

# THE OPEN READING FRAME

News and Recent Events from  
the Biology Graduate Program at the University of Kentucky

## Thoughts from the DGS



In the second issue of this newsletter each year, we welcome our new students into the program while celebrating the activities of our current students. We have students entering into all three of our degree programs this year, and this diversity in what students would like to achieve out of their graduate training also exists in the career trajectories they take after leaving, even within degrees. It reflects the way new information and techniques in the life sciences are trickling into many different areas of human endeavor, making training in the fundamentals of living organisms more and more valuable, yet also more challenging as we think about producing graduates able

to succeed in a more varied landscape of opportunities than has been true in the past. The BGP is continuing to explore ways to support training opportunities and activities that improve the ability of graduates to take advantage of such opportunities. We initiated the Scherr Special Opportunity Award this year and two students, Sruthi and Cody, made use of the funding to visit other institutions and learn new approaches to their research. We are also having conversations about how to initiate new experiences for students in exploiting Big Data in life sciences, from what new questions might be accessible with massive amounts of data, how to acquire that information, and how to process it effectively. Exploiting Big Data will require many new skills, and so it is a challenge to add that into an already busy agenda. Yet, it seems necessary to meet it, and so we welcome your input as we move forward with plans. In the meantime, keep working hard and learning lots!

-Dave

Dave Westneat,  
Director of Graduate Studies  
Department of Biology



## Welcome to our new Biology Graduate Students

**Ehren Anderson** (MSB Program): BS from University of Kentucky, Lexington, KY (not pictured)

**Derek Cox** (Seifert Lab): BS and MS from University of Texas, Dallas, TX (1st on left, back row)

**Mary Foley** (Weisrock Lab): BS from University of Kentucky and MS from Rutgers State University, New Brunswick, NJ (2nd on right front row)

**Ashleigh Glover** (Linnen Lab): BS and MS from California State University Stanislaus, Turlock, CA (1st on right front row)

**Kathryn Greene** (Crowley Lab): BS from Davidson College, Davidson, SC (2nd from left front row)

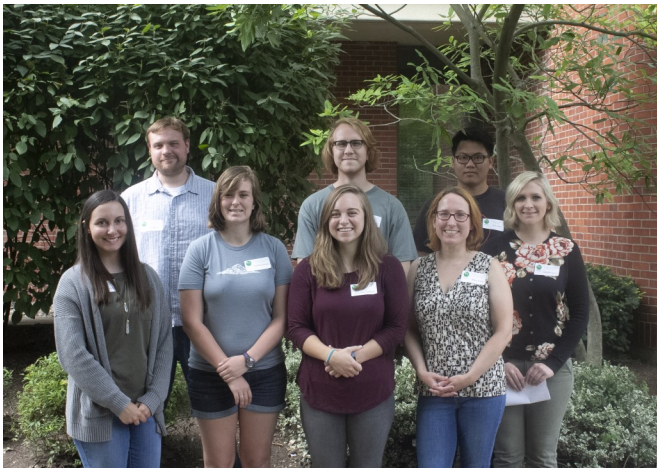
**Bradford Hull** (MSB Program): BS from University of Kentucky, Lexington, KY (middle back row)

**Shannon Ooijkaas** (MSB Program) BS from Alice Lloyd College, Pippa Passes, KY (not pictured)

**Shea Sickles** (Krupa Lab): BS from University of Kentucky, Lexington, KY (1st from left front row)

**Alexandra Stanback** (Cooper Lab): BS from University of Kentucky, Lexington, KY (middle front row)

**Alex Yang** (McLetchie Lab): BS from University of California, Davis, CA (1st on right, back row)



# Getting it done!

## PhD Defenses

**Michelle Giedt** (Harrison Lab): "Jak/Stat Signaling Regulates Gametogenesis and Age-Related Reproductive Maintenance. Dr. Giedt has accepted a postdoctoral position at the University of Iowa.

