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American Chemical Society Awards Tenth Irving S. Sigal Postdoctoral Fellowship

The American Chemical Society, the world's largest scientific society, has awarded the 10th Irving S. Sigal Postdoctoral Fellowship (2014-2016) to Dr. Maraia Ener.

Maraia completed her doctoral studies in December 2013, under the supervision of Professor Harry B. Gray in the Department of Chemistry at California Institute of Technology. She will conduct her postdoctoral studies on "*Development and Implementation of Peptide Cavities to Control Ultrafast Proton Transfer*", in the research groups of Professors Tom Spiro and David Baker at University of Washington and in collaboration with Professor James Mayer of Yale University.

Maraia's doctoral dissertation is on "*Electron Flow Through Cytochrome P450*". For her Irving S. Sigal Postdoctoral Fellowship, Maraia will investigate how proteins direct the movement of one of the smallest chemical reactants: the proton. Proteins harness proton transfers (PTs) to drive structural changes and tune important catalytic reactions. Cell survival depends on precise control over these processes, however, the ubiquity of hydrogen bonds and ultrafast timescale of PT hinder the detailed study of PT mechanisms in biological systems. To address these challenges, Maraia will develop two-component model systems to probe PT within a peptide pocket, and will study the ultrafast vibrational dynamics of the PT processes using Femtosecond Stimulated Raman Spectroscopy (FSRS). A broad array of molecular interactions between the PT-pair and peptide cavity will be engineered by an iterative process of computational peptide design and experimental characterization. Realization of these objectives will help to develop better and more accurate models of enzyme active sites, and will aid the study of similar interactions within complex, native biochemical systems.

The fellowships are named for Irving S. Sigal, a chemist who applied site-directed mutagenesis to study the structure and function of proteins and enzymes. Dr. Sigal died in a 1988 plane crash and the fellowships were established in 1995 by his widow, Catherine T. Sigal, Ph.D., herself a biochemist. The fellowships provide a stipend, currently valued at $55,000 a year, for two years of research at one or more nonprofit institutions in any nation. We also invite you to see a video by Dr. Catherine T. Sigal, "The story behind the fellowships," at the ACS Sigal Website (http://acs.org/sigal).

There are no restrictions on the age or nationality of the Irving S. Sigal Fellow. However, the recipient should be a scientist beginning his/her career that has earned or will earn a doctoral degree from a graduate chemistry department in the United States and proposes to investigate a significant problem at the chemistry/biology interface during the Fellowship.

The American Chemical Society is a nonprofit organization, chartered by the U.S. Congress, with a multidisciplinary membership of more than 160,000 chemists and chemical engineers. ACS publishes numerous scientific journals and databases, convenes major research conferences and provides educational, career, and science policy programs in chemistry. The main offices of ACS are in Washington, D.C., and Columbus, Ohio.