological differentiation at Crustacean and *Drosophila* neuromuscular junctions

October 1998 Dept. of Zoology, Miami University, Oxford, OH.
Actions of neuromodulators on physiological and morphological differentiated crustacean and *Drosophila* neuromuscular junctions in relation to whole animal behavior

April 1999 Dept. of Life Sciences, Murray State Univ., Murray, KY.

Actions of neuromodulators on physiological and morphological differentiated crustacean and *Drosophila* neuromuscular junctions in relation to whole animal behavior

July 1999 International Symposium, 'Frontiers in Crustacean Neurobiology', Conference in Hamburg - Blankenese, **GERMANY**. July 8-11, 1999. **Invited speaker**
Influence of neuromodulators and vesicle docking related proteins on the kinetics of vesicular release. Chapter submitted for a book as a result of the conference.

Feb. 11, 2000 Seminar. Midway College, Midway, KY.
My PhD student (Hao Li) and I conducted a dual talk. I presented an overview of on going research with biospeleology and Mr. Li presented his work on cave crayfish social behaviors.

March 1, 2000 Departmental Seminar. Eastern Kentucky University, Richmond, KY.
My PhD student (Hao Li) and I conducted a dual talk. I presented an overview of on going research with biospeleology and Mr. Li presented his work on cave crayfish social behaviors.

March 24, 2000 Dept. of Pharmacology, School of Medicine, East Tennessee State University, Johnson City, TN.
Neuromodulators mechanisms of action on the synaptic steps in chemical transmission at NMJs of *Drosophila* & crustaceans.

May 8, 2000 Faculty of Biology, University of Konstanz, Konstanz, **GERMANY**
The role of neuromodulators on differentiated crustacean and *Drosophila* neuromuscular junctions in relation to whole animal behavior

May 17, 2000 Institut fuer Zoologie, Universitaet Graz, Graz, **AUSTRIA**
The effects of neuromodulators on sensory neurons, CNS command, and neuromuscular junctions in the crayfish and *Drosophila* in relation to the animal's behavior

July 20, 2000 Physiologishes Institut Technische Universitaet Munchen, Munchen, **GERMANY**
Actions of neuromodulators on synaptic transmission in *Drosophila* & crustaceans

July 27, 2000 International Symposium Ecdysone 2000 in Rapperswil, **SWITZERLAND**.
The non-genomic actions of 20-HE in *Drosophila* & crustaceans

Sept. 11, 2000 Univ. of Illinois, Illinois, USA. Dept. of Entomology.
The non-genomic and genomic actions of 20-HE in *Drosophila* and crustaceans during development

Oct. 24, 2000 Univ. of Kentucky, Sch. of Biological Sciences (tenure & promotion talk)
The effects of neuromodulators on sensory neurons, CNS command, and neuromuscular junctions in the crayfish and *Drosophila* in relation to the animal's behavior

May 30, 2001 Dept. of Physiol., Sch. of Medicine, Univ. of Toronto, Toronto, **Canada**.
Development of the larval *Drosophila* NMJ and potential influences of 20-HE

Feb. 1, 2002 Dept. of Entomology, Univ. of KY, Lexington, KY. Dept. Seminar
Modulation in the development of the larval *Drosophila* NMJ

April 25, 2002 Dept. of Biological Structure & Function, Oregon Health & Science University, Portland, OR. Dept. Seminar. Development of the larval *Drosophila* NMJ: Maintaining homeostasis
(Purpose: Short listed for an associate professor position in the Dept. of Structure and Function)

May 20, 2002 Dept. Biology, Seoul National University, Seoul, **South Korea**. Invited as a presenter as part of a NRL workshop on Synaptic Plasticity & Invertebrate Neurobiology, that had a very prestigious roster. For example, **Dr. Paul Greengard** (Rockefeller Institute) that won the **Noble Prize** in medicine and physiology in 2000 was the keynote speaker. My topic was on the "Development of the larval *Drosophila* NMJ: Maintaining homeostasis"

June 10, 2002 Department of Chemistry, Korean Military Academy, Seoul, **South Korea**. Class room presentation to 3rd year cadets (2 hrs). Physiology of Synaptic Transmission: Modulation and Biological toxins.

Oct. 19, 2003 Sloan's Valley Conservation Task Force meeting. Sommerset, KY. Report on the ongoing research of cave biology taking place in the field. In addition, I provided a 40 minute research talk on "A comparisons of antennule structure in surface and cave-dwelling crayfish".

Dec. 10, 2003 Dept. of Physiology, Sch. of Med., Univ of KY., Dept. Seminar. "Synaptic plasticity, development & neuromodulation at neuromuscular junctions".

April 19, 2004 Dept. of Biology, Univ of Cincinnati, OH, Dept. Seminar. "Neuromodulation in the CNS and at the neuromuscular junctions of arthropods".

April 26, 2004 Korean BioScientist Association at the University of Kentucky (KBAUK). Provide an overview of current research in my program.

Oct. 7, 2004 Dept. of Biol. Sci., Lehigh University, PA. Dept. Seminar. "Neuromodulation of synaptic transmission".

Feb. 24, 2005 Dept. of Pharmacology, Sch. of Med., Univ of KY., Dept. Seminar. "Pharmacology of invertebrate synapses: From serotonin systems to the actions of carbon dioxide on glutamate receptors".

April 2005 Dept. of Biology, Abilene Christian University, Abilene, TX. "Neuromodulation in the CNS and at the neuromuscular junctions of arthropods".

May 2005 Department of Physiology, Faculty of Medicine and Health Sciences, United Arab Emirates University, Al Ain, **United Arab Emirates**. Modulation of neuronal function in circuits of crayfish and *Drosophila*.

May 2006 Department of Biological Sciences, College of Natural Sciences. Seoul National University, **Seoul, South Korea.** Neuromodulation of synaptic transmission in crayfish and *Drosophila.* Host Dr. Kaang. May 29, 2006.

June 2006 Seoul National University, Department of Biological Sciences, College of Natural Sciences. **Seoul, South Korea.** More to learn from invertebrates related to synaptic transmission. Host Dr. Kaang. For symposium of National Research Laboratory group research grant. June 14, 2006.

June 2006 Chonnam National University, **Gwangju, Korea**. The effect of neuromodulators on development and function as well as actions of CO_2 in *Drosophila* larvae. Host Dr. Chang Kim. June 20, 2006.

June 2006 Seoul National University Medical School, Department of Physiology. **Seoul, South Korea.** Differentiation in synaptic transmission. Host Dr. Ho & Dr. Lee. June 24, 2006.

August 2006 Neuromodulation of synaptic transmission in crayfish and *Drosophila.*
1st International Conference on Synapses, Memory, Drug Addiction, and Pain.
Dept. of Physiology, University of Toronto, Toronto, **Canada**.

Sept. 2006 Invited by the Russian Academy of Sciences. VIII East European Conference of the International Society for Invertebrate Neurobiology. Held at Kazan Medical School. **RUSSIA**. Host: Prof. P.M. Balaban - meeting chairman.

Sept. 2006 Department of Neuroscience, Cell Biology and Physiology, Wright State University, Boonshoft School of Medicine, OH, USA. Neuromodulation of synaptic transmission in crayfish and *Drosophila.* Host Dr. Kathrin Engisch.

March 2007 Dept. of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL. Neuromodulation in the CNS and at the neuromuscular junctions of arthropods. Host Dr. Victor V. Uteshev.

January 2008 Overview of on-going research projects and views on graduate education. Transylvania University, Lexington, KY. Invited by undergraduate science students. Host: Monica Hagan.

April 20, 2009 Ca^{2+} regulation that influences synaptic transmission: Comparison between crayfish and *Drosophila* NMJs. **Cornell University**, Neurobiology and Behavior, Mudd Hall Ithaca, NY. Host: Dr. Bruce R. Johnson.

Sept. 2, 2011 Regulation and modulation of vesicle pools during synaptic transmission within motor nerve terminals of the crayfish and *Drosophila* model systems. **Dartmouth Medical School,** Department of Physiology and Neurobiology. Lebanon, NH.

Jan. 14, 2012 Properties of synaptic transmission. Korean-American Scientists and Engineers Association Kentucky Chapter (KSEA-KY) Winter Conference and Annual Dinner. University of Kentucky, Lexington, KY.

March 5, 2012 Modulation of vesicle pools during synaptic transmission within motor nerve terminals. **Centre College,** Department of Life Sciences. Danville, KY.

Sept 12, 2012 The effects of deep tissue injury (muscle) and healing processes. Center for Muscle Biology, **Department of Physiology**, University of Kentucky.

July 11, 2013 Nerve terminal matching in conjunction with muscle unloading and loading. Center for Muscle Biology, **Department of Physiology**, University of Kentucky.

Oct. 4, 2013 Modulation of synaptic vesicle pools in motor nerve terminals. Department of Biological Sciences, **Murray State University**, Murray, KY

May 8, 2014 Outreach and Educational Opportunities: Improve NSF Funding Changes while Promoting Muscle Biology. Center for Muscle Biology, **Department of Physiology**, University of Kentucky.

Sept. 17, 2014 Biology departmental seminar. Defining modulator receptor subtypes and their actions in the CNS, heart and neuromuscular junctions of arthropods. Bowling Green State University. Bowling Green, Ohio.

Oct. 2, 2014 Biology departmental seminar. Effects of various modulators on the CNS, heart and neuromuscular junctions of arthropods. Dept. of Biology, Miami Univ. Oxford, OH.

May 11, 2015 Invited speaker at INTEL-ISEF 2015 for a symposia on "Sharing best practices for action plan implementation of a research course in high school" Organizer was Dr. Tina Gibson, Intel ISEF Advisory Council, Outreach Committee.

January 7, 2016 Invited speaker for the Frankfort Regional Medical Center (KY). Nursing research council on the importance on evidence based research related to hospital magnet status.

January 14, 2016 "Optogenetics with cardiac and skeletal muscle" Center for Muscle Biology, Department of Physiology, University of Kentucky.

Nov. 16, 2016 "Modulation of central circuits, neuromuscular junctions and muscle in *Drosophila* & crustaceans for research & educational programs" Departmental seminar. Department of Physiology, University of Kentucky School of Medicine.

January 14, 2017 **College seminar.** Northern New Mexico College, Española, NM (Host: Ulises Ricoy, Dean of Arts and Sciences)

April 26, 2018 Dept of Physiology Seminar, Texas Tech School of Medicine "Neural

circuits, synaptic plasticity and spinoffs" (Host: Dept Chairperson)

May 9, 2018 College of Life Sciences. William Paterson University. Wayne, New Jersey. "Experiences with course-based undergraduate research experience (CURE) to address authentic research questions for a neurophysiology laboratory class."

Sept. 4, 2020 Virtual Dept Seminar. Department of Biological Sciences, Murray State University, Murray, KY. "The development and follow through of ideas without getting lost in a rabbit hole".

Jan. 14, 2022 Dept. Seminar. Department of Biology. Univ. of Louisville. "The mysterious effects of lipopolysaccharides (LPS) directly on synaptic transmission in a few model preparations as a result of last minute decisions".

X. UNIVERSITY OF KENTUCKY SERVICE

1. Served as the **Member at Large** (**1998-1999**), **President elect** (**2001-2002**) and **President** (**2002-2003**) for the Society for Neuroscience-Kentucky chapter. My role as Member at Large was to organize the national Brain Awareness Week among the local elementary, middle, and high schools and to help coordinate external events to better promote knowledge about the field of neuroscience (1998-1999). In **2002-2004,** I designed and maintained the WWW site for the Society for Neuroscience-Kentucky chapter.

