BioMolecular Science Weekly

September 3rd – September 7th, 2018

Calendar:

Monday, September 3rd:
No Class – Labor Day Holiday

Tuesday, September 4th:
MMG Seminar, 4:10 PM, 1415 BPS
Dr. Marvin Whiteley, Georgia Tech, “Probing bacterial social behaviors during polymicrobial infection”

Wednesday, September 5th:
CMB & Genetics Research Forum, 12-1 PM, 1425 BPS
Research Rundown featuring Genetics Graduate Students: Donghee Hoh, Scott Funkhouser, Katherine Roth, Amanda Koenig, Alec Steep, Sandra Olenic, Mitch Roth, Sarah McNitt, and Faryal Mir

The (3M) Interest Group, 4:00 pm, ICER Seminar Room, 1455A BPS
Sundharraman Subramanian, “Functional Regulators of Flagellar Rotation in Bacillus subtilis”

Thursday, September 6th:
BMB Colloquium Series, 11:00 am, 101 Biochemistry
Jianrong Wang, Michigan State University CMSE, “Genomics/Proteomics”

The Plant Resilience Brown Bag Series, 1:00 PM, 168 Plant Biology
James Santiago and Nathan Havko will present their research results.

Friday, September 7th:
Science at the Edge, 11:30 am, 1400 BPS
Michael Harms, Institute of Molecular Biology and Department of Chemistry and Biochemistry, University of Oregon Biophysics of Protein Evolution
BEACON Seminars, 3:30 PM, BEACON conference room inside BPS
Stephen Kelly, Dalhousie University, “Scaling genetic programming to challenging reinforcement tasks”

Thank you to all BMS orientation and retreat volunteers!
Congratulations to the retreat poster presentation winners:

1st Place
Jake Reske (morning session)

Jenn Watts (afternoon session):
“Elucidating the mechanism of Zika virus-induced birth defects in early embryogenesis”

2nd Place
Matt Swiatnicki (morning session):
“Genomic landscape of E2F1 knockout tumors in the MMTV-Neu and MMYTV-PyMT mouse model”

Jackson Sorensen (afternoon session):
“Microbiome diversity and assembly in the phyllo sphere of perennial bioenergy crops”

New Student Spotlight

Brooke Armistead
Brooke Armistead graduated from Grand Valley State University in April 2018 with a Master of Science degree in Cell and Molecular Biology. Brooke’s thesis research involved measuring gene expression of target genes in cerebral palsy (CP) and healthy control newborn blood spots. Her research aims to better understand possible causal pathways of CP. Brooke is interested in pursuing her PhD through either the Genetics or Physiology departments. She would like to pursue research in the Schwartz, Gallo, Doseff, Petroff, or Fazleabas laboratories. In her free time, Brooke enjoys cooking, running, yoga, and spending time at her cottage with family and friends. Brooke has so far enjoyed biking through MSU’s beautiful campus and is looking forward to attending football games this fall.

Announcements:
World Suicide Prevention Day
September 10, 2018
- FREE Biggby Coffee: 9am-12pm, Grassy area behind Wells and International Center
- Interactive exhibit at the Broad Museum: 11am-4pm
- “The S Word” documentary screening: 5:30pm, Wells B119
- Panel with CAPS: 6:35 pm, Wells B119
Face Recognition Accuracy of Forensic Examiners, Superrecognizers, and Face Recognition Algorithms

Dr. Jonathon Phillips
National Institute of Standards and Technology
Information Technology Laboratory

https://www.nist.gov/people/p-jonathon-phillips

Date: September 11 (Tuesday)
Time: 11:00am - 12:00pm
Venue: Engineering Building (EB) [Room: 3105]

Abstract:
This is the first study to measure face identification accuracy for an international group of professional forensic facial examiners, working under circumstances that apply in real world casework. Examiners and other human face “specialists”, including forensically trained facial reviewers and untrained super-recognizers, were more accurate than the control groups on a challenging test of face identification. Therefore, specialists are the best available human solution to the problem of face identification. We present the first data comparing state-of-the-art face recognition technology to the best human face identifiers. The best machine performed in the range of the best humans, professional facial examiners. However, optimal face identification was achieved only when humans and machines worked in collaboration.

