



# Invitation to Dean's Podium

*Prof. Michal Shapira, Dean of The Faculty of Natural Sciences,  
is honored to invite you to The Dean's Podium*

By

**Professor Nahum Sonenberg**

**McGill University, Canada**

on

## Translational Control of Cancer and Neurological Diseases via eIF4E

### Abstract

Translational control plays a critical role in essential cellular processes including cell growth, proliferation, development, and learning and memory. Under most circumstances, translational control is exerted at the initiation step in which the eukaryotic translation initiation factor 4E (eIF4E) interacts with the mRNA 5'cap structure to facilitate the recruitment of ribosomes and promote translation. Importantly, eIF4E preferentially stimulates the translation of a subset of mRNAs. The activity of eIF4E is regulated chiefly by two major signalling pathways: PI3K/Akt/mTOR and Ras/MAPK/Mnk. mTOR directly phosphorylates the 4E-BPs (eIF4E-binding proteins), which are inhibitors of eIF4E, to relieve translational suppression, while Mnk phosphorylates eIF4E to stimulate translation. Aberrations in these pathways result in dysregulated eIF4E activity, which engenders tumorigenesis and neurological disorders such as autism, Fragile X Syndrome and depression.

### Prof. Nahum Sonenberg- Biography



Prof. Sonenberg 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. In 1985-86 he took a sabbatical leave and was visiting professor in David Baltimore's laboratory at the Whitehead Institute for Biomedical Research. Between 2002 and 2016 Prof. 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.

Prof. Sonenberg studies the molecular basis of the control of protein synthesis in eukaryotic cells and its importance in diseases such as cancer, obesity, diabetes and neurological diseases. His research focuses

primarily on the elucidation of the mechanism of translation initiation in eukaryotes and its regulation during development, differentiation and neoplasia. Prof. Sonenberg carried out pioneering and fundamental work that laid the basis for the understanding of how translation initiation factors promote ribosome binding, and the regulation of initiation factor activity by extracellular stimuli (growth factors, hormones, G-protein-coupled receptor agonists, cytokines and mitogens), and viruses. He made seminal discoveries demonstrating that control of translation initiation is implicated in cancer, learning and memory, autism and fragile X-syndrome.

Prof. Sonenberg was recognized for his achievements with numerous prizes and honors. In 2002, he was awarded the Robert L. Noble Prize from the National Cancer Institute of Canada; he has been a fellow of The Royal Society of Canada since 1992; he received the Killam Prize for Health Sciences in 2005 and the Gairdner International Award in 2008; he was elected to the American Academy of Arts and Sciences and The Royal Society of London, UK in 2006. He became a Fellow of the American Association for the Advancement of Science and received the Rosenstiel Award in 2012. In 2013 he was elected an Associate Member of the EMBO; in 2014 Prof. Sonenberg received the Wolf Prize in Medicine, and in 2015 he was elected Foreign Associate of the National Academy of Sciences of the USA and Member of the National Academy of Medicine, USA.

### Date, Time & Place

**Monday, December 17<sup>th</sup>, 2018, At 14:00**

**in the Life Sciences Auditorium (building 38, room 010)**

**Refreshments will be served before the lecture**

**יום שני, ט' בטבת תשע"ט, 17 בדצמבר 2018, בשעה 14:00,**

**באודיטוריום מדעי החיים (בניין 38, חדר 010)**

**כיבוד קל יוגש לפני ההרצאה**