Tracy H. Lou – Curriculum Vitae

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EDUCATION

University of California, Berkeley — *August 2014 - Present*
B.A. Mathematics and Molecular and Cell Biology: Biochemistry & Molecular Biology and minor in Physics
Berkeley, CA

Relevant Courses: Linear Algebra; Numerical Analysis; Real Analysis; Electromagnetic Waves, Optics, Quantum Mechanics; Techniques in Microscopy; Mathematical Methods in Molecular Biology; Biophysical Chemistry; Structure and Interpretation of Computer Programs

EMPLOYMENT

Desktop Engineer — *April 2016 - Present*
Student Affairs – Information Technologies, UC Berkeley — Berkeley, CA

- Manage over 1,500 staff computers (Windows OS and Mac OS) in SA-IT using Microsoft's Active Directory, Group Policy and Application Virtualization.
- Use IBM BigFix extensively for patch management, writing scripts in Relevance
- Write scripts in BASH, shell, Powershell, and Python to automate repetitive tasks
- Create custom software deployment packages and computer images for use on customer workstations

Research Assistant — *November 2014 - Present*
Principle Investigator: Rebecca Heald, Ph.D — Berkeley, CA

- Attempting to understand the role of and requirement for RNA required during *in vitro* spindle assembly within *Xenopus laevis*
- Extensive use of epifluorescence microscopy
- Use tailored CellProfiler pipeline for segmentation and observation of spindle morphology
- Use R for data analysis and visualization

Residential Computing Consulant — *May 2015 - May 2016*
Student Affairs – Information Technologies, UC Berkeley — Berkeley, CA

- Provide technical support to thousands of UC Berkeley campus residents, mainly of University Village, Albany
- Troubleshoot a variety of problems in security, networking (e.g. WiFi, routers, ports), hardware, TV, etc.
- Responded to more than 100 Request Tracker tickets and ServiceNow incidents

Research Fellow — *June 2013 - December 2014*
UC Irvine Cancer Research Institute Youth Science Fellows Program — Irvine, CA
Principle Investigator: Christine Suetterlin, Ph.D

- Perform 3D segmentation analysis and reconstruction of *Chlamydia* infected cell inclusions from electron micrographs using `IMOD` 3dmod software
- Used Python scripts to convert stacks of 2D image slices into a 3D mesh model in Unix shell

SERVICE

Executive Committee Member and Webmaster — *August 2014 - Present*
Molecular and Cell Biology Cell Developmental Neurobiological Association — Berkeley, CA

- Maintain and re-design club website
- Serve as a liaison between the MCB department and undergraduates by coordinating varied events and workshops

SKILLS

Proficiency in LaTeX, R, Photoshop, `IMOD` 3dmod, and Microsoft Excel, Word, and PowerPoint
Programming in Python, R, MATLAB, HTML/CSS, Powershell, BASH
Experienced with Mac OS X, Windows OS, Linux OS
Light and Fluorescent microscopy methods
Common molecular biology techniques (nucleic acid isolation and manipulation, PCR, agarose gel electrophoresis)
Quantitative data analysis including computational image analysis

PROJECTS

Cryo-EM 3D Image Reconstruction *April 2016 - May 2016*

Simulation of Zika virus from cryogenic electron microscopy data through Radon projections. Use of Fourier slice theorem in image reconstitution. Accomplished 3D reconstruction using backprojection algorithm. Investigated significance of the Phase Contrast Transfer Function in image deconvolution. Written in Python.

Phylogentic Inference *January 2016 - March 2016*

Implementation of Markov models of evolution (Jukes-Cantor, Kimura) to model HIV. Use neighbor joining algorithms and distance methods for phylogenetic inference and evolution simulation according to models. Written in Python.

HOBBIES

Classical and jazz piano; Blues and folk guitar; microscopy; optics and optical engineering; signal processing