Michael Sheets

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EDUCATION

Boston University – Boston, MA   Sept 2017-Current
Recipient of Distinguished Biomedical Engineering Fellowship
Recipient of Translational Research in Biomaterials NIH T32 Training Grant, Sept 2017-Aug 2019

Franklin W. Olin College of Engineering – Needham, MA   May 2017
Recipient of 4-year Olin Merit Scholarship, GPA 3.91
Relevant Coursework: Microbial Diversity, Transport in Biological Systems, Tissue Engineering, Organic Chem.,
Partial Differential Equations, Affordable Design & Entrepreneurship, User-Oriented Collaborative Design

RESEARCH

Huang Lab - Microbiology Researcher   Sept 2013 – Dec 2016, Summer 2014
- Characterized anoxygenic photosynthetic communities by genetic diversity and metabolic processes (esp. cellulose degradation, nitrogen fixation)
- Analyzed of microbial community reactions to environmental and composition perturbations
- Studied collective motion of diverse bacterial systems and potential applications (i.e. turning gears)

Tetragenetics – Research Intern, Genetics Dept.   Jun 2016 – Jun 2017
- Purified five ion channels in milligram quantities from whole cells by affinity chromatography (anti-FLAG, IMAC) for industry partners and internal use for antibody development and screening

Tarveda (formerly Blend) **Therapeutics -** Formulations Intern   May – Aug 2015
- Co-developed polymeric nanoparticles for delivery of proprietary drug conjugates to in vivo xenograft models to develop treatment for cancer
- Designed, optimized, and executed feasibility studies of nanoparticles from lab- to pilot-scale
- Responsible for compiling source references for company's first IND application

International Genetically Engineered Machine (iGEM)   Sept 2011 – Aug 2013
- Designed and built a synthetic genetic sensor circuit

PROJECTS

Lab & Design

Otter Newborn Warmer   Fall 2016
- Refined a newborn warmer to work with phototherapy as part of the firm Design that Matters

Tissue Engineering Skin   Spring 2015
- Differentiated a "keratinocyte" containing skin-like tissue from bone marrow stems cells

"Rapid Refuge" for Domestic Abuse Support Network Volunteers   Spring 2015
- Interviewed and co-designed with DASVs, prototyped a personal private pop-up space

Community Change for Disability Accommodation   Spring 2016
- Designed and ran campus-wide social experiments with a d/Deaf member of the Olin community to improve disability awareness & accommodation on campus

Electronystagmogram (ENG)   Spring 2014
- Developed a functional eye-tracking circuit using electrodes & basic electrical components

Modeling & Review

Collective Tumor Cell Autologous Chemotaxis   Fall 2015
- Created a model of metastasis of cancer cells from tumor to lymph in COMSOL

Statistical Analysis of Vertical & Horizontal Health Aid   Fall 2015
- Analyzed the effect of donor and recipient motivations, limitations, & behaviors on foreign aid efficacy and efficacy metrics in Sub-Saharan Africa

Models of Neuronal Action Potential   Spring 2016
- Explored & compared uses of mathematical models of single-neuron action potentials

Microbial Bioreactor Modeling   Fall 2014
- Created a linear system to model a microbial bioreactor using data from lab cultures

Vaccine Refrigeration & Cold Chain Systems   Fall 2014
- Extensively reviewed recent scientific & technological advancements in vaccine refrigeration

Body-Identity Asynchrony & Narrative Psychology   Fall 2016
- Conducted grounded theory analysis of a life story interview with a transgender man

PRESENTATIONS AND PUBLICATIONS

Sheets, M., Knapp, A., Liu, R., Chin, E., Simmons, S., Huang, J. "Environment and Nutrient are Drivers of Community Composition in Marine and Freshwater Phototrophic Community Enrichments." (Manuscript in Preparation for Environmental Microbiology Reports.)

Sheets, M., Wu, A., Huang, J.J., Christianson, R. "Collective Motion in Diverse Bacterial Systems." Boston Bacterial Meeting. Harvard University, Cambridge, MA, June, 2014.

Zhu, D., **Sheets, M.**, et al. "Factors that Influence composition of Photosynthetic communities cultured by wavelength selection." Northeast Microbial Physiology and Ecology Meeting, June, 2014.

Sheets, M., Sato, C., Knapp, A., Van der Heyde, R., Huang, J.J. "A Microbial Study in Pink: Cultivation of Streptomyces sp." Northeast Microbial Physiology and Ecology Meeting, June, 2014.

TEACHING

Course Assistant – Microbial Diversity (2016), Modern Biology (2015-16), Six Microbes
                          That Changed the World (2014-15), Tissue Engineering (2014)
- Helped prepare and run lab sessions for six courses, held office hours to answer students' questions
- Assisted in curriculum development and soliciting student feedback
- High teaching assistant rating from peers

LEADERSHIP AND ACTIVITIES

Glass Club Co-President   May 2014–Dec 2016
- Manage funding and purchases, coordinate sessions, and give tutorials

Olin Christian Fellowship Co-President   May 2014-May 2016
- Planned and ran weekly events and off-campus retreats, organized funds, and oversaw charter changes

Peer Advocate   May 2014-May 2016
- Trained to provide confidential support for survivors of sexual misconduct and partner abuse

Disney College Program Cast Member   Jan-May 2017
- Assisted hundreds of guests daily in roles requiring quick decision making and extensive knowledge of the park

SKILLS

- **Lab:** Cell culture, Molecular biology, Genome analysis, Anaerobic microbiology, Liposome preparation, Membrane protein purification, Protein concentration, & analysis (BCA, OD_{280}), Photolithography, High-pressure homogenization processes, Tangential flow filtration (TFF), Particle sizing, basic HPLC
- **Code:** MatLab, Arduino, basic SolidWorks, COMSOL
- **Other:** Beekeeping, Glass working, Blues dancing