**Chanung Wang** (O'Hara Lab): "A Comparative Study of Sleep and Circadian Rhythms between the House Mouse (*Mus musculus*) and African Spiny Mouse (*Acomys cahirinus*)". Chanung has accepted a postdoctoral position with Dr. David Holtzman, Neurology Department, Washington University School of Medicine in St. Louis, MO.

## Masters

**Tyler Butsch**, MSB

**Dakota Coomes**, MSB

**Kristen LaRue**, MSB

**Lisa Taylor**, MSB



## Qualifying Exams

**Kara Jones** (Weisrock Lab)

**Tom Maigret** (Weisrock Lab)

**Warlen Piedade** (Famulski Lab)

**Kristyn Van Der Meulen** (Famulski Lab)

**Megan Weaver** (Famulski Lab)

**Congrats to our new PhD candidates!**



# Awards, Fellowships, Grants and Honors

## Awards

**A&S Outstanding TA Award Recipients 2018**

**Kat Sasser**

**Jim Shaffer**

**Biology's Outstanding TAs for 2017-2018**

**Jeff Chalfant**

**\*Luc Dunoyer**

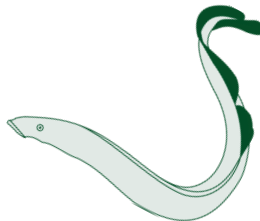
**Allison McLaughlin**

**Tim Salzman**

**\*Kat Sasser**

**\*Jim Shaffer**

**\* nominated for College Competition**



# Awards, Fellowships, Grants and Honors (continued)

## Scherr Special Opportunity Award

**Sruthi Purushothaman (Seifert Lab):** The Scherr Opportunity Award gave Sruthi the opportunity to visit Dr. James Monaghan’s lab at the Northeastern University and learn the gene-editing protocol for axolotls. She says: My thesis work has reached a crucial point where I need to use gene-editing techniques to functionally test the mechanism of genes involved in axolotl limb development and regeneration. With the recent publication of the axolotl genome, it is now possible to target genes and leverage CRISPR/Cas9 technology. I was taken through the elaborate protocol during my 5-day visit and we used standardized protocols from Tanaka lab (IMP, Austria) and Monaghan lab (Northeastern University). I was able to get an evident phenotype with the CRISPR injections I performed during my visit and I am now ready to set up the CRISPR pipeline in our lab at UK.

**Cody Saraceno (Smith lab):** In May of 2018, I was fortunate enough to receive funding from the Scherr Special Opportunity Award to travel to the lab of Dr. Robb Krumlauf, located at the Stowers Institute for Medical Research. While there, I learned how perform *in situ* hybridization (ISH) on lamprey embryos. ISH is a technique that allows one to visualize the spatial and temporal expression patterns of genes in fixed tissues as a means to study their regulation, function or interactions with other gene products. In particular, the gene I was primarily interested in studying was the lamprey *Vasa* gene. *Vasa* is recognized as a universal marker in all developing metazoan embryos for the primordial germ cells (PGCs), which eventually give rise to the mature gametes in the adult organism. Because of this opportunity provided to me by the Scherr Special Opportunity Award, I am now able to utilize this technique in Jeremiah Smith's lab at the University of Kentucky in the service of studying germline development in sea lamprey, which will form a significant contribution to my thesis work.

## Fellowships

**Biology Merit Fellowship** - The Biology Merit Fellowship is awarded to a PhD student in their 1st or 2nd year who has demonstrated exceptional promise. The fellowship provides a stipend commensurate with a TA salary for a pre-quals student and tuition. This year we awarded a fellowship to:

**Jeffrey Chalfant** (Pendergast Lab) spring 2019

**Laura Krueger** (Morris Lab) spring 2019

**Sandeep Saxena** (Seifert Lab) spring 2019

**Morgan Graduate Fellowship** - The Morgan Graduate Fellowship is awarded to a PhD student who has passed their qualifying exam, has demonstrated meritorious progress toward their degree, and has clear plans for enhancing their dissertation. The fellowship provides a stipend commensurate with a TA salary and tuition for either 1 or 2 terms. This year we awarded a fellowship to:

**Kara Jones** (Weisrock Lab) spring 2019

**Sruthi Purushothaman** (Seifert Lab) fall 2018

**Lyman T. Johnson Diversity Fellowship** - Awarded to Graduate Students who contribute to the University of Kentucky’s student diversity.

