Flavio Kapczinski, MSc, PhD, MD

Research Interest

I have been at the forefront of research in biomarkers in bipolar disorder. My research contributed to the development of the concept of neuroprogression. Neuroprogression is the underlying biology of chronicity, functional impairment and higher propensity for dementia among patients with mood disorders. My overarching research focus is to understand the biological components of neuroprogression in bipolar disorder, and translate such scientific knowledge into improvements in clinical interventions. Moreover, in recent years I have been moving toward the realm of big data, studying sleep patterns and proteins in the body, and using neuroimaging to collect information on brain and behavioural patterns to learn when and how to intervene more successfully. While the status quo in psychiatry is the reduction of symptoms and remediation of dysfunction, my team and I believe that the use of machine learning and big data will help pave the way toward personalized medicine in psychiatry. Overall, I believe the main task for psychiatry is to now translate findings from the field of neuroscience into better clinical solutions for patients, their families and the community.

Upcoming Publications

1. The impact of machine learning techniques in the study of bipolar disorder: a systematic review

   In this study, we analyzed how different machine learning techniques can be used in the study of bipolar disorder to create predictive models with multimodal data to assess diagnosis, prognosis, and aid in the prevention of poor outcomes, such as suicide or severe treatment side effects. We also analyze how unsupervised techniques may help to improve the way we diagnose in psychiatry, helping to establish more relevant disorder phenotypes. Finally, we performed a meta-analysis of diagnostic accuracy for neuroimaging studies, that showed a superiority of functional neuroimaging over structural to distinguish bipolar disorder patients from healthy controls.

2. Potential use of text classification tools as signatures of suicidal behavior: a proof-of-concept study using Virginia Woolf's personal writings.

   This paper discusses the feasibility of using text classification to predict individual suicidal behavior. The aim was to show how machine learning can be adapted to each individual to predict relevant outcomes in mental health. We illustrate its application using the personal writings of Virginia Woolf, sampled from different periods of her life, to develop a predictive signature of suicide.