

The titan arum (*Amorphophallus titanum*) bloomed in Washington DC



Third specimen in bloom this year at the US Botanic Garden, Washington DC, August 2017

Left: Dr. Patti Erikson enjoying seeing & smelling the largest “flower” in the world. This specimen reached 2.53 m in height. The titan arum is native to the island of Sumatra in Indonesia. The smell has been described as that of a dead animal. In Indonesia the common name is “bunga bangkai”, the corpse flower. Dr. Erickson is currently on sabbatical at George Washington University.

Right: Record setting “flower” at the Cibodas Botanic Gardens on the island of Java, Indonesia; height 3.73 m. Photo courtesy of Mochammad Soleh.

Biology Alumni



After graduating from Salisbury in 2013 with a BS in Biology and a minor in Environmental Studies, **Gabriella (Gabby) David** went on to pursue a Master of Science in Therapeutic Herbalism at the Maryland University of Integrative Health (<http://www.muhi.edu>). She has a full time position with the US Department of State, Bureau of Oceans and International Environmental and Scientific Affairs in Washington DC. Her office specializes in policy and public outreach. Her coursework at SU and weekly seminars helped prepare her for graduate school and also gave her great networking opportunities and introduced her to beneficial internships. While pursuing her Masters she has learned to prepare herbal blends that aid in the treatment of various ailments such as anxiety and migraines. Ms. David plans to open a Therapeutic Herbalism practice, where she will have her own line of herbal salves, tinctures, medicinal oils, tea blends and herbal honeys.

We Have Bees!



Ian Ralph and Myra Dickey checking out the hives. Photos by Kara VanFleet

In May of this year four beehives were set up by Dr. Stephen Gehnrich (BIOL) and Dr. Jess Walter (EXSC) on University property across Camden Avenue from the campus. Funding for this project was provided by Salisbury University's Green Fund, with help from the university's Horticulture Department and Physical Plant. Throughout the summer the worker bees have been flying several miles each day to collect nectar and pollen, and returning to the hive where the nectar is made into honey. The bees have also been making the honeycomb in which the honey and pollen are stored. The honey and pollen provide food for the hive, and are essential for the bees to survive the long winter. Although we can take some of the honey, most of it (especially in the hive's first year) must be left for the bees to eat. The honeycomb is also the place where bees develop from an egg, through the larval and pupal stages, to adults. The queens have been laying eggs (one egg in each cell of the honeycomb) which take about 20 days to develop into an adult bee. Each of the hives has now grown to a population of approximately 30,000 bees.

But the bees are doing more than pollinating plants and making honey. Biology majors Myra Dickey and Ian Ralph have been collecting some of the bees for their research on a mitochondrial protein and its role in honeybee flight muscle metabolism. The protein carries pyruvate from the cytosol, where it is formed by glycolysis, into the mitochondria where the pyruvate is oxidized in the Krebs cycle. Myra and Ian are testing the possible effects of the insecticides known as neonicotinoids on this step of metabolism.

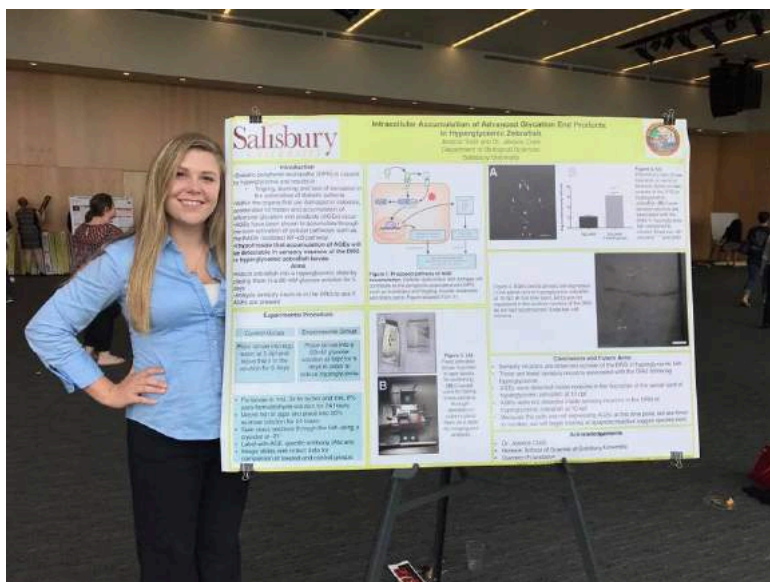
Part of the research involves caring for the bee hives, and making sure they are healthy and thriving. Once they have put on their protective bee suits Myra and Ian open the hive and remove the frames to look for bee eggs and larvae, or invasive parasites such as mites and hive beetles.

