Introducing our AUTHORS

Image courtesy of Marcel Bernard.

Elise Bernard

Current position: Royal College of Surgeons in Ireland, Molecular and Cellular Therapeutics, Postdoctoral Researcher with Niamh Moran

Education: University of Besançon, France, B.S. in chemistry, 1998; Ecole Nationale Supérieure des Industries Chimiques, Nancy, France, Ph.D. in chemistry with Dr. Régis Vanderesse, 2003

Postdoctoral work: University of Amsterdam, The Netherlands, Department of Chemistry, Postdoctoral Researcher with Prof. Henk Hiemstra, 2004; Royal College of Surgeons in Ireland, Department of Pharmaceutical Chemistry, Postdoctoral Researcher with Dr. Marc Devocelle and Prof. Niamh Moran, 2005–2007 and 2008–present

Industrial work: Theraptosis S.A., R&D Chemist, 2007–2008

Nonscientific interests: Playing piano, traveling, learning foreign languages

My research at the RCSI has focused on using synthetic cell-permeable peptidic derivatives to modulate platelet responses. In particular, I studied peptide inhibitors of platelet adhesion and peptide modulators of the platelet-specific glycoprotein GPIIbIIIa, which is central to this current study. The cell-permeable lipopeptides that we designed, synthesized, and tested are interesting tools to better understand platelet behavior, and they can be the starting point of potential therapeutic strategies to fight cardiovascular diseases. (Read Bernard's article, DOI 10.1021/cb8002623.)

Image courtesy of Wesleigh Edwards.

Wesleigh Edwards

Current Position: North Carolina State University, Department of Chemistry, Ph.D. candidate with Prof. Alexander Deiters

Education: Virginia Polytechnic Institute and State University, B.S. in biochemistry, 2005

Nonscientific interests: Triathlons, sailing, crossword puzzles

My graduate research involves the development of methodologies to regulate gene function with light. Many conventional techniques employed to perturb gene function lack spatial and temporal specificity. An alternative approach lies in the photochemical regulation of biological processes, whereby a light-removable protecting group, termed caging group, is installed on a biological macromolecule or regulatory small molecule, inhibiting its nascent function. Irradiation with non-damaging UV light then removes the caging group and restores activity. Since light irradiation can be precisely regulated, decaging can be achieved with a high level of spatial and temporal control. In this report, I demonstrate that a photocaged Cre recombinase enzyme can be expressed in bacterial cells and that its activity can be regulated with light, affording tight spatiotemporal control over DNA recombination and thus gene function. (Read Edwards' article, DOI 10.1021/cb900041s.)

Image courtesy of Jillian Gunther.

Jillian Gunther

Education: Chemistry University of Illinois at Urbana–Champaign, B.S. in bioengineering, 2004; University of Illinois at Urbana–Champaign, Ph.D. in chemistry with Dr. John Katzenellenbogen, 2009

Nonscientific interests: Traveling, outdoor activities

Therapeutic block of nuclear receptor (NR) action has conventionally been achieved with compounds that bind the ligand binding site and cause a conformational change that precludes coactivator protein binding. As an alternative mechanism of inhibition, we have sought small molecules that act as coactivator binding inhibitors (CBIs) by directly competing with SRC3 for interaction with liganded NRs. The androgen receptor (AR) is an attractive target for this type of inhibition due to its accommodation of larger, hydrophobic residues comprising the coactivator interaction sequence, which may allow selectivity for AR among other NRs. We feel that CBIs could be interesting mechanistic probes of AR action and might also provide an alternative, more durable endocrine therapy for prostate cancer, where cellular adaptations have produced resistance to known anti-androgens. (Read Gunther's article, DOI 10.1021/cb900043e)

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Image courtesy of Natalie Campbell.

Daniel Larson

Current position: Albert Einstein College of Medicine, Gruss-Lipper Biophotonics Center, Department of Anatomy and Structural Biology, Research Fellow with Profs. Robert H. Singer and John S. Condeelis
Education: The Ohio State University, B.S. in physics, 1997; Cornell University, Ph. D. in biophysics with Prof. Watt W. Webb, 2004
Nonscientific interests: Music, triathlons

My primary research interest is the development and application of light microscopy methods for observing and manipulating dynamic processes at the level of single molecules in individual living cells. Photomanipulation provides a powerful tool for directly controlling intracellular activities, and my collaborators and I have found that the quantitative control of the activity of biomolecules often reveals unexpected layers of regulation and dynamic responsiveness. My current research is focused on understanding the mechanisms of gene expression at the level of individual RNAs in single cells. I use a variety of fluorescence and biochemical approaches, including fluorescence correlation spectroscopy, single particle tracking and photo-uncaging, in model systems ranging from yeast to mice. (Read Larson's article, DOI 10.1021/cb900036s.)

