BioSketch for the BRC/BGU Partnership Student Partnership

Name: **Raymond M. Klein**
Department: Psychology & Neuroscience
Current Areas of Interest: Networks of Attention; Tools for their assessment; and strategies for the remediations of their disordered behavior
Publications: https://scholar.google.ca/citations?user=gP3fEvgAAAAJ&hl=en&oi=ao

An active member of Dalhousie's Brain Repair Center, Dr. Klein's interests of relevance for this collaboration with Ben Gurion University are in "mind repair" through an understanding of the brain's networks of attention. The concept of attention is pivotal for our understanding of normal human performance and the breakdowns in performance associated with brain disorders and brain damage. Disorders of different aspects of attention are commonly seen in many child and adult neuro-psychiatric disorders (e.g., autism, attention deficit hyperactivity disorder, stroke, schizophrenia, Parkinson's and Alzheimer's diseases). As attention skills are critical for many aspects of cognitive function, attention impairments can result in widespread difficulties in many facets of daily living, including educational attainment, the ability to work, and independence in activities such as self-care, household maintenance and driving a car. These impairments and the breakdown in normal social roles have significant social and economic consequences. Thus, it is critical to understand the underlying attentional mechanisms and how they are affected in neurolpsychiatric disease.

Attention is a multidimensional construct with multiple functions and corresponding underlying neural networks. The taxonomy of attention, the measurement of its components, its normal development, the nature of its normal operation and breakdowns associated with disease and damage to the nervous system and the possible strategies for remediation of these disorders of attention are of great interest to the Klein lab and to work with our collaborators.

My basic research is funded by an NSERC Discovery grant and my translational research is currently funded by a catalyst grant from the Nova Scotia Health Research Foundation and an Engage grant from NSERC. The Klein laboratory provides an ideal setting for young scientists to learn about: 1) the methods of experimental psychology (e.g. mental chronometry, dual task, psychophysics, etc.) that have been developed to shed light on mental processes and representations (cognitive psychology), 2) a Hebbian emphasis on understanding how mind is implemented in the brain (cognitive neuroscience) and some of the methods (cognitive neuropsychology, computational modeling, neurimaging) for doing so, 3) the use of computers in psychological research, 4) being a true student (for whom the acquisition of new knowledge is a worthwhile end), & 5) the pragmatics of science in the 21st century (ethics, accountability, relevance, application). I am fortunate to have attracted some amazing trainees to my lab. As advocated by Hebb, their training is achieved through apprenticeship and contagion. Reflecting my dedication & contributions to graduate training, I was the 1st recipient of Dalhousie's Distinguished Contribution to Graduate Studies Award & 2009 winner of Dalhousie's Outstanding Graduate Advisor award. In the last few years I have had tremendous success with graduate student visitors from abroad and I hope that some students from Ben Gurion University might take advantage of this program to visit us.

Because of my collaborative nature, visitors with interest in the mission described above would have the opportunity to get involved in research on the normal and abnormal development of attention (with Dr. Shannon Johnson), the effects of stroke and aging on attention and the use of the Dalhousie Computerized Attention Battery and Cognitive Repair Kit in these patient groups (with Dr. Gail Eskes), neuroimaging approaches for exploring the networks of attention (with Dr. Aaron Newman) and epigenetic approaches to the study of attention and its disorders (with Dr. Ian Weaver).