Science Debate Student Group
September 20th at 5:30PM in 2245 BPS

Do you love science? Are you interested in how science intersects with policy? Come join the MSU Science Debate student group! Enjoy free food and engage in a discussion led by Ruth Shillair, about the science policy of cyber security. Training and phone banking for the Science Debate questionnaire. Science Debate is a nonprofit nonpartisan organization dedicated to encouraging politicians to give their thoughts on science policy topics.

Email Taylor Dunivin (dunivint@msu.edu) or Amanda Koenig (koenigam@msu.edu) with questions, or visit sciencedebate.org for more information.

Course Announcement: CMSE890:360-Metagenomics
This course is for beginners in metagenomics and is taught in collaboration with the Shade group in MMG. Topics include amplicon sequencing, diversity analysis, shotgun metagenome analysis, and assembled genomes. Prerequisite: CMSE890:305. CMSE890:301 skills are useful. November 8 - December 6.
Course Announcement: Dynamical Modeling of Biological Systems, Fall Semester 2018, 3 Credits

*New course offering by the Department of Biomedical Engineering (BME) at MSU

Course info: BME 891 Sec 003, 3 credits, Mon & Wed 3:00 PM - 4:20 PM, 152 Natural Resources Bldg.

Course overview: “All biology is computational biology”, or so claimed the title of a 2017 article in the journal PloS Biology. Decide for yourself by taking this new course, which will introduce you to fundamental ideas in computational modeling of biological systems and their response to environmental stress. Starting with simple models of gene regulation, we will move on to “systems biology” approaches to model cell signaling networks, signal amplification in protein kinase cascades, and the intricacies of the cell cycle. You will learn how cells in a noisy microenvironment “decide” among multiple possible fates, and why even genetically identical cells exhibit cell-to-cell variability in gene expression. We will also discuss mathematical models of spatial pattern formation in animal and plant systems including branching morphogenesis, and multicellular “virtual tissue” models. This course, which combines theory with hands-on computer modeling, will be of interest to graduate and advanced undergraduate students in various biomedical science disciplines, and engineers, physicists and computer scientists interested in modeling biological systems.

Instructor: Sudin Bhattacharya, PhD (sbhattac@msu.edu), Departments of Biomedical Engineering and Pharmacology & Toxicology.

Prerequisites: Familiarity with basic concepts in biology and differential equations.

Format: Topics will be introduced with short presentations based on lecture notes and/or assigned readings, accompanied by hands-on computer exercises and class discussion. Students will need to bring their own laptop computers. We will use freely available modeling tools like COPASI and Gnu Octave.

Evaluation: Students will be evaluated based on quality of individual and group assignments, attendance, and participation in discussions.

Registration: This being a special topics course, approval from the BME department is required to register. Please fill out the override request form at https://www.egr.msu.edu/bme/form/bme-override-request

Course Announcement: Introduction to Quantitative Genetics ANS490/890

Description Quantitative trait variation is pervasive in nature, it can be found among individuals in populations of virtually all life forms. For many quantitative traits, including in particular production of plants and animals, disease risks of humans, genetics contributes a significant part. Quantitative genetics is the discipline that deals with how the heritable (genetic) part of quantitative trait variation originates, dynamically changes, pass on to next generations. This is important for genetic improvement of food animals and crops, development of diagnosis and treatments of genetic diseases, and understanding evolution.
This course covers the basics of quantitative genetics and is highly recommended for students who seek advanced and/or professional studies in genetics and employment opportunities in the breeding industry. Topics include the life cycle and properties of mutations, population parameters of genetic effects and phenotypes and their properties (means, variances, breeding values, heritability), dynamics of mutations and genetic variation (genetic drift, selection), quantitative genetics in the molecular era (mapping, prediction).

This course covers the general principles of quantitative genetics and should be applicable across species (animals, plants, model organisms, humans, etc.)

