

Biology@Memphis

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Department of Biological Sciences

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College of Arts & Sciences

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From the Communications Committee

As the 1st summer session finished, the spring semester has faded a bit in our memories. But not so much that we don't remember the record number of classroom days lost to snow and ice storms. This left faculty, students and staff scrambling to get everything accomplished. We saw the Grizzlies make another post-season run and the opening of Bass Pro at the Pyramid. This semester saw us say "good-bye" to faculty and staff members, and the successful recruitment of a new faculty member for the fall. We saw a member of our faculty receive one of the most prestigious awards

the University offers. The BioGSA have another successful fund raiser at the UofM Earth Day celebration and the Graduate Women in Science had great semester featuring local scientists talking about their life experiences. Our graduate students swept the Life Sciences awards at Student Research Forum and our undergraduates presented award-winning research at the Tennessee Academy of Sciences.

Remember, you can let us know what you're doing by emailing your news to us at bionews@memphis.edu and you can keep up with the Department by following us on [Facebook](#) and the [Department web site](#)



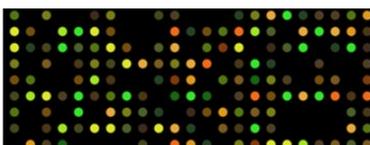
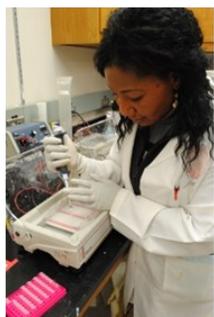
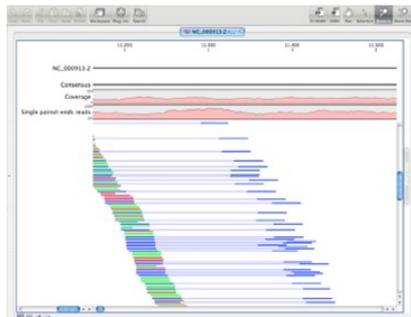
FACULTY NEWS: Awards, Retirements, and Presentations



Pictured: Dr. Thomas Sutter

Congratulations to **Dr. Thomas Sutter** who received the *2015 Alumni Association Distinguished Research Award for Distinguished Research in Science, Engineering, and Mathematics*. Dr. Sutter is Professor of Biological Sciences, Feinstone Chair of Excellence in Molecular Biology and the director of the W. Harry Feinstone Center for Genomic Research. Dr. Sutter's research, accomplishments are demonstrated by the number, breadth and scope of his nearly 100 research publications in the fields of toxicology, cancer biology, and pharmacology, the number of times his work is cited, and his external funding from numerous sources including the National Institutes of Health, the Memphis Research Consortium, and General Electric. In 2012, he was one of the faculty honored for acquiring more than \$1 million in grant funds for the U of M. Under Dr. Sutter's leadership, the Feinstone Center acquired the first Affymetrix GeneChip system at any UT/TBR system university and established Next Generation DNA sequencing on the U of M campus. His commitment to education is evidenced by the Center's support for research by graduate students in the Departments of Biological Sciences, Chemistry, and Computer Science, as well as undergraduate research internships. Congratulations Dr. Sutter.

Read more about [Dr. Sutter](#) and the [W. Harry Feinstone Center for Genomic Research](#)



Retirements

Dr. Stephan Schoech announced his retirement at the end of the spring semester and will be taking up residence in sunny Hawaii. Dr. Schoech received his Bachelor's and Master's degrees in Zoology from Arizona State University, and his Ph.D. in Zoology from the University of Washington. Dr. Schoech was a Post-Doctoral Fellow, an Assistant Professor, and an Assistant Scientist at Indiana University before joining the Department of Biology at the University of Memphis in 2000. Dr.

Schoech is a lifelong lover of birds and an avid bird watcher, pursuits which he mixed to define a very productive career studying the behavior of the Florida scrub jay *Aphelocoma coerulescens*. His interests include (1) the hormones and the hormonal mechanisms that mediate reproductive behaviors, especially parental and alloparental (i. e., helping to care for non-descendant young) behaviors, (2) the effects of an animal's environment upon its physiology and the subsequent effects upon initiation of reproductive behaviors and measures of fitness, (3) how the interactions between stress (e. g., corticosterone) and reproductive (e. g., testosterone and estradiol) hormones mediate an animal's reproductive effort.) and (4) how variable resource availability plays a role in the animal's health and fitness.

