Into the Lipidverse

Symposium

Center for
LIPID RESEARCH
RUTGERS

November 11, 2022

Rutgers University
New Brunswick, NJ

New Jersey Institute for Food,
Nutrition, and Health

Into the Lipidverse

Rutgers Center for Lipid Research Symposium
November 11, 2022

Dear Colleagues,

We are pleased to welcome you to the seventh annual symposium of the Rutgers Center for Lipid Research (RCLR) entitled *"Into the Lipidverse."* We have brought together scientists outside the RCLR family who will share their knowledge, results, and insights into lipids. Additionally, a series of flash talks along with a poster session to highlight the research of students and postdocs. We are certain that you will find the presentations, which are designed to facilitate your interaction with other scientists, stimulating, informative, and enjoyable.

The RCLR is a center of the New Jersey Institute for Food, Nutrition, and Health that promotes multidisciplinary research on the biochemical, biophysical, cellular, and molecular mechanisms involved in lipid metabolism, and extension of these endeavors to elucidate the underpinnings of lipid-based diseases such as obesity, lipodystrophy, diabetes, and heart disease. Our research utilizes model organisms, cells, tissues, and state-of-the-art instrumentation.

The center fosters interaction among faculty, postdoctoral associates, and students by holding monthly research meetings where postdoctoral associates and students have the opportunity to present their research and receive constructive feedback in a warm and friendly atmosphere. Moreover, we provide small grants and travel support to students and postdoctoral associates. We hold an annual symposium and a monthly seminar series that brings renowned scientists to Rutgers. The RCLR founded the Big Ten Academic Alliance Lipid Symposium; this meeting brings lipid researchers at Big Ten schools to interact on a regular basis. In the end, we extend our research findings to address lipid-based diseases, thereby promoting optimum health.

In closing, we convey our appreciation to the IFNH for their support in bringing this symposium to fruition.

Sincerely,

George M. Carman

George M. Carman

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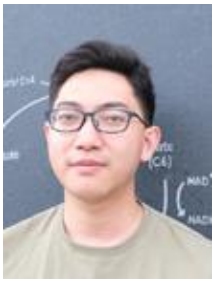
Organizing Committee

Anastasia Diolintzi
(Storch and Sidossis Labs)

Camille Duchamp
(Sampath Lab)

Ruta Jog
(Carman Lab)



Liming Wang
(Izgu Lab)

Laura Amador
(IFNH Administrative Assistant)

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Program

8:30 am	**Registration, coffee/tea, and poster set up**
9:00 am	**Laura Lawson and George M. Carman** *Welcome and introductions*
9:15 am	**Susan K. Fried** (Mount Sinai School of Medicine) *Fine-tuning adipose tissue growth and function to maintain metabolic health* Discussion
10:00 am	**Jessica Ferrell** (Northeast Ohio Medical University) *The bile acid receptor Tgr5 and high fat, high sugar-induced liver injury* Discussion
10:45 am	**Break**
11:15 am	**Jeremy Baskin** (Cornell University) *Click chemistry and optogenetics approaches to probe phosphatidic acid signaling* Discussion
12:00 pm	**Lunch and posters**
2:15 pm	**James Granneman** (Wayne State University) *Lipolysis regulation in the light of evolution* Discussion
3:00 pm	**Susmita Kaushik** (Albert Einstein School of Medicine) *Chaperone-mediated autophagy and regulation of lipid metabolism* Discussion
3:45 pm	**George M. Carman** (Rutgers University) *Awards and Carman Prize in Lipids*
4:00 pm	**Reception**

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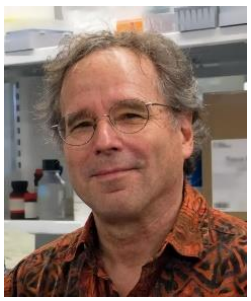
Speaker Biographies

Dr. Susan Fried is Professor and Director of Translational Adipose Biology and Obesity in the Diabetes, Obesity and Metabolism Institute at Mount Sinai School of Medicine. She earned a B.A. in Biology from Barnard College, an M.S. in Human Nutrition from the Institute of Human Nutrition, Columbia College of Physicians and Surgeons and a Ph.D. in Nutritional Biochemistry from Columbia University. After postdoctoral work in Endocrinology at Emory University, and in Lipid Biochemistry at the Medical College of Pennsylvania, she returned to NYC to become a Research Associate at the New York Obesity Center. After that she became Assistant Professor in the Laboratory of Human Behavior and Metabolism at Rockefeller University and then moved up the faculty ranks to Professor in the Dept of Nutritional Sciences at Rutgers University. At the University of Maryland School of Medicine, Dr Fried was a Professor and the founding director of a NIDDK-funded Clinical Nutrition Research Center/Nutrition Obesity Research Center and then served at the Director of the Boston NORC at the Boston University School of Medicine. Her work has been funded by the NIH and the American Diabetes Association, among others, for the past 40 years. Dr. Fried is a Fellow of the American Nutrition Society.

