Introducing our AUTHORS

Image courtesy of Everett Versteeg.

Kelly Aukema

Current position: Canadian Hemophilia Society Postdoctoral Fellow with Stephen Rader at the University of Northern British Columbia

Education: Butler University, B.S. in chemistry 1996; University of Wisconsin-Madison, Ph.D. in biomolecular chemistry, with Catherine Fox, 2003; University of Wisconsin, Madison, WI, Department of Bacteriology, Postdoctoral Researcher with Katrina Forest 2003–05

Nonscientific interests: Exploring life with two young sons, hiking, mountain biking, cross-country skiing

I am fascinated by molecular machines and understanding how they work. Molecular machines present both exceptional challenges and opportunities for mechanistic discoveries. I enjoy studying fundamental biological processes with the potential for practical applications such as the development of antimicrobial agents or chemotherapies. Currently, my work focuses on dissecting one of the largest and most dynamic, molecular machines known, the spliceosome. The identification of small molecule inhibitors of the yeast spliceosome provides tools that can be used in combination with powerful genetic and biochemical techniques available in yeast to advance our mechanistic understanding of pre-mRNA splicing. Furthermore, since some inhibitors of the yeast (*S. cerevisiae*) spliceosome do not adversely affect human (HeLa) cell splicing, the splicing cycle may serve as a target for new antifungal agents. (Read Aukema's article, DOI: 10.1021/cb900090z)

Image courtesy Mario Cargol Pesetas.

Goncalo Bernardes

Current position: Marie-Curie Postdoctoral Fellow in the laboratories of Professor Peter H. Seeberger at the Department of Biomolecular Systems, Max-Planck Institute of Colloids and Interfaces, Germany

Previous position: Postdoctoral Fellow at the University of Oxford, mentor: Prof. Ben Davis (2008)

Education: Ph.D. in organic chemistry, University of Oxford, United Kingdom (2008) with Prof. Ben Davis; M.Chem., Faculty of Sciences, University of Lisbon, Portugal (2004)

Nonscientific interests: Traveling, socializing with friends, skiing

During the past years, my research has focused on reaction engineering for the site-specific modification of proteins. After completion of my Ph.D. in the summer of 2008 in Oxford, I moved to the laboratories of Professor Peter H. Seeberger at ETH in Zürich as a Marie-Curie Postdoctoral Fellow. In January 2009, I moved with the Seeberger Lab to Berlin to a new department in the Max-Planck Institute directed by Professor Seeberger. Here I have been tackling problems of carbohydrate-based vaccine strategies and also developing new drug-delivery systems. This Review highlights recent advances in the synthesis of complex oligosaccharide structures and novel methods to access pure, well-defined glycoproteins. The new tools reviewed have the potential to be the basis for greater advances for the use of glycans in therapeutics and diagnostics. (Read Bernardes' article, DOI: 10.1021/cb900014n)

Image courtesy of Isabelle Michaud.

Bastien Castagner

Current position: Postdoctoral experience, ETH, Zürich, 2009–present Research Advisor: Dr. Karl-Heinz Altmann, Synthesis of Epothilones analogues

Education: Ph.D. in chemistry, Columbia University, New York, 2004; B.Sc. chemistry, University of Montreal, Montreal, 1999; Postdoctoral experience, ETH, Zürich, 2005–2008 Research Advisor: Dr. Peter H. Seeberger, Automated solid-phase synthesis of complex carbohydrates; Summer internship, MethylGene Inc., Montreal, 1999 Research Advisor: Dr. Réjean Ruel, Medicinal chemistry: synthesis of small molecules inhibitors; Undergraduate research, University of California, Berkeley, 1998 Research Advisor: Dr. Clayton H. Heathcock; Summer internships, Merck Frosst Canada Inc., Montreal, 1997 Research Advisor: Dr. Réjean Ruel; Undergraduate research, University of Montreal, Montreal, 1996 Research Advisor: Dr. William D. Lubell

Nonscientific interests: Cooking, traveling, movies

I am interested in the efficient synthesis of complex molecules and their biological relevance. During my Ph.D., I worked on the synthesis of the phomoidrides natural products. I then moved on to automate the synthesis of oligosaccharides, with the aim of providing crucial material to probe important biological processes on a molecular-level. This Review summarizes recent and exciting new developments in both oligosaccharide synthesis and protein modifications that when combined will allow the synthesis of homogeneous glycoproteins that are essential tools in glycobiology. (Read Castagner's article, DOI: 10.1021/cb900014n)

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Image courtesy of Dianjun Chen.