Using techniques from behavioral ecology, environmental physiology, comparative endocrinology, and immunology, Dr. Schoech's long-term field studies of cooperatively breeding Florida Scrub-Jays have provided considerable insight into the reproductive physiology and behavior of this species. Dr. Schoech has been supported by grants from

the National Science Foundation, and the contributions of undergraduate and graduate students, post-doctoral fellows, and a long-standing collaboration with Dr. Reed Bowman, at the **Archbold Biological Station**, near Lake Placid, Florida. During his time at the University of Memphis, Dr. Schoech trained eleven graduate students, three post-doctoral fellows, and gave a host of undergraduates the opportunity to work in his lab. He also served on the committees of an additional twenty eight Biology Department Graduate Students. Dr. Schoech's contributions to undergraduate education included teaching Endocrinology, Vertebrate Physiology, and Ornithology as well as a number of independent study research opportunities for undergraduates.



Pictures of the Amazon Kingfisher (female) and the Blue-fronted Parrot, courtesy of S. Schoech.



Pictured: Dr. Stephan Schoech and *Aphelocoma coerulescens*, his study subject for the past 20+ years. Pictures of Dr. Schoech courtesy of C. Lessman. Pictures of *A. coerulescens* courtesy of the Schoech lab [website](#).

Dr. Schoech is a member of the American Ornithologists' Union, Animal Behavior Society, Association of Field Ornithologists, British Ornithologists Union, Cooper Ornithological Society, International Society for Behavioral Ecology, Sigma Xi, Society for Behavioral Neuroendocrinology, Society for Integrative and Comparative Biology, Tennessee Ornithological Society, and Wilson Ornithological Society and is a Fellow of the AOU and International Ornithological Union.



Tennessee Academy of Science

Providing a Forum for Science Education and Research in Tennessee Since 1912



pictured: Dr. Jennifer Mandal

Meeting of the Tennessee Academy of Sciences: Western Collegiate Division, 2015

The Western Collegiate Division Meeting of the Tennessee Academy of Science was held Saturday, April 11, 2015 at the University of Memphis, TN. Hosted by the Department of Biological Sciences, the meeting was a forum for undergraduate student research in Botany, Geology and Geography, Physics and Astronomy, Science and Math Teaching, Zoology, Mathematics/Computer Science, Microbiology, Engineering and Engineering Technology, Chemistry, and Cell and Molecular Biology. Organized by **Dr. Tit-Yee Wong**, students from the University of Memphis, Rhodes College and Christian Brothers University presented their research.

Dr. Jennifer Mandal was the keynote speaker at this year's meeting and presented a talk entitled "Conservation genetics in an endangered sunflower, *Helianthus verticillatus*". Dr. Mandel discussed her work on *H. verticillatus* which is native to West Tennessee

as well as population genetic approaches for assessing levels and patterns of standing genetic variation in *H. verticillatus*. She also talked about climate change and human impacts on the environment of endangered species. She finished her talk by describing how conservation genetics play an important role in evaluating rare species and determining and directing appropriate conservation strategies. **Drs. Amy Abell, Judy Cole** and **Andrew Liu** served as judges at the oral presentations.



Scenes from the TAS meeting courtesy of Dr. Anna Ross, Christian Brothers University.

GRADUATE STUDENT NEWS: *Degrees and Defenses, Grants, Fellowships, Awards, and Presentations*

Defenses



On February 27th, 2015 **Lindsey Saunders** successfully defended her dissertation entitled *The Effects of Root-Absorbed Glyphosate on Physiology and Growth of Select Agricultural Ditch Plants*. Dr. Saunders performed her dissertation work in the laboratory of **Dr. Reza Pezeshki**.

Pictured: Dr. Lyndsey Saunders



Thomas (Trey) Oguin III successfully defended his dissertation April 1, 2015. Dr. Oguin performed his dissertation work entitled *Innate immune induction in influenza infection* in Dr. Paul Thomas' laboratory in the Department of Immunology at St Jude Children's Research Hospital and with the co-mentorship of **Dr. Omar Skalli**.

Pictured: Dr. Thomas Oguin



Alissa M. Carissimi successfully defended her Master's thesis entitled *Interactions among bacteria and Batrachochytrium dendrobatidis: An investigation of amphibian host immune response* on April 6, 2015. Ms. Carissimi did her Master's work in the laboratory of **Dr. Matthew Parris**.

