

Brain Imaging of Chronic Pain

Karen Davis PhD FCAHS

Krembil Brain Institute and the University of Toronto, Canada

Chronic pain is estimated to impact one in five people world-wide and is poorly managed for many. The inability to adequately manage chronic pain for all those suffering is in part due to the failure of the one-size-fits-all model for treatment. There is now good evidence that individual differences in pain sensitivity, behavioural factors, and brain structure and function, contribute to chronic pain vulnerabilities and treatment outcomes. In this talk I will provide an overview of the spectrum of individual differences in pain sensitivity that is linked to brain structure and function. I will present work to develop a chronic pain treatment prediction tool based on these findings and machine learning approaches. Emphasis will be placed on the importance of dynamic measures of functional connectivity, and both state and trait measures of pain. I will then highlight recent findings of the relationship between pre-treatment functional and structural imaging, and psychophysical metrics on treatment outcome for chronic pain. An understanding of these factors will provide the foundation to develop a personalized approach to pain management.