**Instructor**
Dr. Wen Huang  
Assistant Professor  
Department of Animal Science  
huangw53 AT msu.edu  
(517) 353-9136

**Time and Location**
Mon, Wed, Fri 4:10-5:00 PM, Room TBA Anthony Hall

**Registration**
To register, please sign and return this form ([downloadable link](#)) to Tracy Rich (richt AT anr.msu.edu, 1250 Anthony Hall, 517-353-9227). Undergraduate students should register for ANS490 (section 1) while graduate students should register for ANS890 (section 1).

The course is being processed as a regular course (ANS404) and is expected to be offered every Fall beginning 2019.

**Course Announcement: PHM 980 Dose-response Relationships in Toxicology & Risk Assessment- Concepts, Complexities and Controversies**

**Course info:** PHM 980 Sec 005, 1 credit, 1 class per week on Thursdays, 8 a.m., A158 Plant and Soil Sciences Building

**Instructors:** Robert Roth, PhD, DABT (rothr@msu.edu) and Jay Goodman, PhD (goodman3@msu.edu)

**Course Description:** “The dose makes the poison!” This paraphrase from Paracelsus in the 1500s remains today the most important principle in toxicology. Dose-response relationships underlie approaches to understanding toxicologic mechanisms and to assessing risk from exposure to environmental pollutants, drugs and other chemicals. This course will begin with general information about dose-response terminology and concepts before delving into issues and implications surrounding the threshold concept, nonmonotonic dose-response relationships, hormesis, how dose-response
characteristics are used in risk assessment, and more. Enroll to learn about and discuss important nuances of dose-response and how they give rise to challenges and controversies in assessing risk from chemical exposure. This course will add to your sophistication as a thinker in biological science!

Course Announcement: IBIO890 Sec. 606 Comparative Animal Genomics

2-credit graduate level seminar offered by Ingo Braasch (braasch@msu.edu) FS18: Mondays 3:00 PM - 4:20 PM, 210A Berkey Hall

Genomes are sequenced and analyzed at an ever-increasing pace due to the revolution in genomic methods, offering unprecedented opportunities to compare genomes across animal lineages for a comprehensive understanding into the evolution of their genome architecture, content, and function.

In this weekly seminar, we will discuss recent advances in animal genomics using examples from the research literature.

Topics will include: origins of animal genomes; genome structure evolution & genomic rearrangements; sex chromosome evolution; gene family dynamics (gene duplication/loss); genome duplication/polyploidy; gene regulation, chromatin architecture, epigenetics; transposable elements; phylogenomics & ancestral genome reconstruction; genomic basis of major transitions during animal evolution, of domestication, and of human-specific traits. Graduate students, postdocs, and faculty are welcome to participate.

Graduate students will develop a publishable review article for credit, choosing from one of the topics.

FREE On-Campus CATA Bussing for Students

Michigan State University and CATA have amended their contract for the 2018-19 academic year to make on-campus bus service free to all students, staff and faculty. Free service will go into effect Aug. 27, when fall semester classes commence, and will run on a trial basis for one year.

The new fare-free trial will apply to weekday service, including Routes 30, 31, 32, 33 and 39; and weekend service on Routes 34, 35 and 36. CATA will also offer free service on Route 38, a newly created route, which provides dedicated service to Spartan Village from Ramp 1, the Shaw parking ramp. Additionally, CATA will provide bus service during summer, spring and winter breaks on Route 32, which serves Ramp 1, the MSU Auditorium, the Clinical Center and Lot 89.

Transport your Research Materials with Research Ride Shuttle

Will you be engaged in research this fall or spring semester? There are several services to help you get to and from your research activities. You can take advantage of the free on-campus bus service with CATA. But if you’re concerned about being able to transport your research animals and materials, the Research Ride Shuttle can assist you.