2. Faculty sponsor for The Wilding Society. This is a student organization that promotes camping, hiking and getting involved in conversational issues within the state of Kentucky. (The society started in 1998) (1998-2000).

3. A **member** of the executive committee for CEEB (Center for Ecology, Evolution & Behavior) at UK. My role is to help out in administrative matters. (1998-2000).

4. Within the Univ. of KY there is an organization termed the Interdepartmental Neuroscience Program (**INP**). My affiliation with this group was to organize and coordinate the **seminar speaker series** (1998-1999).

5. 1999 Served as an external job candidate reviewer for Dept. of Physiology, UK.

6. 1999 Served as a reviewer for Freshman Scholarships. 75 applications were reviewed.

7. 1999 Served as an external job candidate reviewer for Dept. of Biochemistry, UK.

8. 2000 Served as a mentor for WINS (women in science). Two high school students worked in my laboratory to learn about conducting scientific methods and experimentation. UK- Outreach center program.

9. 2000 Served as a mentor for minority undergraduate students. A Jr. undergraduate student from

Alabama worked in my lab for 1 summer. UK- Outreach center program.

10. 2001 Served as a University reviewer for Undergraduate Research and Creativity Grants. 19 Spring and 33 Summer ones reviewed.

11. 2002 Served as a University reviewer for Freshman Scholarships. 75 applications were reviewed.

12. 2002 Served as an external job candidate reviewer for School of Pharmacy, UK (for 2 different people)

13. 2002 Served as an external job candidate reviewer for Dept. of Entomology, UK.

14. 2002-2003 Served as an external job candidate reviewer for Dept. of Physiology, UK.

15. Univ. of KY, College of Arts and Sciences (**2002-2004**). Area –A, Curriculum Committee.

16. Provided tours for public school students of my lab and short discussion on the science (**2003**) for the Science Outreach Center, UK. (SCRAMS- Science camp for rural and Appalachian middle students).

2004 - Ad hoc for job candidate in Dept. of Anatomy and Neurobiology, UK.

17. Chemical Safety Committee (**2004-2005; 2006-2007; 2007-2008; 2009-2010**) Campus wide oversight.

18. Fellowship Pannel for Northern KY Alumni Club Fellowships (**Spring 2005**). Review fellowships.

19. 2005-2006 Northern Kentucky UK Fellowship Panel. Review fellowship applications. Dean Blackwell's committee.

20. Representative on Mathematical & Natural Sciences for the **University Senate** (**2005-2007**).

21. Selection Committee for the 2006 Provost Outstanding Teacher Award (**2006**)

22. Board member of the Tracy Farmer Center (Scientific Advisory Board) (**2006 for a 3yr term**).

The Tracy Farmer Center for the Environment is the University of Kentucky's focal interdisciplinary center for the comprehensive integration of research, education, and public service dedicated to: advancing our knowledge and understanding of environmental systems, the analysis and management of environmental problems and issues, the development of sustainable technologies and solutions to these environmental problems and issues, and the successful transfer and dissemination of these technologies to state, federal, and local governments, private organizations, businesses and corporations, and individuals.

23. University Studies Committee 2005-2006 (**Campus wide, 2006-2008**; Dr. Phil Kraemer, Director).

24. Graduate Council for University (representing the College of Arts and Sciences) (**Sept. 2006-May 2008**).

25. Kirwan Faculty Prize selection committee (Univ. of KY, for **2007**).

26. TriBeta (faculty representative for the Biology Honor Society local chapter of TriBeta) (**2005-2016**) . Bimonthly meetings to engage undergraduates in various activities. http://www.as.uky.edu/Biology/TriBeta/default.htm

27. Founder and faculty representative of UK-SHIFT. (**2006- 2018**)
http://www.as.uky.edu/Biology/faculty/cooper/UKSHIFT/default.htm

The purpose of UK SHIFT: The purposes of the organization are to 1) promote and practice the open, rational, and scientific examination of the universe and our place in it, 2) and that ethics and morality can be meaningfully based on rational and humanistic ideals and values, 3) promote skeptical inquiry, 4) provide community for atheists, agnostics, humanists, skeptics, naturalists and other freethinkers, 5) organize activities, such as forums for discussion, guest speakers, and debates that educate the University of Kentucky and surrounding community, 6) foster acceptance of freethinkers and promote a positive image of freethinkers through community service, and 7) advocate for the separation between church and state.

28. Member of the Mathematics and Science Education **Program Faculty in the College of Education** at the University of Kentucky. (2007-present). Role is to supervise graduate training in the College of Education. I serve on the Program Faculty, which is also the same as the admission board, for the MIC program for sciences. MIC is the masters with Initial Certification for high & middle school teachers.

29. Fall 2007. National Merit Students. Gave presentations to entering students. Program is run out of the UK EURKRA office.

30. Summer 2008. Served on the extensive external review of the Ag Bio Tech (UK) program. 2 months over the summer of meetings and surveys of faculty, students, mentors, and administrators. (This was not during a salaried DOE time).

31. Fall 2008. Provide a lecture for ANA710/GRN710/PGY710/PHA710
1.5 hrs on Aging of the Nervous System: "Invertebrate studies and their ongoing contributions to neuroscience". (Took a fair bit of time to prepare as this is not my area of expertise).
Course director: Dr. Greg Gerhardt (Dept. Anatomy and Neurobiology).

32. 2009-2010 Statistics dept.- member on faculty search committee for joint position Statistics/Biology

33. March 2010. I participated as a mentor in the UK project (took one full day in session and many pre/post sessions with paper work and reports. UK made $ off this time). University of Kentucky Office of Undergraduate Research and Creativity/eUreKa! will participate in the research study, "Efficacy of Interventions to Promote Research Careers," conducted by Dr. Elise Lev, associate professor at Rutgers University and her research team. The project is funded by the National Institute of General Medical Sciences (NIGMS) at the National Institutes of Health (NIH). Participating schools that are able to refer at least 30 dyads (30 mentors and 30 students) to the study will receive a $10,000 honorarium.

34. 2000-2015, Serve as an advisor and mentor to students in UK A&S Topical Studies programs. Review proposals and advise in course work. Student in past with Physiology focus.

35. 2006-2016, In 2006 Dr. Jim Geddes and I started the topical studies in Neuroscience. Meetings with the A&S dean, Chairs of departments and A&S representatives in presenting the degree

plans of other universities in this area took a good amount of time. Approval was given by the Dean of A&S to proceed and since then Dr. Geddes and I have been managing this program with designing degree plans for the students and seeing them through to graduation.

36. Participated in the College of Arts and Sciences' Envision 2020 program. Presented and demonstrated my research to UK donors at Keenland and to Scholars night on Campus. Took two full days with setup and tear down as well as preparation time.
See- http://envision.as.uky.edu/Predictions/bench_sciences.aspx#RobinCooper
See- **Ampersand Issue Spring 2011 page 39.**

37. April 2011. Reviewed proposals for the Oswald Competition by Univ of KY undergraduates. Reading papers and ranking them for University wide awards.

38. Chair of Chemical Safety Committee (**2012-2020 Spring**). Campus wide oversight. President appointed. Even during my sabbatical semester (Spring 2014) I still served.

39. Posters Presentation Committee for NCUR 2014. (**2013**). The National Conference on Undergraduate Research annual conference. 1st time held at Univ. of KY. Trip to Lacrosse, WI to observe the process for planning next year's event at UK. (3 days).

40. Fall **2012.** Review 10 research proposals submitted by undergraduate students in the AMSTEMM Program (Appalachian & Minority Science, Technology, Engineering & Math Majors) to determine which ones should be funded.

41. Fall 2012. Review 5 Oswald Competition fellowships for the University of Kentucky. Only Dr. Danley (biology) and I reviewed these proposals

42. 2013 Review Summer research grant proposals for undergraduates (Office of Undergraduate Studies)

43. 2013-2014 Serve as a member of the secondary science program faculty for the Dept of Education, Univ. of KY. Review MIC candidates for their program. (Contact Dr. Krall).

44. 2013-2014 Graduate Council for 2013-2014. The Graduate School. The University of Kentucky. Even during my sabbatical semester (Spring 2014) I still served.

45. 2013-2014. NCUR planning committee and **Person in Charge** of all abstract submissions and review process (~5,000 submissions). Also, I was responsible for all the poster presentation layout and management of presentations for **NCUR 2014** held at Univ of KY. This took a lot of planning time and execution time. Even during my sabbatical semester (Spring 2014) when the event took place I still served as the point person for poster stand set up and tear down as well as trouble shooting.

46. Oct. 7, 2013. Served UK as a representative for outreach on the visit to UK by Kentucky Science Center Louisville. Organized by Jan Swauger.

47. Oct. 28, 2013. Gave talk for 30 students on how to go about communicating to potential mentors for requesting to conduct undergraduate research. Through the Office of Undergraduate Research. 1 hour presentation.

48. Oct 30. 2013. Served UK as a representative for outreach grants on the visit to UK by LG&E/KU Energy Foundation. 2 hour meeting. Organized by Jan Swauger.

49. Feb 25, 2014. Taught a class for the Dept. of STEM, UK (SEM 348-421) methods in science education for pre-service high school science teachers. (Contact Dr. Brett Criswell, Clinical Assistant Professor, STEM Education).

50. May 8, 2014. 8:00 AM- 11:30 AM. An interactive session organized by the Dept of Education (UK). "Teaching toward a touch of greatness". Assessment of MIC program and needs of the program to prosper. Discussions and feedback sessions. Boone Center UK. ~30 faculty and

MIC students (past and present). Even during my sabbatical semester (FALL 2014) I still served.

51. **Sept. 30, 2014**. 1 hour talk to UK 101 students for Natural Science majors. Requested presentation from A&S.

52. **Aug. 21, 2014.** 1 hour with 2 presentations for Dr. Ruth Beattie's FAST TRACT A&S students. 20 students in each group. Requested presentation from A&S.

53. **March 2, 2015.** Guest lecture in Honors Course organized by Dr. Diane Snow. HON301-Spring

54. **June 10, 2015** Provide a full day of biology activities for the UK STEM BLUE camp. 75 middle school students. Joint program with College of Engineering and College of Education, UK.

55. **Sept 9, 2015.** Gave a class room talk for UK 101. contact Alicia D. Seabrooks

56. **Sept 9, 2015** Gave a class room talk for UK 101. contact Emily Baldwin

57. **Sept 9, 2015** Gave a class discussion for the Chellgren Center for Undergraduate Excellence. contact Lynn Hiler

58. **Nov 9, 2015.** Participated in CHS Undergraduate Researchers and Mentors- meeting 1 hour. Organized by Gilson J. Capilouto, Professor & Director of Undergraduate Research, University of Kentucky College of Health Sciences

59. **Nov. 19, 2015.** Gave 1 hour discussion for SPUR (UK Society for Promotion of Undergraduate Research). Contact. Dr. D. Snow

60. **January 6, 2016.** Participated in round table discussion with University of Miami (Oxford, OH) and UK STEM Education department on how the Univ. of Miami can create a STEM center.

61. **April 2016-2020** Serve as a faculty advisor and mentor to students in "**UK Cares". New student organization at UK.** Description: UK Cares is an organization dedicated to completing service projects for UK's campus and nearby areas. The organization will take part in random acts of kindness, which will be completed in various ways such as gift drives for the UK children's hospital, writing motivational notes during finals week, and any other kind act our members would like to contribute.

