**Statistical Design Consulting**

**SEMESTER REPORT**

**Fall 2024**

**Client:** Dr. Xiaoling Chen  **File Number:** 24-134

**Department:** MCMP **Major Prof:**

**Consultant:** Sumeeth Guda **Initial Meeting Date:** 11/05/24

**Meeting Attendees:** Dr. Xiaoling Chen, Sumeeth Guda, Dr. Bruce Craig

**Statement of Problem:**

To determine if there is a difference in the neuronal activity (e.g., firing rate) between the control (WT) and mutant (HET) organoids.

**Goal of This Project:** Grant Application, Journal Publication.

**Background:**

The client is a post-doctoral researcher in the MCMP department who is investigating and deciphering the role of SCN2A deficiency in autism-associated impairments through advanced human brain organoid models. The client submitted a grant proposal to get funding for the project, however it was not grants with reviews stating there is insufficient power. The client came to the SCS seeking help with the power analysis, as well as a review of the application to make sure that all of the statistical methods were valid and reasonable.

**Progress During Current Semester:**

This client needed immediate help with a grant application due the week after the IM meeting concluded. Originally, they messed up their power analysis and as a result the journal publication told them to consult with a statistician and correct the power analysis for the experiments.

Dr. Craig wrote a letter of support for the client to submit to the journal as evidence that we gave her statistical consulting.

During the IM, the client shared her experimental designs for each of her 10 experiments, which ended up having the issue that she assumed each of the experiments had the same settings for alpha and beta when each of the set ups had different levels of variability. After talking about the experiments, the client and consultant met afterwards to discuss the power analysis calculations as well as editing her application to phrase the power analysis results in a correct way.

After a bit of miscommunication, Sumeeth ended up doing all of the editing and sending the commented file back to the client with his edits on the power analysis integration for the application to ensure that her methodologies were statistically sound. The client will likely not be returning in the spring.

**Current Status: Complete.**