

# Li Tai Fang, Ph.D.

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## Summary of Accomplishments:

- The **only** student in UCLA Biochemistry during my time to publish **sole**-authored research paper
- Won George Gregory Research Award in UCLA Physical Chemistry, 2009 (one awarded per year)
- Published 6 peer-reviewed articles in highly respected scientific journals
- Co-organizer of the *Business Club at UCSF* and *UCLA Club Tennis*
- Fluent in Mandarin Chinese and Shanghainese Dialect (US Citizen)
- Proven expertise in Statistical Mechanics, MATLAB programming, Linux, and general IT tasks

## Professional Experience:

### **UCSF Medical Center**

*Statistical Analyst, Postdoctoral*

San Francisco, CA  
March, 2011 – Present

- Completed the “*Idea to IPO 2012*” bioentrepreneurship course sponsored by *Burrill & Co.*, by building a business plan as a group and pitching it to the venture capitalists
- Contribute computational expertise to a team of physicians, molecular biologists, and geneticists, in order to understand the massive amount of genetic data associated with different types of lung cancers
- Administer a 56-CPU computing cluster and the group website: *kimlab.surgery.ucsf.edu*

### **Vicaya Energy**

*Policy & Data Researcher, Voluntary*

Los Angeles, CA  
September, 2010 – March, 2011

- Advised a start-up solar energy company on scientific and science policy issues

### **The Hebrew University of Jerusalem**

*Theoretical Biophysicist, Postdoctoral*

Jerusalem, Israel  
March, 2010 – September, 2010

Completed and formalized a mathematical theory regarding the secondary structure of RNA molecules during a 6-month research fellowship. The work has resulted in two first-authored publications in the *Journal of Physical Chemistry B* and the *Journal of Chemical Physics*

- Developed an intuitive RNA-folding model and implemented its computer simulation algorithm based on the work by Professor Avinoam Ben-Shaul
- Discovered a scaling law between RNA’s 3D size and its linear length
- Presented my theory of Randomly Self-Paired Polymers to the faculty of Fritz Haber Research Center for Molecular Dynamics

### **UCLA Department of Chemistry**

*Teaching Assistant (during grad school)*

Los Angeles, CA  
2004 – 2010

Led a total of 9 discussion and laboratory sections for upper division courses in:

- Statistical Mechanics    • Quantum Mechanics    • Physical Biochemistry
- Chemical Thermodynamics    • Biochemistry Methods

### **National Institutes of Health**

*Visiting Biochemist*

Bethesda, MD  
Winter, 2007

Contributed both experimental and computational expertise to understand the DNA packaging process in viruses using Small Angle X-ray Scattering (SAXS). The results are published in *Physical Review Letters*.

- Trained my NIH collaborators to purify viruses, viral DNA, and proteins
- Presented single-molecule experimental results on viruses at the National Institute of Child Health
- Contributed calculation to the DNA packaging problem

## **Education:**

### **University of California, Los Angeles**

*Ph.D. Biochemistry*

Los Angeles, CA

September, 2003 – March, 2010

Conducted both experimental and theoretical research on viruses and their genetic materials. On my own initiative, implemented my ideas to solve a problem regarding the physical properties of RNA molecules.

- Thesis Advisors: Professors William M. Gelbart and Charles M. Knobler
- The **only** student in Prof. Gelbart's 35-year career and the Biochemistry Department during my time to publish a **sole**-authored peer-reviewed research article
- Dissertation: The Physics of DNA, RNA, and RNA-like Polymers
  - ★ Developed a mathematical model to calculate the end-to-end distance of RNA molecules
  - ★ Discovered an additional entropic force involved in the release of virus genome
  - ★ Measured the bending and electrostatic energies of DNA in viruses
  - ★ Contributed to the fundamental understanding of viruses, relevant to genetic engineering efforts using viruses as delivery vehicles

### **University of California, Berkeley**

*B.A. Molecular and Cell Biology*

Berkeley, CA

August, 1999 – May, 2003

- GRE scores: 800 in quantitative; 770 in analytical (out of 800)
- SAT scores: 800 in math; 730 in physics

## **Selected Peer-reviewed Publications:**

**Li Tai Fang.** The End-to-End Distance of RNA as a Randomly Self-Paired Polymer. *Journal of Theoretical Biology*, 280: 101-107. (2011)

**Li Tai Fang,** William M. Gelbart, and Avinoam Ben-Shaul. The Size of RNA as an Ideal Branched Polymer. *Journal of Chemical Physics*, 135(15): 155105. (2011)

**Li Tai Fang,** Aron M. Yoffe, William M. Gelbart, and Avinoam Ben-Shaul. A Sequential Folding Model Predicts Length-Independent Secondary Structure Properties of Long ssRNA. *Journal of Physical Chemistry B*, 115(12): 3193-3199. (2011)

## **Other Information:**

### **Technical Expertise:**

- MATLAB programming
- Linux/UNIX/BASH scripting
- L<sup>A</sup>T<sub>E</sub>X typesetting
- LifeScope™ Genomic Analysis Software
- Built PC from individual components
- Administer HTTP, SSH, PPTP, and OpenVPN servers in Linux
- X-ray Scattering at Stanford Synchrotron Radiation Lab (SSRL)
- Neutron Scattering at National Institute of Standards & Technology (NIST)

### **Leadership:**

*Co-organizer of Business Club at UCSF*

2011 – Present

- Manage the website ([www.businessatucsf.org](http://www.businessatucsf.org)), LinkedIn groups, mass email list, and all things IT
- Co-organize monthly seminars and talks featuring highly successful business professionals in life science

*Tournament Director/Treasurer of UCLA Club Tennis (100+ members)*

2008 – 2010

- Ran two club tournaments per quarter, including a Tennis on Campus event sponsored by the U.S. Tennis Association, with 100+ participants from 11 colleges from Southern California
- Resolved a crisis that developed 18 hours before a tournament, when Facility Management did not book the requested courts, by securing an alternative site
- Organized 40 members for a trip to the Indian Wells Masters Tennis Tournament
- Managed the club's budget, finance, and procurement of equipment

<http://www.linkedin.com/in/ltfang/>