The Research Ride Shuttle is a complimentary service for faculty, staff, and students that are engaged in research activities. It allows you to bring animals and research materials on the ride. To ride the shuttle, you must make a reservation due to limited seating. To make a reservation, visit the shuttle’s
Once you’ve confirmed your research activity, you’ll have access to the shuttle’s app on your phone and a GPS feature that allows you to track the shuttle at all times.

Shuttle locations and departures include the Administration Building, Anthony Hall/Trout, Biochemistry/Biophysics building, Vet Medical Center, the Clinical Center, and URCF. If you have any questions, contact shuttle@ora.msu.edu or access their website here.

Professional Grant Development Workshop sponsored by The Grant Training Center

September 12-13, 8:30 a.m.-4:30 p.m.; Michigan State University
Sponsored by: The Grant Training Center

This intensive two-day grant proposal workshop is geared towards those who wish to strengthen their grant writing skills, as well as beginners who wish to acquire and master the techniques of preparing and writing winning proposals to various funding agencies. The focus will be on how to effectively write proposals in times of keen competition and limited resources.

Participants will learn how to:
1. Navigate the world of grant procurement
2. Research and identify potential funding sources
3. Address the guidelines of federal and foundation applications
4. Find foundation and corporate giving for the state of Michigan
5. Understand the new federal guidelines for writing winning grants
6. Know the review process and how to address key points for reviewers
7. Write winning grants that stand out against scores of competing submissions
8. Develop focused and realistic budgets
9. Demonstrate the merits, excellence and innovation of your proposal
10. Package professional grant submissions

Our ultimate goal is for you to walk away with a product specific to your interests, which includes the grant design, abstract and budget.

To register:
Please click here

Questions? Call us at (866) 704-7268

Workshop Fee: $595.00 (includes a comprehensive directory, electronic workbook, certificate of completion, and continental breakfast)

Rebate of $45.00 per person is given for two or more registrants from the same organization.

*Space is limited, and since this class fills up quickly, it is on a first-come, first-serve basis.*

COGS Upcoming Events, Discounts, and Services

Greetings Spartan Graduate & Professional Students!
Welcome to the 2018-2019 academic year! COGS would like to remind you of some great services and upcoming activities that you can take advantage of as Graduate or Professional Student.

Check out COGS special discounts and services:
• COGS Discount Wharton Center Tickets – COGS offers $5 off the regular student price for a limited number of tickets to a selection of shows throughout the year. Be sure to check our
website Events page often for available ticket sales. Right now Broadway musical, School of Rock, tickets are available for Graduate & Professional students to purchase for $24 ea. Visit: https://cogs.msu.edu/home/upcoming-events/ (MSU ID needed for ticket pick-up at the COGS office.)

- COGS Wings Wednesday - All day wings are half off at Harrison Roadhouse every Wednesday for grad/professional students wearing a COGS wristband. Need a wristband? Stop by the COGS office in Chittenden Hall (room 120) and get one.
- Free Legal Services - visit http://cogs.msu.edu/resources/services/legal-aid/ for more information.
- Short Term Loans - visit http://cogs.msu.edu/resources/services/loans/ for more information.
- Funding Opportunities - visit http://cogs.msu.edu/resources/funding/ to learn more.

COGS Upcoming Events:
September 29 – MSU v CMU COGS Tailgate. Located in front of Chittenden Hall, 2 hours prior to kickoff. Free food! Celebrate game day with your fellow graduate & professional students!
October 11 – COGS Coffee Hour. Located in the lounge in Chittenden Hall. 4 pm to 5 pm. Enjoy coffee, snacks and conversation!
October 28 – COGS Annual Detroit Red Wings Bus Trip; Tickets go on sale October 1 at noon.

AND MORE! Please like and follow us on Facebook & Twitter for updates and visit our website for more information. We look forward to getting to know you this year!

MSU Drug and Alcohol Policy
Substance use/abuse is a major issue that can result in legal and health problems. At MSU, we offer support services to students who are affected by substance abuse. In order to keep our campus safe and healthy, MSU also enforces laws and policies to prevent the illegal use of alcohol and drugs. The information contained in the “Drugs and Alcohol” section, found here: https://www.dfsca.msu.edu, informs you of our policies, the legal and student conduct-related consequences of illegal substance use, the health effects of such use, and the support services available to you. Further information on student harm prevention programming, including information regarding our collegiate recovery community, is available at https://olin.msu.edu/healthpromo/atod/default.htm.