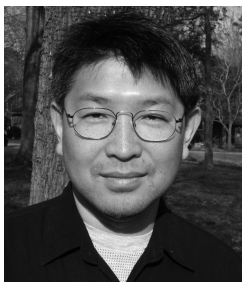

Image courtesy of Chin-Ying Wang.

Hsien-Ming Lee

Current Position: University of North Carolina at Chapel Hill, Departments of Chemistry, Medicinal Chemistry & Natural Products, and Pharmacology, Postdoctoral Fellow with Prof. David S. Lawrence
Education: National Chiao Tung University (Taiwan), B.S. in Applied Chemistry with Prof. Hsin-Tien Chiu, 1995; University of Alabama in Huntsville, M.S. in Chemistry with Prof. James K. Baird, 1998; Purdue University, Ph.D. in Chemistry with Prof. Jean A. Chmielewski, 2004
Postdoctoral work: Albert Einstein College of Medicine, Department of Biochemistry with Prof. David S. Lawrence, 2004–2007
Nonscientific interests: Chinese history and literature, watching movies, snowboarding

Photons are a useful orthogonal stimulus to trigger a biochemical reaction with a high spatial and temporal resolution. My postdoctoral research has focused on the design and synthesis of a new generation of "caged" protein kinases, where both the activity and the fluorescence are simultaneously unleashed upon photo-irradiation. These chemically modified proteins will be used to correlate enzyme activity with cellular behavior at specific location within a cell. In this Review we've summarized the recent chemical advances, biological applications, and instrumental requirements for using light-responsive bioreagents and have argued for enhanced collaboration between chemists and biologist to address complex biological questions. (Read Lee's article, DOI 10.1021/cb900036s)

Image courtesy of Vince Carroll.

Alexander Parent

Current Position: University of Illinois at Urbana–Champaign, Department of Chemistry/Medical Scholars Program, MD/PhD candidate with Prof. John A. Katzenellenbogen
Education: Brigham Young University, B.S. in chemistry, 2005
Nonscientific Interests: Cooking, gardening, home remodeling

Although many notable attempts have been made to directly disrupt protein–protein interactions by targeting surface binding sites, this approach remains a frustratingly difficult path to protein inhibition. In an effort to add to this field, we have used a structure-based model to create small-molecules that selectively target the surface coactivator binding groove of the androgen receptor over that of the estrogen receptor. What is likely most significant about this work is not that we are able to attain selectivity among nuclear receptors, but that this is accomplished by changing the appending substituents on a common core in such a way that mimics the biologically relevant coregulator proteins. In both instances large bulky side chains are only tolerated by the androgen receptor coactivator groove, while molecules with smaller alkyl chains bind to both receptors. (Read Parent's article, DOI 10.1021/cb900043e)

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Image courtesy of Laavanya Parthasarathi.

Laavanya Parthasarathi

Current Position: Royal College of Surgeons in Ireland, Cancer Genetics Group, Postdoctoral Researcher with Prof. Raymond L. Stallings

Education: B.Sc. in Chemistry, 1994; M.Sc. in Chemistry, 1996; Ph.D. in Structural Chemistry, 2003, India

Postdoctoral work: ICGEB, Trieste, Italy, Postdoctoral Researcher, 2002–2003; RCSI, Dublin, Ireland, Postdoctoral Researcher, 2004–2005 and 2008–present; UCD, Dublin, Ireland, Postdoctoral Researcher, 2005–2007

Nonscientific interests: Yoga, meditation, reading books, classical music

I have worked on platelet biology and peptide interactions since 2004 and have modeled peptide interactions with platelet proteins to determine a molecular hypothesis to help explain the dynamics of protein interaction during cellular activation. My current research involves studying the role of protein tyrosine phosphatase delta (PTPRD) in neuroblastoma pathogenesis. As part of this project I am involved in the elucidation of protein interaction networks of interest in neuroblastoma and other neuronal tumors. (Read Parthasarathi's article, DOI 10.1021/cb8002623)