Client 24-134

IM Agenda. Meeting11/5/24 Tuesday 10:30 AM

Phase: Design (No data collected)

Important Deadline: 11/12/24 (Grant deadline)

Background:

The client is a faculty member in MCMP (Med Chemistry Molecular Pharmacology). Who is investigating and deciphering the Role of SCN2A Deficiency in Autism-Associated Impairments Through Advanced Human Brain Organoid Models. They came to the SCS because they need help with power analysis since their previous application was rejected due to insufficient power analysis.

Design set up:

1. The client is estimating sample size with a power of 0.8, effect size of 0.5, and sig level of 0.05.
2. The number of biological replicates per experiment is detailed in the Approach sections.
   1. Organoid Culture: Experiments will include a minimum of three hiPS cell lines over two to three differentiation processes, incorporating at least two to three organoids or assembloids per batch, to account for variability in neuronal differentiation 52,53.
   2. Mouse Studies: Mice of both sexes, aged 0-8 months, will be utilized in Aim 3. Should no sex differences be observed, the results will be pooled.
3. Statistical Analysis: The normality test will be performed with GraphPad, and normally distributed data will be further analyzed by Students t-test (for two groups) or ANOVA with Bonferroni, Tukey’s, or Dunnett’s post hoc tests as appropriate (for three or more groups), and non-normal distribution data will undergo nonparametric analysis (Mann-Whitney U or Kruskal-Wallis with Dunn’s post hoc).

Discussion Points:

1. What is the hypothesis that they are trying to answer?
2. What are their approaches / methodologies for this study?
3. Are there similar studies with an appropriate sample size?
4. What is the client trying to achieve with their project?
5. What are the aims they are investigating?

Dr. Craig notes:

Sumeeth:

It would not hurt to explain to the client how we function (client would be guided/assisted through analysis by consultant). You could also ask if they are looking for a Letter of Support (LOS) from the SCS.

Key to assisting the client with the application is not word-smithing what they wrote but rather understanding the experiments to be run and the proper analysis. This post doc comes from a group that looks at nerve cells (neurons) and typically there is a nesting structure in their experimental designs. I can’t clearly make sense of the study here but it sounds like two studies, one with organoids/cell lines but they’ll need to explain batch and the differentiation processes. The other with mice but I have no idea what they are doing to them and what they are measuring.

It may be dangerous because they might send you the full draft but you could ask for the experimental methods section of each study. Hopefully that would supply the responses they’re considering (in the past it has been the number of neuron firings)

Sincerely,

Prof Craig