62. **Fall 2016.** Member of the program review committee for the Department of Rehabilitation Sciences and related academic degree programs in the College of Health Sciences. All ten Committee members will participate in the review of the Department, and Committee members will be assigned in groups of two with primary responsibility for review and preparing the report for one of the five academic degree programs housed in the Department. (Contact Dr. Scott M. Lephart, Dean and Professor, College of Health Sciences, Univ. of KY)

63. **Spring 2017.** College of Arts & Sciences. Univ. of KY. External review member of the Department of Psychology. 2 Full days of physically reviewing the department and report submitted.

64. Spring 2017. College of Education, Univ. of KY. External review member of the College of Education. Focus area the MS, PhD and undergraduate programs in the department of KHP (*Kinesiology and Health Promotion*). Physically reviewing the department and generated a report for the University assessment.

65. Spring 2017. Panel presenter for UK's Graduate Student Council symposium. Topic "Life after grad school". April 11, 2017.

66. Spring 2017. Review grants for undergraduates (UK wide) for study aboard fellowships. UGRAS Selection Committee.

67. **June 7 and 12th, 2017** Provide a full day of biology activities for the UK STEM BLUE camp. 70 middle school students. Joint program with College of Engineering and College of Education, UK.

69. June 21, 2017- 1 hour tour for 4H stem girls on campus. Research facilities and labs.

70. July 1, 2017- June 30, 2020 DUS (**Director of Undergraduate Studies**) for the new Neuroscience major on UK Campus. New administrative role for about 375 students.

71. Dec. 2017. Reviewed the university wide Oswald Undergraduate Awards for the office of Undergraduate Research at UK. ~ 6 hours.

72. Jan. 2018-present. Wildcat Foundations Kick-Off and Student Success Summit. Subcommittee of "Roles and purpose committee". This is to promote 1st year student success at UK. Director Grace Hahn Hester.

73. March 23, 2018. ***On the Table*** is a one-day community-wide dialogue that takes place throughout Lexington. Organized by Todd Stoltzfus UK Program Director for Civic Engagement, University of Kentucky. I lead a table for discussion.

74. Spring-Summer 2018. On search committee for full time advisor for College of Arts and Sciences in their Education Abroad & Exchanges. Skype interviews and then in person interviews for narrowed list. 103 applications. Extensive review of 30 and interview 5 applicants.

75. June 6, 12, 13, 18, 19, 2018 Provide a full day of biology activities for the UK STEM BLUE camp. Total 200 elementary and middle school students. Joint program with College of Engineering and College of Education, UK. Crayfish, fruit flies, human and medical outreach.

76. Thursday July 19th, 2018 UK hosts Project Lead The Way (PLTW). I was asked to provide 2 hrs of Health related activities for 15 high school teachers to show them what their students would be exposed to if they organized field trips to UK in the future with their classes. UK medical school outreach center.

77. Tuesday, Nov. 13, 2018. UK outreach at Frazier Science Outreach Presentation. Present for 1.5 hrs to a high school class from Clinton Co. ATC. Physiology and healthrelated activities.

78. Dec. 2019. Served on faculty search committee for the Dept. of STEM, College of Education.

Screen applicants, 10 Zoom mtgs, 3 campus interviews.

79. 2020-present Appointed by the A&S Dean as Associate Director of the Neuroscience Program. This occurred after passing the DUS on to the next person after my 3 year term.

80. 2021. <u>Committee Chair</u> for external 5year review of the Department of Physiology, Univ. of Kentucky.

81. 2020-2023. Graduate School Committee on Fellowships & Traineeships for a 3 year period (July 1, 2020 - June 30th, 2023). (year 2021- 28 graduate fellowships to review) Presidential Fellowship Review Committee.

82. 2020-21 Academic Area Advisory Committee. Assigned by the Provost. Advice to the provost on tenure and promotion university wide (Life Sciences).

83. 2021 Summative Review Committee for Robert DiPaola, Dean of the College of Medicine at the University of Kentucky. Assigned by Provost Blackwell.

84. 2021. Hosted a small group of undergraduate Summer Research + Creativity Fellows at the 3rd annual Summer Research and Creativity Symposium. Tuesday, August 31 from 4 – 6 PM in the Gatton Student Center's Ballroom C.

85. Spring 2022. Review of the Topical Studies degree program in College of Arts and Sciences, Univ. of KY. Two full days March 3 and 4, 2022. (16 hours)

86. March 2022. LTJ Diversity Fellowship program for graduate students. March 2022. Requested service by Martha L. Peterson (Acting Associate Provost for Graduate and Professional Education, Univ. of KY.) Review of 50 fellowship proposals by committee.

MS Committee service:

1. Stacy Smith 1996-1997; Member (advisor- Dr. Bonner)
2. Kwani Stewart 1997-1998; Member (advisor- Dr. Bonner)
3. Vanessa Boyce 1998-1999; Member (advisor-Dr. Hartman, Duquesne Univ., Biology, Pittsburgh, PA.)
4. Joe Kramer 1998-1999; Member (advisor- Dr. Bonner)
5. Misty Crider 1996-1998; **Advisor**
6. Ping He 1997- 1998; **Advisor**
7. Johann Sohn 1998-1999; **Advisor**
8. Joseph Shearer 1999-2001 **Advisor** (Plan B)
9. Sean Griffin 2000-2002; Member (advisor- Dr. Bonner)
10. Shardan Radmanesh 2000-2002; Member (advisor- Dr. Bonner)
11. Bin Xing 2001-2003 **Advisor**
12. A. Ashleigh Long 2003-2004; **Advisor**
13. Samuel P. Carmichael 2006-2008 Member (advisor Dr. Osborn; Biology)
14. Fan Wu 2008; Member (advisor Dr. O'Hara; Biology)
15. Capt. Junyoung Lee 2007-2010 (MS student); **Advisor**
16. Nathan Klar 2010-2011 (advisor Dr. Crowley)

17. Rachel C. Holsinger 2011-2013. **Advisor** (Thesis)
18. Yan Zhu 2012-2014. **Advisor** (non thesis, plan B)
19. Yuting Zhou 2015 MS exam plan B (committee member) (advisor Dr. Rucker)
20. Alex Palumbo 2015 MS exam plan B (committee member) (advisor Dr. Voss)
21. Connor Donley 2017 MS exam plan B (committee member (advisor Dr. K. High, Dept of Physiology, Masters in medical sciences).
22. Kelle Ellis 2017 MS exam plan B (committee member) (advisor Dr. K. High, Dept of Physiology, Masters in medical sciences).
23. Kristen LaRue 2018 Spring - MS plan B exit exam (Biology)
24. Julia Jagielo-Miller 2018 MS plan A student (committee member) (advisor Dr. Prendergast; Psychology)
25. Randi.Narkevic 2021-present, Advisor and committee member, MS plan B (Biology)

PhD Committee service:

1. Matt Turnbull 2002-2003; Member (advisor Dr. Webb; Entomology)
2. M.K. Jeoung 2000-2003; Member (advisor Dr. Ji; Chemistry)
3. Mark Lancaster 2000-2007; Member (advisor Dr. Viele; Statistics)
4. Shi-Ping Zou 2000-2003 (advisor Dr. Staben)
5. Bruce Griffis 1997-2001; Member (advisor Dr. Bonner)
6. Hao Li 1997-2001; **Advisor**
7. Brad Dickey 1998-2004; Member (advisor Dr. Crowley)
8. Changsu Hwang 1998-2001; Member (advisor Dr. MacAdams; Physics)
9. Greg Mayer 1997-2001; Member (advisor Dr. Hogstrand)
10. Bing Zhao 1997-2004; Member (advisor Dr. Debski)
11. Chris Butt 1997-2000; Member (advisor Dr. Debski)
12. Jorge Quintero 2001 Outside examiner (Physiology- Dr. McMahon)
13. Patrick Crumrine 1998-2003; Member (advisor Dr. Crowley)
14. Johann Sohn 2000-2005; Member (Chair but his advisor was Dr. Ji; Chemistry)
15. Andy Johnstone 2003-2007; **Advisor**
16. Sameera Dasari 2003-2007; **Advisor**
17. Jeremy Nadolski 2002-2004; Member (advisor Dr. Viele; Statistics)
18. Mohati Desai 2005- 2008; **Advisor**
19. Andrew Wigginton 2004-2005; member (advisor Dr. Birge; Biology)
20. Sonya Bierbower 2006-2010; **Advisor**
21. Ying Shu 2006-2007; Member (advisor Dr. Tae H. Ji; Chemistry)
22. Chris Noe 2006-2007; Member (advisor Dr. Tae H. Ji; Chemistry)
23. Rachael Self 2006 Outside examiner (advisor Dr. Prendergast; Psychology)
24. Rhonda VanDyke 2006-2008; Member (advisor Dr. Viele; Statistics)
25. Gayle L. Joseph 2006-2008; Member (advisor Dr. Andrade; Physiology) Switched to MS after quals.
26. Deanna Morris 2006-2010; Member (advisor Dr. Rawls; Biology)
27. Tim Bradshaw 2006-2012; Member (advisor Dr. Osborn; Biology)
28. Katherine Smith 2006-2011; Member (advisor Dr. Prendergast; Psychology)
29. Ling Liu 2006-2009; Member (advisor Dr. O'Hara; Biology)
30. Prashant Karl 2005-2010; Member (advisor Dr. O'Hara; Biology)
31. Lisa Thomas 2008; outside examiner (advisor- Rehabilitation Sciences Dr. Joseph Stemple)
32. Tracy Butler 2008-2011; Member (advisor Dr. Prendergast; Psychology)

33. Elizabeth A.E. Roland 2009; outside examiner (advisor- Dr. J. Truman Stevens, Dept. Instruction and Administration-Dept of Education)
34. Wen Hui Wu 2008-2013; **Advisor**
35. Hua Bai 2009; outside examiner (advisor-Dr. Subba R Palli, Dept of Entomology)
36. Ashlie Beals 2009-2014; Member (advisor- Dr. Krall, Dept. Instruction and Administration-Dept of Education)
37. Dustin Lueker 2010-2014; Member (advisor Dr. Viele; Statistics)
38. Laura Gilliam 2010; outside examiner (advisor-Dr. Reid, Dept of Physiology)
39. Jessica Harris 2011-2012; Member (advisor-Dr. Butterfield, Dept of Chemistry)
40. Nathan Klar 2011-2012; Member (advisor Dr. Crowley, Dept of Biology, switched to MS)
41. Zana R. Majeed 2011-2016; **Advisor**
42. Josh Titlow 2011-2014; **Advisor.** Postdoctoral fellow at Oxford, England
43. Mansi Sethi 2012-2016; Member (advisor Dr. O'Hara; Biology)
44. Deepa Jonnalagadda 2013; outside examiner (advisor Dr. Sidney Whiteheart; Dept. Biochemistry).
45. Shreyas Joshi 2013-present; Member (advisor Dr. O'Hara; Biology)
46. Daniel Bartos 2013; outside examiner (advisor Dr. John Satin; Dept. Physiology).
47. Kimberly Zeidler 2013-2016; Member (advisor Dr. Sharon Brenan; College of Ed)
48. Luc Arnaud Dunoyer 2013-2015; Member, switched off (advisor Dr. Crowley, Biology)
49. Cole Malloy 2014-2017; **Advisor** (Graduated) Postdoc- NIH
50. Chanung Wang Graduate student, Rotation Fall 2013
51. Marjorie Buckner 2015; outside examiner (advisor Dr. Deanna Sellnow, Dept. of Communication)
52. Lucas Broster 2015; outside examiner (advisor Dr. Yang Jiang, Dept. of Behavioral Science)
53. Tyler Kirby 2015; outside examiner (advisor Dr. John McCarthy, Dept of Physiology)
54. YueChen Zhu 2014-2017; **Advisor** (Graduated with PhD)
55. Dlovan Mahmood 2014-2018; **Advisor** (pre qual. Left with MS in 2018)
56. Warlen Pereira Piedade; Graduate student, Rotation Fall 2015
    2015-2020-PhD committee member, PhD student in Biology
57. Jacob T. Higgins 2015-2019, member, PhD student in nursing at UKY, Co-mentor for Robert Wood Johnson Foundation fellowship)
58. Edita Klimyte 2016; outside examiner (advisor Dr. Rebecca Dutch, Dept of Biochem)
59. Lauren (Ren) Guerriero 2016- 2021; Member (advisor Dr. O'Hara; Biology)
60. Adrienne Herrenbruck 2018- outside examiner (advisor Dr. Lance Bollinger, Department of Kinesiology and Health Promotion)
61. Sarah Rose Martha 2019. Outside examiner (advisor Dr. Justin Fazier, UK Neurosurgery)
62. Kirby Mayer 2019-present. Committee member (advisor- Rehabilitation Sciences, Dr. E.E. Dupont-Versteegden)
63. Davis Alan Englund (2020) Outside examiner (advisor- Rehabilitation Sciences, Prof. Charlotte Peterson)
64. Kathryn Caroline Hickey Lucas (2020) Outside examiner (advisor- Rehabilitation Sciences, Prof. Charlotte Peterson)
65. Kristen Witt (2020) Outside examiner (advisor: Dr. Margaret Schroeder-STEM dept).
66. Caleb S. Bailey (2020-present). Committee member. (advisor - Dr. Prendergast; Psychology)
67. Zachary Hettinger (2021) Outside examiner (advisor- Rehabilitation Sciences, Dr. E.E. Dupont-Versteegden)
68. Anjana Subramoniam (2021-present); Member (advisor Dr. O'Hara; Biology)