We are hoping to start a beekeeping club at SU. If you are interested in learning more about beekeeping give us a buzz!

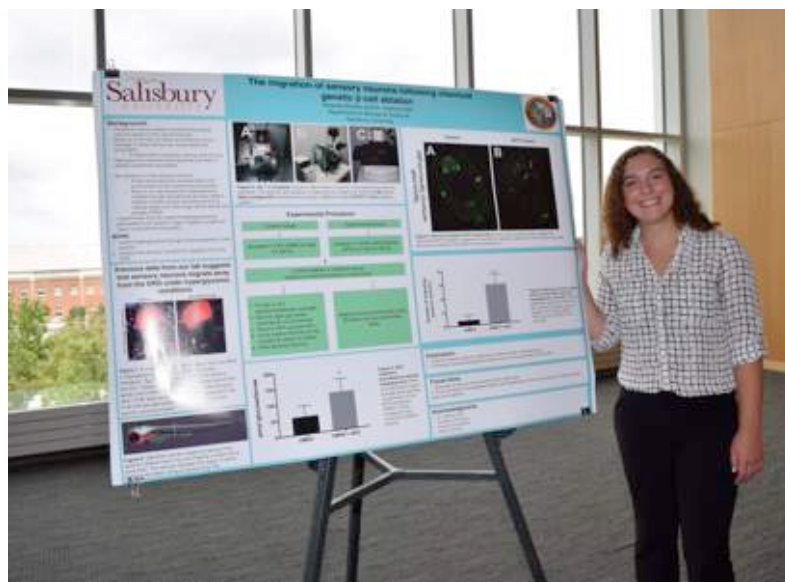
Myra Dickey mdickey2@gulls.salisbury.edu
Ian Ralph iralph1@gulls.salisbury.edu
Kara VanFleet kvanfleet1@gulls.salisbury.edu

Our Undergraduate Students

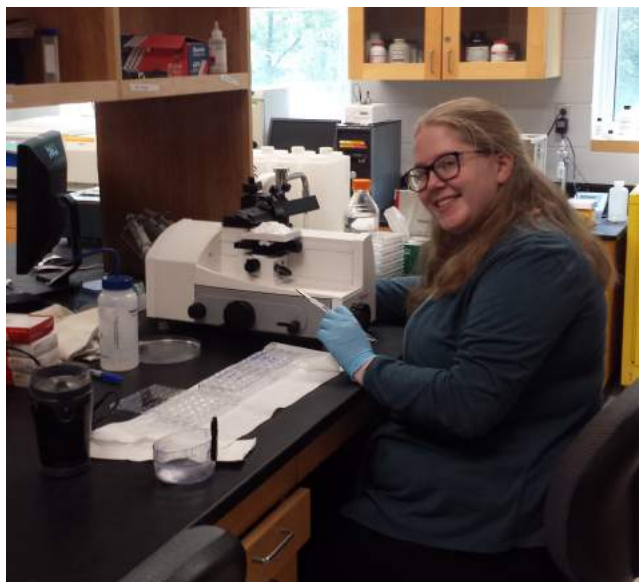
GUERRIERI SUMMER SCHOLARS



Jessie Todd: Intracellular accumulation of advanced glycation end products in hyperglycemic zebrafish. Dr. Jessica Clark, Mentor.