Job Opportunities:

Postdoctoral Position: Blood-Testis Barrier University of Arizona College of Pharmacy
The blood-testis barrier protects developing germ cells by limiting the entry of xenobiotics into the adluminal compartment. Our lab has identified a transepithelial transport pathway as the molecular mechanism by which nucleoside analogs may be able to circumvent the blood-testis barrier. A postdoctoral position is available to determine the selectivity of nucleoside transporters across the blood-testis barrier and create a computational model for this transport pathway. Applicants will be trained in mammalian cell culture, functional transport assays, and liquid chromatography-mass spectrometry. This position is available immediately and supported by multiple grants.

Required qualifications: PhD within the last three years in the biomedical sciences (e.g. biochemistry, pharmacology, toxicology, or analytical chemistry).
Preferred qualifications: Strong background in mammalian cell culture, gene and protein expression (western blot analysis, PCR), animal handling and surgical procedures and background in analytical chemistry using LC-MS.

For consideration please email: cherring@pharmacy.arizona.edu, a cover letter, curriculum vitae and two references.

For more information, please visit: http://www.pharmacy.arizona.edu/departments/pharmacology-toxicology-department


Biological Scientist: USDA Animal and Plant Health Inspection Service

“The announcement is for all S&T labs but our lab -CPHST Beltsville- has 5 of these positions with Full Performance Level of GS13. We are looking for one Molecular Virologist as one of these positions. The other positions are for Molecular Bacteriologist, Mycologist or Virologist and should have experience in developing portable molecular diagnostic tools.”

This is time sensitive position.
https://www.usajobs.gov/GetJob/ViewDetails/506792700

Scholarships & Fellowships:

The DOE Office of Science and Graduate Student Research (SCGSR) Program

The Department of Energy’s (DOE) Office of Science is pleased to announce that the Office of Science Graduate Student Research (SCGSR) program is now accepting applications for the 2018 Solicitation

2. Applications are due 5:00pm Eastern Time on Thursday, November 15, 2018.

Detailed information about the program, including eligibility requirements and access to the online application system, can be found at: https://science.energy.gov/wdts/scgsr/.
The SCGSR program supports supplemental awards to outstanding U.S. graduate students to conduct part of their graduate thesis research at a DOE national laboratory/facility in collaboration with a DOE laboratory scientist for a period of 3 to 12 consecutive months— with the goal of preparing graduate students for scientific and technical careers critically important to the DOE Office of Science mission.

The SCGSR program is open to current Ph.D. students in qualified graduate programs at accredited U.S. academic institutions, who are conducting their graduate thesis research in targeted areas of importance to the DOE Office of Science. The research opportunity is expected to advance the graduate students’ overall doctoral thesis/dissertation while providing access to the expertise, resources, and capabilities available at the host DOE laboratories/facilities. The supplemental award provides for additional, incremental costs for living and travel expenses directly associated with conducting the SCGSR research project at the DOE host laboratory/facility during the award period.

The Office of Science expects to make approximately 50 awards in 2018 Solicitation 2 cycle, for project periods beginning anytime between June 3, 2019 and September 30, 2019.

Since its inception in 2014, the SCGSR program has provided support to over 370 graduate awardees from more than 120 different universities to conduct thesis research at 18 DOE national laboratories/facilities across the nation.

The SCGSR program is sponsored and managed by the DOE Office of Science’s Office of Workforce Development for Teachers and Scientists (WDTS), in collaboration with the six Office of Science research programs offices and the DOE national laboratories/facilities, and program administration support is provided by the Oak Ridge Institute of Science and Education (ORISE).

For any questions, please contact the SCGSR Program Manager, Dr. Ping Ge, at sc.scgsr@science.doe.gov.

U.S. Department of Energy, Office of Science