Introducing our AUTHORS

Image courtesy of Ekin Atilla-Gokcumen.

Ekin Atilla-Gokcumen

Current position: Harvard Medical School, Department of Biological Chemistry and Molecular Pharmacology and Dana-Farber Cancer Institute, Department of Cancer Biology, Postdoctoral Researcher with Ulrike Eggert
Education: Koc University, Istanbul, Turkey, B.S. in chemistry, 2003; University of Pennsylvania, Ph.D. in chemistry with Eric Meggers, 2008
Nonscientific interests: Cinema, traveling, tasting foods from all around the world

My research in the Eggert lab focuses on the role of lipids in cytokinesis. Cells undergo dramatic shape changes during cytokinesis. The roles of the plasma membrane and its lipids are poorly understood during this process, perhaps because traditionally research has been more focused on the actin cortex. I am interested in unraveling which lipids are involved in cytokinesis and in understanding their functions. In this paper, we review small molecules and metabolites that affect cytokinesis. In addition to small molecule inhibitors, we focus on lipids that have been linked to cytokinesis so far, as well as the long-forgotten polyamines and calcium. We hope that this perspective will help to improve our understanding of a basic question of cell biology: How do cells divide? (Read Atilla-Gokcumen's article, DOI: 10.1021/cb900256m)

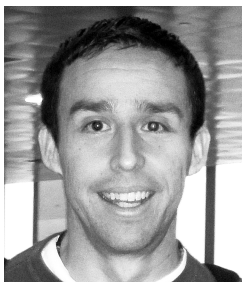

Image courtesy of Adam Castoreno.

Adam Castoreno

Current position: Dana Farber Cancer Institute, Department of Cancer Biology, and Harvard Medical School, Department of Biological Chemistry and Molecular Pharmacology, Postdoctoral Fellow with Prof. Ulrike Eggert
Education: New Mexico State University, B.S. in microbiology, 2000; Harvard University, Ph.D. in biology with Prof. Axel Nohturfft, 2005
Nonscientific interests: Running, triathlon, hiking, camping

My research interests are focused on discovering small molecules that target the Rho pathway, a central regulator of cellular processes involving the actin cytoskeleton, including migration, adhesion, and cytokinesis, the last step in cell division. Currently no specific inhibitors of the Rho pathway exist apart from the ROCK inhibitors. We have recently developed a chemical variant of a classical modifier screen to discover small molecules that target the Rho pathway in cytokinesis. Promising compounds from our screen inhibit cellular functions of the Rho pathway and likely target diverse proteins within the pathway. These compounds will be important tools to dissect Rho signaling regulation. In this review, we discuss how small molecules have been successfully used to probe the mechanisms of cytokinesis. (Read Castoreno's article, DOI: 10.1021/cb900256m)

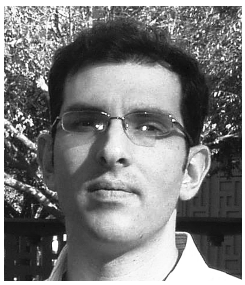

Image courtesy of Stuart L. Jeung.

Ari Firestone

Current position: Stanford University School of Medicine, Department of Chemical and Systems Biology, Ph.D. Candidate with Prof. James K. Chen
Education: Carleton College, B.A. in biology, 2001
Nonscientific interests: Cycling, wine, ultimate frisbee, cooking

The ability of genetically identical, undifferentiated, embryonic cells to properly adopt distinct fates is perhaps the most critical aspect of metazoan development. Several highly conserved signaling pathways, such as Hedgehog signaling, play a major role in accomplishing this remarkable feat, yet our understanding of and ability to chemically modulate these pathways is still incomplete. By searching for mechanistically novel chemical modulators of Hedgehog signaling and identifying their mechanism of action, our goal is to advance both the biological understanding of this pathway, as well as, providing a useful means of its manipulation for technological, medicinal, and experimental benefit. My graduate work in the Chen lab has been largely dedicated to these goals. (Read Firestone's article, DOI: 10.1021/cb900249y)

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Image courtesy of Randy Parker.

Randy Parker

Education: University of Central Oklahoma, Dr. Clark Ovrebo

Nonscientific interests: Music, sports, reading, arts and crafts

The Kohler lab develops new tools to study carbohydrate–protein interactions. Carbohydrates are major determinants of cellular and molecular interactions, yet these interactions remain poorly characterized because the binding events are typically transient and low affinity. Our group synthesizes carbohydrates containing photocross-linking functional groups. These photocross-linkers are metabolically incorporated into cellular glycoconjugates where they can covalently trap glycan-mediated interactions. My research focuses on sialidases: enzymes that hydrolyze terminal sialic acid residues from glycan chains. Sialidases have roles in cell proliferation, differentiation, and metastasis. I plan to use chemical tools to identify sialidase substrates and gain insight into sialidases' roles in normal and pathogenic processes. (Read Parker's article, DOI: 10.1021/cb9002514)

Image courtesy of Stephen Leonard.

Candice Paulsen

Education: B.S. in genetic biology, Purdue University, 2006; Doctoral studies at University of Michigan, 2006–present, advisor Kate Carroll

Nonscientific interests: Socializing with friends, going to musicals/concerts, traveling, reading

My graduate work involves using chemical tools to ask interesting and difficult biological questions about the roles that post-translational modification (PTMs) of cysteine residues play in regulating protein function and cell signaling. This review highlights the recent advances that have been made in the field of redox signaling. Mechanistic insights into signal-mediated reactive oxygen species (ROS) production and the development of tools and methods to detect specific cysteine PTMs have greatly expanded our understanding of how cells use ROS to regulate signaling events. Continued work in this field will underscore the importance of ROS production and cysteine modification in regulating normal biological processes and will demonstrate how dysregulation of these processes can promote disease. (Read Paulson's article, DOI: 10.1021/cb900258z)