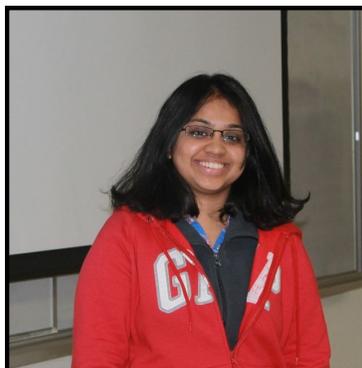
Pictured: Ms. Alissa Carissimi

Awards and Grants

Bill Simco Graduate Scholarship

The **Bill Simco Graduate Scholarship** was established in 2014 to honor Dr. Bill Simco's long-standing commitment to graduate education at the University of

Memphis. The scholarship is presented to one graduate student per year and requires students to submit a research proposal describing their research project, why it is important, and how it impacts the scientific community. This year's winner is **Deepthi Raghu**, a Ph.D. student in the laboratory of **Dr. Amy Abell**. Deepthi's proposal was entitled "Loss of Galnt3 induces mislocalization of proteins in murine trophoblast stem cells".



Stephen Ferguson (Ph.D. candidate in **Dr. Stephan Schoech's** lab) was invited to Australia as part of the 2015 East Asia and Pacific Summer Institutes program for US graduate students in partnership with the National Science Foundation.



He also received a Terrell Graduate Student Research Grant from the Georgia Ornithological Society for his studies on female vocal behavior and aggression as well as nestling physiology and behavior while eavesdropping on territorial parents. He also received a British Ornithological Union Small Research Grant for his work on nestling corticosterone levels, a Paul A. Steward Grant from the Wilson Ornithological Society and a Travel Enrichment Award from the College of Arts and Sciences to travel from Sydney to Cairns while he is in Australia.



Nikki Brantley was a finalist for Graduate Assistant Meritorious Teaching Award in the College of Arts & Sciences. Nikki is a Master's candidate in the laboratory of **Dr. Charles Lessman**

Pictured: Nikki Brantley

Denita Weeks received an E.E. Williams Research Grant from the Herpetologists' League for her proposal entitled *Potential mitigation of amphibian disease with biopesticides: a natural, unexplored strategy*. This



Pictured: Denita Weeks

grant is named in honor of Herpetologists' League's first Distinguished Herpetologist, and provides support for graduate student research in herpetology. She also received a Society for Integrative and Comparative Biology travel award to visit two labs to learn techniques and methods of data analysis. Denita is a Ph.D. candidate in **Dr. Matthew Parris'** lab.

Blake Jones (Ph.D. candidate in **Dr. Stephan Schoech's** lab) was awarded an National Science Foundation GROW (Graduate Research Opportunities Worldwide) grant for his proposed research titled: "Do animals learn to pay attention to human gaze? An assessment of the endocrine and environmental factors that influence directional gaze discrimination in the Australian magpie (*Cracticus tibicen*).". He will be collaborating with Dr. Bill Bateman of Curtin University in Perth for six months. Blake and **Sara Bebus** will be visiting academic researchers at Curtin working with six PI's, eight Ph.D students, and ten undergraduates from Curtin and Murdoch Universities composing the Western Wildlife Ecology and Behavior research collaboration.



Pictured: Sara Bebus and Blake Jones

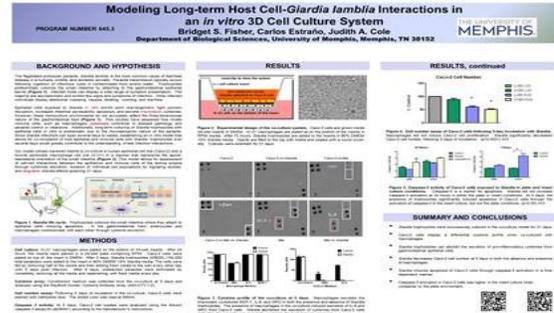
Research Day Winners

Biology Graduate Students placed swept the awards in the Life and Health Sciences division at the 27th Annual University of Memphis Student Research Forum.



