Phil Long

Graduate Institution: University of Chicago

Location: Chicago, IL

Graduate Discipline: Biophysics

Hometown: Spokane, WA

Research Interests:

My research combines the fields of femtosecond laser spectroscopy and molecular biology to probe quantum-mechanical effects in photoactive biological systems. In particular, I am investigating ultrafast energy transfer in photosynthetic pigment-protein complexes. Purely classical models of energy transfer cannot adequately explain the remarkable quantum efficiency and speed of excitation energy transfer among different chromophores within these systems. Instead, the classical model must be complemented by quantum chemistry insights. Furthermore, amassing research suggests the proteins associated with these chromophores actively aid the process, so molecular biology techniques figure heavily into my research. Through this integrative, interdisciplinary approach, I hope to elucidate the underpinnings of excitation energy transfer to suggest improved methods for synthetic designs.

About me:

My core interest lies in applying inter-disciplinary scientific thinking to tackle the mounting energy crisis. My thesis research seeks to decipher how nature harvests solar energy so effectively. The basic science questions alone captivate my interest. The potential societal impact, however, redoubles that motivation. I took an unusual path to this graduate course: After completing undergraduate studies in physical chemistry and history, I worked in science policy at the National Academies in Washington, DC. This experience not only imbued in me the passion to pursue biophysics, but also taught me the fundamental need for scientifically trained communicators to bridge the divide between Congress and researchers. I hope to somehow contribute to this field again.

Among my past academic achievements, I participated in an NSF-REU research experience in inorganic chemistry and was awarded one of three scholarships given annually by the Portland, OR section of the ACS to regional undergraduates. I am now a member of the Biophysical Society. Currently, I tutor Leadership Alliance students from local Chicago universities to support the program's goal of developing underrepresented minorities into leaders in academia, business, and the public sector.

I maintain active interests outside the lab. Participation in a Chicago soccer league keeps my muscles limber. Rushdie, Rand, Dickens, Tolkien, Martin, and Hugo provide a much-needed literary outlet. Chicago offers countless cultural opportunities and, when possible, I travel domestically and internationally to seek new adventures.