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ANNA LECHNER

Image courtesy of Jon Moyer Photography.

Current position: (starting July 2013) Postdoctoral researcher, Synthetic Biology Group at the Joint Bioenergy Institute (JBEI), Advisor: Prof. Jay Keasling.

Education: Ph.D. in Biotechnology, Heidelberg University (2012); Advisors: Prof. Mathias Hafner and Prof. Bradley Moore. Biotechnology Diploma from Mannheim University of Applied Sciences, Germany (2008).

Nonscientific interests: Exploring cities, countries and cultures, playing beach soccer/volleyball, and practicing yoga

My Ph.D. work focused on the regulation and genetic manipulation of polyketide biosynthesis. The recent unveiling of several crotonyl-CoA carboxylase (CCR)-dependent precursor pathways has a significant impact on the bioengineering of structurally diverse polyketides. Our latest publication explores the modular application of one such newly recognized extender unit. In this example, we genetically engineered the 36-Methyl-FK506 congener by exploring the natural substrate flexibility of its mulitmodular megasynthase. At the same time we demonstrated the "plug and play"-type usability of the CCR-encoding gene cassette. (Read Lechner's article; DOI: 10.1021/sb3001062)

MANUEL MONTABÁN-LÓPEZ

Image courtesy of Manuel Montabán-López.

Current position: Postdoctoral researcher in the Molecular Genetics Group, University of Groningen. Advisor: Prof. Oscar P. Kuipers

Education: Ph.D. in Biology (2008), University of Granada, Spain. Supervisors: Prof. M. Maqueda, E. Valdivia, M. Martínez-Bueno. Bachelor's in Pharmacy (2003), University of Granada, Spain.

Nonscientific interests: Reading, cinema, music, traveling

My main interest, right from my undergraduate studies, is in antimicrobials. Therefore, I started my Ph.D. on bacteriocins, particularly AS-48, and the impact of circularization in this interesting enterocin. Currently, I am working on different bacteriocins termed lantibiotics, and the application of synthetic biology to produce novel antimicrobial molecules by hypermodification, combinatorial approaches, and multivalency principles. Lantibiotics are very stable and potent antimicrobial compounds that undergo extensive posttranslational modifications. This paper represents the first approach to produce lantibiotics *in vivo* that contain posttranslational modifications that are not present in the native molecule, opening an exciting field for the combination of designed modifications in bioactive peptides. (Read Montabán-López's article; DOI: 10.1021/sb3001084)

DONGDONG MU

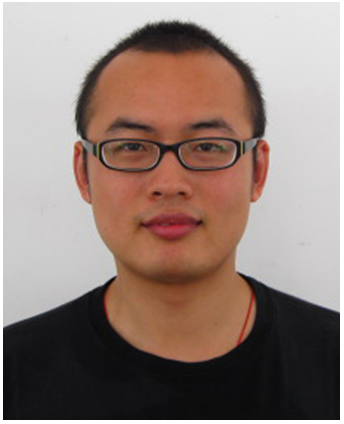

Image courtesy of Dongdong Mu.

Current position: Ph.D. Student at Molecular Genetics Department of the University of Groningen, Groningen, The Netherlands. Advisor: Prof. Oscar P. Kuipers

Education: Bachelor/Master degree in Biology from Chongqing University, China.

Nonscientific interests: Running, watching movies, playing poker

My Ph.D. project is to increase the chemical diversity of lantibiotics (mainly the model lantibiotic nisin) by introducing single/multiple modification enzyme(s) found in other bacteriocin systems belonging to both lantibiotics and non-lantibiotics. Lantibiotics are small peptides undergoing a series of posttranslational modifications. They display high antibacterial activity against Gram-positive bacteria. They are promising candidates in the fight against multidrug-resistant pathogens. In our research, we expect to

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design lantibiotics with more modifications/novel activity by using the combination of different modification enzymes. Meanwhile we aim to describe the substrate specificity of the enzyme we choose. (Read Mu's article; DOI: 10.1021/sb3001084)

AUKE J. VAN HEEL

Image courtesy of Marjanne van Heel-Foljersma.

Current position: Ph.D. Candidate, Department of Molecular Genetics, University of Groningen, Groningen, Netherlands. Advisor: Prof. Oscar P. Kuipers

Education: B.S. and M.Sc. Molecular biology and biotechnology, University of Groningen, Netherlands

Nonscientific interests: Sports, photography, and board games

My Ph.D. project aims to produce novel antimicrobial lanthionine containing peptides (lantibiotics). By genome mining many clusters involved in the biosynthesis of these genome encoded post-translationally modified peptides can be identified. To go from prediction to activity we employ a synthetic biology approach to "wake up" "sleeping" lantibiotics. We combine the biosynthesis cluster of the model lantibiotic nisin (NisBTC) with the novel predicted lantibiotic (LanA) to produce novel modified peptides. In the paper published in this issue we show that we can extend this *in vivo* system with other additional enzymes from the biosynthesis clusters other lantibiotics. This extended modular *in vivo* system enables us to produce a wider variety of (novel) modified (antimicrobial) peptides. (Read van Heel's article; DOI: 10.1021/sb3001084)

BIJAN ZAKERI

Image courtesy of Bijan Zakeri.

Current position: Post-Doctoral Associate, Research Laboratory of Electronics, MIT Synthetic Biology Center, Massachusetts Institute of Technology. Advisors: Dr. Timothy K. Lu and Dr. Peter A. Carr.

Education: Ph.D. in Biochemistry as a Clarendon Scholar and Born Scholar from Oxford University. Advisor: Dr. Mark Howarth. M.Sc. in Chemical Biology from McMaster University. Advisor: Prof. Gerard D. Wright. H.B.Sc. in Biochemistry and Biomedical Sciences from McMaster University. Advisor: Prof. Karen L. Mossman.

Nonscientific interests: I enjoy traveling internationally and learning about new cultures.

My scientific interests include using interdisciplinary approaches to develop innovative technologies, as reflected in my expertise in gene therapy, chemical biology, and drug development. More recently, during my Ph.D. I focused on bionanotechnology, where I invented the isopeptag and SpyTag covalent tagging technologies. Currently, my research focuses on genomic engineering of biological circuits, where I am exploring how synthetic biology technologies can be more readily transferred to industry. Accordingly, this paper reflects my experiences and provides a broad overview of the interdisciplinary nature of synthetic biology, and how this can be utilized for developing new strategies for antimicrobial discovery. It explores the engineering of a variety of biological platforms for the development of small molecule, peptide, and nontraditional antimicrobial therapeutics. (Read Zakeri's review; DOI: 10.1021/sb300101g)

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