HD MULTI ELECTRODE ARRAY

HD MEA recordings on human iPSC-derived NEURONS

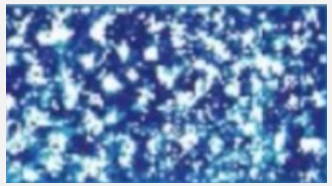
Characterize and validate your cell lines

neuroservices ALLIANCE X maxwell BIOSYSTEMS

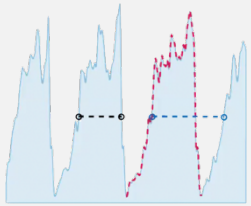
HD MEA RECORDINGS ON HUMAN iPSC-DERIVED NEURONS WITH MAXTWO

TWO FUNCTIONAL ENDPOINTS

Firing activity



Burst shape



HEALTHY H-iPSC

PATIENT-DERIVED iPSC

maxwell BIOSYSTEMS

WHAT WE PROPOSE

Determine over time **when** your cell line expresses **the right neuropharmacological endpoints**

HEALTHY H-iPSC

Pharmacology:
investigate compound effect

PATIENT-DERIVED iPSC

- Characterize impairment (healthy vs. Diseased)
- **Pharmacology**: investigate compound effect

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HD MEA RECORDINGS OF HUMAN iPSC-DERIVED NEURONS WITH MAXTWO

HD MEA

Analyze *in vitro* networks

- ✓ Higher throughput than Patch Clamp
- ✓ High statistical power
- ✓ Restricted number of functional endpoints

PATCH CLAMP

Analyze single neurons

- ✓ Higher number of functional endpoints
- ✓ Higher signal resolution
- ✓ Lower throughput than HD MEA

Target Research → Screening → Lead Optimization → Preclinical Dev → IND

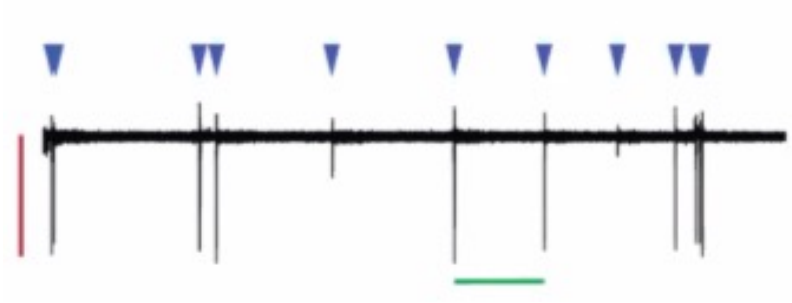
Every scientific question is unique and so is every solution

We co-design custom solutions with our clients

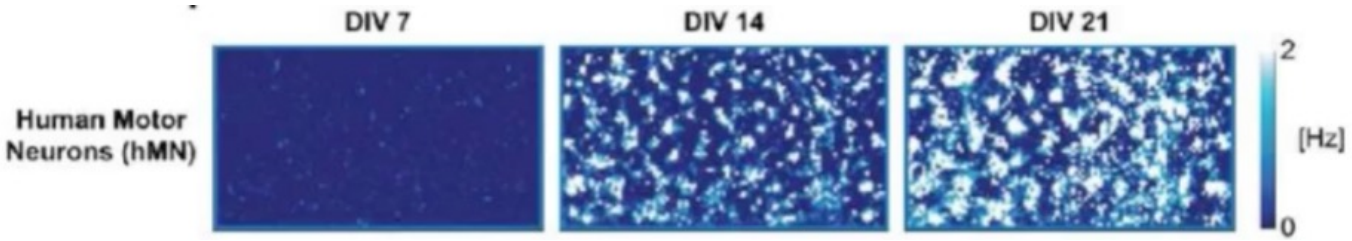
STANDARD iPSC NEURONS

DETERMINE OVER TIME WHEN YOUR CELL LINE EXPRESSES THE RIGHT NEUROPHARMACOLOGICAL ENDPOINTS

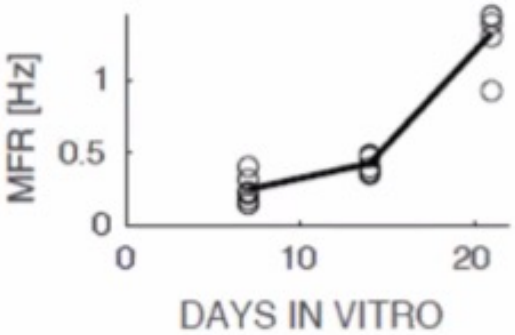
Determine the optimum culture time while following global firing activity-over DIV



