BME ANNOUNCEMENTS
Weekly Newsletter to the Undergraduate Students

JANUARY 27TH, 2020

IMPORTANT DATES:

BME Seminar Series
Lin Tian
JAN. 30TH 4PM

Spring Courses Viewable in CAESAR
FEB 10TH

Last Day to Drop a Class for Winter
FEB 14TH

Registration for Spring 2020 Begins
FEB 24TH

“It’s so I can remember what to write on my checks.”

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To study the neural circuitry, the action of one cell under the context of others, one would precisely measure and perturb specific neuronal populations and molecules in behaving animals who are specifically engaged in performing the computation or function of interest. The dataset of millions of neurons firing together underlying a behavior are required to develop and refine theories (hypotheses) explaining animal behavior in terms of brain physiology. The focus of lab is to develop novel genetically encoded indicators based on fluorescence proteins, especially focusing on direct and specific measurement of myriad input signals with needed spatial and temporal resolutions. In this talk, I will discuss our recent progress into develop and apply a new suite of genetically encoded indicators of neural activity. I will discuss the design, characterization and applications of these genetically encoded indicators. We also validate our sensor design platform, which could also be applied to developing sensors for a broad range of neuromodulators, including norepinephrine, serotonin, melatonin, and opioid neuropeptides. In combination with calcium imaging and optogenetics, these sensors are well poised to permit direct functional analysis of how the spatiotemporal coding of neural input.
Short Term Educational Program (STEP) towards Digestive & Metabolic Physiology

The Department of Molecular & Integrative Physiology at the University of Michigan is pleased to offer Summer Fellows under the Short Term Education Program towards Digestive and Metabolic Physiology to support undergraduate students from engineering, computational sciences, mathematics or other quantitative backgrounds to apply their expertise to research relevant to digestive and metabolic physiology and associated diseases.

Students currently enrolled at any degree granting university or college are eligible to apply, with preference given to those students interested in a career in research. Each student will be matched, based on their interests, to a laboratory led by a faculty member of the University of Michigan Medical School. This collection of laboratories is involved in nationally recognized research, in topics such as obesity and diabetes, endocrine and metabolic diseases, kidney and urologic diseases, nutrition and weight control.

The stipend for 2020 will be $4,200, pre-tax, for twelve weeks of full-time work from May 26 to August 14. The start and end date of the fellowship may be change to accommodate overlap with academic year at home institution, if necessary. The laboratory hands-on research is completed with a weekly seminar series with presentations on responsible conduct of research, career advice and couching, and how loss of physiological regulation leads to digestive and metabolic diseases. There will be a research forum at the end of the summer in which fellows will present their work, as well as opportunities to attend research seminars throughout the summer.

Further details and application materials are available from the fellowship website:

https://goo.gl/Ym21d7

The deadline for applications is February 3, 2020

Department of Molecular & Integrative Physiology
University of Michigan Medical School
1301 E. Catherine Rd, Ann Arbor, MI 48109-5622

This summer fellowship program is partially funded by the National Institute of Diabetes and Digestive and Kidney Diseases (Grant No. R25 DK088752)
What is BESIP?

The NIBIB sponsored Biomedical Engineering Summer Internship (BESIP) is for undergraduate biomedical engineering students who have completed their junior year of college. The ten-week program, under the guidance of Dr. Robert Lutz, BESIP Program Director, is scheduled from June 1, 2020 to August 7, 2020. The internship allows rising senior bioengineering students to participate in cutting-edge biomedical research projects under the mentorship of world-class scientists in NIH laboratories in Bethesda, MD.

Selected by a nationwide competition, the interns will have the opportunity to indicate preferences from a list of available NIH projects that involve areas of engineering or physical science expertise. The interns participate in many activities that are provided by the Summer Internship Program (SIP). They submit posters to the NIH Poster Day where summer interns from all disciplines present their projects. The 16 interns present the results of their summer research projects at a closing BESIP Seminar which is attended by students, mentors, and many guests from NIH. Interns submit a short written report at the end of the program that summarizes their research for the summer.

Who Can Apply?

Below are the requirements for BESIP:

- Applicant must have completed at least three years (6 semesters or 9 quarters) of undergraduate study in a biomedical engineering or bioengineering degree program by the start of the 2020 summer
- Applicant must plan to be returning to undergraduate school for at least one term following the summer BESIP program
- Applicant must be a United States citizen or permanent resident attending college in the U.S.
- Because of the structure of the program, the orientation procedures and the planned group activities, the student must be present on the Bethesda campus to participate in the entire ten-week program between June 1 and August 7, 2020

How to Apply?

The BESIP application site can be found at https://www2.training.nih.gov/transfer/SIPApp. BESIP is a Subprogram of SIP and uses the same application forms. The SIP site will go live by early to mid-November 2019. The on-line application form requires the following four items, which will be used to select interns:

1. A resume containing:
   - Addresses and phone numbers for both school and permanent residence
   - E-mail address
   - A statement affirming the U.S. citizen or permanent resident status of the applicant
   - Information about the student’s education, recent work experience, and activities and awards

2. An unofficial transcript or listing of courses and grades (copy and paste into the online application)
   NOTE: an official transcript may be requested before starting the program

3. An essay briefly discussing items such as:
   - Career goals
   - Technical and research interests
   - Reasons for applying to BESIP
   - A statement describing the potential benefits that will come about as a result of the student’s participation in BESIP

The information listed in item 3 above constitutes the “Cover Letter” mentioned in Section 6 of the online application form. The Essay and the Cover Letter are one in the same.

