

Introducing our AUTHORS



Neychelle Fernandes

Current position: University of California, Irvine, Department of Chemical Engineering, Ph.D. candidate with Dr. Nancy Allbritton

Education: University of Mumbai, India, B.E. in chemical engineering, 2003; University of California, Irvine, M.S. in chemical engineering, 2006

Nonscientific interests: Reading, music, watching movies

The mitogen-activated protein (MAP) kinases (MAPKs) are a family of enzymes that play an integral part in signal transduction cascades inside the cell. Because of the important cellular functions controlled by MAPKs, these pathways are being extensively studied to define their role in human disease and are of particular interest for drug discovery research. Because the catalytic activities of these enzymes are the clearest measure of signaling information flow, there is tremendous interest in quantifying the dynamics of each specific kinase individually in cellular media. The focus of my graduate work is developing efficient and specific peptide substrates for the MAPK extracellular regulated kinase (ERK). By appending short docking sequences taken from known substrates of ERK to a consensus phosphorylation motif, I obtained a high-efficiency substrate. Simple, modular peptide substrates that can be easily tailored to possess high phosphorylation efficiencies will enhance our understanding of the regulation of MAPK ERK and provide a tool for the development of new kinase assays. (Read Fernandes's article on p 665.)



Dwaipayan Sil

Current position: Cornell University, Department of Chemistry and Chemical Biology, Ph.D. candidate with Prof. Barbara Baird

Education: University of Calcutta, India, B.Sc. in chemistry, 2000; Indian Institute of Technology, Bombay, M.Sc. in chemistry, 2002

Nonscientific interests: Newspaper reading, actively participating in the activities of non-profit organizations

Antigen-mediated cross-linking of IgE-FcεRI receptors at the surface of mast cells stimulate the release of inflammatory mediators from their secretory granules, which leads to inflammation and allergy. Although the molecular components of this signaling pathway have been extensively studied, the spatial parameters that regulate these processes have been relatively unknown. My present research has been focused on addressing this question. Whereas multivalent, irregularly shaped natural antigens provide robust response, they do not provide spatial information. Using chemically modified, structurally well-defined antigens that generate significant structural and functional information, we have tried to address this question of spatial regulation of receptors in mast cells. My research interest lies primarily in signal transduction in cells and in the use of synthesized molecules that can act as mechanistic tools to investigate specific questions in cellular signaling pathways. (Read Sil's article on p 674 and Point of View on p 652.)



Daniel B. Werz

Current position: Universität Göttingen, Germany, Institute for Organic and Biomolecular Chemistry, Assistant Professor

Education: Universität Heidelberg, Germany, diploma 2000; Ph.D. in organic chemistry with Prof. R. Gleiter, 2003

Postdoctoral work: ETH Zürich, with Prof. Peter H. Seeberger, 2004–2006

Nonscientific interests: Hiking, traveling, history

The focus of my postdoctoral work was on solution-phase and automated solid-phase synthesis of various oligosaccharides. I undertook the first synthesis of an anthrax spore surface tetrasaccharide, which has been used as a vaccine candidate and for spore detection. But the work in Prof. Seeberger's lab also involved looking into carbohydrate diversity as well as into their synthesis from a more general point of view. We raised various questions, such as: What are the most frequent structural combinations within mammalian oligosaccharides? What does nature realize out of the billions of possibilities? The answers will have enormous impact on carbohydrate synthesis. In many cases some kind of modular approach for the synthesis of carbohydrates can be envisioned as it is well-known for the synthesis of peptides and oligonucleotides. Recently, I started my independent career focusing on the specific manipulation of carbohydrates. (Read Werz's article on p 685.)