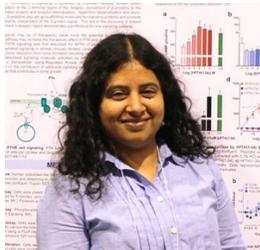
Pictured: Deepthi Raghu and Stephanie Haddad

Deepthi Raghu's presentation entitled "Regulation of the cellular phenotype by Galnt3p" won 1st place and **Stephanie Haddad's** presentation entitled "The Enigmatic Higher-Level Phylogeny of Longhorned Beetles (Coleoptera, Cerambycidae)" took 2nd place. Deepthi is a Ph.D. student in **Dr. Amy Abell's** lab and Stephanie is a Ph.D. candidate with **Dr. Duane McKenna**.



Presentations

Bebus SE, Jones BC, Elderbrock EK, Small TW, Schoech SJ. "Neophobic behavior in free-living birds is highly repeatable and related to stress-induced corticosterone". Annual Meeting of the Society for Integrative and Comparative Biology, West Palm Beach, FL, January 2015



Mamidanna G and Cole JA "Comparison of Parathyroid Hormone (PTH) (1-34) and PTH (7-34) Effects on Cell Signaling and Proliferation in Saos-2 Osteoblast-like Cells." EB 2015, Boston, MA, March 2015.

Pictured: Gayatri Mamidanna



Ramsey, Adam J and Mandel, Jennifer R. March 2015. "Genetic diversity and gene flow in crop and wild carrot". University of Memphis Research Forum, poster presentation, Memphis, TN.

Pictured: Adam Ramsey

BioGSA News



This semester, the Biological Sciences Graduate Student Association (BioGSA) orchestrated two fundraisers that were both huge successes! The photo sale continued this year in conjunction with the Student Research Forum where graduate student photos were subject to heated (silent) bidding wars. Also, thanks to the Mandel Lab and Dr. Bayer for donating their time and green thumbs to the awesome plant sale fundraiser that took place in conjunction with the University of Memphis Earth Day Celebration! We appreciate all who donated time, photos, and came out to support the fundraisers.

Congratulations to the new BioGSA officers

President: Denita Weeks

Vice President: Deepthi Raghu

Graduate Student Representative: Adam Ramsey

Treasurer: Bailey Patillo

Secretary: Malle Carrasco-Harris

The 1st Annual Graduate Student Invited Speaker

was hosted this semester by the BioGSA. The event was made possible by the generosity of the Department of Biological Sciences. The BioGSA organized



Dr. Rindy Anderson

a poll and helped orchestrate a visit for **Dr. Rindy Anderson** from the Department of Biological Sciences at Florida Atlantic University. Dr. Anderson also gave an informal talk about her personal journey to her current position as a new assistant professor at Florida Atlantic University at a pizza social hosted by the BioGSA, Graduate Women in Science, and

The Department of Biological Sciences. We would like to extend a huge thanks to Blake Jones for playing such a large role in the success of this event.

Finally, a graduate student requested course, *Topics in Ecology*, with a focus on biostatistical software and analysis, will be offered this Fall thanks to a joint effort by the BioGSA, graduate student feedback, and departmental faculty.



Pictured ((top to bottom) preparations for the Earth Day plant sale (thanks to A Ramsey), the BioGSA plant sale booth, and Graduate students, friends and significant others out for a quiet evening after a long day of doing science (Thanks to Denita Weeks)

Graduate Women in Science News



The Graduate Women in Science (GWIS) organization continued their Meet the Professor series this semester, bringing in speakers from a variety of interesting fields and backgrounds. From within the Department of Biological Sciences, Dr. Randall Bayer, Dr. Duane McKenna, and Dr. Stephan Schoech gave very exciting talks. GWIS also hosted outstanding talks by Dr. Esra Roan (Department of Biomedical Engineering), Dr. Abby Parrill (Department of Chemistry and Associate Dean, College of Arts and Sciences), Dr. Fairouzeh Sabri (Department of Physics), and Erin Loeding (Memphis Zoo). Whole Foods Market and an anonymous donor generously sponsored Meet the Professor events this semester. GWIS also organized a bake sale to raise funds for its events.

The organization is very grateful to all the graduate students who made baked goods for us to sell, and who donated their time sitting at the bake sale booth. We are also grateful to the faculty members and staff who came by and showed their support.



