Comprehensive Research Experience for Medical Students (CREMS)

2022 Supervisor and Project Information Form

Please complete and return via email ONLY to crems.programs@utoronto.ca by February 18, 2022.

**Supervisor Information**

*NOTE: CREMS will not support pre-determined pairings of students and supervisors. Supervisors must agree to open their projects to all students and interview all that are interested.*

**Name:** Nathan Kolla

**Email:** nathan.kolla@camh.ca

**Department:** Psychiatry

**Hospital/Research Institution:** Centre for Addiction and Mental Health

**SGS Department(s) (if applicable):** Psychiatry

**ORCID ID** *(see [https://orcid.org/](https://orcid.org/) - If you do not have an ORCID ID we encourage you to sign up for one):*

https://orcid.org 0000-0001-7578-723X

**Location of Work:** Centre for Addiction and Mental Health

**Field of Research (up to 4 keywords):**
First episode psychosis; Conduct disorder; Functional magnetic resonance imaging; Structural magnetic resonance imaging

**Student contact time** *(number of hours per week YOU are available to the student for any concerns or to review progress):*

2-3
**Project Information**

*NOTE: If this project is selected, this information will be posted on CREMS website for interested student applicants to view research opportunities.*

**PROJECT TITLE:**
Early Detection of Aggression in First Episode Psychosis: A Structural and Functional Magnetic Resonance Imaging Study

**PROJECT DESCRIPTION:**
Including background, aim(s), method(s) and significance of the project. **Maximum 300 words.**

While the vast majority of individuals with psychotic disorders (PD) are non-violent, some are still at increased risk for violence and aggression. While positive psychotic symptoms can help explain aggressive behaviors in older individuals with PD, our understanding of the origin of violence in first episode PD is poorly understood. A fuller understanding of the neurobiological factors underlying violence during this period is necessary to develop better treatment and/or prevention strategies. Our overall goal is to investigate the neural correlates of violence in young people with PD who are experiencing their first episode of psychosis. Thus, by studying younger populations with PD along with comorbid conduct disorder (CD) including both overt and covert violent behavior, compared to those with PD without a history of violence and also healthy controls, we aim to explore the differences in their brain anatomy and function. Using anatomical magnetic resonance imaging (aMRI), functional MRI during a go/no-go impulsivity paradigm, diffusion-weighted MRI, magnetization transfer (MT), and MR spectroscopy, we will be able to assess various neurological biomarkers between these groups.

**Is this project remote-capable (in case of new restrictions) or have an alternative remote option?**
- ☒ Yes, remote capable
- ☐ No

- ☐ Yes, alternate remote option. Please specify (100 words max): Click or tap here to enter text.

**If human subjects are involved, have the appropriate Research Ethics Board approvals been obtained?**
- ☒ Yes
- ☐ No
- ☐ Not Applicable

**If yes, please list the application submission date:**

**Do you expect this work will be published?**
- ☒ Yes
- ☐ No
- ☐ Uncertain / Other
Research Environment and Student Roles and Responsibilities

Please be specific as possible. Please describe the research environment, including availability of required facilities/equipment/expertise, supervisor’s experience and mentorship plans. Please clearly outline the student role(s) and responsibilities related to the project, potential educational value, and indicate who will serve as the student’s direct report for daily oversight (PI, PHD student, technician, etc.). Maximum 300 words.

The student will be based within the supervisor’s laboratory at CAMH, working alongside approximately 5 graduate students and a Research Analyst, in addition to the supervisor, Dr. Nathan Kolla. The student will have their own computing workstation in the laboratory and will be fully integrated within the laboratory. The student will participate in journal club weekly with the laboratory and at some point it will be expected that the student will present an article of interest to them to the rest of the group. The student will work directly with the Research Analyst administering a variety of questions either in person or virtually to the participants. The student will then have the opportunity to observe the MRI sessions and will gain familiarity with MRI analysis. Dr. Nathan Kolla has supervised several CREMS students in the past. Without exception, all have published and many have produced a first-author paper. The supervisor will also be available for daily oversight as needed. The supervisor will meet with the student no less than once per week for mentorship, conversations about career development, and learning the benefits and challenges of conducting research as a future clinician. This project is currently running, so there will be no wasted time waiting for REB approval or getting set up. The student, after the appropriate onboarding, can begin working on the project almost immediately.