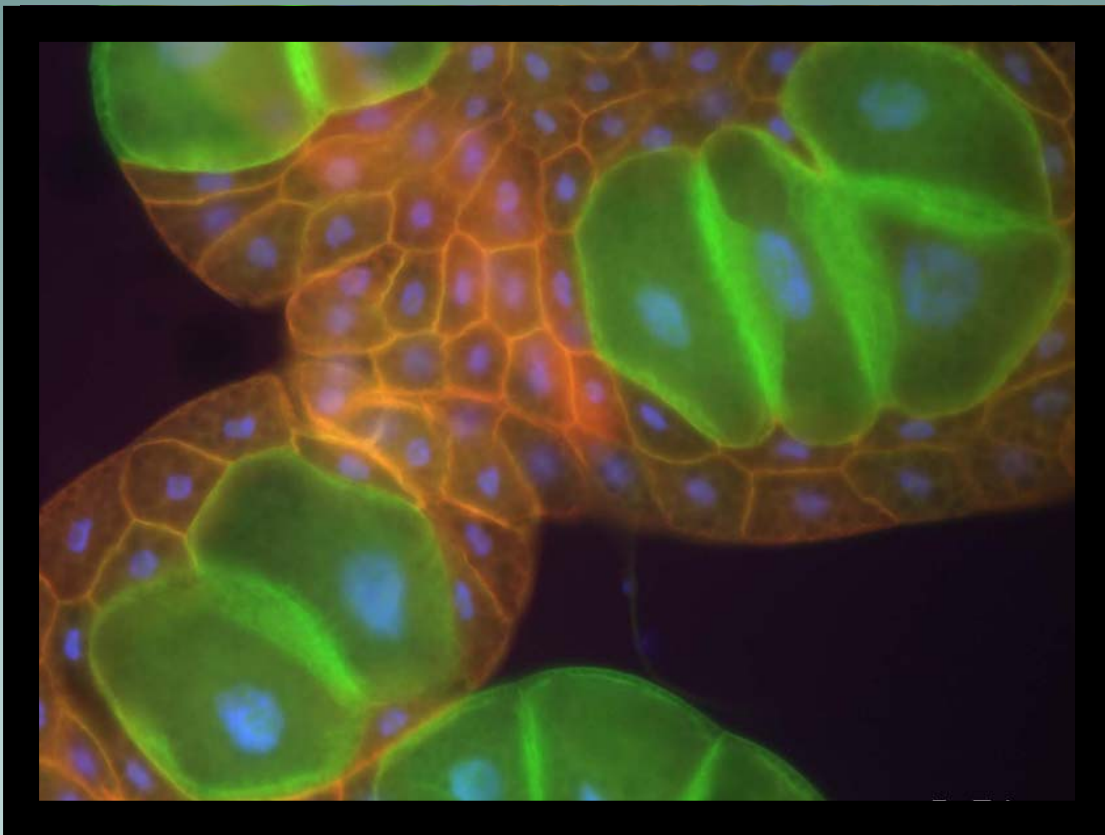


The Forty-Seventh Annual Verna and Marrs McLean Lectures in Biochemistry

Michael N. Hall, PhD

Nahum Sonenberg, PhD



April 25, 2019
Cullen Building Main Auditorium

Baylor
College of
Medicine

NAHUM SONENBERG, PH.D.

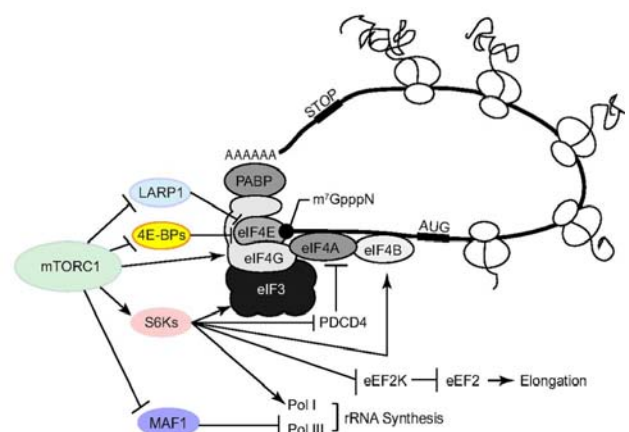


Dr. Nahum Sonenberg was born in Germany, and his childhood unfolded in the aftermath of World War II. At age 2, he immigrated to Israel where he grew up. Inspired by the pace of genetic discovery and a compelling biochemistry professor, Dr. Sonenberg resolved to enter this exciting field of research as an undergraduate microbiology student. “What attracted me to the field was that the nature of proteins and everything that follows - our behavior, our wellbeing, everything - is dictated by genes,”

