

## CONTACT

Email\_ kyetokikuchi@gmail.com

## RESEARCH SKILLS

Experimental Design / Microscopy /  
Statistical Analysis / Academic Writing  
Image Analysis / Data Visualization /  
Network Clustering / Classification

## TECHNICAL SKILLS

Python	R
Fiji/ImageJ	MATLAB
Clojure	Illustrator

## EDUCATION

# Sep 2016 > Present

**PhD Candidate** @ University of California, San Diego (San Diego)  
Biological Sciences with Specialization in Quantitative Biology  
Representative on Biology Graduate Student Council (2020-2021 term)

# Apr 2014 > Mar 2016

**Master of Arts** @ University of Tokyo (Tokyo)  
Research in bacterial cytoplasm biophysics and optogenetics

# Apr 2010 > Mar 2014

**Bachelor of Arts** @ International Christian University (Tokyo)  
Biology Major  
Editor-in-chief of weekly student newspaper

## EXPERIENCE

# Sep 2016 > Present

**PhD Candidate** @ University of California, San Diego [San Diego]  
Investigating how bacterial spores use electrochemical charges to return to life by combining molecular genetic techniques, fluorescence microscopy, and image analysis.

- Obtain time-lapse microscopy data for thousands of spores in a microfluidics device.
- Process and analyze image data in Fiji/ImageJ using custom macro to stabilize drift and extract image features.
- Process data in Python using Pandas and NumPy to detect spore germination, perform statistical analyses, and generate publication-ready data visualization.
- First-author manuscript currently under peer review (see Publications).

# Sep 2018 > Dec 2018, Sep 2019 > Dec 2019

**Teaching Assistant**, Quantitative Principles in Biology @ University of California, San Diego  
Led weekly hands-on coding sessions teaching undergraduate students to perform mathematical modeling in MATLAB.

- Taught students who had mostly never coded before, starting from establishing familiarity to the MATLAB software, to write and solve ODEs to simulate protein expression and degradation. Other topics covered included stochastic simulation, curve fitting, and nullcline analysis.

# Apr 2013 > Aug 2016

**Student Research Assistant** @ The Systems Biology Institute (Tokyo)  
Participated in bioinformatics research projects aiming to locate drug-target proteins from protein-protein interaction (PPI) networks.

- Developed a novel network mining method by sequentially applying clustering algorithms in R.
- Evaluated network motifs to score target enrichment and identified a module within the Human PPI network enriched with 40% of known kinase inhibitors, leading to a co-authored paper in Artificial Life and Robotics.
- Participated in the Sage DREAM8 competition and ranked among the top 5 in the visualization sub-challenge.
- Developed a GUI app using PyQt4 for the network clustering pipeline.
- Led a project to apply clustering technique to Methicillin-Resistant Staphylococcus aureus (MRSA), refining the module analysis step to use an ensemble voting method comprised of 10 different machine learning algorithms to predict drug targets.
- Accepted to the 8th Asian Young Researcher's Conference on Omics and Computational Biology as an oral presentation with travel grants awarded (acceptance rate < 25%).

# Nov 2010 > Aug 2016

**President** @ Shoyojuku Private Tutoring (Tokyo)  
Founded and ran a tutoring service for local secondary school students.

- Managed a staff of up to 8 part-time tutors, overseeing scheduling, pay, classroom renting, coordination with school teachers, among other responsibilities.
- Taught mathematics, Japanese, and English to students ranging from 7th to 12th grade, including preparations for college entrance exams.



## PUBLICATIONS

### # Manuscript under review

Kikuchi K, Galera-Laporta L, Weatherwax C, Garcia-Ojalvo J, Süel GM "An integrate-and-fire mechanism drives germination of bacterial spores"

### # Dec 2019

Zhai X, Larkin JW, Kikuchi K, Redford SE, Roy U, Süel GM, Mugler A "Statistics of correlated percolation in a bacterial community" PLoS Computational Biology

### # Aug 2018

Larkin JW, Zhai X, Kikuchi K, Redford SE, Prindle A, Liu J, Greenfield S, Walczak AM, Garcia-Ojalvo J, Mugler A, Süel GM "Signal percolation within a bacterial community" Cell Systems

### # Feb 2016

Hill S, et al. [HPN-DREAM Consortium, including Kikuchi K] "Inferring causal molecular networks: empirical assessment through a community-based effort" Nature Methods

### # Nov 2014

Hase T, Kikuchi K, Ghosh S, Kitano H, Tanaka H "Identification of drug-target modules in the human protein-protein interaction network" Artificial Life and Robotics

## FELLOWSHIPS AND AWARDS

### # Oct 2020 > Sep 2021

The ANRI Fellowship @ ANRI

### # Sep 2016 > Aug 2019

Overseas Graduate Scholarship @ Japan Student Support Organization

### # Apr 2016 > Aug 2016

Research Fellowship DC1 @ Japan Society for the Promotion of Science

### # Mar 2016

Outstanding Graduate Student Award @ University of Tokyo

### # Jan 2015

AYRCOB Travel Grant @ 8th Asian Young Researcher's Conference on Computational and Omics Biology (AYRCOB)

### # Apr 2014 > Mar 2016

Integrated Human Sciences Graduate Program Fellow @ University of Tokyo

### # Mar 2014

Takuya Tokihisa Biosciences Award @ International Christian University

### # Apr 2010 > Mar 2014

Peace Bell Scholar @ International Christian University

## LANGUAGES

Native fluency in English and Japanese

## INTERESTS

Cooking / Photography / Baking / Surfing / Biking / Pottery / Gardening / Kintsugi