Swee S. **Lim**

PhD Biomedical Engineering

contact

29638 Arroyo Dr
Irvine, CA 92617
USA

(949) 648 7933

sweel@uci.edu
github://sweegit

languages

English mother tongue

programming

Python (main), MATLAB, R (proficient)
JAVA, C, BASH (basic knowledge)
Markdown, LATEX, Jekyll

education

2015 **Ph.D.** Biomedical Engineering — *University of California, Irvine*
Multi-scale Structure-function Analysis of Mitochondrial Network Morphology and Respiratory State in Budding Yeast.
University of California, Irvine

2009 **M.S.** Biomedical Engineering — University of California, Irvine

2001 **M.Eng.** Mechanical Engineering — Imperial College, London

Research and Work Experience

2016 **University of California, Irvine** — Irvine, California
Assistant Specialist

2012–2015 **University of California, Irvine** — Irvine, California
Graduate Research Assistant, Susanne Rafelski lab
Developed a computational framework to quantify structure-function relationship in yeast mitochondrial network. This is one of the first projects that attempts to integrate the study of mitochondrial bioenergetics at multiple spatial scales. This project requires a multi-disciplinary skillset of both:

- wet lab
  - confocal microscopy and molecular biology techniques.
- dry lab
  - coding batch jobs, writing analytical and interactive data exploration programs.

Other responsibilities include:

- Troubleshooting, repairing and maintaining hardware in the lab (such as spinning disk confocal microscope and Linux file servers).

2009–2012 **University of California, Irvine** — Irvine, California
Graduate Research Assistant, Steven George lab
Researched post-translational effects of S-nitrosylation on calcium channel receptors in human and mammalian smooth muscle cells. This project involved culturing primary human and bovine smooth muscle cells and studying their response to calcium excitation, then comparing the data to a mathematical model to determine how the frequency response of asthmatic cells differed from healthy cells.

2001–2007 **Tuas Power Singapore** — Singapore
Business Analyst
Analysing power consumption data and energy markets in newly liberalized electricity supply market. Responsible for developing risk profiles and mitigation strategies against spikes in fuel prices, forex and market demand. Also involved in stress testing financial portfolio of company against these risks.

Awards

2008 **MCSB award** Center for Complex Biological Systems, UC Irvine
The Mathematical, Computational and Systems Biology is a competitive, fully funded gateway year meant to introduce students to a doctoral program in departments that have a systems biology related research. Rotated through several molecular biology labs and obtained my first exposure to molecular biology techniques such as histology, RT-PCR, primary cell culture and cell transfection.

1999 **Undergraduate Scholarship** Economic Development Board, Singapore
Full scholarship covering tuition and stipend to pursue undergraduate studies in London

Teaching and Mentoring Experience

2016 **Guest Lecturer** Biomedical Engineering
I gave a lecture and also held a lab section for a course in molecular and cell biophotonics. I demonstrated the tools I developed and showed how it could be used to study mitochondrial function in budding yeast using a spinning disk confocal microscope.

2012 **Teaching Assistant** Biomedical Engineering
TA for classes in organ transport systems and signals analysis in biomedical systems. Responsibilities included leading weekly discussion and grading assigments

Peer Reviewed Publications

Quantifying mitochondrial content in living cells
Matheus Palhares Viana, Swee Lim, Susanne M. Rafelski
Methods in Cell Biology, Academic Press, 2015

A quantitative structure-function analysis of mitochondrial network morphology and respiratory state in budding yeast
Swee Lim, Susanne M. Rafelski
in preparation

Poster Presentations

2015 **Poster presentation** ASCB , San Diego, CA
A quantitative , multi-scale structure-function analysis of mitochondrial network morphology and respiratory state in budding yeast *Saccharomyces cerevisiae*.

2013 **Poster presentation** ASCB , New Orleans, LA
Quantifying the relationship between mitochondrial network topology and bioenergetics in budding yeast.

2013 **Poster and talk** MCB Retreat , Santa Monica, CA
Presented results of collaboration with Suzanne Sandmeyer lab on mitochondrial networks.

Professional Memberships

- American Society of Cell Biology
- Biomedical Engineering Society

Interests

Professional: data analysis, software engineering, machine learning, file and storage systems. **Personal:** swimming, gymnastics, automotive repair, mechatronics.