69. Jeffrey Chalfant (2021-present); Member (advisor- Dr. Krall, Dept. STEM, College of Education, UK)
70. Mubaraq Opoola (Univ. of Louisville). (2021-present); Member (advisor is Dr. Hwangbo at University of Louisville)
71. Aaron West (2022-present); Member (advisor- Eve Schneider, Dept of Biology).

XI. DEPARTMENT OF BIOLOGY

1996-1997 Facilities and safety committee
1998-1999 Biology dept.- OIB faculty search
1998-1999 Graduate affairs committee
1998 & 1999 Served as the Biology representative for the Teaching and Learning Center in testing incoming students for TAs
2000 Biology dept.- seminar committee.
2000-2002 Biology dept.- Faculty Merit Evaluation committee.
2000-2008 Biology dept.- Undergraduate affairs committee.
2000-2001 Biology dept.- Bioinformatics faculty search
2001-2002 Biology dept.- Functional Genomics faculty search
2003-2004 Biology dept.- Functional Genomics faculty search
2005 Served as the Biology representative for the Teaching and Learning Center in testing TAs.
2011-2013 Biology dept.- Faculty Merit Evaluation committee.
2011-present Biology dept.- Undergraduate affairs committee.
2010-2012 Biology dept.- Graduate affairs committee.
2013-2014 Biology dept.- Graduate affairs committee.
2013-2014-2015-2016 Biology dept.- 45 advisees listed to advise.
2015-2016 Biology dept. Faculty search committee for a Physiologist.
2017-2018 Biology dept. Faculty search committee for - cell and molecular neurobiology
2017-2019 Biology dept.- Faculty Merit Evaluation committee.
2017-2020. Biology dept.- Undergraduate affairs committee.
Jan-Feb 2018 Present live demos for 4 different sections of Bio305 Neuro techniques course to demonstrate intracellular recordings for Dr. Seth Jones's class. (Did this last year as well).
2017-2018 Biology dept. Faculty search committee for a Neurobiologist.
2021-2022 Biology dept.- Lecturer Search Committee
2021-2023 Biology dept.- Faculty Merit Evaluation committee.

XII. LOCAL COMMUNITY SERVICE (State of KY)

1. 2002-2003: Served as **Secretary** for the **Blue Grass Grotto** (BGG). This is a local caving club as a branch of the National Speleological Society. The BGG is mostly composed of academic types and is concerned with conservation and education of the public about caves within KY.
2004-2007: Serving a three year appointed term as a **Director** for the **Blue Grass Grotto**.

2. Sloan's Valley Conservation Task Force, National Speleological Society (NSS) (1997-present). As a member of this task force I work to protect the ecology and educate the public concerning the 23.5 miles of the Sloan Valley Cave system in Kentucky. We monitor the water quality and status of the biota throughout the cave system. We also have implemented an experimental research station to observe the behavioural interactions of various species of blind cave-adapted crayfish. There are a number of recent concerns that the task force is working on related to agricultural pollutants and run off from county landfills that affect the cave biology and cave dynamics.

3. 2006-2007 Vice president in the executive board for the Kentucky Academy of Sciences (KAS). This then leads by default to President Elect for 2007-2008 and then **President of the KAS for 2008-2009**. This is a state wide organization to promote science education in the state of KY.

4. 2008-2012. I am a board member of the KY-SEF (KY STATE SCIENCE AND ENGINEERING FAIR). This is to help organize and fundraise for the state science fair held annually at Eastern KY Univ. We meet 3 times a year in Frankfort at the Dept of Education (KY) to help plan state wide science activities for high school and middle school students.

2012-2016, **President** of the board for KY-SEF (Kentucky & Science Engineering Fair). This is the STATE Science fair. All the regional fairs work their way to the highest state fair. We are really two fairs (Life sciences and Physical Sciences). Our winners go directly to the International INTEL competition.

5. 2009. KY Girls STEM Collaborative Conference. Present at conference about science activities for science majors. Hayett (Lexington, KY) June 15, 2009. Entire day event.

6. 2010 , 2011 2012, 2013, 2014. Jr. Kentucky Academy of Sciences. Serve as a judge of presentations. April 23, 2011. Annual meeting

7. June 2013: Ran activities for Middle School Summer STEM-Blue Camp at UK Dept. of Biology. Funded by American Honda Foundation. Spent two days with four sessions (AM and PM, 4 hours each session, 35 students in each session). Two preparation days required. (PI. Margaret Schroeder, Dept. of Education).

8. June 2014: Ran activities for Middle School Summer STEM-Blue Camp at UK Dept. of Biology and UK med school outreach office. Funded by American Honda Foundation. Spent two days with four sessions (AM and PM, 4 hours each session, 35 students in each session). Also, two preparation days required. (PI. Margaret Schroeder, Dept. of Education).

9. July 30, 2014. Kentucky Girls STEM Collaborative to host a Girls STEM Day. Presenting lab projects to middle school students from across KY. 3 sets of 10 students. Contact Robin Cooper or Dr. Carol D. Hanley, Univ. of KY.

10. Sept 12, 2014 Present Science projects and help with lesson plans for Lewis County High school. In Vanceburg, Ky. Demonstrate how to wire up crayfish for heart rate recordings, how to manage fruit flies for behavioral experiments. Teacher contact Ms. Donna Dietrich. (3 hr drive 1 way and 3 hrs in classroom).

11. 2014. Present 3 workshops for KSTA (Kentucky Science Teacher Association). Each workshop 1 hour. Lexington, KY. Nov. 6-8, 2014.

(1) **Classroom activity on skeletal muscle anatomy and physiology.** Dr. Robin L Cooper, Dr. Becky Krall, Ms. Diane Johnson, Ms. Susan Mayo, Ms. Kim Zeidler-Watters and Michael Schultz.

(2) **Activity on geometry, algebra and visual projections of objects in 3D space.** Dr. Robin L Cooper, Dr. Becky Krall, Ms. Diane Johnson, Ms. Susan Mayo, Ms. Kim Zeidler-Watters and Douglas Potts.

(3) **Population dynamics as a module for NGSS teaching.** Dr. Robin L Cooper, Dr. Becky Krall, Ms. Diane Johnson, Ms. Susan Mayo, Ms. Kim Zeidler-Watters and Samuel J. Potter.

12. July 27, 2015 Lexmark Lexington Youth Science Summit 3rd annual event state wide. Presented hands on activities in health related and basic biological science topics. Contact Carlos Rodriguez
13. July 25, 2015. Louisville Youth Science Summit. Presented hands on activities in health related and basic biological science topics. Louisville, KY Science Center. ~100 students
14. April 9, 2016. Ran a 6 hour session reviewing posters and student presentations for the TEAM KY ISEF-INTEL finalist. This was a session to provide feedback to the INTEL Finalist across the state from various regional fairs prior to their attending ISEF international fair. This was held at the LEXMARK-UK center 8AM - 3 PM. The goal was to give students feedback so they will do their best at the International Science Fair and best represent the State of KY.
15. June 13 and 14, 2016: Ran activities for Middle School Summer STEM-Blue Camp at UK Dept. of Biology and UK med school outreach office. Funded by College of Ed, STEM. Spent two days with four sessions (AM and PM, 4 hours each session, 38 students in each session). Also, two preparation days required. (PI. Margaret Schroeder, Dept. of Education). Topic: Health aspects and animal behavior.
16. April 29, 2017. Organize and coordinate practice sessions for all the high school students in KY going to the INTEL international science fair competition (ISEF). An entire day dedication. Held at Frankfort, KY.
17. April 27, 2019. Jr. Kentucky Academy of Sciences. Serve as a judge of oral presentations. KY-STATE. (4 hrs).
18. Doctoral committee member of Mubaraq Opoola (U of L). (2021-present); Outside committee Member (advisor is Dr. Hwangbo Dept of Biology at University of Louisville, KY).

Sept., 2022

Community Service in Lexington, KY & local areas

1. For National Brain Awareness Week (**1997, 1998, 1999, 2000, 2001, 2002**) neuroscientists across America were asked to speak at local elementary and high schools on the subject of neurobiology For example, I volunteered to speak at the Cassidy School throughout the week. The presentations reached every 4th and 5th grader at Cassidy elementary school during that week. We worked with the Cassidy science teacher Ms. Hesseldenz so that we could use the students Science hour in order to have 15 to 20 students in each of the 12 sessions. I brought human brains, a snake brain and a fish brain to the school for the students to hold (with gloves) and compare. We also played some games that the students enjoyed doing while learning about sensory and motor neurophysiology.

2. Science Fair **2000-2012** Glendover Elementary School**. Coordinated the judging** of the science fair projects. Every 4th and 5th grader (~200) is required to present at the Science Fair. In the year 2002, I had to coordinate all the science fun day activities and organize 30 judges for the event. I also judged at the local school level and at the county level.

3. The local elementary schools (Cassidy & Glendover) have a yearly science day. In **1998, 1999, 2000**, **2001** I presented neurophysiology and neuroanatomy experiments for Glendover (February-contact Ms. Dove-Science teacher at Glendover) and crayfish interactions, cave ecology and heart rates of crayfish for Cassidy (April-contact Ms. C. Hesseldenz, Cassidy).

4. The local middle school (Morton). Since **2003** I have been presenting hands on demonstrations neurophysiology experiments for students. (contact Ms. Jacobs-Science teacher). I also organize the Science fair at the middle school to secure judges for the event and the determine the over winners for the competitions. These events involve 3-5 days each year.
Also outside FY county I help out in science outreaching. For example, I visit (Ms. Pam Long, Biology Teacher) West Jessamine High School, Nicholasville, KY for demonstrations is sensory neurophysiology to sciences classes. In **2004** I visited (Ms. Leona Blackburn, science teacher) Berea Community School and presented hands-on science activities for her 3 classes.