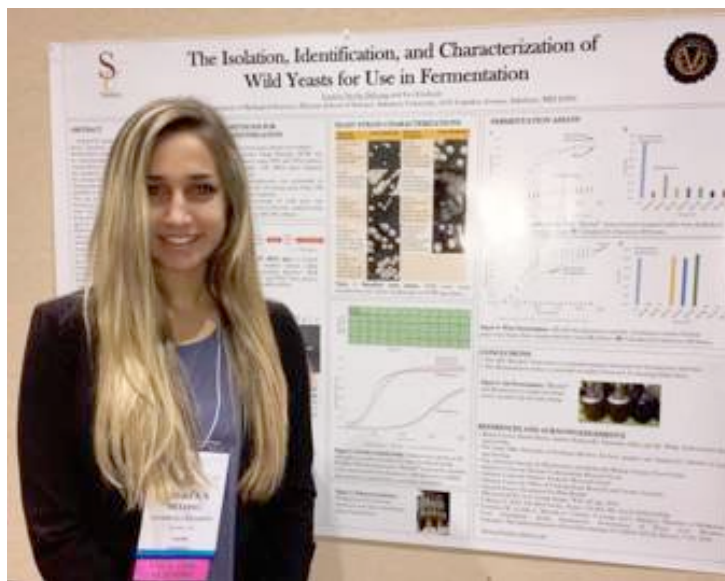


Amanda Rocker: The migration of sensory neurons following chemical genetic beta-cell ablation. Dr. Jessica Clark, Mentor.



Dorothy Maclean-Blevins: Her project is examining the developmental mechanisms that have led to the enlargement of specific brain regions in birds. Dorothy will be comparing the neural growth of species that show significant difference in their brain structure (chicken, ducks and owls), and will help to determine the patterns of neural growth in these species. Her research is set to provide the first glimpse into the development of the avian brain and to help determine the evolutionary mechanisms that produce differences in brain structure. Dr. Jeremy Corfield, Mentor.

WILD YEAST & BREWING!



The biology research of **Lauren Delong** (Left) and **Allison Brown** (SU Biology '17), mentored by Dr. Les Erickson, was recently highlighted in a SU press release titled *Breweries Tap into SU's Expertise*. Delong and Brown collaborated with two local breweries, Evo and Burley Oak, to capture and identify wild yeasts involved in making beer. Delong, shown in the picture, has presented her wild yeast research at the National Conferences on Undergraduate Research (NCUR) in Memphis, TN, 2017 Experimental Biology conference in Chicago, IL, and twice at SUSRC. Read more about this research: <http://www.salisbury.edu/news/article.html?ID=7451>

ENTOMOLOGY CLASS LEARNS ABOUT BEEKEEPING



Dean Burroughs demonstrating how a Smoker works.



Dean Burroughs



Miranda Smullen and Alexandra Stevens bravely helping Dean open the hive for examination.

Dr. Dana Price's Entomology class visited Pemberton Park in September to learning about beekeeping from Dean Burroughs. Dean is a Master Beekeeper and is an Emeritus faculty member in the Department of Health, Physical Education and Human Performance, Salisbury University.

Our Graduate Students



Marissa Moran

In July Marissa went to the University of North Dakota, in Grand Forks, to learn the techniques of the eminent parasitologist, Dr. Vasyl Tkach. Dr. Tkach is the world's leading authority on the taxonomy of helminths, the group that she studies. At this year's 92nd Annual Meeting of the American Society of Parasitologists in San Antonio, TX, Dr. Tkach was awarded the Henry Baldwin Ward Medal, which is the nation's most prestigious parasitology award. While working in his lab for a week, Marissa learned important skills that will enhance the quality of her graduate work. It's probably also important to note that Dr. Tkach invited Marissa to shadow him, which of course was a huge honor for her.