**Oluwabukola “Bookie” Omotola** (Pendergast Lab) fall 2018

**Kayla Titilii** (Morris Lab) fall 2018

## Honors

**Charles Cassone** (Cassone Lab) was awarded the **Condor Instruments Excellence Award** by the **Society for Research on Biological Rhythms** for his abstract “*Temperature Entrainment of the Circadian Clock of the Enteric Bacterium Enterobacter aerogenes*”.

**Kaylynne Glover** (Crowley Lab) was elected to the positions of *Director of Legislative Affairs* and the *Social Justice Advocate* of the **Midwest Region of the National Association of Graduate Professional Students** (NAGPS). She was also elected as the *External Affairs Officer* for the **University of Kentucky Graduate Student Congress**.



## Awards, Fellowships, Grants and Honors (continued)

**Warlen Piedade** (Famulski Lab) received Outstanding Poster Presentation Honors at the **2018 Annual Neuroscience Meeting**, Louisville, Kentucky.

**Kayla Titilii** (Morris Lab) received 1<sup>st</sup> place honors for her poster “” she presented at the **Barnstable Brown Diabetes and Obesity Research Day** at the University of Kentucky. She also received a Travel Scholarship from the **Society for the Advancement of Chicano/Latinos and Native Americans in Science (SACNAS)** and a Professional Development Fund Scholarship from the **Center for Graduate Diversity** at the University of Kentucky.

**Kristyn Van Der Meulen** (Famulski Lab) received Outstanding Poster Presentation Honors at the **2018 Annual Neuroscience Meeting**, Louisville, Kentucky.

## Presentations and Publications

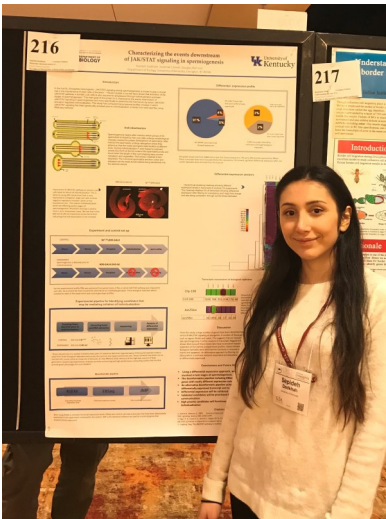
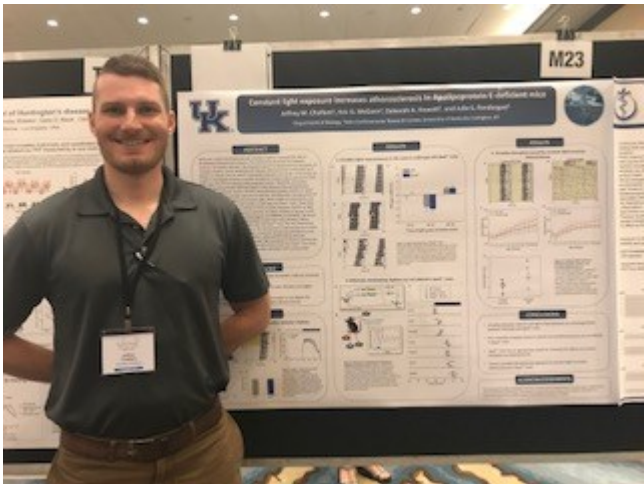
### Presentations

**Charles Cassone** (Cassone Lab) was invited to give a talk at the **2018 Society for Research on Biological Rhythms Conference** held on Amelia Island, Florida. SRBR is an international society that meets every two years. The invitation to speak was due to the acceptance of his Abstract *Temperature Entrainment of the Circadian Clock of the Enteric Bacterium Enterobacter aerogenes*".