5. Science Fair Judging:
2002-2017 Judged at Fayette **County Science fair** and at the **science fair for SCAPA**, Lexington. Past years. **District Science fair** at Northern KY Univ.,
2003-present Judged at Fayette **County Science fair**, **State Science fair** at Eastern KY Univ. and at the **Jr. Kentucky Academy of Sciences** annual meeting Campbellsville Univ. served as a mentor.

6. 2003-present. Serve as a **mentor** for the **Jr. Kentucky Academy of Sciences**. This is to help High School Students with Science projects so that they will be able to learn the investigative principles of science. I also help the students prepare to present their findings at the Jr. Kentucky Academy of Sciences annual meeting. **In 2004, 2005 and 2006** - I couch students from Morton Middle school on their skills to present their science projects and helped them prepare their research lab notebooks so that they could compete at the **Jr. Kentucky Academy of Sciences**. Four of the 5 placed 1st in their divisions.

7**. 2000-2015.** Serve as a resource for MAD SCIENCE network. I serve as a resource for questions from students around the world related to neuroscience questions. This service is coordinated by graduate students from Washington University, School of Medicine.

8. 2003-2008. Developer and Founder of the **Central KY Regional Science and Engineering Fair, Inc**. This was a new entity brought to the University of KY. This provides an opportunity for 33 counties in KY to send their K4-12 students to compete in the **DISCOVERY CHANNEL CHALLEGE** or INTEL**-ISEF** recognized science fairs. This also provided UK with some credibility for PR into the community. **THIS TOOK A CONSIDERABLE AMOUNT OF TIME AND EFFORT.** (I would estimate 3 to 4 weeks of total time each year.). I passed directorship over to Dr. Ed DeMoll in 2008.

9. Sept. 18, 2007. Visited Wolf County High School biology classes to help with demonstration of invertebrate life cycles and sensory biology- focus on cave animals. Outreaching with the Tracy Farmer center for the Environment. 40 kids.

10. Oct. 24, 2007. Took Woodford County high school Biology classes to KY state Fish and Wildlife aquaculture facilities to examine the economics and biology of prawn farming. Outreaching with the Tracy Farmer center for the Environment. 50 kids

11. Nov. 8, 2007. Visited Woodford County High School biology classes to help with Crayfish dissections. Provided animals and dissecting tools and knowledge on dissections. Outreaching with the Tracy Farmer center for the Environment. 50 kids.

12. Provided physiological demos of synaptic transmission and dissection techniques to a class (Anatomy and Physiology students) at Kentucky State University. Spent all day at KY State to work with this class. Host: Bruce Griffs (Faculty member in Natural Sciences). January 30, 2008

13. Provided an entire day (March 16, 2009) to teaching all the 8th graders (4 classes) at Beaumont Middle School (Lexington, KY) differences in innate and learned behaviors. This was done with lecture and hands on activities. (Contact person: Mr. Patrick Goff, Science teacher at Beaumont Middle School).

14. The local middle school (Morton). Presenting hands on demonstrations of sensory physiology on the students and on invertebrate animals. (contact Ms. Jacobs-Science teacher). The event took a day to prepare and a ½ day to execute in the classroom. May 27, 2009.

15. The local middle school (Jessie Clark). Presenting hands on demonstrations of math concept is biology for advanced geometry and algebra students. (contact Craig Schroeder, Ph.D.; Math and Science Teacher, Jessie Clark Middle School). The event took two days to prepare and a full day 4 classes to execute. May 29, 2009. This was an event to Beta test of exercises that I wish to publish for teachers in Math/Biology for middle and high schools.

16. Judged for "The FFA Agriscience Fair" Science fair. High school students. June 9, 2010; Lexington KY. ½ day event.

17. Provided an entire day (March 6, 2012) to teaching all the 8th graders (4 classes) at Beaumont Middle School (Lexington, KY) differences in innate and learned behaviors. This was done with lecture and

hands on activities. (Contact person: Mr. Patrick Goff, Science teacher at Beaumont Middle School).

18. 2012 Serve as a science fair judge at Lexington Universal Academy (private Muslim based school) for middle school kids. Contact person: Ms. Camille Pence

19. Nov. 5, 2013. Presented activities at Paul Laurence Dunbar High School in Lexington for Ms. Heidi M. Anderson's class. Opto-physiology and genetics with fruit flies.

20. Nov.15, 2013. Mercer county High school. Led life science day at UK Med school outreach center for 60 students. All day event. Contact Ms. Cynthia Russell –Sci teacher at Mercer county High school.

21. Year of 2013-2014. Science fairs: Coordinated judges for Glendover elementary science fair; Coordinated judging for the Morton Middle school sci fair; Participated in judging science fairs at: Glendover, Morton, SCAPA, Fy County Sci fair, UK-CKRSEF Sci fair, & State Sci and Eng Fair at EKU.

22. June 28, 2014. Kentucky Science Center and Lexmark Youth Science Summit. 8 AM to 3 PM at the Lexmark plant in Lexington. Reverse science fair presentations. I represented UK and the Dept. of Biology for activities and "What biological researchers do". Approximately 200 kids in groups.

23. Feb.7, 2015 Ran a table for KY-PHYS and Center of Muscle Biology at the FY County Science fair to answer questions and explain about health related topics as well as about animal research. 7:30 AM to 1:00 PM ~100 people came by the table

24. Feb 10, 2015 Ran a table for KY-PHYS and Center of Muscle Biology at the Leestown middle school Science night. Answered questions and explained about health related topics as well as about animal research. 6:00 PM to 8:00 PM ~50 people came by the table

25. Fall 2015- present. I serve on the DuPont Manual Science Review panel for the magnet High School students at DuPont Manual in Louisville, KY. This is a high school student organization. I was asked by the students to be on their supervisory board to help guide their ideas and meetings. Contact person: Harsha Paladugu. Student group president.

26. Sept. 11, 2015. Present a life science activity. "Optogenetics and Arduino coding" to 2 classes at Sayre High school, Lexington, KY. Contact R. Holsinger.

26. Sept. 14, 2015. Present a life science activity. "Optogenetics and Arduino coding" to 2 classes at DuPont Manual High school, Louisville, KY. Contact H. Anderson.

26. Sept. 16, 2015. Present a life science activity. "Optogenetics and Arduino coding" to 5 classes at Lancaster High school, Lancaster, KY. Contact Jennifer Putnam.

27. Sept 14, 2015. Held discussion for Science Academic Review group. How to maintain a lab notebook and how to work with Science fair mentors at the university. DuPont Manual High school, Louisville, KY. Contact person: Harsha Paladugu. Student group president.

28. Jan. 5, 2016. Present a life science activity. "Modulators effect on crayfish fruit fly behaviors" to 3 classes at Sayre High school, Lexington, KY. Contact R. Holsinger.

29. April 11, 2016. Present a life science activity. "Optogenetics and Arduino coding" to classes at Pulaski County High school, KY. Contact Jennifer Wilson. All day event to drive there to present to the various classes and drive back to Lexington.

30. April 18, 2016. Biotechnology class visit from Pulaski High School. 9 AM to 2 PM visit. Showed lab activities and tour of campus. Contact person Jennifer Wilson.

31. May 29, 2016. Presentation to the public. Health aspects and help present high school students' research. A public booth at the Somernites Cruse event in Somerset, KY. http://www.somernitescruise.com/ (6 Biotechnology students from Pulaski High School, Cole Malloy, Robin Cooper) http://csl.nsta.org/2017/01/the-healthy-flea-market/

32. March 10, 2017. Present a life science activity. "Optogenetics and Arduino coding" to classes at Locust Trace High school, Lexington, KY. Contact Ms. Anderson. 3 different classes to instruct.

33. June 24, 2017. Kentucky Science Center and Lexmark Youth Science Summit. 8 AM to 3 PM at the Lexmark plant in Lexington. Reverse science fair presentations. We represented UK and the Dept. of Biology for activities related to physiology and anatomy. Approximately 150 kids in small groups.

34. Oct 18, 2017, STEM NIGHT. Eastern Elementary, Georgetown, KY 40324. Represented Dept of Biology and Neuroscience program. 4PM-7PM

35. Nov. 9, 2017, Dunbar High school STEM Fair. I represented the Dept. of Biology and the Neuroscience program. 4 PM to 6:30 PM

36. Feb. 5, 2018. Life science demonstrations to Eminence middle school all 8th grade science classes throughout the day, Eminence, KY 40019 All day event.

37. June, 2018. Provided a full day of biology activities for the UK STEM BLUE camp over a period of 6 days. Total **360** elementary & middle school students. Joint program with College of Engineering and College of Education, UK. Our topic was Biological modelling - Crayfish, human and medical outreach.

38. Dec 10, 2018. Present a life science activity. "Optogenetics and Arduino coding" to classes at Locust Trace High school, Lexington, KY. Contact Ms. Anderson. 3 different classes to instruct.

39. July 12, 2019. Talk to high school students as part of "Kentucky Science Pathways (KSP)" 50 min seminar on our research and how students fit into the research programs. UK campus in Ag South.

40. Oct. 28, 2019. Present activities to 4 different high school classes at Pulaski High school in Sommerset, KY. Metabolism and expression of channel rhodopsin protiens in Drosophial. Contact. Ms. Wilson. 15 hr day with traveling. Prep time 3 hrs in prior days.

41. Nov 13, 2019 Maxwell elementary school (Lexington, KY) 5:00 PM to 7:30PM Life sciemnce day activities. Showed crayfish Heart beating, Fruit fly hearts fruit fly behaviors. Contact: David Kaiser.

42. Feb 27, 2020. Presentation to the pre-med/health science group at Dunbar High School. 3:30-4:30 PM.

43. Nov 6, 2021. Judge for division of Health Sciences at the KY Academy of Sciences annual meeting. 11 presentations.

Sept., 2022

Health Related Community Service in Lexington, KY & local areas

1. Presentation and activity on the importance of good respiration with pH balance for elderly and people with COPD: Concerns with oxygen therapy. Presentation to students in High School Biology classes (2 different classes). FCPS, Southside Technical Center, Lexington, KY. Feb. 1, 2012. Contact: Ms. Shannon Raymer, RN, MSN, CCRN

2. 2012- present. Volunteer multiple times in evenings as a RN for Mission Clinic at the Baptist Church, Frankfort, KY. (~50hrs within 2012; continue to serve throughout 2013 at least once per month for 4 hrs each visit).

3. Presentation and activity on the importance of good respiration with pH balance for elderly and people with COPD: Concerns with oxygen therapy. The Lexington Senior Center. February 7, 2012. Contact: Mr. Wright.

4. Presentation and activity on the circulatory system: Concerns with obesity and arthroscleroses. The Lexington Senior Center. "Did you know presentations" April 2, 2012. Contact: Mr. Wright.

5. Presentation and activity on the importance of good respiration with pH balance for elderly and people with COPD: Concerns with oxygen therapy. Presentation to students in High School Biology classes (3 different classes). Sayre high school, Lexington, KY. April 2012. Contact: Ms. Maggi O'Neill.

6. 2013- present. Research mentor for the Nursing Research Council at Frankfort Regional Medical Center (FRMC), Frankfort, KY. USA. This is an active council with various IRB applications for student as well as nursing research activities within their hospital. There is also an annual research conference day with poster and oral presentations that I attend.

7. August 21, 2013. Taught for 6 hours basic anatomy for the **Kentucky Medical Association** (KMA, Louisville, KY) https://sites.google.com/site/kmacodeanatomyrefresher/ This was a service to the participants for refreshing their anatomical knowledge to pass the medical coder exam for ICD-10.