Our Faculty

Dr. Tom Jones & Mrs. Nancy Jones



From left: Nancy Jones, Tom Jones and Janet Dudley-Eshbach (President, Salisbury University)

Salisbury University Press Release: Dr. Tom Jones is no stranger to Salisbury University. The former biological sciences professor, dean and provost has helped nurture students in the classroom and beyond during his three-plus decades at SU. Though retired since 2014, he and his wife, Anne-Marie “Nancy” Jones, former facilities manager at the University of Maryland Center for Environmental Science (UMCES), will continue that impact on the campus with the establishment of the Tom and Nancy Jones Undergraduate Research Fund. “Tom and Nancy have long been a vital part of the Salisbury University community, and this gift reaffirms their commitment to the Henson School and its students,” said SU President Janet Dudley-Eshbach. “Tom and I have had many conversations over the years about the importance of science, technology, engineering and mathematics, or STEM, education, and this generous gift will provide even more opportunities for students in those fields. Undergraduate research is a hallmark of an SU education, and I am grateful to the Joneses for supporting these efforts.” Their \$50,000 endowment gift will provide financial resources for undergraduate students to conduct research and present their work in the biological, environmental and marine sciences. In recognition of this commitment, the Dean’s Suite in Henson Science Hall will be named in their honor. Tom served as dean of SU’s Richard A. Henson School of Science and Technology from 1997-2006 and helped oversee the design and construction of the building, then one of the largest science facilities of its kind in Maryland.

NEW FACULTY



Dr. Michael Carter

Michael grew up in Indianapolis and Evansville, Indiana, before attending Indiana University where he studied to get a BS in Microbiology and a BA in Biochemistry. He then attended Ohio State University where he received a PhD for his studies on metabolic pathway regulation and biochemistry in bacteria. After his PhD, Dr. Carter did postdoctoral research at the Institute for Genomic Biology at the University of Illinois where, as a part of the Enzyme Function Initiative, he worked to identify novel bacterial metabolic pathways. He then joined the faculty of Drury University in Springfield Missouri as a Visiting Assistant Professor where his research lab continued identifying novel metabolic pathways in bacteria and he taught Introductory and Advanced Molecular Genetics. Now, as an Assistant Professor here at Salisbury, he will continue his work investigating novel bacterial pathways while teaching courses in Microbiology.



Dr. Kristen Lycett

Kristen was born and raised in Grants Pass, Oregon. She is a member of the Cow Creek Band of the Umpqua Tribe, one of the nine federally recognized tribes in the state of Oregon. In 2009 she graduated from Oregon State University with a Bachelors of Fine Arts in Applied Visual Arts and a Bachelors of Science in Environmental Science with a specialization in Aquatic Biology. While a student at Oregon State, she worked with the Partnership for Interdisciplinary Studies of Coastal Oceans and studied the impact of human visitation levels on tidal community in coastal state parks. After graduation, she relocated to Baltimore, MD and began working for the Living Classrooms Foundation. She spent two years teaching about the Chesapeake Bay aboard the Skipjack Sigsbee, before she joined the Pitula Lab at the University of Maryland Eastern Shore and the Marine Estuarine Environmental Science (MEES) Program. At UMES, her PhD research focused on the dinoflagellate parasite, *Hematodinium perezii*, which infects blue crabs from high salinity waters such as the Maryland Coastal Bays.

DR. ERIC LIEBGOLD



In late July, a Red-tailed Hawk had been seen walking around on the ground outside of the Guerrieri Student Union, where it likely flew into a window. Dr. Liebgold captured the hawk and Biology student Myra Dickey transported the hawk to Tri-State Bird Rescue and Research (<https://tristatebird.org>) where it was treated for head trauma.

DR. JENNIFER NYLAND

I served as a host mentor for the Society of Toxicology Undergraduate Diversity Program in advance of the 56th annual meeting of the Society of Toxicology, Baltimore, MD in March. At that meeting I also presented: Pourhoseini, S, JF Nyland, RD Merrifield, and JR Lead. "In vitro interactions of isotopically labelled core-shell nanoparticles (Ag@Au@Ag) on human peripheral blood mononuclear cells." Poster presentation.