**Nick Carrara** (Famulski lab) presented his poster at the **2018 Association for Research in Vision and Ophthalmology (ARVO)**, Honolulu, Hawaii.

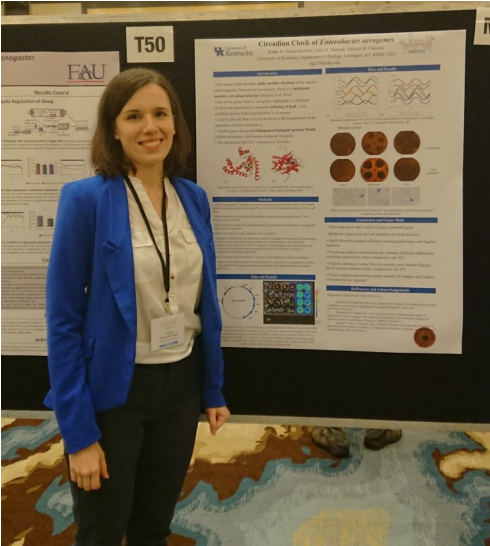
**Jeff Chalfant** (Pendergast Lab) presented his poster “Constant Light Exposure Increases Atherosclerosis in ApolipoproteinE-Deficient Mice” at the **2018 Society for Research on Biological Rhythms Conference** held on Amelia Island, Florida.



**Sepideh Dadkhah** (Harrison Lab) presented her poster “Molecular characterization of JAK/STAT regulation of spermatid differentiation” at the **59<sup>th</sup> Annual Drosophila Research Conference** in Philadelphia, Pennsylvania.

## Presentations and Publications (continued)

**Kaylynne Glover** (Crowley Lab) attended the **AAAS CASE** ("Catalyzing Advocacy in Science and Engineering") **Workshop** in Washington, DC, where she learned about science advocacy, public policy, and the federal budget process.

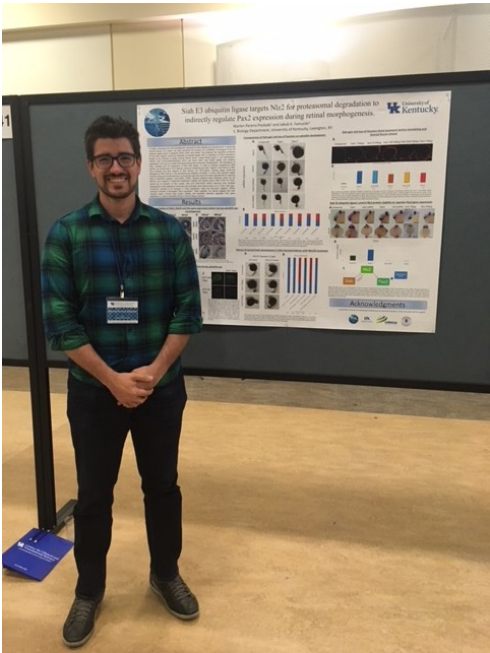


**Kinga Graniczkowska** (Cassone Lab) attended the Society for Research on Biological Rhythms 2018 meeting at Amelia Island, Florida where on May 14<sup>th</sup> she presented a poster entitled “Circadian Clock of *Enterobacter aerogenes*”. Additionally, during this event Kinga received two rewards: The **SRBR Merit Award for Behavior/Pop** and **The Trainee and Young Faculty Diversity Enhancement (TYDE) Fellowships Award!** These prizes were based on the scientific merit of her research.

