Alan M. Luu

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EDUCATION

Ph.D. Physics **Aug. 2016 - Present**
University of Illinois at Urbana-Champaign

- Advisor: Jun S. Song

B.A. Physics **Aug. 2012 - May 2016**
University of California at Berkeley

- GPA: 3.79
- Graduated with Distinction in General Scholarship

PUBLICATION

Michael Gapinske, Alan Luu*, Jackson Winter, Wendy S. Woods, Kurt A. Kostan, Nikhil Shiva, Jun S. Song, Pablo Perez-Pinera, CRISPR-SKIP: programmable gene splicing with single base editors. . *Genome Biology*, August 2018.

SKILLS

RESEARCH EXPERIENCE

Song Lab **Jan. 2017 - Present**
University of Illinois at Urbana-Champaign
Position: CPLC Fellow. Advisor: Jun Song

- Analyzed MiSeq data using Bowtie2 and Tophat2 to determine feasibility of using CRISPR-mediated base editing to induce alternate splicing.
- Created web application to determine which exons of a gene can be modified to be excluded from the final transcript using CRISPR-mediated base editing.
- Implemented various machine learning algorithms to discover new lincRNA.
- Investigated using graph spectral sparsification to identify important edges in a network.

Kuehn Lab **May 2017 - Jul. 2017**
University of Illinois at Urbana-Champaign
Position: CPLC Fellow. Advisor: Seppe Kuehn

- Carried out Statistical and network analysis on gene knockout data to investigate the correlation between phenotypic robustness and evolvability.

Aksimentiev Group **Sept. 2016 - Dec. 2016**
University of Illinois at Urbana-Champaign
Position: CPLC Fellow. Advisor: Aleksei Aksimentiev

- Ran large molecular dynamics simulations using high performance computing resources to investigate stability of 3D nano-engineered DNA structures in various ionic solutions.

Ion Trap Group **Feb. 2015 - May 2016**
University of California at Berkeley
Position: Undergraduate Researcher. Advisor: Hartmut Haeffner

- Machined fixtures to house and align optical elements on an optical table.
- Designed and manufactured Helmholtz coils using electromagnetic simulation tools, computer aided design, and 3D printing.

*Equal Contribution

Irene Project **Jan. 2014 - Oct. 2014**
Lawrence Berkeley National Laboratory
Position: Undergraduate Researcher. Advisor: Carl Haber

- Implemented and benchmarked optical-flow-based algorithm to reconstruct audio signals from high resolution confocal microscope images of lacquer records.

TEACHING EXPERIENCE

Undergraduate Student Instructor **Jun. 2016 - Aug. 2016**
University of California at Berkeley
Class: Physics 7B - Lower division electromagnetism and thermodynamics
Professor: Mike Bloxham

- Led discussion section, held office hours, and graded exams.

Undergraduate Homework Grader **Jan. 2016 - Aug. 2016**
University of California at Berkeley

- Physics 137B - Second course in undergraduate Quantum Mechanics
- Physics 139 - Undergraduate course in General Relativity

Instructional Lab Assistant **Aug. 2013 - Dec. 2013**
University of California at Berkeley
Class: CS61A - Structure and Interpretation of Computer Programs
Professor: John DeNero

- Helped run instructional lab section and held office hours

SKILLS

- Programming Languages: C, Java, Python
- Web Applications: Python Flask, HTML, CSS, Javascript
- Software: Matlab, Labview, Mathematica, Jupyter notebooks, Autodesk 123D design, VMD, NAMD, Bowtie2, Tophat2, scikit-learn
- Operating Systems: Windows, MacOS, Linux/Unix
- Sequence data analyis
- Basic machine shop and construction skills including drill press, lathe, and 3D printing
- Basic image processing including optical flow, edge detection, and filtering
- Machine learning, quantitative and statistical analysis, mathematical proofs

SERVICE

Society of Physics Students **Aug. 2013 - May. 2016**
University of California at Berkeley
Position: Lunch Host

- Hosted lunch with physics professors and alumni in industry.
- Helped run SPS zone meeting hosted at UC Berkeley

California Public Interest Research Group **Aug. 2012 - Dec. 2012**
Position: Campaign Organizer

- Helped lead campaign to petition the Berkeley City Council to denounce the Supreme Court ruling of *Citizens United v. FEC*

HONORS, AWARDS, SCHOLARSHIPS

Center for the Physics of Living Cells Fellowship **Aug. 2016 - Aug. 2018**
University of Illinois at Urbana-Champaign

College of Letters and Science Dean's Honor List **Aug. 2012 - May 2014**
University of California at Berkeley

Pomerantz Scholarship **Aug. 2014 - Aug. 2015**
University of California at Berkeley

- Awarded for high academic standing and progress in the physics major

Regents and Chancellor's Scholarship **Aug. 2012 - May 2016**
University of California at Berkeley

- Awarded to top 1% of applicants (top 5% of admitted students)