He received his Ph.D. in Biochemistry from the Weizmann Institute of Science (Rehovot, Israel) in 1976. He joined the Roche Institute of Molecular Biology in Nutley, New Jersey as a *Chaim Weizmann postdoctoral fellow* with Aaron Shatkin. In 1979, he moved to Montreal to become an Assistant Professor and later Professor in the Department of Biochemistry at McGill University. Between 2002-2017 Dr. Sonenberg was a *James McGill Professor*, and since 2017 he is a *Gilman Cheney Chair* in the Department of Biochemistry and the Rosalind and Morris Goodman Cancer Research Centre at McGill.

Through most of his research career, Dr. Sonenberg focused on understanding the mechanisms of translation initiation in eukaryotes and the importance of translational control in diseases such as cancer, obesity, diabetes and neurological disorders. His work laid the basis for the understanding of how translation initiation factors promote ribosome binding, and the regulation of initiation factor activity by extracellular stimuli and viruses. Notably, he discovered the mRNA 5' cap-binding protein eIF4E, the internal ribosome entry site (IRES), the eIF4E-binding proteins (4E-BPs), which are regulated by mTOR, how miRNA regulate translation and the translation control mechanism that are implicated in cancer, learning and memory, autism and fragile X-syndrome.

Dr. Sonenberg has received numerous awards, including the Robert L. Noble Prize in 2002, the Killam Prize for Health Sciences in 2005, the Gairdner International Award in 2008; and the Rosenstiel Award in 2012. In 2014 Dr. Sonenberg was awarded the Wolf Prize in Medicine, and in 2018 the Prix du Quebec Wilder-Penfield prize. He is also a member of the Royal Society of Canada, the Royal Society of London and a Foreign Associate of the National Academy of Sciences.



2:00 p.m.

“TOR’s translational branch: a key regulator of cancer progression and neuronal function”

MICHAEL N. HALL, PH.D.



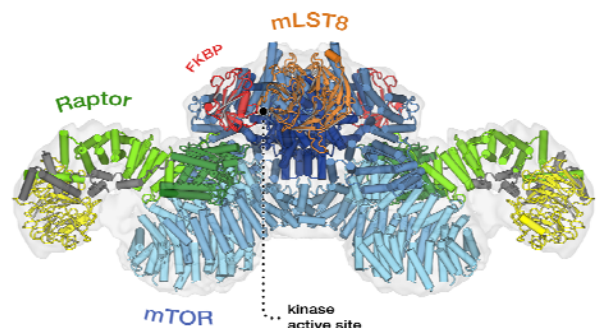
Dr. Michael N. Hall was born (1953) in Puerto Rico and grew up in South America (Venezuela and Peru). He went to boarding school in the US when he was thirteen years old and later did his undergraduate studies in zoology. Inspired by the work of Jacob and Monod, he did his Ph.D in molecular genetics at Harvard University. He was a postdoctoral fellow at the Pasteur Institute (Paris, France) and the University of California, San Francisco (UCSF). In 1987, he joined the Biozentrum of the University of Basel (Switzerland), where he is currently Professor and former Chair of Biochemistry. While Dr. Hall started working on nuclear localization signal and the machinery associated with it, he later switched to work in immunosuppressant drugs.

