Nonscientific Interests. Big fan of sports and travel; active biker, golfer and skier; comedy and science fiction enthusiast.

I believe that time and resources are the only factors limiting scientific progress. Therefore, I am passionately engaged in engineering efficient new tools that both enhance the availability of scientific models for research and accelerate our understanding of biology. While engineered nucleases have recently made genome targeting enormously accessible, genome editing strategies are overly involved and still quite limited in scale. With these ideas in mind, the work presented here demonstrates the utility and great potential of a new genome editing platform, capable of eliminating a major bottleneck to the design and implementation of numerous high-value synthetic biology projects. In future work, I hope to expand upon these and other findings through constructing novel models of disease and exciting new research tools. (Read Brown's article; DOI: 10.1021/acssynbio.6b00056).

PATRICIA CALERO

Patricia Calero

Current Position. Ph.D., Department of Bacterial Cell Factories at Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark Hørsholm, Denmark. Advisors: Prof. Alex T. Nielsen and Dr. Sheila I. Jensen.

Education. M.Sc. in Industrial, Environmental and Food Biotechnology, University Pablo de Olavide, Seville. Advisor: Prof. Fernando Govantes.

Nonscientific Interests. I have a great interest in graphic design, painting and music. I also enjoy traveling and practicing sports like yoga and pilates.

My research is focused in finding solutions to the toxicity generated by the accumulation of chemicals in bacterial cell factories. For this purpose I work on the development of tools to increase the production of biochemicals in the soil bacteria *Pseudomonas putida* as well as on the identification of its natural mechanism of tolerance toward industrially relevant chemicals. *P. putida* strains possess a characteristic physiology that makes them able to tolerate a wide range of chemical compounds. By understanding and exploiting such characteristics we can use these strains for the production of very toxic chemical compounds. This will help to the improvement of the efficiency of cell factories, leading to a more sustainable chemical production industry. (Read Calero's article; DOI: 10.1021/acssynbio.6b00081).

SEBASTIAN CASTILLO-HAIR

Sebastian Castillo-Hair

Current Position. Ph.D. Candidate, Bioengineering Department, Rice University. Advisors: Dr. Jeffrey Tabor, Dr. Oleg Igoshin.

Education. B.Sc. In Mechatronic Engineering, Universidad Nacional de Ingenieria, Peru.

Nonscientific Interests. Sports, singing.

My research is focused on reverse-engineering natural gene networks involved in bacterial decision-making, with an emphasis on dynamics. For example, *B. subtilis* differentiate into metabolically inert spores upon starvation. The decision to differentiate is taken using intra- and extracellular information, which has been shown to be encoded in the temporal dynamics of gene expression and protein activity. Our lab previously published a method to control gene expression dynamics using light-sensing two-component systems. I use these systems to introduce time-varying perturbations to gene networks, study their response, and draw conclusions about their underlying design principles. My research has also resulted in the development of hardware for high-throughput optogenetics experiments, as well as software for gene expression analysis, particularly using flow cytometry. (Read Castillo-Hair's article; DOI: 10.1021/acssynbio.5b00284).

DANIEL A. CHARLEBOIS

Mariola Szenk

Current Position. Postdoctoral Institution/Advisor: Laufer Center for Physical and Quantitative Biology at Stony Brook University/Prof. Gábor Balázsi.

Education. Graduate Institution/Degrees/Advisor: Ottawa Institute of Systems Biology at University of Ottawa/M.Sc. Physics and Ph.D. Physics/Prof. Mads Kærn; Undergraduate

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Institution/Degrees: University of Calgary/B.Sc. Biological Sciences and B.Sc. Physics with Applied Mathematics Minor.

Nonscientific Interests. I enjoy working on American muscle car restoration and modification, playing acoustic guitar, and building salt water aquariums.

My research focuses on developing mathematical models and population dynamics algorithms to study how nongenetic phenotypic variability enhances antimicrobial drug resistance. I also perform microbiology/evolution experiments in yeast to investigate gene network evolution in fluctuating drug environments. The present work is an example of how quantitative models and wet-lab experiments can be combined to provide new insights into the dynamics of biological systems. Namely, we were able to use modeling to predict how ABC efflux pumps affect synthetic gene circuit function, and generate a hypothesis for the counterintuitive finding that efflux pumps can increase dose−response sensitivity at low inducer concentrations. Looking forward, I plan to continue to use the tools of synthetic biology to study evolution, and investigate how the dynamics of synthetic gene circuits are affected by the extracellular environment. (Read Charlebois' article; DOI: 10.1021/acssynbio.5b00154).

JUNCHEN DIAO

C. Spitzenberger

Current Position. Founder and CEO of JCBiomed LLC.

Education. Ph.D. in Biostatistics, Bioinformatics and Systems Biology, Graduate School of Biomedical Sciences at MD Anderson Cancer Center/UTHealth, Advisor, Dr. Gabor Balazsi; B.S. in Biology, Wuhan University, China.

Nonscientific Interests. Meditation, swimming, reading, connecting and inspiring people.

Regulating gene expression noise with transcriptional gene circuits is has been on the minds of synthetic biologists. I became interested in regulating an active target gene (pump) which affects the regulatory elements in the gene circuits was the first attempt in yeast cells. With our collaborators, we predicted the pump gene expression pattern with stochastic simulations and verified them with biological experiments. This has many potential applications. First, our work provided an example of quantitatively understanding a pathway that regulates an active target gene. Such pathways are common in natural systems. Second, similar systems can be used in biomaterials productions, such as biofuels and drugs/vaccines. Production of such molecules can be toxic to the host cells and therefore reduce their fitness and production rate. A feedback-regulated pump that transports these molecules from cytoplasm out provides an alternative model with controllable efflux and toxicity. (Read Diao's article; DOI: 10.1021/acssynbio.5b00154).

ARNOLD J. M. DRIESSEN

Zernike Institute of Advanced Materials

Current Position. Full Professor in Molecular Microbiology, University of Groningen, University of Groningen.

Education. Ph.D. at the University of Groningen, Department of Microbiology (Supervisor Prof. Dr. W.N. Konings) cum laude; Undergraduate studies Biology at the University of Groningen, The Netherlands.

Nonscientific Interests. Traveling, nature photography and filming, outdoors, cooking.

The introduction of the highly efficient CRISPR/Cas tool for filamentous fungi is a major step forward in the maturation of the genetic toolbox for these organisms. Filamentous fungi can be used as cell factories for the production of secondary metabolites and proteins. Now with CRISPR/Cas it will be possible to quickly tailor the genome in engineering projects, such as the introduction of genomic mutations, the deletion of complete genes and even the introduction of foreign genes while maintaining full control over selection markers or even avoiding such markers which unfortunately are still limited in filamentous fungi. By having a choice of plasmid or protein-delivery based methods for the introduction of Cas9, maximum versatily is realized. (Read Driessen's article; DOI: 10.1021/acssynbio.6b00082).

SHEILA I. JENSEN

Sheila I. Jensen

Current Position. Postdoc at the Novo Nordisk Foundation, Center for Biosustainability, Technical University of Denmark. Advisor: Prof. Alex T. Nielsen

Education. M.Sc. in Biology from University of Copenhagen. Advisors: Prof. Michael Kühl and Prof. Anders Priemé. Ph.D. in Biology from University of Copenhagen. Advisors: Prof. Michael Kühl and Prof. Arthur R. Grossman. In my Ph.D. I further

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