**Table S2: Detailed cell type identification information.** Information regarding each of the test in vitro models, and their corresponding, catalog number, as well as the duration of exposure, positive controls, cell-type specific phenotypes (functional and cytotoxic), abbreviated names, and descriptions.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **In Vitro Model** | **Catalog #** | **Chemical Exposure** | **Positive Controls** | **Cell Type Specific Phenotypes** | | **Abbreviated Phenotype** | **Description** |
| **iCell Neurons** | #C1012 | 72 h | Brefeldin A Mitomycin C Retinoic Acid Rotenone | **Functional Phenotypes** | Total Outgrowth | TotOut | Total length of outgrowth in μM |
| Mean Outgrowth | MeanOut | Average growth in μM divided by the number of cells |
| Total Processes | TotProc | Number of outgrowths in the image that are connected to cell bodies |
| Total Branches | TotBranch | Total number of branching junctions in the image |
| Cells with Significant Growth | CWG | Number of cells in the image with outgrowth greater than the threshold length in the modules settings |
| **Cytotoxic Phenotypes** | Cell Number | TotCell | Total number of nuclei, cell count measurement |
| Mitochondrial Integrity | MitoInteg | Total number of cells positive for the MitoTracker staining |
| Cytoplasmic Integrity | CytoInteg | Total number of cells positive for the Calcein AM staining |
| Total Cell Body Area | CBA | Total μM2 of the cell bodies in the image (not including outgrowths) |
| ATP Production | ATP | Luminescence readout of ATP using CellTiter Glo assay |
| **iCell Cardios** | #C1006 (01434.1025) | 90 min | Sotalol  Isoproterenol Propranolol | **Functional Phenotypes** | QT Prolongation | QTProl | 5% increase in decay to rise ratio; average ratio of deay to rise time of each peak after exposure |
| Positive Chronotrope | PosChron | 5% increase in peak frequency |
| Negative Chronotrope | NegChron | 5% decrease in peak frequency |
| Asystole | Asystole | 95% decrease in peak frequency |
| **Cytotoxic Phenotypes** | Cell Number | TotCell | Total number of nuclei, cell count measurement |
| **HUVECs** | #CC-2519A | 18 or 24h | Histamine Chloroquine Nocodazole Suramin | **Functional Phenotypes** | Mean Tube Length | MTL | Total tube length divided by the number of segments |
| Total Tube Length | TTL | Total microns of tube length (not including nodes) |
| Total Tube Area | TTA | Total square microns of tube area (not including nodes) |
| **Cytotoxic Phenotypes** | Cell Number | TotCell | Total number of nuclei, cell count measurement |
| Mitochondrial Integrity | MitoInteg | Total number of cells positive for the MitoTracker staining |
| Mitochondrial Intensity | MitoIntens | Total pixel intensity of MitoTracker stain over the area of the cells that were positively stained, divided by the number of cells positive for the MitoTracker stain |
| Cytoplasmic Integrity | CytoInteg | Total number of cells positive for the Calcein AM staining |
| Nuclei Mean Area | NMA | The average area of the nucleus for all cells in the image |
| ATP Production | ATP | Luminescence readout of ATP using CellTiter Glo assay |
| **iCell Heps PHHs HepG2s** | #C1023 #HMCPIS #HB-8065 | 48 h | Amiodarone Rotenone Doxorubicin Palm/Oleate Mix | **Functional Phenotypes** | Mitochondrial Integrity | MitoInteg | Total number of cells positive for the MitoTracker staining |
| Mitochondrial Intensity | MitoIntens | Total pixel intensity of MitoTracker stain over the area of the cells that were positively stained, divided by the number of cells positive for the MitoTracker stain |
| Granularity | Gran | Total number of granules |
| Total Granule Area | TGA | The total area of granules found in the image (in μM2) |
| **Cytotoxic Phenotypes** | Cell Number | TotCell | Total number of nuclei, cell count measurement |
| Nuclei Intensity | NucInt | Average pixel intensity of the nuclear stain in the nucleus |
| All Cell Mean Area | CMA | The average area of the cell including the nucleus and cytoplasm for all cells in the image |
| Cytoplasmic Integrity | CytoInteg | Total number of cells positive for the Calcein AM staining |