

Nonscientific Interests. Music, mountain biking, and tennis.

My graduate work focused on using a bacterial system to identify an essential enzyme for human vitamin B12 metabolism. This gave me a background in biochemistry and molecular biology, with specific expertise in DNA, RNA, and peptide manipulations. I joined the Benner laboratory to apply those skills in the field of synthetic biology using unnatural nucleic acids; I have been involved in developing the manipulative and analytical technology needed to support the conversion of six-letter information encoded in DNA to give the corresponding information in encoding RNA as well as peptide synthesis *in vitro*. Further, I have been associated with Firebird Biomolecular Sciences, where I've overseen the production of enzymes in its catalog that deal with unnatural nucleic acids. (Read Leal's article; DOI: [10.1021/acssynbio.5b00276](https://doi.org/10.1021/acssynbio.5b00276)).

■ JIAZHANG LIAN



Jiazhang Lian

Current Position. Postdoc Research Associate, Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana–Champaign. Advisor: Huimin Zhao.

Education. Ph.D., Chemical Engineering, University of Illinois at Urbana–Champaign. Advisor: Huimin Zhao. B.S., Bioengineering, Zhejiang University, China. Advisor: Zhinan Xu.

Nonscientific Interests. Pingpong, music, reading, and playing cards.

My Ph.D. research was focused on the engineering of yeast cell factories for efficient production of fuels and chemicals *via* enhanced supply of precursor metabolites, especially acetyl-CoA. In this paper, we showed that the bacterial pyruvate dehydrogenase complex, one of the most efficient and energetic routes for acetyl-CoA generation in nature, could be functionally reconstituted in the cytosol of *Saccharomyces cerevisiae*. Through lipoylation machinery engineering, the requirement for the supplementation of expensive compounds such as lipoic acid was completely eliminated. Currently, I'm trying to develop CRISPR/Cas9 based genome-scale engineering methods to further improve the performance of the yeast cell factories, with the construction of an acetyl-CoA overproducing yeast strain as one of the goals. (Read Lian's article; DOI: [10.1021/acssynbio.6b00019](https://doi.org/10.1021/acssynbio.6b00019)).

■ ZHE LYU



Zhe Lyu

Current Position. Postdoctoral Research Associate, Department of Microbiology, University of Georgia. Advisor: Dr. William B. Whitman.

Education. Ph.D. Biotechnology of Resources and Environment, China Agricultural University, China (2012). Advisor: Dr. Yahai Lu; B.S. Biotechnology, Shandong University, China (2006).

Nonscientific Interests. Family, tennis, guitar, noodles, video games.

I have been working on many aspects of methanogenic archaea, including their physiology and ecology, since my doctoral studies. Working with a group of talented and passionate iGEM students, I am currently focused on developing tools for genetic engineering of *Methanococcus maripaludis*, an excellent model organism for methanogenic archaea. Because of its uniquely autotrophic and methanogenic metabolism, we are constructing *M. maripaludis* as a platform species for making high value biochemicals with an ultrasmall carbon footprint. As a proof of concept, we have demonstrated in this paper that a recombinant *M. maripaludis* strain could produce geraniol using H₂ and CO₂ when a synthetic geraniol synthase gene was heterologously expressed. In parallel, the same set of genetic tools has also enabled us to explore some fundamental molecular mechanisms for methanogenesis. Another unique feature of *M. maripaludis* is that it shares many genes with human in the information processing system. Therefore, our platform could also promote development of an archaeal model for certain human diseases. (Read Lyu's article; DOI: [10.1021/acssynbio.5b00267](https://doi.org/10.1021/acssynbio.5b00267)).

■ MICHAEL MAGARACI



Felice Macera

Current Position. Ph.D. Candidate, Department of Bioengineering, University of Pennsylvania. Advisor: Dr. Brian Chow.

Education. B.S.E. in Bioengineering from the School of Engineering and Applied Science and B.S. in Economics from the Wharton School at the University of Pennsylvania.