Dianjun Chen

Current position: Research Scientist, Acme Bioscience, Palo Alto, CA. 2008 - present
Education: Sichuan University, M.S. in chemistry, 1997; Texas Tech University, Department of Chemistry and Biochemistry, Ph.D. in organic chemistry, 2005; Texas A&M University, Department of Chemistry, Postdoctoral Researcher with Professor Kevin Burgess, 2005–2007
Nonscientific interests: Reading, playing soccer and tennis

My research at Texas A&M University involved in two major fields. One is using heterocyclic structures to mimic protein secondary structure, *e.g.*, β-turn. Monomers derived from natural amino acids were first synthesized and they were then combined together to form bivalent peptidomimetics together with a fluorescent probe or other handles. Hundreds of compounds were made in this way and were tested on different assays. Another research field is making N-heterocyclic carbene–iridium complexes and using them as catalysts for the asymmetric hydrogenation of largely unfunctionalized alkenes. Currently I am working on small molecular drug discovery in industry, targeting HCV disease. (Read Chen's article, DOI: 10.1021/cb9001415)

Image courtesy of Ikinder Chohan.

Kamalprit Chohan

Current position: Just moved to the lower mainland and looking into doing further research in biochemistry
Education: University of Northern British Columbia, Prince George, B.Sc. in chemistry, 2005; M.Sc. in chemistry with Profs. Kerry Reimer and Stephen Rader, 2008
Nonscientific interests: Music, hanging out with my family, watching bollywood movies, playing badminton

The areas of chemistry which interest me the most are organic and biochemistry, therefore, in my graduate work I chose a research question that bridged the two disciplines. My graduate research involved studying the effect of small organic molecules on pre-mRNA splicing. I was most interested in knowing whether specific classes of small molecules were targeting certain RNA splicing complexes. In the future I hope to carry on, directly or indirectly, studying the affects of small molecules on other important biological systems. (Read Chohan's article, DOI: 10.1021/cb900090z)

Image courtesy of Parag Patwardhan.

Parag Patwardhan

Current position: Postdoctoral Research Scholar in the laboratory of Dr. Marilyn Resh, Dept. of Cell Biology, Memorial Sloan Kettering Cancer Center, New York
Education: M.Sc. in microbiology, University of Pune, June 2000; Ph.D. in molecular and cellular biology with Dr. W. Todd Miller, Dept. of Physiology and Biophysics, Stony Brook University, New York, 2001–2007
Nonscientific interests: Music, movies, sports

My research interests are primarily in the area of signal transduction by tyrosine kinases. Currently in Dr. Marilyn Resh's lab at Sloan Kettering, I am studying the role of N-myristoylation in Src kinase activity and stability. Graduate research with Dr. Todd Miller at Stony Brook focused on phosphorylation of adaptor protein p130Cas by Src. Cas has a unique substrate domain with multiple YXXP motifs that serve as Src substrates. Our previous work demonstrated that none of the individual YXXP motifs were critical for processive phosphorylation by Src but phosphorylation of multiple YXXP motifs was needed for cell migration response. The role played by the number and arrangement of these YXXP motifs was, however, not clear. In this paper, using a novel synthetic approach, we have tried to determine whether any particular number and arrangement of the YXXP motifs is preferred for phosphorylaiton by Src. (Read Patwardhan's article, DOI: 10.1021/cb900059f)

Introducing our AUTHORS

Image courtesy of Sarah M. Richer.

Sarah M. Richer

Education: Wheeling Jesuit University, Advisor Professor Mary Scott Railing; Graduate Institution: Indiana University, Advisor Professor Martha G. Oakley

Nonscientific interests: Playing with my daughter, soccer, hiking, watching movies (when my daughter cooperates), wakeboarding, hanging out with family and friends

Phosphoinositides are essential to a wide variety of cellular functions. However, the means by which these lipids achieve binding specificity is incompletely understood. The protein profilin is regulated by the phosphoinositide PI(4,5)P_2 through multiple contacts. Unfortunately, lipid structures that target multivalent proteins present many challenges. My focus has been on the development of methods to aid in the characterization of such proteins. This paper details the preparation of a multivalent analogue of PI(4,5)P_2 micelles that alleviates many of the issues associated with lipid structures. We show that this analogue binds profilin with an affinity indistinguishable from that of PI(4,5)P_2. These studies have provided key information for understanding the way PI(4,5)P_2 regulates profilin, but also illustrate methods widely applicable for the study of additional protein−PI interactions. (Read Richer's article, DOI: 10.1021/cb900121r)

Image courtesy of Nichole K. Stewart.

Nichole K. Stewart

Current position: Graduate student in chemistry, Ph.D. candidate with Prof. Martha G. Oakley, Indiana University, Bloomington, IN

Education: B.S. chemistry (Biochemistry emphasis), Cum Laude from Saint Mary's College in Notre Dame, IN 2002

Nonscientific interests: Music, cooking, reading, movies

My interest in organic and biological chemistry began while preparing precursor compounds for the synthesis of our PIP_2 PAMAM dendrimers. Being able to use synthetic techniques to help solve biochemical questions is appealing because it presents an interesting use for created compounds. My interests also include comparing the recognition of synthetic compounds versus natural ligands by cellular biomolecules, thus presenting a new way for biochemical interactions to be manipulated. In the future, I would like to expand my research interests by applying fundamental organic techniques to enhance the understanding of a broader range of biochemical systems. (Read Stewart's article, DOI: 10.1021/cb900121r)