8. Biggest community service in year 2013 was I reached a 2 gallon level of blood donation over my last 5 yrs. Kind of happy that I could make a direct impact on people's lives.

9. April 25, 2014. Served as nurse volunteer for high school activity with blood typing. Sayre high school, Lexington, KY. 8:00 AM to noon.

10. April 14, 2015. Served as nurse volunteer for high school activity with blood typing. Sayre high school, Lexington, KY. 8:00 AM to noon.

11. April 27, 2015. Fayette County Extension Office. Bridging Families, is a family resource event with 26 organizations that present in a "resource fair" type fashion focusing on providing parents information. The presentation here was a the Healthy flea idea of students working on health related projects in their classrooms and then presenting them in public events such as flea markets or swap meets. Contact: Hilary Angelucci, Legislative Aide to Council Member Peggy Henson.

http://csl.nsta.org/2017/01/the-healthy-flea-market/

12. April 19, 2016. Served as nurse volunteer for high school activity with blood typing. Sayre high school, Lexington, KY. 8:00 AM to noon.

13. April 20, 2016. Margaret Boils high school class from Cassy County, KY. Health aspects. EMG recording, pH buffering, organs and how they work. UK Med School outreaching Center. 16 students

XIII. TEACHING

Teaching Awards:

1. Recipient of the University of Kentucky Provost Award for Outstanding Teaching April, 2005 (5K cash award and a plaque).

2. Recipient of KAS (Kentucky Academy of Science) Outstanding College/University Teacher of 2012-2013. The qualifications: The recipient shall have made some significant contribution primarily to science teaching but also to research at the college/university level in Kentucky. Contributions should be interpreted broadly to mean contribution directly to the Commonwealth, or the intellectual growth in the Commonwealth. The recipient must be a member of the Kentucky Academy of Science.

3. Recipient of "teacher who made a difference" award 2014. Given by the University of Kentucky College of Education. http://education.uky.edu/Community/TWMAD

4. 2014 Recipient of UK's Delta Zeta's Professor Award. "The academic program within Delta Zeta feels you should be rewarded for your remarkable work educating students at the University of Kentucky. I would like to formally invite you to a chapter-wide, 5 pm dinner on Monday, April 21st at the Delta Zeta House (319 Columbia Terrace) to show our appreciation and present you with a certificate and gift card."

5. 2015 Recipient of UK's Undergraduate Professor Award for mentoring research based students. Given by the UK's Office of Undergraduate Studies. http://www.uky.edu/chellgren/undergraduate-research/faculty-mentor-awards

6. 2016. Center-clinical-and-translational-science (CCTS) Community and Campus wide recognition. Mentor award. http://uknow.uky.edu/content/nearly-1000-attend-uk-center-clinical-and-translational-science-conference

7. 2016. College of Arts and Sciences, University of Kentucky. Outstanding undergraduate mentor award.

8. **2019 Chellgren Endowed Professor.** The Chellgren Endowed Professorships are reserved for tenured University of Kentucky faculty members who exhibit outstanding credentials as teachers and researchers with a deep interest in undergraduate excellence. The University of Kentucky Strategic Objectives for Undergraduate Student Success (2015-2020) include a number of initatives

in which faculty scholars might contribute. These are also aligned with the mission of the division of Student and Academic Life (SAL). To be named a Chellgren Endowed Professor, a faculty member must assume a leadership assignment for a campus-wide initiative or program of undergraduate excellence.

Teaching:

1. Univ. of Kentucky
Details related to teaching and course content are provided in the TEACHING PORTFOLIO.

Teaching general physiology to undergraduates, allied health and medical students is a matter in which I am proficient. During postdoctoral years (Dept. Physiology, Univ. Toronto) I taught physiology in the general areas of human physiology and experimental neurophysiology. I have continued to teach comparative physiology and advanced neurophysiology courses at the University of Kentucky. I also taught undergraduate and graduate seminars at the Univ. of Kentucky on the topics of neuromodulation and neurophysiology. I also developed **3 new courses** (Bio550, Bio621, and Bio650) on these subjects within my first 3 years at Univ. of KY.

In 2010 summer I developed a series of wet labs for the Bio350 core course (animal physiology). This took a lot of effort and time but it paid off in having a series of wet labs now established for the course that could be tweaked over the years. A number of the labs I published in JoVE which showed how advanced our course was with advanced physiological teaching. Students at Cornell (NY) and other locations use the on line material for their courses.

Published labs that were originally developed for the Bio350 course (some of the costs for publication and the productions came from **personal funds ~$10,000**):

1. Wu, W.H. and **Cooper, R.L.** (**2010**) Physiological recordings of high and low output NMJs on the Crayfish leg extensor muscle. Journal of Visualized Experiments (JoVE). Jove. 45: http://www.jove.com/index/details.stp?id=2319 doi:10.3791/2319.

2. Robinson, M.M., Martin, J.M., Atwood, H.L. and **Cooper, R.L. (2010)** Modeling biological membranes with circuit boards and measuring conduction velocity in axons: Student laboratory exercises. Journal of Visualized Experiments (JoVE). Jove. 47: http://jove.com/details.php?id=2325 doi: 10.3791/2325

3. Leksrisawat, B., Cooper, A.S., Gilberts, A.B. and **Cooper, R.L. (2010)** Response properties of muscle receptor organs in the crayfish abdomen: A student laboratory exercise in proprioception. Journal of Visualized Experiments (JoVE). Jove. 45: (for manuscript) http://www.jove.com/index/details.stp?id=2323 doi:10.3791/2323

4. Cooper, A.S., Leksrisawat, B., Gilberts, A.B., Mercier, A.J. and **Cooper, R.L. (2011)** Physiological experimentations with the crayfish hindgut. Journal of Visualized Experiments (JoVE). Jove 47: http://www.jove.com/details.php?id=2324 doi: 10.3791/2324.

5. Baierlein, B., Thurow, A.L., Atwood, H.L. and **Cooper, R.L. (2011)** Membrane potentials, synaptic responses, neuronal circuitry, neuromodulation and muscle histology using the crayfish: Student laboratory exercises. Journal of Visualized Experiments (JoVE). Jove 47:http://www.jove.com/Details.php?ID=2322 doi: 10.3791/2325.

Published labs that were originally developed for the Bio 650/A&S 500 neurophysiology course (paid for the publications and production out of **personal funds ~$12,000**):

1. Majeed, Z.R., Titlow, J., Hartman, H.B. and **Cooper, R.L.** (**2013**) Proprioception and tension receptors in crab limbs: Student laboratory exercises. **Journal of Visualized Experiments (JoVE)**. (80), e51050, doi:10.3791/51050 Professional movie and peer reviewed manuscript. http://www.jove.com/video/51050/proprioception-tension-receptors-crab-limbs-student-laboratory

2. Titlow, J., Majeed, Z.R., Nicholls, J.G. and **Cooper, R.L.** (**2013**) Identifiable neurons in the central nervous system of a leech via electrophysiology and morphology, sensory field maps in skin and synapse formation in culture: Student laboratory exercises. **Journal of Visualized Experiments (JoVE).** (81), e50631, doi:10.3791/50631. Professional movie and peer reviewed manuscript. http://www.jove.com/video/50631/intracellular-recording-sensory-field-mapping-culturing-identified

3. Titlow, J., Majeed, Z.R., Hartman, H.B., Burns, E., and **Cooper, R.L.** (**2013**) Neural Circuit Recording from an Intact Cockroach Nervous System **Journal of Visualized Experiments (JoVE)**. (81), e50584, doi:10.3791/50584 (2013). Professional movie and peer reviewed manuscript).http://www.jove.com/video/50584/neural-circuit-recording-from-an-intact-cockroach-nervous-system

Semester	Course number/title	# of Students	Student Evaluation	School Average
Fall 96	BIO 350 Animal Physiology	75	3.9 out of 4.0	3.1
Fall 97	BIO 550 Adv. Comparative Physiology	8	3.7 out of 4.0	3.4
Fall 97	BIO 350 Animal Physiology	75	3.6 out of 4.0	3.0
Fall 98	BIO 550 Adv. Comparative Physiology	14	3.7 out of 4.0	3.3
***Fall 98**	BIO 650 Neurophysiology Lab cross listing PGY650	6	3.6 out of 4.0	3.5
	*A in-depth laboratory manual was assembled for this course			
Spring 99	BIO 425 Undergraduate seminar	12	3.9 out of 4.0	3.5
	BIO 425 Undergraduate seminar	14	3.8 out of 4.0	3.5
Fall 99	BIO 621 Membrane Biophysics registered	6	3.7 out of 4.0	3.5
	Sit ins	5		
Fall 99	BIO 770 Graduate seminar	6	3.8 out of 4.0	3.4
Spring 00	BIO 350 Animal Physiology (sec1-6)150	3.5 out of 4.0	3	
	BIO 550 Adv. Comparative Physiology	12	3.5 out of 4.0	2.9
Fall 01	BIO 350 Animal Physiology (sec1-6)72	2.9 out of 4.0	2.9	
Spring 01	BIO 350 Animal Physiology (sec1-6)65	2.9 out of 4.0	3	
	BIO 550 Adv. Comparative Physiology	12	3.5 out of 4.0	3.3
Spring 02	BIO 425 Undergraduate seminar	12	3.8 out of 4.0	3.4
Summer 02	BIO 350 Animal Physiology	8	3.9 out of 4.0	
Fall 02	BIO 350 Animal Physiology (sec1-5)120	3.34 out of 4.0		
	BIO 425 Undergraduate seminar	14	4.0 out of 4.0	
Spring 03	BIO 425 Undergraduate seminar	12	3.9 out of 4.0	
Fall 03	BIO 350 Animal Physiology-avg all 6 sec	120	3.3 out of 4.0	
Fall 03	BIO 152 Introductory Biology	280	3.4 out of 4.0	
Spring 04	BIO 650 Neurophysiology	6	4.0 out of 4.0	
Summer 04	BIO 350 Animal Physiology	20	no evaluation (Summer -NA)	
	BIO 425 Undergraduate seminar	15	no evaluation (Summer -NA)	
Fall 04	BIO 350 Animal Physiology-avg all 5 sec	120	?	
	BIO 425 Undergraduate seminar	15	?	
Spring 05	BIO 350 Animal Physiology-avg all 5 sec	120	3.6 out of 4.0	
	BIO 425 Undergraduate seminar	13	4.0 out of 4.0	
Summer 05	BIO 350 Animal Physiology	16	no evaluation (Summer -NA)	
	BIO 425 Undergraduate seminar	10	no evaluation (Summer -NA)	
	BIO 425 Undergraduate seminar	6	no evaluation (Summer -NA)	
	A&S 500 (to be Bio401G-Teachers in science)	20	no evaluation (Summer -NA)	
Fall 05	BIO 152 Introductory Biology	320	3.2 out of 4.0	
	BIO 350 Animal Physiology-avg all 5 sec	120	3.4 out of 4.0	
Spring 06	BIO 350 Animal Physiology-avg all 6 sec	120	3.5 out of 4.0	
	BIO 550 Adv. Comparative Physiology	12	4.0 out of 4.0	
	BIO 621 Membrane biophysics	8	3.8 out of 4.0	
Summer 06	BIO 350 Animal Physiology	15	no evaluation (Summer -NA)	
	BIO 425 Undergraduate seminar	12	no evaluation (Summer -NA)	
	BIO 425 Undergraduate seminar	8	no evaluation (Summer -NA)	
Fall 06	Sabbatical (for 1 semester)			

Gap---Have not updated 2006 to 2010

Spring 2010 A&S 300 Special topics to develop laboratory experiments for Bio350. Beta test wet labs. 6

Summer 2010

BIO 402G For MIC students at UK. Teacher's workshop on Science education.
BIO 350 Animal Physiology 20 no evaluation (Summer -NA)
BIO 425 Undergraduate seminar 8 no evaluation (Summer -NA)
BIO 425 Undergraduate seminar 3 no evaluation (Summer -NA)

Fall 2010

BIO 350 Animal Physiology with wet labs 125 Avg ~3.0
21 hours per week of contact time. This was the 1st semester to introduce wet labs into Bio350. 6 sections of 3 hrs each plus 3 hrs/wk of lecture.

