Project title: Role of GPR139 in cognitive impairment and its potential link with schizophrenia

1. **Brief Background of Research Project**

   Deficits in cognitive function ranging from decreased attention and working memory to disrupted social cognition and language are common in psychiatric disorders. They severely compromise the quality of life, yet are currently poorly treated. Although specific symptoms of psychiatric disorders such as depression, delusions, and anxiety are alleviated by current drugs, cognitive deficits are not usually improved and may even worsen.

2. **Project Description**

   GPR139, an orphan G-protein coupled receptor predominantly expressed in the habenula, an evolutionarily conserved brain region. Recently, evidence has been accumulating to support an essential role of the habenula in cognitive performance. We hypothesize that GPR139 may have a role in cognitive functions and could be implicated in cognitive deficits in mental illnesses.

   We have recently identified the possible role of GPR139 in learning ability and decision-making (Scientific Reports, 2021). However, its involvement in other cognitive functions such as the attention process remains unknown. Schizophrenia is widely thought to involve deficits of attention. Hence, understanding of the possible role of GPR139 in attention could lead to developing GPR139 signalling as a potential therapeutic target for negative symptoms associated with schizophrenia.

3. **Objectives**
   i. To examine the effect of selective inhibition or activation of GPR139 signalling on sensory gating abnormalities
   ii. To examine effect of selective activation or inhibition of GPR139 signalling on in vivo neuronal activity in the brain

4. **Supervisor / Supervision team**
   i. Dr Satoshi Ogawa
   https://www.monash.edu.my/jcsmhs/staff/academic/satoshi-ogawa
   ii. Prof Ishwar Parhar
   https://www.monash.edu.my/jcsmhs/staff/academic/ishwar-parhar
   iii. Dr Siew Ying Mok (UTAR)

5. Eligibility

Candidates must meet the minimum admission requirements (academic and English language proficiency) for the research degree. Candidates interested in applying for scholarship must meet the minimum eligibility for scholarship application which is equivalent to a high distinction average (H1/H1E or 1st Class Honours as per Faculty's and Monash's assessment at admission) from a recognized university. Applications for scholarship will go through a rigorous Campus ranking exercise of academic achievement, research publications, and research experience or research-related awards.

6. Required Skills

i. Basic biological lab skills (basic cell culture and molecular biology experience would be advantageous)
ii. Standard PC skills (experience in Python would be advantageous)
iii. Life science background (neuroscience background would be beneficial)