Pictured: The refreshments provided by Whole Foods for the talk by Erin Loeding from the Memphis Zoo, (top), Dr. Firouzeh Sabri from the Physics Department (lower left) and Blake Jones introducing Dr. Rindy Anderson (lower right)

UNDERGRADUATE NEWS: Awards and Research

Winners of the Department Awards and Scholarships

The Biology Faculty Award is presented to the student who has made the most significant contribution to the department during the academic year. Nominations are solicited from Biology faculty and the recipient is selected by the Biological Sciences Undergraduate Studies Committee.

Bridget M. Shaner

The Chi Beta Phi Award is presented to the Biology Major with the highest GPA

Bridget M. Shaner

The Edward T. Browne Biology Scholarship is given to a Sophomore, Junior or Senior majoring in Biology who has a GPA of at least 3.25 or the demonstrated potential for academic distinction in Biology

Amanda Walker

The Goldye Feinstone Scholarship goes to a Sophomore, Junior or Senior Biology major with an interest in microbiology or molecular cell sciences

Olivia Freeman

The Priscilla Rushton Scholarship goes to a Sophomore, Junior or Senior with a minimum GPA of 3.25 or the demonstrated potential for academic distinction in Biology as well as leadership ability and the strong potential for professional success

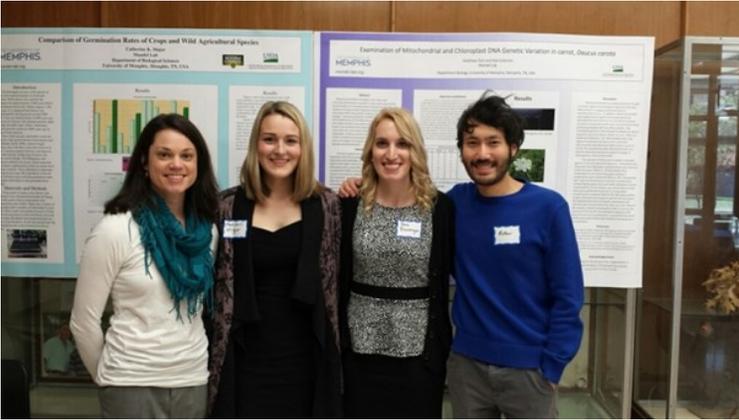
Demi Brasfield

The Omar E. Smith Ecology Scholarship is presented to a student majoring in Biology with preference given to students in Ecology. The student selected will develop an ecological research project to be conducted under the guidance of a faculty member in the Department of Biological Sciences.

Sara Brauningner

Undergraduate Research

Winners at the Annual TAS Meeting



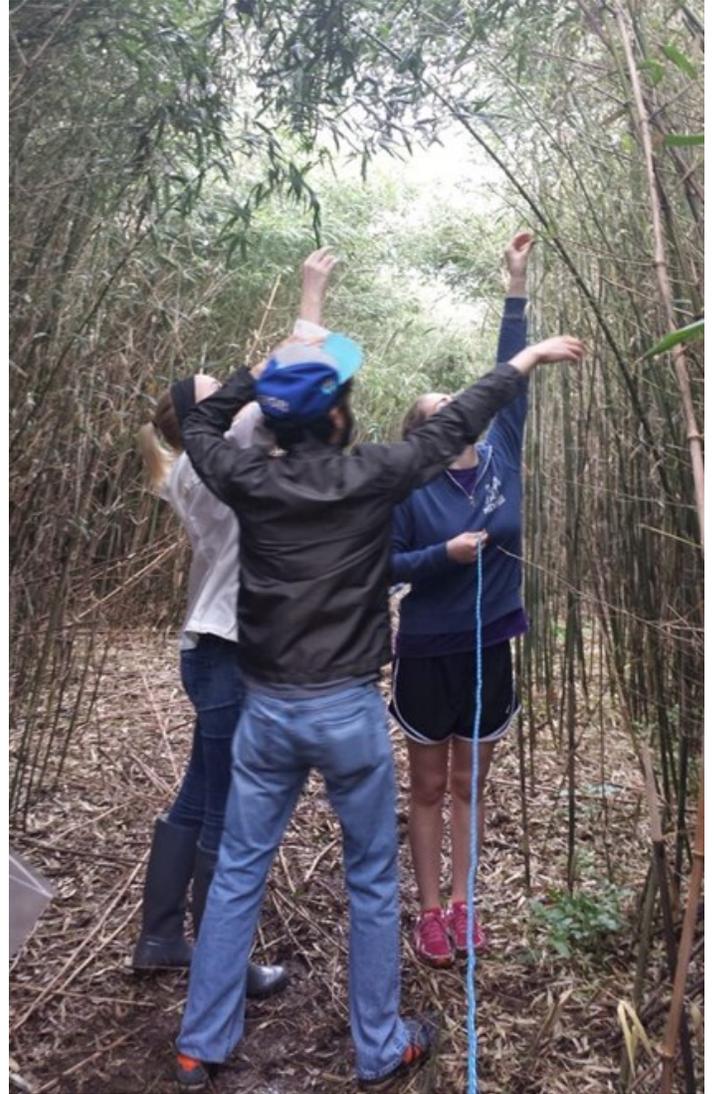
Pictured (left to right): Team Mandel with Dr. Jennifer Mandel, Kendall Major, Sara Brauningner, and Matthew Tom.