Dr. Hall is a pioneer in the fields of TOR signaling and cell growth control. In 1991, using yeast genetics, Hall and colleagues discovered TOR (Target of Rapamycin) and subsequently elucidated its role as a central controller of cell growth and metabolism. Through most of his research career, Dr. Hall has focused on the understanding of the mechanisms underlying growth and

metabolism, with a specific emphasis in TOR signaling. TOR is a highly conserved, nutrient- and insulin-activated protein kinase. In addition, Dr. Hall discovered that TOR form two distinct structurally and functionally protein complexes, TORC1 and TORC2.

The discovery of TOR led to a fundamental change in how one thinks of cell growth. It is not a spontaneous process that just happens when building blocks (nutrients) are available, but rather a highly regulated, plastic process controlled by TOR-dependent signaling pathways. As a central controller of cell growth and metabolism, TOR plays a key role in development and aging, and is implicated in cancer, cardiovascular disease, neurological disorders, diabetes, and obesity. The understanding of TOR signaling and how it is dysregulated in disease may reveal new therapeutic strategies for a wide variety of disorders.

Dr. Hall is a member of the US National Academy of Sciences, has received numerous awards, including the Cloëtta Prize for Biomedical Research (2003), Louis-Jeantet Prize for Medicine (2009), the Marcel Benoist Prize for Sciences or Humanities (2012), the Breakthrough Prize in Life Sciences (2014), the Canada Gairdner International Award (2015), and the Albert Lasker Award (2017), and has served on several editorial and scientific advisory boards.



3:30 p.m.

“mTOR signaling in growth and metabolism”



Verna and Marris McLean loved youth and valued education. This department was named in tribute to their leadership and dedication.

Their example continues to inspire.

The Verna and Marris McLean Department of Biochemistry and Molecular Biology at Baylor College of Medicine was established to promote an essential biomedical science focused on the knowledge of chemical reactions in the living cell, and to provide students with sound scientific principles on which to base their research and clinical practice. It has since expanded to provide graduate education and research training leading to a Ph.D. degree as well as advanced postdoctoral training. The research programs in the department cover a broad spectrum of basic science aimed at advancing knowledge in many areas, from protein function at an atomic level to systems biology and drug discovery. The diversity of research topics and the collaborative spirit of a world-class faculty provide a vibrant training environment for students and postdoctoral trainees.

The department houses advanced technology cores in cryo-electron microscopy, mass spectrometry proteomics and cell-based assay genomic screening, as well as leading research programs in these areas. It is playing a leading role in developing the Therapeutic Innovation Center (THINC) for promoting basic and translational research in chromatin and RNA biology.

The Verna and Marris McLean Lecture Series was inaugurated in 1972 by Salih J. Wakil, Distinguished Service Professor and Chairman Emeritus, in honor of an outstanding Texas family for their generous support of the department. Verna and Marris McLean shared a philosophy of civic and humanitarian responsibility and a keen commitment to education. Although they were personally generous and supported many philanthropic causes, the McLeans believed that their greatest contribution was to set an example that encouraged others to make equally strong commitments. This tradition has been maintained by their children and grandchildren, as exemplified by the endowment of the *Ruth McLean Bowman Bowers Professorship*, which supports a faculty member in the department, as well as the establishment of the *Ruth McLean Bowman Bowers "Excellence in Research" award*.

**Nobel Laureates
of the Verna and Marris McLean
Lectures in Biochemistry**

*Paul Berg
Hans Adolf Krebs
Bengt I. Samuelsson
Walter Gilbert
Francis Harry Compton Crick
Arthur Kornberg
Salvador E. Luria
D. Carleton Gajdusek
George E. Palade
Sydney Brenner
J. Michael Bishop
James Dewey Watson
Thomas R. Cech
Aaron Klug
David Baltimore
Max Ferdinand Perutz
Joseph L. Goldstein
Michael S. Brown
Sir Paul M. Nurse
Phillip A. Sharp
Christiane Nüsslein-Volhard
Richard Axel
Harold E. Varmus
Leland H. Hartwell
Martin Rodbell
H. Robert Horvitz
Mario R. Capecchi
Robert J. Lefkowitz
Peter C. Agre
Eric F. Wieschaus
Jack W. Szostak
Roger Y. Tsien
Brian K. Kobilka
Randy Schekman
Richard Henderson*