SUN& Upstate Medical University in Syracuse is one of only academic medical centers in the US. Through its four colleges SUN& Upstate trains the next generation of research scientists, physicians, nurses and health care professionals. Its thriving biomedical research enterprise is dedicated to understanding and improving the human condition. Recent technological advances have accelerated the pace of research and are improving our understanding of diseases at a molecular and cellular level to develop targeted treatments. Research at Upstate includes structural, molecular, and systems biology at a basic level, through translational and clinical research.

For more information on our lecture series, or to request a speaker, look for the link at www.upstate.edu/grad or contact:
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All research at Upstate is performed with the goal to improve human health.
Mira Krendel, PhD
Cell & Developmental Biology
Lessons from four-legged patients: mouse studies and human genetic diseases
Mouse models can be used to find genes responsible for inherited diseases in humans. Our studies in mice helped identify a link between myosin mutations and kidney disease.

Steven Hanes, PhD
Biochemistry & Molecular Biology
Using Model Organisms to Study Development & Disease
This introduction to model organisms in biomedical research includes how we study how information is decoded from the DNA to switch genes on and off during embryonic development.

Steven Y. Youngentob, PhD
Psychiatry and Behavioral Sciences
Does Mother Nature Always Know Best? Fetal Alcohol Experience and Chemical Sensory Plasticity: Its Contribution to Adolescent Alcohol Abuse
Human studies point to a relationship between fetal alcohol exposure and adolescent abuse. Our studies reveal that fetal exposure alters development of smell and taste so the aversive odor and flavor of alcohol become more acceptable, thereby enhancing intake.

Andrea Viczian, PhD
Ophthalmology
What the frog can teach us: Pluripotent stem cells to eyes
Pluripotent stem cells have the capacity to form any cell in our body, but directing them to specific cell types has been a challenge. We have discovered the seven genes necessary to drive them to form functional retinal cells in frog and are using that technology to drive mouse pluripotent stem cells to retina.

Dan Tso, PhD
Neurosurgery
Plasticity and the Dynamic Brain: Wiring, Injury and Re-wiring
Recent evidence has forced a greater appreciation of the extent to which the adult brain is capable of remarkable rewiring and plasticity, particularly in order to adapt to changes in the environment or in response to brain injury. We will explore the fixed versus plastic nature of the adult brain and some of the underlying neural mechanisms.

Vladimir Sirotkin, PhD
Cell & Developmental Biology
Endocytosis by the Numbers: Investigation of the Mechanisms of Endocytosis by Quantitative Live Cell Imaging
The actin cytoskeleton dynamics are responsible for changes in cell shape. By counting the numbers of molecules in live cells, we investigate how cells control the actin filament assembly driving membrane deformation during endocytosis.

Mark E. Schmitt, PhD
Dean, College of Graduate Studies; Professor of Biochemistry & Molecular Biology
All Ribosomes are Not Created Equal
Ribosomes are extremely ancient RNA-based enzymes that catalyze protein synthesis in all organisms. Ribosomes differ in their RNA and protein composition and these subtle differences confer different functions that control and regulate the translation process.

Dan W. Pryne, PhD
Cell & Developmental Biology
From Yeast to Muscles — Using Model Systems to Understand How Cells Build Their Cytoskeleton
A cytoskeleton of actin filaments provides a framework for the body’s cells. We have developed a model for how the highly ordered actin arrays in muscle cells are assembled through study of successively more complicated systems, from in vitro biochemistry to budding yeast and finally, the simple animal C. elegans.

Wen Yi Feng, PhD
Biochemistry & Molecular Biology
Chromosome fragility: When Replication Goes Awry
We are interested in the mechanisms of how replication defects lead to DNA strand breakage, chromosomal rearrangements and genome instability, which are the underlying cause of many human diseases including cancer. We also develop novel methods using NextGen sequencing to identify chromosome fragile sites in the human genome.

Thomas Duncan, PhD
Biochemistry & Molecular Biology
Jamming the Gears of ATP Synthase Nanomotors for Antibacterial Drug Discovery
ATP synthases are rotary motor enzymes critical for cellular energy metabolism. Understanding bacteria-specific regulatory mechanisms may lead to new antibiotics.

Wenyi Feng, PhD
Biochemistry & Molecular Biology
Mechanism of Mitochondrial Genome Maintenance
Mitochondria are the powerhouse of the cell, and the maintenance of mitochondrial DNA is critical for energy homoeostasis. We are interested in studying how damaged mitochondrial DNA is repaired and how mitochondrial damage contributes to cell aging.

Steven Goodman, PhD
Biochemistry & Molecular Biology and Pediatrics
Developing Personalized Medicine for Sickle Cell Disease
Protein profiling studies utilizing proteomic technologies has allowed my laboratory to identify bio-markers of sickle cell severity. Changes in these proteins early in life will allow pediatric hematologists, in the future, to tailor therapeutic choices to predicted levels of sickle severity.

Vladimir Sirotkin, PhD
Biology
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Stewart Loh, PhD
Biochemistry & Molecular Biology
Design of biomolecular switches: p53 folding, misfolding, and cancer
Our lab uses the tools of protein folding, engineering, and design to develop mechanisms by which ordinary proteins can be converted into switches, and for understanding how p53 mutations contribute to cancer and how mutant p53 can be reactivated by small molecules.

Eric C. Olson, PhD
Neuroscience & Physiology
Putting Dendrites In Their Place: The Role of the Reelin-Signaling Pathway In Organizing Brain Structure
Covers the basic cellular processes underlying mammalian brain development, and focuses on our efforts to understand Reelin-signaling and the early differentiation and positioning of cortical neurons through the use of multiphoton microscopy and time-lapse imaging.

Steven G. Goodman, PhD
Psychiatry & Behavioral Sciences, Neuroscience & Physiology
Biomarkers for Neuropsychiatric Disorders
Unlike many other medical conditions, neuropsychiatric disorders are currently diagnosed based only on behavioral reports and clinical observation rather than biomarkers. The presentation will summarize the latest efforts to identify valid biomarkers for these disorders, which should facilitate earlier identification and intervention and better outcomes.

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David Amberg, PhD
Biochemistry & Molecular Biology
Understanding the complexities of actin function
A presentation on my laboratory’s research will focus on our multidisciplinary approaches to identifying and understanding the functions of actin and the cytoskeleton in eukaryotic cells. (In addition, Dr. Amberg will discuss the process for obtaining a PhD in biomedical research.)

Jeffrey Amack, PhD
Cell & Developmental Biology
Heart Development in the Zebrafish Embryo
Congenital heart disease is the most common birth defect. My lab uses the zebrafish embryo as a model system to find genes that control heart development and disease.

Yinzi Feng, PhD
Biochemistry & Molecular Biology
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