The Department of Biological Sciences swept the poster session awards at the XXth Annual Meeting of the Tennessee Academy of Science, which was held at the University of Memphis this spring. All three students are working in the laboratory of [Dr. Jennifer Mandel](#).

Sara Brauningner won 1st place in the TAS poster presentations for her work entitled “Measuring Clonal Diversity in Stands of Bamboo at Shelby Farms for Memphis Zoo Pandas”

Matthew Tom won 2nd place for his poster entitled “Examination of Mitochondrial and Chloroplast DNA Genetic Variation in carrot, *Daucus carota*”

(Catherine) Kendall Major won 3rd place for her poster entitled “Comparison of Germination Rates of Crops and Wild Agricultural Species”.



Sampling in the Memphis Zoo bamboo fields at Shelby Farms (picture courtesy of A. Ramsey)



STAFF NEWS: Good-byes



Pictured: Cynthia Stephens

This year we said good-bye to two of our staff members. Cynthia Stephens (*pictured left with her U of M swag*) who managed our graduate students for three years, moved on to new challenges in Nashville. Rumor has it that she will be cutting an album and going on tour... but that's just a rumor. Thanks to Cynthia for her hard work.

We also bid a fond farewell to Diane Mittelmeier, who retired in March. Notoriously camera shy, we could only get a picture of Diane's parting gifts from the Department (*pictured right*). Diane, who worked to the University for nearly 20 years, was the Business officer in the Department, and watched our nickels and dimes. Diane will be

spending much of her time spoiling small children and then giving them back to their partners. Thanks Diane for keeping us all on the fiscal straight and narrow.



BIOLOGISTS@LARGE

Congratulations to **Gayatri Mamidanni** who received the *Sheryl K. Nienhuis Memorial Award for Volunteerism*, honoring her volunteer work at St. Jude Children's Research Hospital. Gayatri is a *Helping Hands* volunteer, one of many who provide care for children and their siblings when parents or caregivers need a break. The staff and her co-workers describe her as "*Dedicated, loyal consistent wonderful volunteer.*" and "*The staff and your fellow volunteers look forward to working with you every Sunday.*" Gayatri is a Ph.D. candidate in Dr. Judy Cole's lab.



SELECTED PUBLICATIONS



Chung, K-T. Occurrence, uses, and carcinogenicity of arylamines. *Frontiers in Bioscience, Elite*: 367-393, 2015

Evans, AM, **McKenna, DD**, Bellamy, CL, and BD Farrell. Large-scale molecular phylogeny of metallic wood-boring beetles (Buprestidae and Schizopodidae) provides new insights into relationships and reveals multiple evolutionary origins of the larval leaf-mining habit. *Systematic Entomol* 40:385-400, 2015.

J. Hulcr, TH Atkinson, AI Cognato, BH Jordal, and **DD McKenna**. (2014). Morphology, Taxonomy, and Phylogenetics of Bark Beetles. In: F. Vega and R. Hofstetter (Eds.) *Bark Beetles: Biology and Ecology of Native and Invasive Species*.

Johnson NM, Egnor PA, Baxter VK, Sporn MB, Wible RS, **Sutter TR**, Groopman JD, Kensler TW, Roebuck BD. Complete protection against aflatoxin B(1)-induced liver cancer with a triterpenoid: DNA adduct dosimetry, molecular signature, and genotoxicity threshold. *Cancer Prev Res (Phila)*. 7(7):658-65, 2014.

