Anna Mathew, MBBS, graduated medical school in India and did further residency training in Internal medicine and Pediatrics at University of Illinois at Chicago. She completed her nephrology training in both adult and pediatric nephrology at University of California San Diego before joining as faculty at University of Michigan in 2011. She is passionate about managing patients with chronic kidney disease--specifically diabetic kidney disease, obesity related disease, and kidney diseases in young adults. She manages chronic kidney disease patients at the University of Michigan Nephrology Clinic at Taubman Center and dialysis patients at the University of Michigan Dialysis Clinic in the Livonia Center for Specialty Care.

Miriam S. Udler, M.D, Ph.D. is an endocrinologist at Massachusetts General Hospital (MGH) and an Assistant Professor at Harvard Medical School. Dr. Udler is the founding director of the MGH Diabetes Genetics Clinic, which provides genetic testing, counseling, and management to patients with monogenic forms of diabetes. She is also an Associate Member of the Broad Institute of MIT and Harvard. Dr. Udler's lab at

MGH and the Broad Institute studies the genetic contribution to metabolic diseases and clinical applications of genomic data, including using genetics to identify atypical forms of diabetes and to dissect disease heterogeneity. Dr. Udler received an A.B. degree cum laude in Applied Mathematics from Harvard College, an M.Phil.and Ph.D. in Genetic Epidemiology from University of Cambridge, and an M.D. degree from University of Massachusetts Medical School. She completed a residency in Internal Medicine at Mount Sinai Medical Center and Endocrinology fellowship at MGH.

Kıvanç Birsoy, Ph.D., received his undergraduate degree in Molecular Genetics from Bilkent University in Turkey in 2004 and his Ph.D. from the Rockefeller University in 2009, where he studied molecular genetics of obesity in the laboratory of Jeffrey Friedman. In 2010, he joined the laboratory of David Sabatini at the Whitehead Institute of Massachusetts Institute of Technology (MIT), where he combined forward genetics and metabolomics approaches to understand how different cancer types rewire their metabolism to adapt nutrient deprived environments. In 2015, he joined the Rockefeller faculty as an Assistant Professor. He received the Jane Coffin Childs Medical Fund Fellowship, Leukemia and Lymphoma Society Special Fellow award, Margaret and Herman Sokol Award, NIH Career Transition Award, Irma Hirschl/Monique Weill-Caulier Trusts Award, Sidney Kimmel Cancer Foundation Scholar Award, March of Dimes Basil O'Connor Scholar Award, AACR NextGen award for Transformative Cancer Research, Searle Scholar Award, Pew-Stewart Scholar Award, NIH Director's New Innovator Award and Pershing Square Sohn Prize.

BME SUMMER WORKSHOPS @ MICHIGAN

HIGHLIGHTING A TRADITION OF COLLABORATION AND COLLEGIALITY

The goal of the BME Summer Workshops @ Michigan series is to establish the University of Michigan in Ann Arbor as a place to gather, learn, and network – each summer – on important research topics in biomedical engineering. These workshops will provide a collaborative forum to present current research progress and discuss future research opportunities at the interface of engineering and medicine.

This interdisciplinary workshop on metabolism and precision medicine is scheduled for July 25-26, Thursday from 1:00 p.m. - 6:00 p.m. and Friday, from 9:00 a.m. - 4:30 p.m., in the NCRC Building 18 Dining Hall. It is co-sponsored by BME, Precision Health, the Michigan George M. O'Brien Kidney National Resource Center and the Department of Internal Medicine, Division of Nephrology.