4. Two letters of recommendation: Letters should come from individuals who are familiar with the student’s academic or work performance, such as faculty or a supervisor, and who can comment on his/her suitability for the program. Requests for recommendation letters will be sent automatically from the online web application system via e-mail to the two recommenders listed in the application. The recommenders will be given instructions for submitting their letters to the online system.
The intern selection process will be performed by a panel of NIH scientists using a scoring system based on the information submitted in the four items listed above. The BESIP deadlines are different from the NIH-wide Summer Internship Program (SIP), which are stated on the SIP website. It is the applicants’ responsibility to be sure that all application materials, including letters of recommendation, are submitted on time for BESIP.

**BESIP Deadlines**
- The deadline for submitting the online application is **February 03, 2020**
- The deadline for Reference Letters is **February 10, 2020**
- Notification of selected interns will be on or about **February 24, 2020**
- Intern must accept or decline by **March 09, 2020**

**Stipend and Benefits**

The BESIP summer stipend is approximately $5600 for the 10 week program. The amount is based on the NIH Policy Manual for Intramural Research and Training Awards (IRTA) stipends for the Summer Internship Program (SIP) as a rising senior. A small stipend supplement is often available to STEM interns to cover the high cost of living in the DC area. Stipend will be dispersed in arrears as a prorated amount at the end of the months of June, July and August for the ten-week duration of the program. BESIP interns frequently elect to share local housing to reduce the housing costs. Information about housing can be found from the Office of Intramural Education and Training (OITE) website https://www.training.nih.gov/assets/Moving_Guide.pdf. The intern must pay any travel expenses to and from NIH from the summer stipend.

**Other NIH Summer Programs**

Applicants who are not selected for the BESIP program will automatically have their BESIP applications released for viewing by the general NIH staff so that the applicant may become eligible for hiring into the regular summer internship program. Any inquiries about admission to Summer Internship Program in Biomedical Research (SIP) or the High School-Summer Internship Program in Biomedical Research (HS-SIP) must be made to the Office of Education and Training (www.training.nih.gov) to Dr. Yewon Cheon (cheony@mail.nih.gov) and not to BESIP. For more information on SIP or HS-SIP please visit https://www.training.nih.gov/programs/sip or https://www.training.nih.gov/programs/hS-sip.

**BESIP Website**

For more information about the BESIP program and to read about past BESIP projects and interns, please visit the BESIP website at https://www.nibib.nih.gov/besip.

**NIBIB Contacts**

National Institute of Biomedical Imaging and Bioengineering
6707 Democracy Blvd.
Suite 200
Bethesda, MD 20892
Phone: 301-496-8659
info@nibib.nih.gov

Office of Science Policy
and Communications
Press Office:
Phone: 301-496-3600
Fax: 301-480-1613
nibibpress@mail.nih.gov
INTERESTED IN REAL-WORLD HEALTHCARE PROBLEMS/INNOVATION?

HONE YOUR PROBLEM-SOLVING SKILLS WITH A MULTIDISCIPLINARY TEAM!

FREE MEALS AND CASH PRIZES!

Join us at NU Health Hacks, Northwestern’s first healthcare hackathon, for 24 hours of innovation, collaboration, and mentorship from leaders across Northwestern and Chicagoland.

February 7-8, 2020
(Friday evening to Saturday Evening)

Free and open to all Northwestern affiliates. No hackathon or coding experience necessary.
People in the developed world spend 90% of their time in buildings, and these buildings generate 39% of our global CO₂ emissions and account for about 40% of the total energy consumption. The emerging field of Building Physics explores ways to ensure our buildings enable healthy and productive humans, and minimize emissions and energy consumption.

In this new course, gain an understanding of the fundamental knowledge of the physics related to buildings to be able to support the design of low-energy and comfortable constructions.

Join this spring quarter course to learn more about heat and mass transfer, moisture, sound/acoustics, illumination and energy consumption in buildings.

**Style:** lectures, weekly exercises and independent development of a research project (report + final presentation) on a sustainable technological solution.

**Prerequisites:** 3rd year standing (or higher); knowledge of thermodynamics.

**Instructor:** Dr. Giorgia Chinazzo
giorgia.chinazzo@northwestern.edu

**Schedule:** Tues-Thurs, 2-3:20pm

*For permission to register – contact Melissa Koelling (mkoelling@northwestern.edu)*
ATTENTION BIOMEDICAL ENGINEERING AND ELECTRICAL ENGINEERING STUDENTS:

Dr. David Walner, MD is a Chicago-based Pediatric Otolaryngologist. He approached the Garage at Northwestern with an interest in developing wireless monitoring that could be utilized for pediatric sleep studies.

This is a great opportunity for medical students or undergrads/grads with experience in Electrical or Biomedical Engineering.

If you'd be interested in learning more about this opportunity, please send your resume to: dwalner@comcast.net
The Insight Fellows Programs are tuition-free fellowships for graduating students looking to transition to thriving careers as data scientists, engineers, and other cutting-edge professionals.

Apply to the Insight Fellows Program by February 10: apply.insightdatascience.com

Insight Fellows:
- Pay no tuition; the program is fully funded by top companies
- Receive guidance throughout the entire process to meet, interview, and join top companies
- Launch a cutting-edge career where the average starting salary is $127K
- Join Insight from a wide range of backgrounds & education levels
- Join a community of 3,000 alumni that support each other throughout their careers

Programs:
- Artificial Intelligence
- Data Engineering
- DevOps Engineering
- Decentralized Consensus
- Security
- Data Science*
- Health Data Science*

*Please note that our programs are open to all degree levels, except our Data Science and Health programs, which have a PhD requirement.

Locations:
- San Francisco
- New York
- Boston
- Seattle
- Toronto
- Los Angeles
- Remote Program

Sessions begin May 26th. Want to learn more about Insight and our programs? Visit: https://www.insightfellows.com