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**Friday, September 13th, 2013**
**12:00 PM – 2:00 PM**
**Bronfman Bldg., Rm. 310**
**1001 Sherbrooke St. West, Montreal**

# Phases and Flaws in Translational Research


## Dr. Leonard Levin, MD, PhD.

Chair of the Department of Ophthalmology,
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Physician-in-Chief of Ophthalmology,
McGill University Health Centre (MUHC)



***Abstract***

The goal of much modern biomedical research is to translate research done in the laboratory into effective treatments or diagnostics for patients with disease. Unfortunately this is infrequently successful, because translational research frequently fails to replicate in the clinic what has been demonstrated in the laboratory. This has become strikingly apparent with respect to the failure of many pharmaceutical companies to replace their aging blockbuster drugs with new contenders. Three fundamental reasons for this "Lost in Translation" problem are the "Butterfly Effect" (chaotic behavior of many animal models), the "Princess and the Pea" problem (the spread of variance along the translational trajectory), and the "Two Cultures" problem (differences between the methodologies for preclinical and clinical research).

This presentation will analyze how research is done at the bench and at the bedside, how the translational process occurs, how it fails, and what can be done about it.


***A light lunch will be served***

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## *Bio*

Leonard A. Levin, MD, PhD is Chair of the Department of Ophthalmology, Faculty of Medicine, McGill University, and Physician-in-Chief of Ophthalmology at the McGill University Health Centre (MUHC). Len received a bachelor's degree *magna cum laude* in applied mathematics at Harvard. He did his MD in the Harvard/MIT joint program in Health Science and Technology, with a PhD in neurobiology, focusing on research relevant to multiple sclerosis. He then pursued an ophthalmology residency and neuro-ophthalmology fellowship at the Massachusetts Eye and Ear Infirmary.

Dr. Levin's clinical practice focuses on patients with neuro-ophthalmic disorders, particularly those with diseases of the optic nerve, for which effective treatments are sparse. He tries to combine clinical care of patients who have complex neuro-ophthalmic disorders with laboratory research that tries to find treatments for these blinding diseases. Specifically, his research program focuses on mechanisms of retinal ganglion cell death at the molecular, tissue culture, and whole animal level. This includes the role axonal damage plays in inducing loss of retinal ganglion cells and how axons themselves undergo injury, an area common to ophthalmology and neurology. He is particularly interested in using advanced imaging techniques to study signaling of cell death in the retina and the development of new drugs for optic nerve and retinal disease.

This and related research has resulted in more than 160 peer-reviewed papers, reviews, and book chapters, 4 issued and 1 pending patents, and his editing of five textbooks in the visual sciences or ophthalmology, including *Ocular Disease: Mechanisms and Management*, and the recent 11th edition of *Adler's Physiology of the Eye*. He chaired the Diseases and Pathophysiology of the Visual System study section at the National Institutes of Health in the United States and has been an ad hoc reviewer for the Canadian Institutes of Health Research, and funding bodies in Hong Kong, Israel, Australia, and elsewhere. He has given more than 130 invited lectures in North America and abroad.

He is particularly interested in the challenges associated with successfully translating basic science research into clinically effective therapies, and has been involved with the design and assessment of clinical trials to study neuroprotective therapies in glaucoma and other optic neuropathies.