I had three presentations at the 13th International Congress on Mercury as a Global Pollutant, Providence, Rhode Island in July:

- Silbergeld, EK and JF Nyland. "Mercury and the immune system: what is the contribution of immunotoxic mechanisms to mercury toxicity?" Oral presentation.
- Monastero, R, R Karimi, JF Nyland, J Harrington, K Levine, and J Meliker. "Mercury exposure, serum antinuclear antibodies, and serum cytokine levels in the Long Island Study of Seafood Consumption: a cross-sectional study in NY, USA." Poster presentation.
- Eagles-Smith, C, E Silbergeld, N Basu, P Bustamante, F Diaz-Barriga, B Hopkins, K Kidd, and JF Nyland. "A synthesis of how global change drivers modulate mercury exposure, bioaccumulation, and adverse outcomes in wildlife and humans". Plenary session.

The second was at the invitation of the congress organizers and will result in a synthesis paper to be published later this year.

DR. PATTI ERICKSON'S SABBATICAL AT GEORGE WASHINGTON UNIVERSITY



Ross Hall, across from GWU Hospital and the Foggy Bottom Metro station in Washington, D.C.



C. elegans microinjection, magnified 400X

<https://www2.lawrence.edu/fast/DESTASIE/resources/injection.jpg>

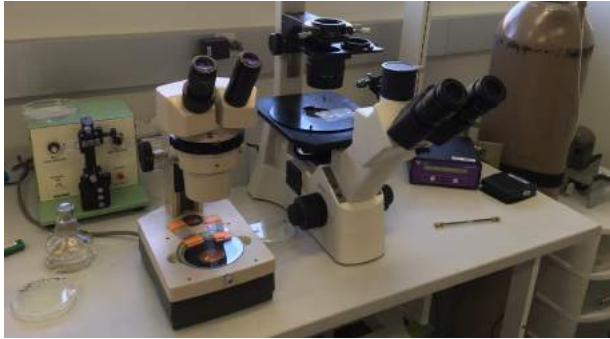


Celebrating my success with Ramesh Ratnappan, the post-doctoral research fellow teaching me the microinjection technique.

During the fall semester, I'm on sabbatical in Washington, D.C., working in the laboratory of Dr. John Hawdon of the Department of Microbiology, Immunology and Tropical Medicine in the George Washington University School of Medicine and Health Sciences, to microinject DNA into the nematode worm, *Caenorhabditis elegans*.

Microinjection involves piercing the cuticle and gonad of microscopic worms with a finely pulled glass needle and injecting a tiny volume of DNA. *C. elegans* are moved from the Petri plates where they grow and put onto a thin glass slide under a dissecting microscope. They are then injected with DNA under 400X magnification. The technique requires careful eye-hand coordination and excellent light microscopy skills!

The focus of my project is to identify putative G-protein coupled receptors involved in parasite-host interactions during infection by the hookworm, *Ancylostoma caninum*. This parasitic nematode worm is very closely related to *C. elegans*, which is used as a model system since many "reverse" genetic tools, like transformation, RNA interference and CRISPR-Cas genome editing, are possible in it. By injecting *C. elegans* with hookworm promoter-green fluorescent protein (GFP) fusion constructs, I can determine if GFP is expressed in the chemosensory neurons, which would be consistent with a host-specific hookworm receptor. I co-inject the hookworm promoter-GFP DNA with a red fluorescent protein (RFP) DNA construct that is strongly expressed in the pharyngeal muscles, making it easy to identify transgenic worms. Preliminary observations for the first two hookworm constructs that I've tested don't show GFP expression in the expected neurons, but I have seven more constructs yet to analyze!



Needle puller, dissecting and compound microscopes, plus nitrogen gas-driven microinjection system.



Close-up of injection needle holder with glass slide on compound microscope.



About two thirds of these worms express RFP, while the other half are not transformed with the foreign DNA.