Thank you to the following team for leading this event:

- Organizer Sriram Chandrasekaran, Associate Professor, Biomedical Engineering
- Co-organizer Subramaniam Pennathur, Chief and Norman Radin Professor, Internal Medicine-Nephrology, Associate Professor, Molecular and Integrative Physiology and Director, Molecular Phenotyping and Metabolomics Core
- Arika Lycan, Member Engagement Manager, Precision Health

BME SUMMER WORKSHOPS @ MICHIGAN

METABOLISM & PRECISION HEALTH: A BIOMEDICAL ENGINEERING WORKSHOP

Thursday and Friday, July 25-26
Thursday: 1:00-6:00 p.m.
Friday: 9:00 a.m.-4:30 p.m.
NCRC Building 18 Dining Room

Session Sponsors:

COLLEGE OF ENGINEERING & MEDICAL SCHOOL
BIOMEDICAL ENGINEERING
UNIVERSITY OF MICHIGAN

PRECISION HEALTH
UNIVERSITY OF MICHIGAN

George M.
O'Brien Kidney
National Resource Center
University of Michigan

SPECIAL GUEST SPEAKERS

Nathan Price, Ph.D., is Professor and Co-Director of the Center for Human Healthspan at the Buck Institute for Research on Aging, and also the Chief Scientific Officer of Thorne, a science-driven wellness company that serves 5 million+ customers and 47,000 health-care practitioners.

Previously he was CEO of Onegevity, an AI health intelligence company that merged with Thorne in 2021, and was Professor and Associate Director of the Institute for Systems Biology in Seattle for a decade.

He is co-author with biotechnology pioneer Lee Hood of a 2023 bestselling book, The Age of Scientific Wellness, published by Harvard University Press. In 2019, he was named one of the 10 Emerging Leaders in Health and Medicine by the National Academy of Medicine, and in 2021 he was appointed to the Board on Life Sciences of the National Academies of Sciences, Engineering, and Medicine. He was the chair of the NIH Study Section on Modeling and Analysis of Biological Systems (MABS) from 2018-2020.

Dr. Price is also a fellow of the American Institute for Medical and Biological Engineering and was the 2023 recipient of the Alexander & Mildred Seelig Award for science from the American Nutrition Association.

Ahmet Coskun, Ph.D., is a Bernie-Marcus Early-Career Professor of Biomedical Engineering at Georgia Institute of Technology and Emory University. Dr. Coskun is a systems biotechnologist and bioengineer, working at the nexus of multiplexed cell imaging and quantitative tissue biology.

He directs an interdisciplinary research team at the Single Cell Biotechnology and Spatial Omics Laboratory. Dr. Coskun received his postdoctoral training from the California Institute of Technology. He holds a Ph.D. degree from the University of California, Los Angeles.

He is a recipient of the NIH R35 MIRA Award 2023, BMES-CMBE Rising Star Award 2023, American Lung Association Innovation Award 2022, and Student Recognition of Excellence in Teaching: Class of 1934 CIOS Award, among other research and teaching awards. In addition, he leads outreach programs to engage K12 students and undergraduate students through BioCrowd Studio, an innovative crowd-sourcing program bringing together interactive virtual media, distributed biokits, and collaborative spatial discovery.

SCHEDULE OF EVENTS
JULY 25, 2024
SESSION 1: SYSTEMS BIOLOGY

INTRODUCTIONS AND OVERVIEW
- **Sriram Chandrasekaren, Ph.D.,** Associate Professor, University of Michigan
- **Mary-Ann Mycek, Ph.D.,** William and Valerie Hall Department Chair and Professor, University of Michigan

KEYNOTE ADDRESS
- **Nathan Price, Ph.D.,** Professor and Co-Director, the Center for Human Healthspan at the Buck Institute for Research on Aging, and Chief Scientific Officer, Thorne HealthTech
- **Ryan Schildcrout,** Ph.D. Student, Chandrasekaran Lab

BREAK
SESSION 2: NEW TECHNOLOGIES
- **Ahmet Coskun, Ph.D.,** Assistant Professor, Bernie Marcus Early Career Professorship, Georgia Tech
- **Navyateja Korimerla, Ph.D.,** Postdoctoral Fellow, Wahl Lab
- **Deepak Nagrath, Ph.D.,** Professsor, Biomedical Engineering, University of Michigan
- **Jennifer Baker,** Ph.D. Student, Dickson Lab
- **Gary Patti, Ph.D.,** Michael and Tana Powell Professor of Chemistry, Washington University