Dr. Jessica Ferrell is an Assistant Professor in the Department of Integrative Medical Sciences, College of Medicine at Northeast Ohio Medical University (NEOMED). She earned the M.S. degree from The University of Akron and Ph.D. degree in Neuroscience from Kent State University. Dr. Ferrell joined NEOMED as a postdoc in 2011, then as a Research Assistant Professor in 2015 and tenure-track Assistant Professor in 2022. Her long-term research goals are to study bile acid physiology and signaling within the context of alcoholic and metabolic liver disease. Bile acid synthesis is controlled by FXR-mediated feedback in the liver and intestine and circadian rhythms originating from the brain & periphery, while bile acid-activated TGR5 mediates inflammatory pathways in the gut and brain. This liver-gut-brain axis ensures the liver adapts appropriately to changes in nutrient status and time of day as well as pathological stimuli (high fat diets, dysbiosis, and ethanol consumption, etc.). Continued insults to these mechanisms can result in non-alcoholic or alcoholic fatty liver disease, dyslipidemia, Type 2 diabetes, and obesity.

Dr. Jeremy M. Baskin is an Associate Professor and the Nancy and Peter Meinig Family Investigator in the Life Sciences at Cornell University. He has appointments in the Department of Chemistry and Chemical Biology and the Weill Institute for Cell and Molecular Biology. Dr. Baskin received the B.S. degree at MIT and Ph.D. at the University of California, Berkeley. His postdoctoral work was at Yale University. Research in the Baskin laboratory centers on the chemical biology and cell biology of lipid signaling. His work encompasses both methodology development and hypothesis-driven, mechanistic research aimed at shedding light on how lipid properties such as structure and subcellular location impact biological function. Using cross-disciplinary approaches, the lab is focused on elucidating biological functions of key phospholipid signaling molecules including phosphatidic acid and phosphoinositides. A vital part of our research involves development of innovative chemical tools to visualize and manipulate these lipid species, harnessing the latest advances in click chemistry, optogenetics, directed enzyme evolution, chemoproteomics, and super-resolution microscopy. Additionally, the lab is revealing new roles for phosphoinositides in the regulation of ubiquitination and Wnt signaling through studies of a family of lipid-binding proteins implicated in melanoma progression and metastasis.

Speaker Biographies



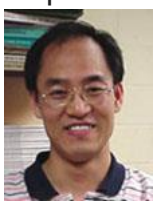
Dr. James Granneman is Professor of Molecular Medicine and Genetics, and Director of the Center for Integrative Metabolic and Endocrine Research at Wayne State University School of Medicine. He received his Ph.D. from the University of Massachusetts. His research broadly addresses the relationship between fat cell function and metabolic diseases. His lab is currently undertaking 2 major projects. The first project investigates metabolic and cellular plasticity of adipose tissues *in vivo* using genetic tracing and single cell functional genomics. The long-term goal is to understand how adipose tissue is established, maintained, and remodeled under pathological and therapeutic conditions. The second project investigates the fundamental molecular controls of fatty acid mobilization and sequestration in adipocytes and muscle. His work is currently focused on the molecular pharmacology of ABHD5, a ligand-regulated lipase activating protein that is involved in obesity, fatty liver disease, and cancer. This project combines high resolution optical analyses in live cells, metabolic tracing, computational modeling, and biophysical analysis in defined model systems.

Dr. Susmita Kaushik is a Research Assistant Professor in the Department of Developmental and Molecular Biology at the Albert Einstein College of Medicine. She received the B.S. and M.S. degrees in India from the University of Delhi and PGIMER, respectively, and Ph.D. degree from Albert Einstein College of Medicine. Her research focuses on the relation between selective autophagy and lipid metabolism. She co-discovered lipophagy, the mobilization of intracellular lipids through breakdown by lysosomes, and showed that lipophagy is a fundamental protective mechanism against hepatic steatosis. Her long-term interest has been in understanding the fundamental mechanisms that control chaperone-mediated autophagy (CMA), a selective protein degradation pathway in lysosomes, and determine how CMA governs lipid metabolism in peripheral tissues. Her work was critical for highlighting the importance of lipid microdomains in the lysosomal membranes in regulating CMA; defining bidirectional crosstalk between CMA and macroautophagy; and discovering a new type of autophagy, endosomal microautophagy. Her research work also revealed that CMA-mediated degradation of lipid droplet coat proteins is the first regulatory step, which allows lipophagy to occur, emphasizing the coordinated functioning of different selective types of autophagy in metabolism.

Carman Prize in Lipids

The George M. and Maureen D. Carman Prize in Lipids is an endowed prize established to encourage research and to provide financial assistance to graduate students and postdoctoral fellows/associates in the School of Environmental and Biological Sciences (SEBS). The prize is awarded for outstanding research achievement in the area of lipid biochemistry. You can contribute to the endowment via the Rutgers Foundation web site and earmark the funds for the Carman Prize in Lipids.

Recipients



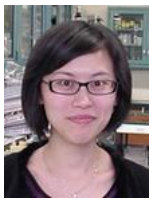
Hyeon-Son Choi (2007)

Anibal Soto-Cardalda (2008)

Younkyung Kim (2009)

Stylianos Fakas (2011)

Lesley Wassef (2011)



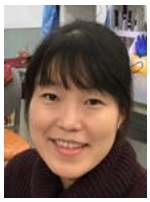
Wen-Min Su (2012)

John Douglass (2013)

Yixuan Qiu (2014)

Marc Tuazon (2014)

Lu-Sheng Hsieh (2015)



Yeonhee Park (2016)

Inna Nikonorova (2017)

Prabuddha Dey (2018)

Joanna Kwiatek (2019)

KevinTveter (2020)

Natalie Burchat (2021)

William Jonsson (2021)

Priyanka Sharma (2022)

Shoily Khondker (2022)

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