Krushkal J, Murphy LE, Palmer FB, Graff JC, **Sutter TR**, Mozhui K, Hovinga CA, Thomas F, Park V, Tylavsky FA, Adkins RM. Epigenetic analysis of neurocognitive development at 1 year of age in a community-based pregnancy cohort. *Behav Genet*. 44(2):113-25, 2014

Leon Carrion S, Sutter CH, Sutter TR. Combined treatment with sodium butyrate and PD153035 enhances keratinocyte differentiation. *Exp Dermatol*. 23(3):211-4, 2014.

McKenna, DD, BD Farrell, MS Caterino, CW Farnum, DC Hawks, DR Maddison, AE Seago, AEZ Short, AF Newton, and MK Thayer. Phylogeny and evolution of Staphyliniformia and Scarabaeiformia (rove and scarab beetles): Forest litter as a stepping-stone for diversi-

fication of non-phytophagous beetles. *Systematic Entomol* 40:35-60, 2015.

McKenna, DD, (2014). Molecular Phylogenetics and Evolution of Coleoptera. In Beutel, R. G. and R. A. B. Leschen (Eds.) *Handbook of Zoology. Volume IV. Arthropoda: Insecta. Part 38. Coleoptera, Beetles. Volume 3: Morphology and Systematics (Phytophaga)*. Berlin: Walter de Gruyter.pp. 1-10

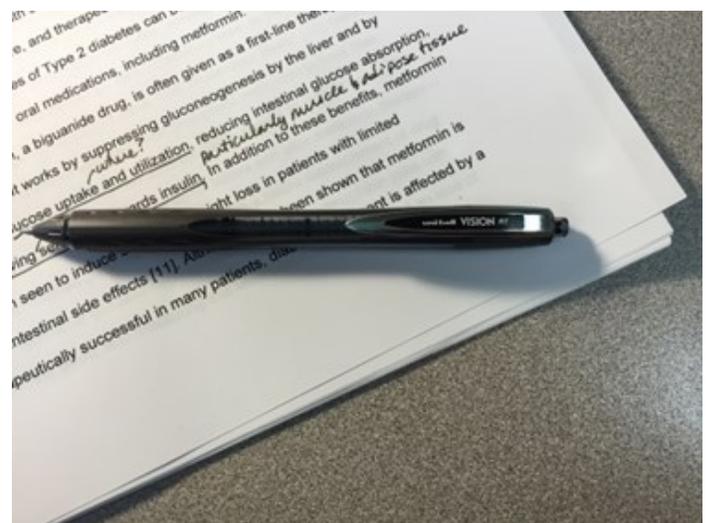
Nambeesan, SU, **JR Mandel**, JE Bowers, LF Marek, D Ebert, J Corbi, LH Rieseberg, SJ Knapp, and JM Burke. Association mapping in sunflower (*Helianthus annuus* L.) reveals independent control of apical vs. basal branching. *BMC Plant Biology* 2015, 15:84

Qiao S, **Homayouni R.** Dab2IP Regulates Neuronal Positioning, Rap1 Activity and Integrin Signaling in the Developing Cortex. *Dev Neurosci*. 37(2):131-41, 2015.

Quick, Q., Paul, M., **Skalli, O.** Roles and Potential Clinical Applications of Intermediate Filament Proteins in Brain Tumors. *Semin Pediatr Neurol*. 22(1):40-48, 2015.

Scully, ED, SM Geib, JE Carlson, M Tien, **DD McKenna**, and K Hoover. Functional genomics and microbiome profiling of the Asian longhorned beetle (*Anoplophora glabripennis*) reveal new insights into the digestive physiology and nutritional ecology of wood-feeding beetles. *BMC Genomics* 2014, 15:1096

Saunders LE and Pezeshki, R. Sublethal effects of environmentally relevant run-off concentrations of glyphosate in the root zone of *Ludwigia peploides* (creeping water primrose) and *Polygonum hydropiperoides* (smartweed). *Weed Biology Management* 14: 242-250, 2014.



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creating leaders in research, education and service

College of Arts & Sciences

Information links for this issue

The Department of Biological Sciences Webpage
www.memphis.edu/biology

The W. Harry Feinstone Genomics Center
www.memphis.edu/feinstone

The Tennessee Academy of Science
tennacadofsci.org/

Information for the Newsletter
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Except where noted, photos were taken by JA Cole



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Check out the BioGSA events on [Facebook](#)



See who the Graduate Women in Science are inviting on their [Facebook](#) page