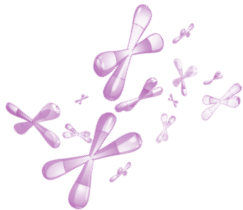
**Clifford Harpole** (Cassone Lab) was chosen to give a slide session talk at the **2018 Society for Research on Biological Rhythms International Meeting**, titled "*Sex Differences in Seasonal House Sparrow Vocalizations and Pineal Gland Control.*" He discussed his results on how melatonin, a molecule only expressed at night, defies expectation in not affecting primary sexual function in songbirds. It does, however affect how and when male birds vocalize within the season. Female house sparrows also have dynamic vocalization patterns, but less so than males and the pineal gland does not affect it nearly as much.



**Rose Marks** (McLetchie Lab) presented her poster “*Intraspecific variation in dehydration tolerance: insights from the tropical liverwort, Marchantia inflexa*” at the **Gordon Research Conference on Salt and Water Stress in Plants** in Waterville Valley, NH.

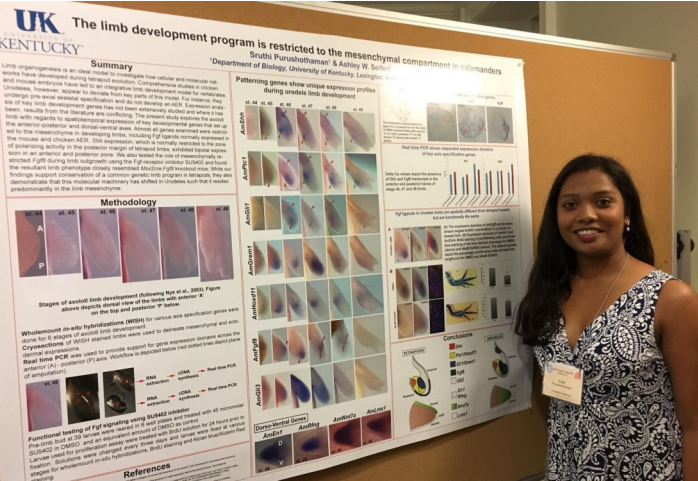


**Warlen Piedade** (Famulski lab) gave an oral presentation at the **2018 Association for Research in Vision and Ophthalmology (ARVO)**, Honolulu, Hawaii. He also presented a poster at the **2018 International Zebrafish Conference** in Madison, Wisconsin and at the **2018 Annual Neuroscience Meeting** in Louisville, Kentucky.





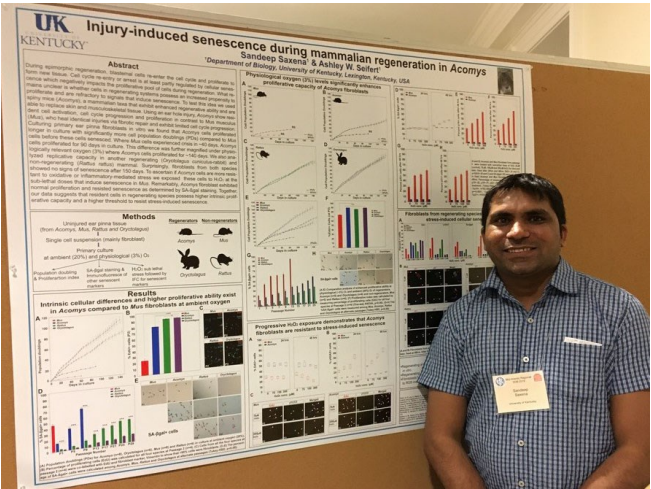
Presentations and Publications (continued)



Sruthi Purushothaman (Seifert Lab) presented her poster titled “The limb development program is restricted to the mesenchymal compartment in salamanders” at the Mid-Atlantic **Society of Developmental Biology Meeting**, University of Virginia Charlottesville.