Spring 2011

BIO 499 Undergraduate seminar for students that conducted research 6 ?

BIO (A&S300)/ B650 - Physiology laboratory techniques 6 ?
(overload without salary increment. Taught in my research lab)

Summer 2011

BIO 350 Animal Physiology 16

Fall 2011

BIO 350 Animal Physiology with wet labs 125 Avg ~3.4

Spring 2012

Bio 621- Membrane Biophysics (3 hrs) 6 3.8

Fall 2012

BIO 350 Animal Physiology with wet labs 125 3.7
A&S 300 - On line International Seminar course (new adventure) (1 hr)
**NEW ADVENTURE; PR for dept gained. 6 TBA
http://theworldreportuky.com/2012/09/28/uk-seminar-course-promotes-international-dialogue/

Spring 2013

A&S 500 Sec 005 **New Course.** Neurophysiology Lab 6 4.0
(2 Hr credit, 6 hours per week as a Lab course, also listed as Bio650 for 1 student)
A&S 500 Sec 008, **New Course**, Sensory Biology (3 Hr) 20 3.5

Fall 2013

BIO 350 Animal Physiology 125

Spring 2014 - Sabbatical semester

Fall 2014

BIO 350 Animal Physiology (4 Hr) 100

……Sec 001 3.57 (dept mean 3.23) out of a 4 point score

……Sec 002 3.85 (dept mean 3.23)

……Sec 003 3.57 (dept mean 3.23)

……Sec 004 3.46 (dept mean 3.23)

……Sec 005 3.2 (dept mean 3.23)

……Sec 006 3.3 (dept mean 3.23)

Bio380- Neurophysiology seminar (Presentation U) (1 Hr) 10

Spring 2014

New course Bio 476 –Neurophysiology lab (2 Hr)

Fall 2015

Sec 1 BIO 350 Animal Physiology (4 Hr): Teaching Quality 3.38; Mean A&S 3.25
Sec 2 BIO 350 Animal Physiology (4 Hr): Teaching Quality 3.05; Mean A&S 3.25
Sec 3 BIO 350 Animal Physiology (4 Hr): Teaching Quality 3.59; Mean A&S 3.25
Sec 4 BIO 350 Animal Physiology (4 Hr): Teaching Quality 3.25; Mean A&S 3.25
Sec 5 BIO 350 Animal Physiology (4 Hr): Teaching Quality 3.20; Mean A&S 3.25

Spring 2016

Bio446 Neurophysiology lab (3 hr credit, now part of the new major)
Teaching Quality 4.0; Mean A&S 3.28

Fall 2016

Sec 3 BIO 350 Animal Physiology (4 Hr): Teaching Quality 4.14; Mean A&S 4.19
Sec 4 BIO 350 Animal Physiology (4 Hr): Teaching Quality 3.62; Mean A&S 4.19
Sec 5 BIO 350 Animal Physiology (4 Hr): Teaching Quality 4.25; Mean A&S 4.19

Spring 2017

Bio446 Neurophysiology lab (3 hr credit, now part of the new major)

Teaching Quality ?; Mean A&S ?

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper was prepared for class.	4.83	6	0.41	4.31	3959	0.83	4.33	33566	0.87
The instructor Robin Cooper presented material clearly.	4.67	6	0.52	4.03	3953	1.07	4.06	33481	1.12
The instructor Robin Cooper responded to questions in a manner that aided my understanding of the material.	4.83	6	0.41	4.11	3948	1.03	4.14	33438	1.07
The instructor Robin Cooper provided material at an appropriate pace.	4.67	6	0.52	4.08	3947	1.01	4.14	33463	1.02
The instructor Robin Cooper treated students with respect.	4.83	6	0.41	4.37	3962	0.86	4.41	33558	0.86
The instructor Robin Cooper asked questions that stimulated deep consideration of the course content.	4.83	6	0.41	4.07	3949	0.99	4.09	33378	1.05
RobinCooper provided quality teaching.	4.83	6	0.41	4.11	3955	1.02	4.13	33446	1.08

Which aspects of the instructor RobinCooper were most helpful? Why?

Comments
The discussions and tangents. Not sure if everyone liked them, but I know I learned so much good information from those! He teaches the physiology in a way that I can grasp and conceptualized, and in a way that I know I will not forget the information for a long time.
Dr. Cooper is very knowledgeable and enjoys making sure that his students understand the material and topics covered in the course.
Very in depth explanations and background stories contributed to my learning

Bio199- Students not in STEM CATS but needed research Bio199 credit (9 students)

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper was prepared for class.	4.57	7	0.53	4.31	3959	0.83	4.33	33566	0.87
The instructor Robin Cooper presented material clearly.	4.43	7	0.79	4.03	3953	1.07	4.06	33481	1.12
The instructor Robin Cooper responded to questions in a manner that aided my understanding of the material.	4.43	7	0.79	4.11	3948	1.03	4.14	33438	1.07
The instructor Robin Cooper provided material at an appropriate pace.	4.57	7	0.53	4.08	3947	1.01	4.14	33463	1.02
The instructor Robin Cooper treated students with respect.	4.71	7	0.49	4.37	3962	0.86	4.41	33558	0.86
The instructor Robin Cooper asked questions that stimulated deep consideration of the course content.	4.71	7	0.49	4.07	3949	0.99	4.09	33378	1.05
RobinCooper provided quality teaching.	4.57	7	0.53	4.11	3955	1.02	4.13	33446	1.08

Which aspects of the instructor RobinCooper were most helpful? Why?

Comments
Dr. Cooper is super awesome and is very intelligent and more than willing to teach us new concepts. I learned a lot from him and think he is an amazing mentor/teacher.
Dr. Cooper has great understanding of the material and great enthusiasm for the content of the material which made it fascinating and easier to understand.
He also knew how to explain things easily so that everyone could understand along with the fact the he was a fun all around teacher.
His light-hearted attitude toward the class made the intense and in-depth topics much easier to grasp. He is extremely intelligent. His existence simply made the class better.
Willingness to help understand
He's a great guy and was very easy to get a hold of. I feel like I could still go to him in a couple years and talk and he would be happy to help me.

Sept., 2022

Bio199-Class 1 (STEMCATS) Monday nights 5:30PM to 8 PM (7 students)

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper was prepared for class.	4.57	7	0.53	4.31	3959	0.83	4.33	33566	0.87
The instructor Robin Cooper presented material clearly.	4.71	7	0.49	4.03	3953	1.07	4.06	33481	1.12
The instructor Robin Cooper responded to questions in a manner that aided my understanding of the material.	4.71	7	0.49	4.11	3948	1.03	4.14	33438	1.07
The instructor Robin Cooper provided material at an appropriate pace.	4.71	7	0.49	4.08	3947	1.01	4.14	33463	1.02
The instructor Robin Cooper treated students with respect.	5.00	7	0.00	4.37	3962	0.86	4.41	33558	0.86
The instructor Robin Cooper asked questions that stimulated deep consideration of the course content.	4.43	7	0.53	4.07	3949	0.99	4.09	33378	1.05
RobinCooper provided quality teaching.	4.57	7	0.53	4.11	3955	1.02	4.13	33446	1.08

Which aspects of the instructor RobinCooper were most helpful? Why?

Comments
He is always willing to help with the projects we are working on. He is also very funny and makes the class fun.
Dr. Cooper is great. He's approachable and understanding.
He was always willing to explain things and provide a deeper insight which allowed for more thorough posters
EXTREMELY knowledgeable and passionate about his work. it made it easy to follow along during demos and made

Bio199-Class 2 (STEMCATS) Tuesday Afternoon 2PM to3 PM and online mentoring (11 students)
(Not enough students responded for TCE)

Bio199-Class 3 (STEMCATS) Thursday nights 5:30PM to 8 PM (15 Students)

7. RobinCooper provided quality teaching.

Options	Score	Count	Percentage
Agree	4	1	16.67%
Strongly Agree	5	5	83.33%

Instructor Specific Questions (continued)

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper was prepared for class.	4.67	6	0.52	4.31	3959	0.83	4.33	33566	0.87
The instructor Robin Cooper presented material clearly.	4.67	6	0.52	4.03	3953	1.07	4.06	33481	1.12
The instructor Robin Cooper responded to questions in a manner that aided my understanding of the material.	4.67	6	0.52	4.11	3948	1.03	4.14	33438	1.07
The instructor Robin Cooper provided material at an appropriate pace.	4.80	5	0.45	4.08	3947	1.01	4.14	33463	1.02
The instructor Robin Cooper treated students with respect.	5.00	6	0.00	4.37	3962	0.86	4.41	33558	0.86
The instructor Robin Cooper asked questions that stimulated deep consideration of the course content.	4.83	6	0.41	4.07	3949	0.99	4.09	33378	1.05
RobinCooper provided quality teaching.	4.83	6	0.41	4.11	3955	1.02	4.13	33446	1.08

Which aspects of the instructor RobinCooper were most helpful? Why?

Comments
He was fun and understanding of everyone in the class.
He took the time to make sure we knew what we were doing and why we were doing it
I liked when you sent emails about what we were doing for the week.

Bio395/394, HHS 395 & Agbiotech 395 - in my research lab (11 students)

-No evaluations

Fall 2017

Bio 446 Neurophysiology lab (3 hr credit) 14 students

University of Kentucky - Fall 2017 Indiv TCE Report for BIO446-001-2018010 - NEUROPHYSIOLOGY LABORATORY (Robin Cooper)

Instructor Specific Questions

1. The instructor Robin Cooper was prepared for class.

Options	Score	Count	Percentage
Agree	4	1	10.0%
Strongly Agree	5	9	90.0%

2. The instructor Robin Cooper presented material clearly.

Options	Score	Count	Percentage
Agree	4	1	10.0%
Strongly Agree	5	9	90.0%

3. The instructor Robin Cooper responded to questions in a manner that aided my understanding of the material.

Options	Score	Count	Percentage
Strongly Agree	5	10	100.0%

4. The instructor Robin Cooper provided material at an appropriate pace.

Options	Score	Count	Percentage
Agree	4	1	10.0%
Strongly Agree	5	9	90.0%

5. The instructor Robin Cooper treated students with respect.

Options	Score	Count	Percentage
Agree	4	1	10.0%
Strongly Agree	5	9	90.0%

6. The instructor Robin Cooper asked questions that stimulated deep consideration of the course content.

Options	Score	Count	Percentage
Agree	4	1	10.0%
Strongly Agree	5	9	90.0%

7. RobinCooper provided quality teaching.

Options	Score	Count	Percentage
Agree	4	1	10.0%
Strongly Agree	5	9	90.0%

Sept., 2022

Bio 426 Seminar for neuroscience majors (1 credit hr) 11 students

University of Kentucky - Fall 2017 Indiv TCE Report for BIO426-002-2018010 - NEUROSCIENCE SEMINAR:SYNAPTIC PHYSIOLOGY (Robin Cooper)

Instructor Specific Questions

1. The instructor Robin Cooper was prepared for class.

Options	Score	Count	Percentage
Agree	4	1	12.5%
Strongly Agree	5	7	87.5%

2. The instructor Robin Cooper presented material clearly.

Options	Score	Count	Percentage
Agree	4	1	12.5%
Strongly Agree	5	6	75.0%
Choose not to rate	NRP	1	12.5%

3. The instructor Robin Cooper responded to questions in a manner that aided my understanding of the material.

Options	Score	Count	Percentage
Strongly Agree	5	8	100.0%

4. The instructor Robin Cooper provided material at an appropriate pace.

Options	Score	Count	Percentage
Agree	4	1	12.5%
Strongly Agree	5	6	75.0%
Choose not to rate	NRP	1	12.5%

5. The instructor Robin Cooper treated students with respect.

Options	Score	Count	Percentage
Agree	4	1	12.5%
Strongly Agree	5	7	87.5%

6. The instructor Robin Cooper asked questions that stimulated deep consideration of the course content.

Options	Score	Count	Percentage
Strongly Agree	5	8	100.0%

7. RobinCooper provided quality teaching.

Options	Score	Count	Percentage
Disagree	2	1	12.5%
Agree	4	1	12.5%
Strongly Agree	5	6	75.0%

HHS 402G- Muscle Biology (3 credit hours) (I just help out teaching in this course 6 lectures, No DOE credit, http://web.as.uky.edu/Biology/faculty/cooper/Muscle%20class-UK/MuscleBiology.html).

