Tal Scully

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Education

Harvard University, PhD Student in Systems Biology — Cambridge, MA, 2018-Present

Massachusetts Institute of Technology, BS in Physics and in Theater Arts — Cambridge, MA, 2014-2018

Selected coursework in science disciplines:

Physics: Quantum Mechanics I II & III, Statistical Mechanics, Relativity, Junior Laboratory

Chemistry: Organic Chemistry, Thermodynamics and Kinetics, Physical Chemistry II

Computer Science: Mathematics for Computer Science, Engineering Computation and Data Science

Brookline High School — Brookline, MA, 2010-2014

Research Experiences

Research Intern, Klein Lab, Harvard Medical School Dept. of Systems Biology — June 2017 – Jan 2018

PI: Allon Klein, PhD, Assistant Professor of Systems Biology. — Boston, MA

Graduate student mentors: Caleb Weinreb and James Briggs.

- Developed a computational method for comparing gene expression patterns between species using single cell RNA sequence (scRNA Seq) data.
- Analyzed and identified gene orthologs in Xenopus and Zebrafish embryos using the above method.
- Explored tradeoffs of linear dimension-reduction methods such as principle component analysis (PCA) as applied to scRNA Seq.

Undergraduate Researcher, Field Group, MIT Dept. of Chemistry — June 2016 – Mar 2017

PI: Robert Field, PhD, Haslam and Dewey Professor of Chemistry. — Cambridge, MA

Graduate student mentor: Alex Hull.

- Investigated the mechanism of a reaction to make diatomic phosphorus through laser induced fluorescence and microwave spectroscopy.
- Optimized experimental set-up of the microwave spectroscopy components.

Undergraduate Researcher, Buchwald Group, MIT Dept. of Chemistry — Feb 2015 – June 2016

PI: Stephen L. Buchwald, PhD, Camille Dreyfus Professor of Chemistry. — Cambridge, MA

Mentor: Rana Kashif Khan, PhD.

- Developed a synthesis of unnatural amino acids for use in new drugs.
- Discovered a previously unknown intermediate reaction step.
- Co-authored paper to be submitted to *Angewandte Chemie Journal.*

Teaching Experience

Teaching Assistant, Junior Laboratory, MIT Dept. of Physics — Sep 2017 – Dec 2017

Cambridge, MA

- Oversaw students in the Junior Laboratory (8.13) class, which covers fundamental experiments of modern physics.
- Taught students how to approach error analysis, manuscript writing, and oral presentations on technical data.

Volunteer Teacher, SPLASH, MIT Educational Studies Program Nov 2014 – Nov 2017
Cambridge, MA

- SPLASH is an annual weekend-long program of classes taught by MIT students to high schoolers.
- Developed and taught classes on Crystal Field Theory, Statistical Mechanics, Special Relativity, Computational Biology, and Improv Comedy.

Awards, Leadership, and Extracurricular

NSF Graduate Research Fellowship Program, Honorable Mention March 2018

MIT Emerson Scholarship for Private Music Study Sep 2014 – May 2018

- Took private weekly flute lessons with Sue-Ellen Hershman-Tcherepnin, MIT Adjunct Flute Instructor.
- Performed in a recital each semester with other Emerson Scholars.

President and Officer-at-Large of the MIT Shakespeare Ensemble May 2015 – May 2018

- Led an effort to revitalize touring of Shakespearean productions.
- Coordinated and ran Scene Nights and other events.
- Produced an alumni reunion performance in June, 2017.
- Acted in several productions, including playing the title roles in *Hamlet* and *Macbeth*, as well as Prospero in *The Tempest*.

Vice President of MIT Comedy Improv Troupe "Roadkill Buffet" May 2017 – May 2018

- Scheduled practices throughout the semester.
- Ran practices and worked with members to improve their communication and scene work.

Laya and Jerome B. Wiesner Student Art Award May 2018

- Institute award presented annually to up to four students (undergraduate or graduate), living groups, organizations or activities for outstanding achievement in and contributions to the arts at MIT

David Epstein Award May 2018

- From the MIT Music and Theater Arts Dept. in recognition of distinguished service and musical contribution to the MIT Symphony Orchestra.

Ragnar and Margaret Naess Award May 2017

- From the MIT Music and Theater Arts Dept. in recognition of exceptional talent and commitment to performance at MIT.

Skills

- Python, MATLAB, LaTeX, JavaScript, HTML/CSS
- Web Design. Website portfolio can be found at: http://web.mit.edu/tals/www
- Public Speaking and Voice Training