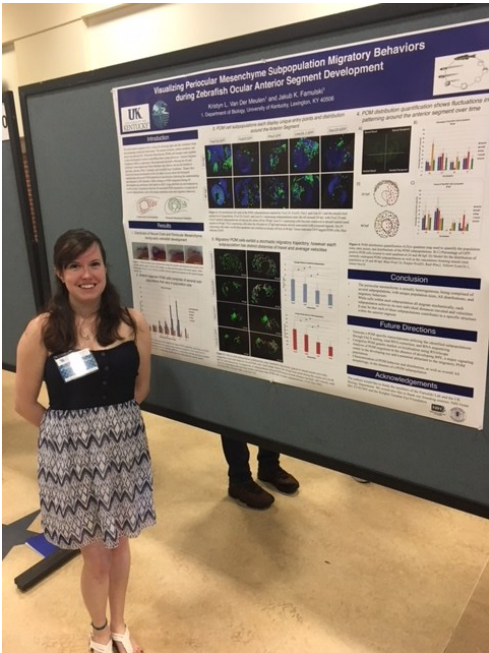


Sandeep Saxena (Seifert Lab) presented his poster “Injury-induced senescence during mammalian regeneration in Acomys” at the Mid-Atlantic **Society of Developmental Biology Meeting**, University of Virginia Charlottesville.

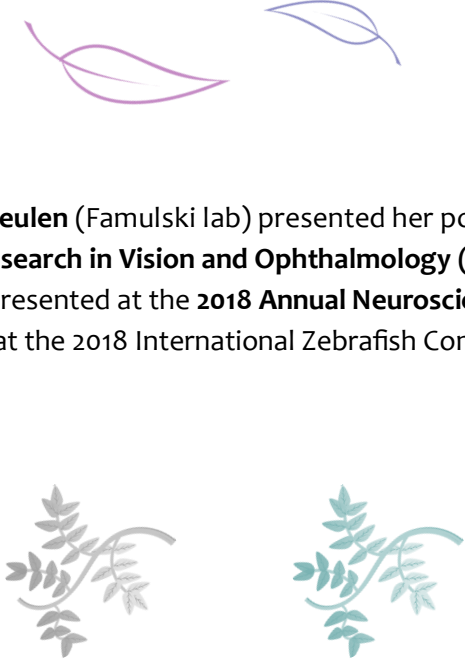


Zachary Stanley (McLetchie Lab) presented his poster *The Effect of Growth on Competition between Sexes of a Dioecious Bryophyte* at the **International Molecular Moss Society Conference (IMOSS)** in St. Petersburg, FL.

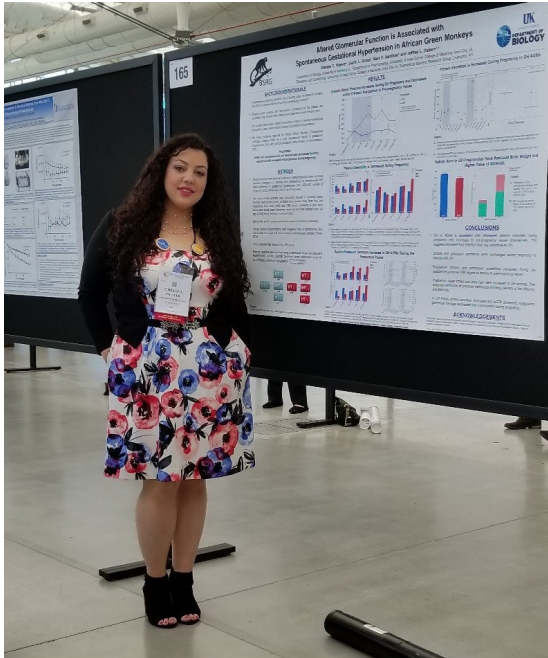
Kayla Titalii (Morris Lab) presented posters at the **Society of Post-doctoral Scholars Symposium** University of Kentucky, **Barnstable Brown Diabetes and Obesity Research Day**, University of Kentucky, KY-WV **Louis Stokes Alliance for Minority Participation Symposium**, Lexington, Kentucky and the **2018 Association for Research in Vision and Ophthalmology (ARVO)**, Honolulu, Hawaii.



