IMPROVING HUMAN HEALTH THROUGH COLLABORATIVE SCIENTIFIC DISCOVERY

The Life Sciences Institute serves as Michigan's hub for collaborative biomedical research on human health problems. The LSI harnesses the strength and tradition of academic excellence at the University of Michigan by forging links between the health sciences, basic sciences, engineering, the social sciences, and the humanities.

Interdisciplinary science is the feature of LSI's annual symposia. They are designed to encourage the exchange of ideas and to provide the opportunity for students and scientists alike to interact with and learn from prominent scientific leaders about recent developments.

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Sperling's research focuses on cell differentiation, cellular metabolism, and genetic factors involved in obesity and diabetes. His team has made important discoveries including the identification of a master regulator of fat development called PPARgamma. Most recently, his team showed that a critical metabolic protein PDK1 alpha regulates oxidative metabolism in multiple tissues, and this may be related to diabetes, obesity, and neurodegenerative disease. Sperling was elected to both the National Academy of Sciences and the American Academy of Arts and Sciences in 2003 among many honors.

Posna has made numerous contributions to our understanding of the molecular basis of insulin action. His initial efforts were focused on developing detailed understanding of the mechanisms by which extracellular insulin binding can activate the intracellular tyrosine kinase domain of the insulin receptor. More recently, his studies have encompassed the identification of intracellular effectors proteins that are activated by insulin and their ultimate regulation of glucose transporter gene transcription. These findings have important implications for understanding the metabolic and anabolic properties of insulin growth factor receptors. Posna is currently Editor-in-Chief of Endocrinology and earned the Outstanding Scientific Achievement award of the American Diabetes Association and the Outstanding Investigator Award from the American Diabetes Association among many other honors.

Hall's research interests include signal transduction and cell growth control in yeast and mammalian cells. He discovered TOR (Target of Rapamycin) and is one of the leaders in the cell growth field. TOR is a conserved nutrient and insulin-activated protein kinase and is a central controller of cell growth. In collaboration with colleagues Markus Ripp and Yes-Ming Lian, his team in also studying the role of TOR signaling in the postmitotic growth of muscle and neural cells. Through combined research efforts, they hope to determine the molecular mechanisms by which TOR senses nutrients signals nutrient availability. Hall recently began studying the role of IGF-1 in the regulation of the aging process. These studies have interesting implications for the control of hormone and nutrient-related processes such as appetite regulation and aging. Among many honors and awards, Hall is a member of the European Molecular Biology Organization and was awarded the Gilead Prize for his contribution to biomedical research.

Kernoff studies the regulation of aging in the small soil nematode, C. elegans. In 1993, she discovered that this is similar to the human insulin and IGF-1 receptors regulates the life span of this animal, thus demonstrating that aging is controlled hormonally. She showed that inhibiting receptor activity doubles the life span and greatly extends swarmerhiss by changing the expression of certain genes. Her studies at the role of growth hormone in the regulation of aging is now being extended to the mammalian system. Her studies are focused on the role of growth hormone in the regulation of aging in the mammalian system. Her studies are focused on the role of growth hormone in the regulation of aging in the mammalian system.

Dr. Flier discovered that anti-antibodies to the insulin receptor in human are in ways that are similar to those that are found in insulin resistant diabetes in man. This research has provided major insights into the molecular mechanism of the pathogenesis of insulin resistance and the role of growth hormone in the regulation of aging in the mammalian system. His research has led to the identification of a novel protein secreted from fat cells that may be a new target for treatment of type 2 diabetes. He was elected to the Institute of Medicine of the National Academy of Sciences in 2005 and is an elected member of the American Society for Clinical Investigation and the Association of American Physicians as well as many other honors and awards.

As one of the country's leading diabetes investigators, Dr. Kahn's research has had a major impact on understanding the molecular mechanisms underlying type 2 diabetes and the cellular and physiologic processes that underlie the major risk factors for type 2 diabetes. Her lab has identified important roles for the INSIG1 and insulin-like growth factor-1 (IGF-1) in the regulation of aging and the regulation of aging in the mammalian system. Her studies are focused on the role of growth hormone in the regulation of aging in the mammalian system.

Co-sponsored with the:
Michigan Comprehensive Diabetes Center and the
Michigan Diabetes Research and Training Center at the
University of Michigan

9:00 am
Welcome
Alan Saltiel
Director, Center for Systems Biology

9:15
Mary Sue and Kenneth Coleman Life Sciences Lecture: Transcriptional Control of Systemic Energy Homeostasis

9:45
Break

10:00 am
Uncoupling of Insulin-Regulated Glucose Sensitivity from Fatty Acid Metabolism

10:30 am
TOR Signaling and Control of Cell Growth in Yeast and Mammals

11:00 am
Genes and Cells that Regulate the Lifespan of C. elegans

11:30 am
Lunch on Your Own

12:00 pm
The Periphery and the Brain in Energy Balance: Recent Initiatives

12:30 pm
TOR Signaling and Control of Cell Growth in Yeast and Mammals

1:00 pm
Break

1:30 pm
A Novel Adipocyte-Secreted Molecule Involved in Obesity Resistance in Obesity and Type 2 Diabetes: Retinol Binding Protein 4

2:00 pm
Immediately following:
The Michigan Diabetes Research and Training Center Puder Session 2006
Puder Symposium by
Dean Puder Braganza