Spring 2018

Bio199-(STEMCATS) (15 Students)

Overall Instructor Score

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper provided quality teaching.	4.7	6	0.5	4.3	3530	1.0	4.2	31983	1.0

Sec 1 BIO 350 Animal Physiology (4 Hr): Teaching Quality ?; Mean A&S ?

Overall Instructor Score

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper provided quality teaching.	4.4	13	0.9	4.3	3530	1.0	4.2	31983	1.0

Sec 2 BIO 350 Animal Physiology (4 Hr): Teaching Quality ?; Mean A&S ?

Overall Instructor Score

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper provided quality teaching.	2.9	14	1.3	4.3	3530	1.0	4.2	31983	1.0

Sec 3 BIO 350 Animal Physiology (4 Hr): Teaching Quality ?; Mean A&S ?

Overall Instructor Score

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper provided quality teaching.	3.5	11	1.2	4.3	3530	1.0	4.2	31983	1.0

Sec 4 BIO 350 Animal Physiology (4 Hr): Teaching Quality ?; Mean A&S?

Overall Instructor Score

Question	Course			Department (Biology)			College (Arts and Sciences)		
	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation	Mean	Response Count	Standard Deviation
The instructor Robin Cooper provided quality teaching.	3.4	15	1.2	4.3	3530	1.0	4.2	31983	1.0

Fall 2018

Bio 446/650 Neurophysiology lab (3 hr credit) 14 students

HHS 402G- Muscle Biology (3 credit hours) (I just help out teaching in this course 2 lectures, No DOE credit but help grade exams and class reports)

Spring 2019

Bio350 Animal physiology. 4 sections (4 credit hours, with wet lab)
Bio395/394 - ? students

Fall 2019

Bio 446/650 Neurophysiology lab (3 hr credit) 16 students
Bio395/394 - ? students

Spring 2020

Bio350 Animal physiology. 4 sections (4 credit hours, with wet lab-COVID developed online labs, record data)
Bio395/394 - ? students

Fall 2020

Bio 446/650 Neurophysiology lab (3 hr credit) 16 students
Bio 398 GCCR students
Bio395/394 - ? students

HHS 402G- Muscle Biology (3 credit hours) (I just help out teaching in this course 2 lectures, No DOE credit but help grade exams and class reports)

Spring 2021

Bio350 Animal physiology. 4 sections (4 credit hours)- On line due to COVID
Bio199 Two different sections (8 students in each. In person lab experiments)
Bio 425/426 Biology seminar, neurobiology seminar (2 sections) All online.
Bio 398 - two students. GCCR credits
Bio395/394 - 4 students

2. BCTC (BLUEGRASS COMMUNITY AND TECHNICAL COLLEGE) Lexington, KY.

Summer II 2011

BIO 137 Human Anatomy & Physiology I (lecture) 75 students

Fall 2015

BIO 137 Human Anatomy & Physiology I (lecture. Night class) 25 students

Sept., 2022

INTERNATIONAL TEACHING & ORGANIZATION

1. Course organizer and director: 1993 summer
Dept. of Physiology, Korea University, Seoul, South Korea

Topic: Neuroscience hands-on workshop: **"6th Intensive IBRO Workshop on Basic Neuroscience"**
For: International neuroscience graduate and medical students
I had initiated and succeeded in obtaining an international neuroscience hands-on workshop in Seoul, South Korea. Obtained funding ($25,000 USD) for this workshop from International Brain Research Organization (IBRO) and Brain Research Foundation, Tokyo. I was the main instructor and laboratory overseer for this workshop. The title of this workshop was, **"6th INTENSIVE IBRO WORKSHOP ON BASIC NEUROSCIENCE"** and was held from **July 16 to August 1, 1993** at Korea University, Seoul, South Korea. Dr. Joseph Chang of Sogang Univ., Seoul, Korea was the organizer within Korea. Dr. Masao Ito of Japan (President of the IBRO Commission on Pan-Asian Oceanic Neuroscience) was the international Co-organizer. See: (1) Abst. Soc. Neurosci. (1993) 19:116.3; (2) IBRO News Letter (1993) vol. 21 #2; and (3) Neuroscience Research (1993) 16:237.

2. Adjudicator for PhD thesis (**2006**). Ms. M. Komali (Sri Venkateswara University, Tirupati, **India**). "Elucidation of the role of biogenic amines in the metabolism and reproduction of freshwater prawn, *Macrobrachium malcolmsonii*"

3. Adjudicator for PhD thesis (**2008**). Mr. L. Imayavaramban **(**Ph.D. Research scholar, Unit of Biochemistry, Department of Zoology, University of Madras, Guindy Campus, Chennai-600 025, **India**)

4. Created a new online international seminar course (A&S 300, at the University of KY). This brought international PR for our Biology Department and University.
See local PR http://theworldreportuky.com/2012/09/28/uk-seminar-course-promotes-international-dialogue/ Also a write up in the UK Undergraduate Research newspaper.

5. Summer 2014. Obtained student from DAAD - German Academic Exchange Service for 12 weeks of summer research. All expenses paid by German government. Student: Sandra Blümich from Universität Leipzig.

6. 2014. Started a "**Citizen Science"** project. In this project, I worked with high school students in Kentucky to pilot the descriptions and approaches used. Then I reached out to various students at Seoul National University and Korean Military Academy in South Korea, University of Salahaddin in Iraq, Al Ain Medical School in U.A.E., Kazan State Medical University in Kazan, Russia, Universität Leipzig, Germany and at the University of Padova in Italy for participation. This is what I like to call "science without boarders" in solving problems. For this to appeal to Kentucky teachers, the projects were intentionally designed to integrate the Next Generation Science Standards. These projects are being developed in collaboration with Kim Zeidler-Watters in P-12 Math and Science Outreach Unit of PIMSER at University of KY and Dr. R.M. Krall in the Dept. of STEM at Univ. of KY. In relation to the science and clinical relevance Dr. Esther E. Dupont-Versteegden in the

Division of Physical Therapy, Dept. Rehabilitation Sciences, College of Health Sciences, and members of the Center for Muscle Biology, at UK are participating.
See web page:
http://web.as.uky.edu/Biology/faculty/cooper/Citizen%20Science%20folder/CitizenScienceProjectPage.htm

7. Summer 2015. Obtained my 2nd student from DAAD - German Academic Exchange Service for 12 weeks of summer research. All expenses paid by German government. Student: Ms. Felicitas Koch from Universität Leipzig Veterinary School of Medicine.

8. Summer 2017. Obtained my 3rd student from DAAD - German Academic Exchange Service for 12 weeks of summer research. All expenses paid by German government. Student: Ms. Kristin Weineck from Universität of Rostock (Germany)

9. Summer 2017. Short course for High School Science teachers May 29-30th. Funded by Belize Aquaculture. The workshop was hosted in the board room of Belize Aquaculture, mile 4 Placencia Road, Stann Creek District, **Belize, Central America.** Backyard brain kits were bought by Belize Aquaculture and left for the teachers to use in their class rooms.

IV. DOE ADMINISTRATION at UK

I took on the role of DUS (Director of Undergraduate Studies) for the Neuroscience Undergraduate Program on June 15, 2017. This is an interdepartmental major with departments within the Medical School, Agriculture and College of Arts and Sciences. There are 68 faculty listed as Faculty of Record for the program. When I started as DUS I was assigned 0% DOE (distribution of effort). However, this was increased to administration to **5%** for January 2018. This is a very low percentage given the amount of time this requires and to manage ~400 students within the interdepartmental major and other DUS positions in other depts. (~20% to 40% DOE).

Activities since assuming DUS:

1. August/Sept 2017: College Welcome - K-Week Day involved meetings with groups of students interested in the neuroscience program.

2. Meet on Friday's (most every Friday during the Fall) with potential incoming freshman and their parents to talk about the neuroscience program.

3. Attend DUS meetings (1 or 2 times per month) arranged by A&S for changes in advising, and other administrative matters.

4. November. Complete the UK & Council of Postsecondary Education yearly assessment of the program. This was supposed to be completed by the past DUS but it fell on my lap to do.

5. Oct-Dec., 2017. Restructure the major and minor program with a multitude of changes. This

involved meeting with A&S administration, departments involved, and individual meetings with faculty to get the proposed curriculum changes approved. This required the faculty within Dept. of Biology to approval all the motions and then the Faculty of Record campus wide and hold an open forum for discussion.

6. 2017-2018. Every 2 weeks, since Sept. 2017, the executive board of the neuroscience program meets for 1 hour to discuss planning and issues for the program. Since 2019 about once a month meeting.

7. 2017-present. Sign off on each student contact for Bio394 (Research for Neuroscience). Help find research mentors for the students.

8. 2017-present. Monthly meetings. Meet with NeuroCats as a group or their executive members (student group) for their planning activities and discuss changes for the major.

9. 2017-present. Multitudes of APEX exceptions for students needed to be dealt with as bottle necks appeared in the major for students to graduate on time and to find research mentors. Literally **100's** of emails with students and POT advising to make changes and follow ups with advising issues.

10. 2017-present. Individual advising sessions for students finishing their 2nd year, all 3rd and many 4th year students. This takes and instrumental amount of time and planning around. So I meet with many students after 5:00PM or over the weekend in order to focus the distractions to research and working with the students conducting research in my lab.

11. March 2018 & 2019. Merit day (days) meeting with students coming to UK in fall 2018. Several meetings with students coming to UK. 6 different days to meet with students in groups.

12. **Summer advising 2018 & 2019** (on 9 month appt but still did DUS duties). Course equvilent approvals and advising via email and in person.

13. **Fall 2018 and 2019** Natural Science Visit Days schedule. A sample of what is required each year as DUS in Neuroscience: (Talking with groups of students planning on UK to attend).
Example Fall 2018 Natural Science Visit Days:
September 7th, 14th, 21st, 28th, 2018
October 5th, 12th, 19th, 26th, 2018
November 2nd, 9th, 16th, 30th, 2018

14. **August/Sept 2018 & 2019**: College Welcome - K-Week Day involved meetings with groups of students interested in the neuroscience program.