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| The Human Brain Organoids Facility at BRI-FORTH**Georgia Voudouri** 1#, **Kleanthi Chalkiadaki** 1, **Maria Zafeiri** 1, **Elpida Statoulla** 1 and **Christos G. Gkogkas** 1#1 Biomedical Research Institute, Foundation for Research and Technology-Hellas, University Campus, 45110 Ioannina, Greece# Presenting author: Georgia Voudouri, email: georgia.voudouri@bri.forth.gr \* Corresponding author: Christos Gkogkas, email: [cgkogkas@bri.forth.gr](cgkogkas%40bri.forth.gr%20)  |

abstract

The Human Brain Organoids Facility at BRI-FORTH is dedicated to advancing biomedical research through the development and application of brain organoid models. Brain organoids are three-dimensional, stem cell-derived structures that mimic the cellular composition and architecture of specific regions of the human brain. These models are generated from induced pluripotent stem cells (iPSCs) that can be derived from somatic cells, such as skin or blood, through a process called reprogramming. By using well-established protocols, the facility can produce organoids representing various brain regions, including the cortex, dorsal and ventral midbrain, enabling the study of region-specific neurological functions and disorders. Brain organoids have proven to be invaluable preclinical models for understanding the pathophysiology of a wide range of neurological disorders, including neurodegenerative diseases, neurodevelopmental disorders, and psychiatric conditions. Their ability to recapitulate human-specific brain features in a laboratory setting allows researchers to investigate disease mechanisms, identify biomarkers, and test potential therapeutic interventions. The facility offers a comprehensive range of services, including: iPSC reprogramming, organoid generation, and specialized assays to analyze the cellular and molecular characteristics of brain organoids. Available analyses include advanced imaging techniques, cellular and molecular profiling, toxicity assessments, and custom assay development for disease modeling and drug discovery.

By providing these services, the Human Brain Organoids Facility at BRI-FORTH aims to support cutting-edge research in neuroscience and foster the development of personalized therapeutic approaches for neurological disorders.