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| **Applications will be accepted from:** [x]  Both MD & non-MD Undergraduates [ ]  MD undergraduate students only [ ]  non-MD undergraduate students only |
| **Project Duration:** [x]  Suitable for either a 4 or 8 week project (Only Yr 3 MD students are eligible to apply for 4-week projects) [ ]  Only suitable for an 8-week project [ ]  Only suitable for a 4-week project  |
| **Additional information for potential student partners:** E.g. desired skills/interests/experience, scheduling restrictions for the project timeline, additional info you want applicants to provide when contacting you about this position, etc.      |

## PROJECT INFORMATION

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| **Project Title:**Task-based Functional Brain Networks involved in Hallucinations and Delusions in Schizophrenia |
| **Hypothesis or Research Question being addressed (400 character limit, ~55 words):**This initiative will contribute to ongoing research with the following goals (1) anatomical identification of a novel set of task-based brain networks detectable with fMRI; (2) delineation of the function of each network; (3) specification of how dysfunction in these networks contributes to hallucinations and delusions in schizophrenia. Internationally shared fMRI data sets will be analyzed using in-house software that will generate new insights into the workings of these functional networks, thereby contributing to a biological understanding of the symptoms of schizophrenia. |
| **Keywords:** **Provide approximately 5 key words that describe the proposed research project.**schizophrenia, delusions, hallucinations, functional neuroimaging, cognition, statistical methodology |

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| **Project Attributes and Benefit to the Student**Please review the [online adjudication criteria](http://www.med.ubc.ca/current-learners/summer-student-research-program/adjudication/) carefully prior to completing the next two sections to ensure your application is addressing the adjudication criteria outlined in “Project Attributes and Benefits to the Student”. |
| **A) Background and Summary of Proposed Research. Summarize the proposed project including the rationale for the project, the context within the relevant field of research, the proposed research approach and the expected project outcomes.** *If this is an ongoing project of >8 weeks duration (or 4 weeks for MD 2022 students) clearly distinguish the expected project outcomes at the end of the FoM SSRP funding period from the overall project objectives.* **Please write in lay terms for a non-specialist audience.** **Character Limit: 3050 characters (~430 words)**The neuroimaging focus of the proposed work will apply advanced multivariate methodology to comprehensive, internationally shared data sets in order to generate new insights into these functional brain networks as they relate to delusions and hallucinations in schizophrenia. Emerging task-based brain networks can be anatomically identified based on core anatomical “signatures”. They can also be assigned a cognitive function, based on their BOLD response to the implemented experimental conditions. Finally, the relation to the symptoms of schizophrenia can be determined by statistical methods used to study the overlap between individual differences in two datasets; namely, in this case, brain imaging data and measurement of symptoms of schizophrenia.To date, a number of clinically-oriented labs (Canada, France, UK, USA, Australia, Brazil and Netherlands) have committed their data to this initiative. We also include a substantial amount of publically available fMRI data. Such research is interdisciplinary, as it involves clinical researchers in psychiatry and cognitive neuroscience sharing data with those involved in multivariate statistics. This initiative will generate new insights into the workings of the functional brain networks underlying the symptoms of schizophrenia, thereby paving the way for studies attempting to manipulate these brain networks through neuromodulation. |
| **B) Outline the student’s role in the project and describe how they will benefit from their involvement.** This section must address how involvement in this project will help the student gain an understanding of how high quality research is conducted. This includes addressing the opportunities to learn new skills in the context of the relevant learning objectives listed in the [adjudication criteria](http://www.med.ubc.ca/current-learners/summer-student-research-program/adjudication/); their anticipated interactions with other researchers and the available resources that will contribute to a beneficial experience.*Clearly indicate which items will be completed during the FoM SSRP funding period and which (if applicable) will be completed before or after the funding period if the student and supervisor have chosen to also work together outside of the funding period. Project feasibility is considered during the adjudication process; 4-week and 8-week projects will be adjudicated separately, with appropriate consideration given to each.***Character Limit: 3800 characters (~540 words)**DutiesThe duties of the student will be: learning how to read functional brain images, upload them to our in-house software for data analysis, run the in house software, create reports on the results, re-run the software using different analysis methods.Skills RequiredComputer programming skills/knowledge of multivariate statistics are not really required for this internship. What is required is a desire to learn about these methods, how to apply them to the study of hallucinations in schizophrenia, using functional neuroimaging. The intern will gain extremely valuable skills that would provide an excellent starting point for a career in cognitive neuroscience research. Most importantly, the intern must be easy to get along with, able to work well with a team. Working well with a team means being able to find the right balance between working independently and asking for guidance.Working teamThe Cognitive Neuroscience of Schizophrenia Laboratory (CNoS) is located in the BC Mental Health and Addictions Research Institute (BCMHARI) housed on the 3rd floor of the Translational Research Building of the BCCHRI at Children's and Women's Hospital in Vancouver, BC. We focus on functional neuroimaging and cognitive neuropsychiatry. We are committed to developing a cognitive and biological understanding of the symptoms of schizophrenia, and translating this information back to people with schizophrenia so that they will better understand their illness, and through this insight, be better able to cope with their symptoms. Currently our team involves three Ph.D. students, two computer programmers, 1 research coordinator and 4 research assistants. Testable research hypotheses/questions will be developed through critical evaluation of existing literature on schizophrenia, hallucinations and brain imaging. The experimental design of multiple cognitive tasks must be developed in order to analyze the shared data. The ethical principles of research must be strictly attended to when using shared data. Advanced in-house data analysis methods will be used. Presentations and manuscripts will be an important part of this work. The role of the student will be to compile data from multiple labs from around the world and analyze these data with our in-house neuroimaging software. The project can be completed in 8 weeks because the data for the project has already been collected. A 4 week project would lead to only preliminary analyses being completed. |

