Stress-in-a-dish

Statements belonging to the thesis

Stress-in-a-dish: Modeling the neurobiology of glucocorticoids *in vitro*, investigating stress susceptibility, and highlighting ethical implications

1. *In vitro* glucocorticoid models are used to investigate stress-related neurobiological mechanisms and disorders, but standardization is needed for improved study validation and replication. – *This thesis*

2. Chronic and excessive cortisol exposure leads to the dysregulation of neurobiological mechanisms in human cortical neurons during neuronal development including cell-type and stage-specific effects on proliferation, differentiation, and maturation. – *This thesis*

3. Cortisol-sensitive genes show robust co-localization with genes previously linked to the neurodevelopmental disorder schizophrenia, and not with genes associated with stress-related disorders such as depression and post-traumatic stress disorder. – *This thesis*

4. Chronic cortisol *in vitro* can be used to investigate candidate genes involved in PTSD susceptibility, including *DUSP22* and *ZFP57*, through differential DNA methylation and mRNA expression, respectively. – *This thesis*

5. The ethical concerns surrounding cerebral organoid research, potential donors, and animal chimera research are more pressing than the ongoing discussions about the potential sentience of cerebral organoids. – *This thesis*

6. Human pluripotent stem cell differentiation *in vitro* is a very promising tool for the study of human-specific neurodevelopmental processes, that could enable the elucidation of mechanisms of neurodevelopmental disorders. – *Marchetto et al. 2010*

7. Prenatal and postnatal periods are highly vulnerable to environmental and psychosocial factors and have been associated with psychiatric symptoms in children. – *Airikka et al, 2022*

8. Guidelines for the ethical communication of findings associated with cerebral organoids (and biotechnologies in general) is eminent for the responsible dissemination of the science without facilitating false hope and hype. – *Impact paragraph of this thesis*

9. Despite increasing literature on the promise and usage of psychiatric biomarkers for clinical and non-clinical purposes, there has been little proactive discussion on the potential ethical, social, and legal issues that accompany their use. – *Singh & Rose, 2009 & this thesis*

10. Before you are useful, make sure you are harmless. – *Hippocrates*

11. We are scientists and not women in science.

Katherine Bassil
May 30th, 2023