Nonscientific Interests. Rock climbing, electronic music, Engineers without Borders, and my cat Lux (named after the luxR gene).

I am broadly interested in engineering tools and applying them to elucidate the regulatory mechanisms of complex cellular processes. I am also passionate about growing the synthetic biology community through education and outreach initiatives. In this work, we created an educational toolbox to enable hands-on exploration of the modular regulation of gene expression *via* both experimentation and mathematical modeling. Through bacterial strain engineering and low-cost hardware development, we provide an infrastructure to ensure that the experiments scale in size from a few students to large classes, and intellectual scope from demo to multiweek modules. My current research seeks to build optogenetic tools for monitoring cellular physiology from the bottom up by combining *de novo* protein design with high throughput screening and directed evolution. (Read Magaraci's article; DOI: [10.1021/acssynbio.6b00057](https://doi.org/10.1021/acssynbio.6b00057)).

■ DMITRY NEVOZHAY



Ekaterina Berdnichenko

Current Position. Principal Scientist at Far Eastern Federal University, Vladivostok, Russia and Visiting Scientist at The University of Texas MD Anderson Cancer Center, Houston, TX.

Education. M.D., Vladivostok State Medical University, Vladivostok, Russia; Ph.D., Experimental Oncology, Maria Skłodowska-Curie Memorial Cancer Center, Warsaw, Poland and Institute of Immunology and Experimental Therapy, Wrocław, Poland. Advisors: Janusz Boratyński and Adam Opolski.

Nonscientific Interests. I enjoy traveling. One of my passions is photographing cities and interesting landscapes around the world.

My research interests are centered on using synthetic biology approach to study DNA damage repair pathways in eukaryotes, species bias in their functioning, and its relevance to genome modification and human cancers. These pathways, especially homologous recombination, play an important role in genome integrity maintenance. Deeper understanding of these pathways will benefit existing and emerging targeted genome editing technologies, in particular CRISPR/Cas9. I am also interested in studying factors affecting the degree of precision of gene expression in eukaryotes and using that knowledge to develop tunable systems for control of gene expression in eukaryotic cells. (Read Nevozhay's article; DOI: [10.1021/acssynbio.5b00154](https://doi.org/10.1021/acssynbio.5b00154)).

■ ALEX T. NIELSEN



Alex T. Nielsen

Current Position. Professor at The Novo Nordisk Foundation Center for Biosustainability, Technical University of Denmark.

Education. Ph.D. in Microbiology, Technical University of Denmark; M.Sc. in Chemical Engineering and Biotechnology, Technical University of Denmark.

Nonscientific Interests. Photography, archeology, traveling and sailing.

The main focus of my research is within the fields of metabolic engineering, systems and synthetic biology. I have a mixed industrial and academic background and focus on both applied and fundamental scientific questions. My laboratory currently works on developing novel tools and strategies for engineering microbial cell factories for the production of biochemicals and proteins. Several different bacterial hosts and novel production pathways are being pursued. Understanding and harnessing biological systems and circuits for solving relevant societal challenges is of key importance. I have published more than 30 papers and 18 patents/patent applications that have been cited more than 2400 times. (Read Nielsen's article; DOI: [10.1021/acssynbio.6b00081](https://doi.org/10.1021/acssynbio.6b00081)).

■ YVONNE NYGÅRD



Yvonne Nygård

Current Position. Postdoctoral fellow at DSM, Delft, The Netherlands.

Education. Postdoctoral fellow, University of Groningen and DSM Biotechnology Center, The Netherlands (Advisors: Arnold Driessen and Roel Bovenberg); Ph.D., VTT Technical Research Centre of Finland (Advisor: Prof. Merja Penttilä); M.Sc., Biotechnology at the University of Helsinki, Finland (Advisor: Prof. Annele Hatakka).

Nonscientific Interests. Outdoors and sports (skiing, biking, running), traveling, studying languages, reading and writing.