**BIOLOGY FACULTY & STAFF PROMOTE
GULL WEEK**



**LUNCH AT AGAVE AZUL WITH PROFESSOR
EMERITUS BILL GROGAN**



Bill is fifth from the left.

FACULTY PUBLICATIONS

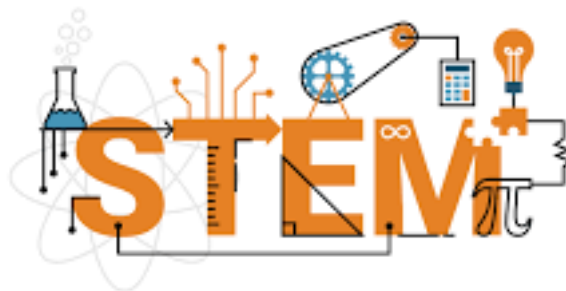
Grant AH** and EB Liebgold. 2017. Color-biased dispersal inferred by fine-scale genetic spatial autocorrelation in a color polymorphic salamander. *Journal of Heredity* 108:588–593

Biddle JR*, AH Grant** and EB Liebgold. 2017. Factors affecting the growth of Eastern Red-backed Salamanders, *Plethodon cinereus*. *Herpetologica* 73:89-93

*denotes undergraduate co-author

** denotes graduate student co-author

First Annual STEM Networking Night



Career Services has partnered with Dr. Judith Stribling, Dr. Lori Carmack, Dr. Jessica Clark and Dr. Mary Gunther for the **First Annual STEM Networking Night** on **Thursday, October 19, 2017 at Salisbury University**. The event is for all SU students majoring in a STEM (math, science, computer science, geography, physics, chemistry, etc.) related field. Also students can be any grade level to attend. We are very excited about this first ever science/math related networking night. We currently have 15 Alumni Mentor/Employer representatives attending (see list below). Basically, the format of the program is student are assigned a table with 8-10 students seated at each table. After each Mentor/Employer speaks for 2-3 minutes, there will be career-related questions read by the organizer (typically a faculty member) of the program. As each question is read, you will rotate to another Mentor/Employer table. This format ensures each student will get to speak to every Mentor represented. The environment is business casual (polo shirt and khaki pants if you have them-if not come anyway!)) **For the second half of the event**, refreshments will be served and students will have the opportunity to network with any Alumni Mentor/Employer you choose. The event will begin at 5 PM and conclude at 6:45-7:00 pm. This is a casual networking event that gives you the opportunity to discuss any questions you may have with knowledgeable alumni and employers.

The logistics are as follows: *Title: STEM Networking Night *Date: Thursday October 19th, 2017 *Time: 5:00-7:00 PM *Location: 462 Assembly Hall of the new Academic Commons Building *How to Register: Send Mr. Endicott (rcendicott@salisbury.edu) your name, the name of the workshop (STEM Workshop) and student ID or go online at this website <https://candidate.gradleaders.com/SalisburyU/Candidates/Login.aspx?pid=3620>.

Once you are logged in go to “Events” on the left menu>Workshops>Show Available Workshops>You will see “STEM Networking Night>Click on “Sign-up.

The list of organizations attending are:

Agilent Technologies, Inc.
Chesapeake College
Choptank Electric Cooperative
Dendreon Corporation
Dorchester County Health Department
Howard County General Hospital
Johns Hopkins Medicine International
EAG Laboratories (in Easton)

Maryland Coastal Bays Program
McKinsey & Company
National Aquarium
Peninsula Regional Medical Center
Percorso Life Sciences (Biotech & Pharmaceuticals)
State of Delaware
Town of Ocean City

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Alumni Connection



SU BIOLOGY ALUMNI

Stay Connected

We want to hear from you! Please let us know where you are living and what you are doing! We would love to hear from you. In the future we plan to have an Alumni Connection section in our newsletter.

Send information to:

Sandra Ramses, Program Management Specialist

SHRAMSES@SALISBURY.EDU

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Dr. Chris Briand (editor) & Dr.
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