Kristyn Van Der Meulen (Famulski lab) presented her poster at the **2018 Association for Research in Vision and Ophthalmology (ARVO)**, Honolulu, Hawaii. She also presented at the **2018 Annual Neuroscience Meeting** in Louisville, KY and at the **2018 International Zebrafish Conference** in Madison, Wisconsin.



Presentations and Publications (continued)



**Chelsea Weaver** (Osborn Lab) presented her abstract, "Altered Glomerular Function is Associated with Spontaneous Gestational Hypertension in African Green Monkeys," at **Experimental Biology** in San Diego, CA April 21-25, 2018. She also received an award of \$1200/year for conference related travel to serve as a Graduate Student Ambassador for the **American Physiological Society** for 2018 & 2019.

**Meagan Weaver** (Famulski Lab) presented a poster at the **2018 International Zebrafish Conference**, Madison, Wisconsin.

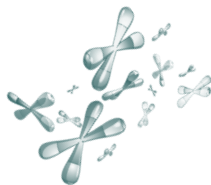


Publications

**Dwaraka VB**, Smith JJ, Woodcock MR, Voss SR. (2018) "Comparative transcriptomics of limb regeneration: Identification of conserved expression changes among three species of Ambystoma." *Genomics*. doi:54.5450/j.ygeno.6452.41.451

Salamanders may owe their amazing ability to regenerate limbs to highly conserved transcriptional programs. To elucidate these programs, we used a comparative transcriptomic approach and identified 405 genes among three ambystomatid species that are commonly, differently expressed after limb amputation. This paper discusses the implications of these conserved regeneration genes in the context of early limb regeneration features, and provides a high-confidence set of biomarkers for future studies of tissue regeneration.

**Tim Salzman** and **Allison McLaughlin** (Westneat lab) are authors on a paper published in *Behavioral Ecology and Sociobiology* "Energetic trade-offs and feedbacks between behavior and metabolism influence correlations between pace-of-life attributes." The project arose out of Phil Crowley's 606 Conceptual Methods class. The full citation is: Salzman, T., McLaughlin, A., Westneat, D. F., and P. H. Crowley. (2018) *Behavioral Ecology and Sociobiology*, 72: 54. doi.org/10.1007/s00265-018-2460-3.





## 4<sup>th</sup> Year Symposium

On a Saturday afternoon in April, Biology held its fourth annual 4<sup>th</sup> Year Graduate Symposium in the T. H. Morgan Building. Three 4th year students, **Tim Salzman** (Westneat Lab), **Sruthi Purushothaman** (Seifert Lab) and **Emily Bendall** (Linnen Lab) presented their developing research.

Spicing up the transitions between speakers were short introduction-to-the department talks by 1<sup>st</sup> year students **Alex Cones** (Westneat Lab), **Mariah Donohue** (Weisrock Lab), **Derek Filipek** (Weisrock Lab) and **Julia Howell** (Santollo Lab).

Thanks to the BGSA officers for organizing this stimulating event!

## Outreach Activities

**Jeff Chalfant** (Pendergast Lab) is currently serving as the **2018 BioBonanza** Committee Chair and he participated in **Science Night** at Coventry Oak Elementary School, Lexington, KY. He introduced elementary students to Circadian Biology.

**Sruthi Purushothaman** (Seifert Lab) performed Bharatanatyam Dance at the Living Arts and Science Center, Lexington KY for **International Children’s Arts Festival**: March 17<sup>th</sup>, 2018. The theme of the festival was to encourage children to look outside their windows and throughout their community to create artwork and share with us a view of the people and places in their own part of the world.



*“Science is not only a disciple of reason but also one of romance and passion.”*

- Stephen Hawking

