

JONATHAN LIU

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EDUCATION

University of California, Berkeley

PhD in Physics

Advisor: Hernan Garcia

Aug 2016 - Present

California Institute of Technology

BS in Applied Physics with Honors

Sept 2011 - June 2015

RESEARCH INTERESTS

Quantitative biology, gene regulation, synthetic biology, systems-level modeling and analysis

APPOINTMENTS

Graduate Student - UC Berkeley

Biophysics of gene regulation in fruit flies:

Live imaging of transcriptional inputs and outputs with confocal microscopy

Experimental and theoretical investigations of nonequilibrium processes in gene regulation

Aug 2016 - Present

Fulbright Visiting Student - Ludwig Maximilian University of Munich

Interfacial dynamics of DNA in thermal gradients:

Novel discovery of interfacial DNA accumulation in heated fluid systems

Applications of interfacial dynamics to origins of life studies

Sept 2015 - July 2016

HONORS AND AWARDS

2017 NDSEG Graduate Fellowship

2015 U.S. Fulbright Student Fellowship

2015 Caltech B.S with Honors

2014 DAAD RISE Research Internship

2013 Caltech SURF Fellowship

2012 Caltech SURF Fellowship

PUBLICATIONS

1. Elizabeth Eck*, **Jonathan Liu***, Shelby Blythe, Hernan Garcia. "Broken detailed balance in transcriptional regulation in development." To be submitted to *Cell*. (*equal authorship)
2. Matthias Morasch, **Jonathan Liu**, *et al.* "Heated gas bubbles enrich, crystallize, dry, phosphorylate, and encapsulate prebiotic molecules." Submitted to *Nature Chemistry*, under revision.

TALKS PRESENTED

Jan 2018	Contributed	Gordon Conference: Stochastic Physics in Biology
Dec 2018	Invited	DoD Science, Technology, and Innovation Exchange
Nov 2018	Invited	UC Berkeley Physics Compass Lecture Series
Feb 2018	Contributed	Biophysical Society 62nd Annual Meeting
Aug 2017	Invited	Canadian-American-Mexican Graduate Student Physics Conference
Mar 2016	Invited	German Fulbright Berlin Conference

TEACHING AND MENTORING

Teaching Assistant - Caltech Physical Biology Boot Camp *Sept 2018*

Assisted with week-long physical biology course for incoming graduate students
Designed and ran experimental module on live imaging of transcription in fruit flies

Graduate Student Instructor - Physics for Engineers and Scientists (7B) *Aug 2016 - May 2017*

Taught small sections for large undergraduate physics course
Prepared section material, supervised lab projects, graded exams

Student Tutor - Caltech Undergraduate Dean's Office *Sept 2012 - June 2015*

Tutored undergraduate students in STEM courses

WRITING

1. "Machine Learning: Chapter 3 (Particle Physics)." *Berkeley Science Review (Fall 2018)*.
<http://www.berkeleysciencereview.com/article/machine-learning-chapter-3/>
2. "Why (anti)hydrogen matters." *Berkeley Science Review (Spring 2017)*.
<http://berkeleysciencereview.com/article/why-antihydrogen-matters/>

OUTREACH AND SERVICE

Organizer - Grounds for Science *July 2018 - Present*

Organizer for local public science lecture series, run by and for graduate students

Organizer - Berkeley Physics Graduate Student Seminar *Jan 2017 - Aug 2018*

Started and helped run seminar series for graduate students in UC Berkeley Physics

Member - Berkeley Physics Admissions Committee *Jan 2018 - Mar 2018*

Member of committee planning and organizing admitted graduate student visit program

Member - Caltech Academics and Research Committee *Sept 2013 - June 2015*

Member of undergraduate committee overseeing undergraduate curriculum and research issues
Chaired 2015 committee on updating Applied Physics department curriculum requirements

MISCELLANEOUS

Programming languages:	MATLAB, Python, Java, Mathematica, LabVIEW
Software:	Autodesk Inventor, Adobe Illustrator, COMSOL
Experimental skills:	Fluorescence microscopy, molecular biology, <i>Drosophila</i> husbandry, gene editing
Analytical skills:	Statistical inference, modeling, computational and theoretical physics
Mathematical knowledge:	Calculus, linear algebra, differential equations, probability, statistics
Languages:	English (native), Mandarin (fluent), Shanghainese (fluent), German (fluent)