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| **Please indicate if your project requires the following and indicate their status as appropriate.** This will help clarify the scope of the project for potential student partners. |
| **This project requires ethics approval (human or animal):**[x]  Yes [ ]  NoIf yes please indicate if you:[x]  Already have approval [ ]  Will obtain approval before the SSRP funding period [ ]  Intend for ethics application to be a focus over the funding period\*Please note that as ethics approval can be a lengthy process it is recommended that this be obtained well in advance of the funding period unless the intention is for this activity to form a major part of the FoM SSRP-funded portion of the project.**This project requires access to electronic medical records:**[ ]  Yes [x]  NoIf yes please indicate if you: [ ]  Already have approval [ ]  Will obtain approval before the SSRP funding period [ ]  Plan to obtain approval during the SSRP funding period**This project requires operational/institutional approval:**[x]  Yes [ ]  NoIf yes please indicate if you: [x]  Already have approval [ ]  Will obtain approval before the SSRP funding period [ ]  Plan to obtain approval during the SSRP funding period |

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| **Research Location (As applicable, indicate where the project will be conducted.)** |
| City or Region: VancouverResearch Centre: Cognitive Neuroscience of Schizophrenia Laboratory (CNoS) - BC Mental Health and Addictions Research Institute (BCMHARI)Hospital: Children's and Women's Hospital     Program or Unit:      Additional information (building, lab etc.): 3rd floor of the Translational Research Building of the BCCHRI |
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| **Supervisor’s Information** |
| **Supervisor Last Name:** Woodward | **Supervisor First Name:** Todd |
| **FoM Department/School (Main FoM Appointment):** Psychiatry | **UBC FoM Division (if applicable):**      |
| **Preferred contact method (for students)****[ ]** Phone supervisor**[x]** Email supervisor | **[ ]** Phone alternate contact**[ ]** Email alternate contact |
| **Preferred Phone:** 604 875-2000 ext 4724 | **Supervisor Rank (Instructor, Professor etc.):**     Professor  |
| **E-mail Address:**  toddswoodward@gmail.com |  |
| **Optional Alternate Contact** (e.g. co-supervisor, research/lab coordinator, assistant etc.) |
| **Contact’s Name:**       | **Contact’s Role:**       |
| **Contact’s Phone Number:**      | **Contact’s E-mail Address:**      |