POSTERS & RECEPTION
JULY 26, 2024
SESSION 3: PRECISION HEALTH
KEYNOTE ADDRESS
- **Marian Walhout, Ph.D.,** Professor and Chair, Department of Systems Biology, Maroun Semaan Chair in Biomedical Research, UMass Chan Medical School
- **Ajay Bhat, Ph.D.,** Postdoctoral Fellow, Leiser Lab
- **Dominik Awad, Ph.D.,** Postdoctoral Fellow, Lyssiotis and Daley Labs
- **Miriam Udler, M.D., Ph.D.,** Assistant Professor of Medicine, Harvard Medical School

LUNCH & POSTERS
SESSION 4: METABOLIC DISEASES
- **Noah Thomas Hutchinson, Ph.D.,** Postdoctoral Fellow, Li Lab
- **Anna Mathew, MBBS,** Assistant Professor, Internal Medicine, Nephrology, University of Michigan
- **Saroj Chakraborty, Ph.D.,** Postdoctoral Fellow, Pennathur Lab
- **Jaie Woodard, Ph.D.,** Postdoctoral Fellow, Chandrasekaran Lab
- **Kivanç Birsoy, Ph.D.,** Chapman-Perelman Associate Professor, Head of Laboratory of Metabolic Regulation and Genetics, Rockefeller University

Gary Patti, Ph.D., is the Michael and Tana Powell Professor at Washington University in St. Louis, where he holds appointments in the departments of chemistry, genetics, and medicine. Dr. Patti is the Senior Director of the Center of Mass Spectrometry & Metabolic Tracing, Director of the Clinical Research Core in Medicine, Principal Investigator of the NIH Omics Production Center, Dean's Fellow of Advancement and Entrepreneurship, Director of Faculty Affairs, and the Chief Scientific Officer and Co-Founder of Panome Bio. Professor Patti's research focuses on developing and applying mass spectrometry-based technologies to enhance our understanding of human diseases such as cancer. Professor Patti has been recognized with numerous honors including the Biemann Medal from the American Society for Mass Spectrometry, the Midwest Award from ACS, the Innovation Award from the Academy of Science, and the inaugural NIH award for revolutionizing, innovative, and visionary environmental health research.

Marian Walhout, Ph.D., is the founding chair, Department of Systems Biology, at the University of Massachusetts Chan Medical School (UMass Chan), Worchester, and serves as the Maroun Semaan Chair in Biomedical Research, and Professor. In her laboratory, she and her research team are interested in metabolism, gene regulation, and how these processes affect each other. Their studies are relevant to nutritional science, microbiota research, and basic molecular mechanisms of metabolism and gene expression. She also has authored the "Handbook of Systems Biology," which was published by Elsevier and is widely available, and includes a chapter, "Netherlands in Ideas" (in Dutch). She is a Ph.D. graduate of Utrecht University, The Netherlands, and was a postdoctoral fellow at Massachusetts General Hospital, Boston.

Deepak Nagrath, Ph.D., is Professor, Biomedical Engineering, at the University of Michigan. His lab focuses on answering the question: "What is the role of tumor microenvironment in modulating cancer cell metabolism?" The Nagrath lab has developed several metabolic isotope tracing and 13C-based metabolic flux analysis techniques. Recently, the lab developed a metabolic systems biology approach, collateral lethal genes identification via metabolic fluxes (CLIM) to integrate genomic and transcriptomic data with machine learning and genome-scale metabolic flux analysis in ovarian cancer. Notably, the lab is focused on personalized metabolic therapy and circulating tumor cell organoids and tumor tissue slices in pancreatic, lung, and breast cancers. With extensive expertise in machine learning, metabolic flux analysis and systems metabolomics, the lab is building new quantitative models to measure flux in brain cancers and their microenvironment.