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Professor James A. Glazier
Director, Biocomplexity Institute
Department of Physics
Swain Hall West 159
Indiana University, Bloomington
727 East Third Street
Bloomington, IN 47405-7105

Dear Professor Glazier:

I am writing in support of Dr. **Lingchong You's** application for a faculty position in your department. I have interacted closely with him at Caltech for over a year; I am also familiar with his graduate work at Wisconsin. Lingchong is a remarkable young scientist-engineer, with a clear vision of how to blend engineering and biology to solve important problems. I am sure that he will be a leader in outlining future interdisciplinary research in synthetic and systems biology.

As a postdoc in my group at Caltech, Lingchong is leading an effort to design and build *de novo* genetic circuits based on cell-cell communications and engineered cell death. These circuits are allowing him to program *E. coli* to become little 'synthetic ecosystems', whose interactions are well-defined and controllable. His predator-prey system design, which he is constructing from bacterial quorum sensing components, is a brilliant, elegantly simple that will allow him to explore complex, population-level behavior in a (relatively) well-defined experimental system. This is an engineer's approach to understanding, and manipulating, biology—and one that is likely to prove extremely fruitful.

Although Lingchong's PhD research was entirely theoretical (mathematical modeling of viral growth, with descriptions starting at the genetic level), he has jumped into experimental work with vigor and extraordinarily good productivity. He organized the efforts of a team that included undergraduates and graduate students to complete the construction of his first functional 'population control' circuit, which he is currently characterizing. We are now writing this work up for publication, and I expect it will be very well received. To do this work, Lingchong had to learn many molecular biological and microbiological methods, which he did with alacrity and enthusiasm. He's really very good in the lab, and that makes a formidable set of skills when added to his strong training in theory and simulations.

Too many of the computational people and theorists working in this area of systems biology have little understanding of where the experimental science is heading, and are therefore unable to communicate effectively with biologists. Their work, as a result, is largely ignored. Those rare few who can simultaneously make predictions and test them are the ones that will make an impact. Lingchong has the ability to do this, and I believe this will propel him to the forefront of 'systems biology' research. He constantly asks questions and both leads and participates in ongoing Caltech-wide discussions of the future of signaling and systems biology.

Lingchong is a careful, thorough and engaging lecturer. He gives an excellent seminar and gave some of the best lectures in my course on Biological Design in winter, 2003. He is extremely conscientious about teaching. His outgoing nature, strong work ethic, and curiosity will make him a valued colleague, collaborator, and effective researcher. He ranks among the five best postdoctoral researchers I have worked with (more than sixty), and I strongly recommend that you interview him.

Sincerely,

A handwritten signature in black ink that reads "Frances Arnold". The signature is written in a cursive, flowing style with a large initial 'F'.

Frances H. Arnold

FHA:dj