**Information about the MEA recordings**

Summary table for experiment

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| --- | --- | --- |
|  | *Name* | *Condition* |
|  | **MEA2** | Control culture: PBS (PBS1) |
| **Experimental Details** | **MEA18** | Control culture: PBS (PBS2) |
| Seeding: 100.000 cells /MEA | **MEA13** | Control culture: Monomers (Monomer1) |
| Date seeded: 08.08.17 | **MEA17** | Control culture: Monomers (Monomer2) |
| Recording period: 29.08-03.10.17 | **MEA8** | PFF condition (PFF1) |
| Baseline recordings: 5 (29.08-11.09) | **MEA14** | PFF condition (PFF2) |
| Recordings after perturbation: 13 per MEA (13.09-03.10) | **MEA15** | PFF condition (PFF3) |
|  | **MEA16** | PFF condition (PFF4) |

The spontaneous electrophysiological activity from 8 neural networks maintained on 60-electrode planar microelectrode arrays (MEAs) (60MEA200/30iR-Ti; Multi Channel Systems) was recorded using an MEA2100 *in vitro* system together with the MEA suite software (Multi Channel System).

Each MEA was seeded with approximately 100.000 iPSC-derived neural progenitor cells and matured for 21 days before the network activity was recorded. 5 baseline recordings were made from each network (dates 29.08-11.09), before seeds of alpha-synuclein PFFs were added to MEA8,14,15 and 16; PBS was added to MEA2 and 8, while alpha-synuclein monomers were added to MEA13 and 17.

The resulting electrophysiological data obtained from each neural network during the duration of the experiment (03.10) are available in HDF5 format.

Futher information on the reprogramming protocol, cell culture and handling, MEA preparation and experimental set-up will be published in the research article produced form these datasets, or provided on request.