

CellBrain™

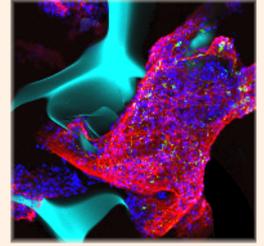
Cell therapy testing
Biomaterial biocompatibility testing

Human brain organoid model

Advantages of CellBrain™

Cell therapy testing
Biomaterial biocompatibility testing

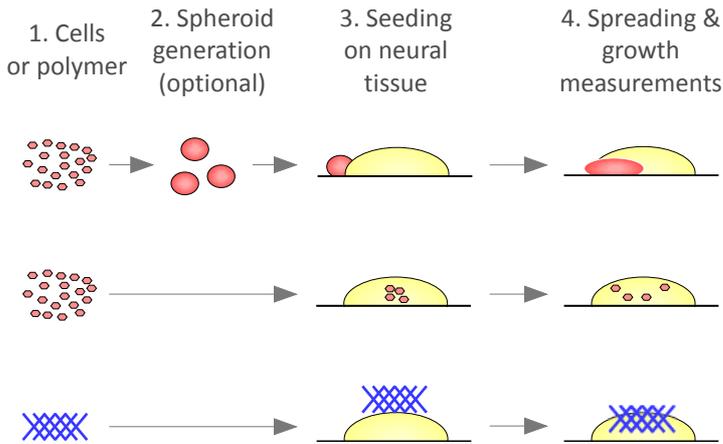
- Short & Long term treatment testing
- Human 3-dimension tissues
- Highly physiological tissue interactions
- Monitoring of cell / polymer integration in the neural tissue



CellBrain™ is a testing service to investigate the efficiency and safety of cell therapy or biomaterial therapy in human brain tissue.

Efficiency of cell therapy can be assessed starting from fluorescent single cell suspension or spheroids depicted in the scheme below (red-colored). These are then seeded on the neural tissue, and spreading can be easily monitored via fluorescence measurement.

Similar experimental pipeline is followed with a biomaterial (blue-colored), while its integration in the neural tissue is finally measured.



The long term treatment testing, 3D human organoids and physiological cell/biomaterial - tissue interactions makes CellBrain™ advantageous compared to currently used 2D as well as animal models.

CellBrain™ represents an ideal tool for lead treatment screening and validation through efficiency testing, or deeper histological, proteomic and genomic testing for mechanistic studies.

Monitoring cell survival and spreading

Following fluorescent cell injection in the neural tissue, their survival, integration and spreading can be monitored.

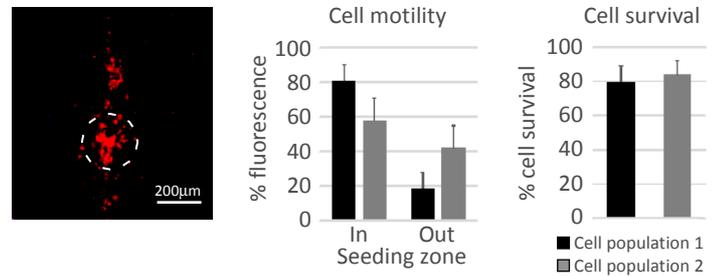


Fig. A: as example, seven days following injection of fluorescent cells in the neural tissue fluorescence is measured. The white circle in left panel represents the seeding zone, all cells out of this zone are considered as motile and quantified in middle panel. Right panels quantifies total fluorescence to assess cell survival.

Biomaterial biocompatibility measurement

We provide multi-parameter approach to assess the biocompatibility of a biomaterial: the volume occupied by cells, its influence on cell viability and on cell differentiation

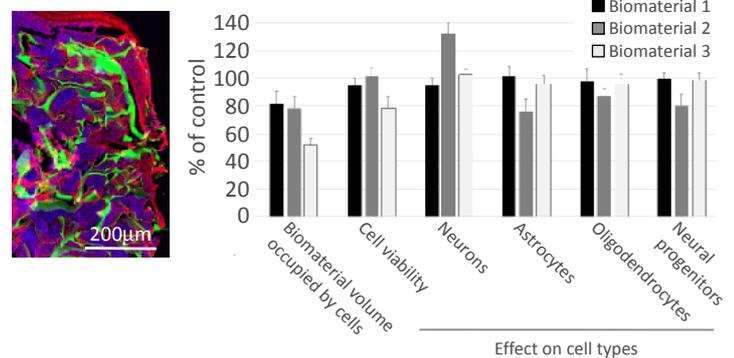


Fig. B: in left panel, histological analysis displays high biomaterial penetration in the neural tissue: neurons in red (β III-tubulin) and biomaterial in green. Multiparameter quantification reveals volume occupied by cells and their viability. Genomic analysis shows that biomaterial 2 promotes neuronal migration, while no cell-dependent effect are observed for biomaterials 1 & 3.

CellBrain™ Cell therapy & biomaterial biocompatibility testing - Service specifications

| | |
|-----------------------|--|
| Cell types | 3D Neural tissue: Minibrain™ generated from human pluripotent stem cells. Composed of neurons, astrocytes, oligodendrocytes and neural progenitor cells. The latter cells keep generating newborn neurons in a dynamic process. |
| Production technology | Neurix's Minibrain™ & Neurosphere technology with minimum batch to batch variability guaranteed by extensive quality control of identity (rt-qPCR) |
| Field of application | - Lead compound validation - High throughput screening (for cell therapy only) |
| Assay window | Short term (7 days) to long term (one month) |
| Readouts | - Cell viability - Cell apoptosis - Cell motility - Biomaterial volume occupied by cells - Cell-type dependent effects |

Our publication

Nayernia, Z. et al. The relationship between brain tumor cell invasion of engineered neural tissues and in vivo features of glioblastoma. *Biomaterials* 34, 8279–8290 (2013)

Bonini F., Bratschler T. et. Al., in preparation

Validated assay and protocols

CellBrain™ service is integrated into a variety of validated assay that can be implemented in drug development for efficacy evaluation of novel compounds:

- Cell viability assays
- Histological analysis (IHC & IF)
- Cell sorting and cell population analysis (FACS)
- Genomic analysis
- Proteomic analysis

Get in contact with us

Neurix offers customized services for neural applications. These include gene / cell / polymer therapy testing, brain tumor drug testing, neurodegenerative diseases modeling and neurotoxicity assays. Our experienced scientists are happy to work with you in order to understand your needs and meet your objectives.

Contact us

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Next generation neuro-engineering