Firing Rate
Spike Amplitude
Inter-Spike Interval



Average firing frequency over time



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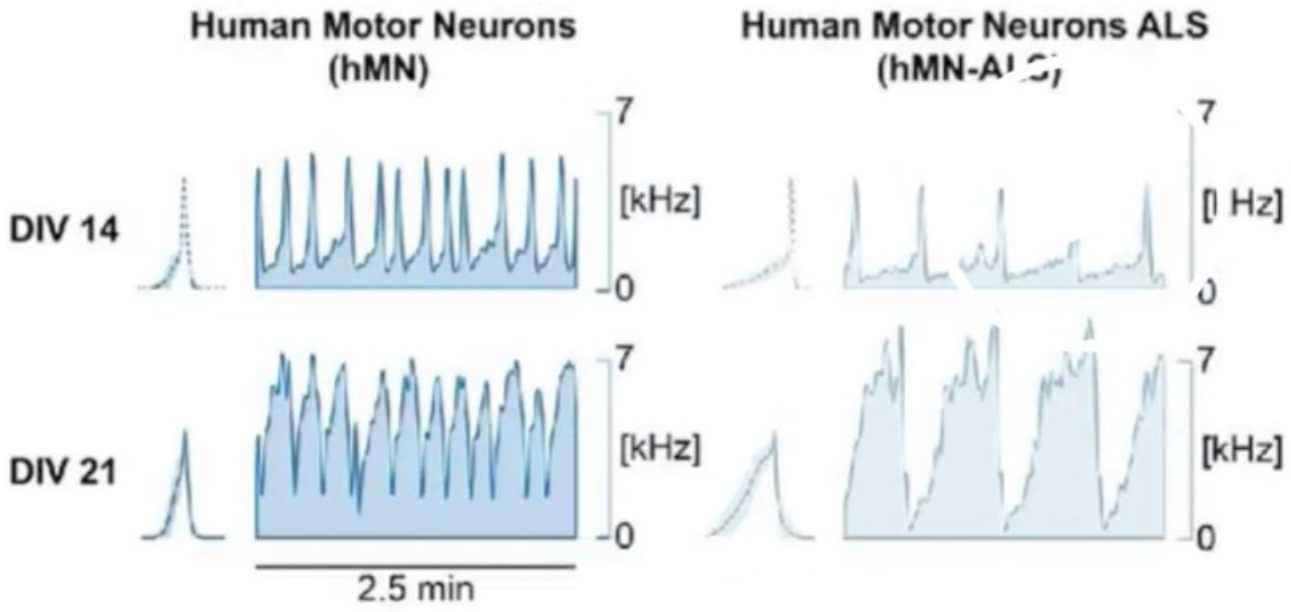
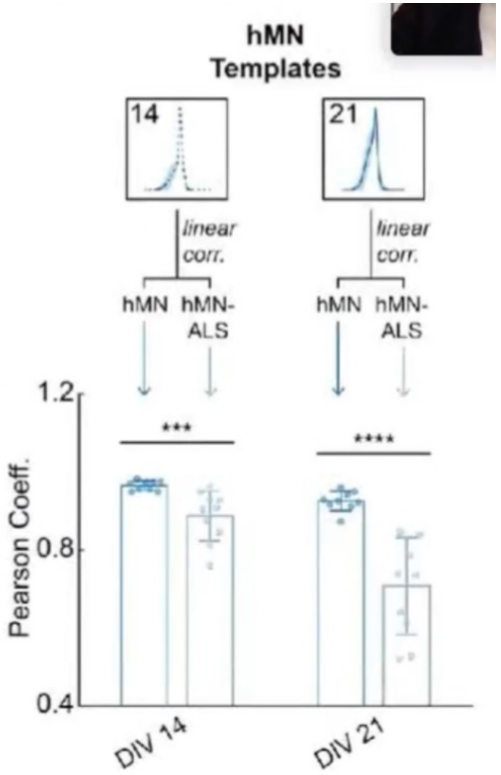
PATIENT-DERIVED iPSC NEURONS

DETERMINE OVER TIME WHEN YOUR CELL LINE EXPRESSES THE RIGHT NEUROPHYSIOLOGICAL ENDPOINTS

Get electrical “signature” to differentiate your cell lines phenotypes & determine optimal culture time by comparison





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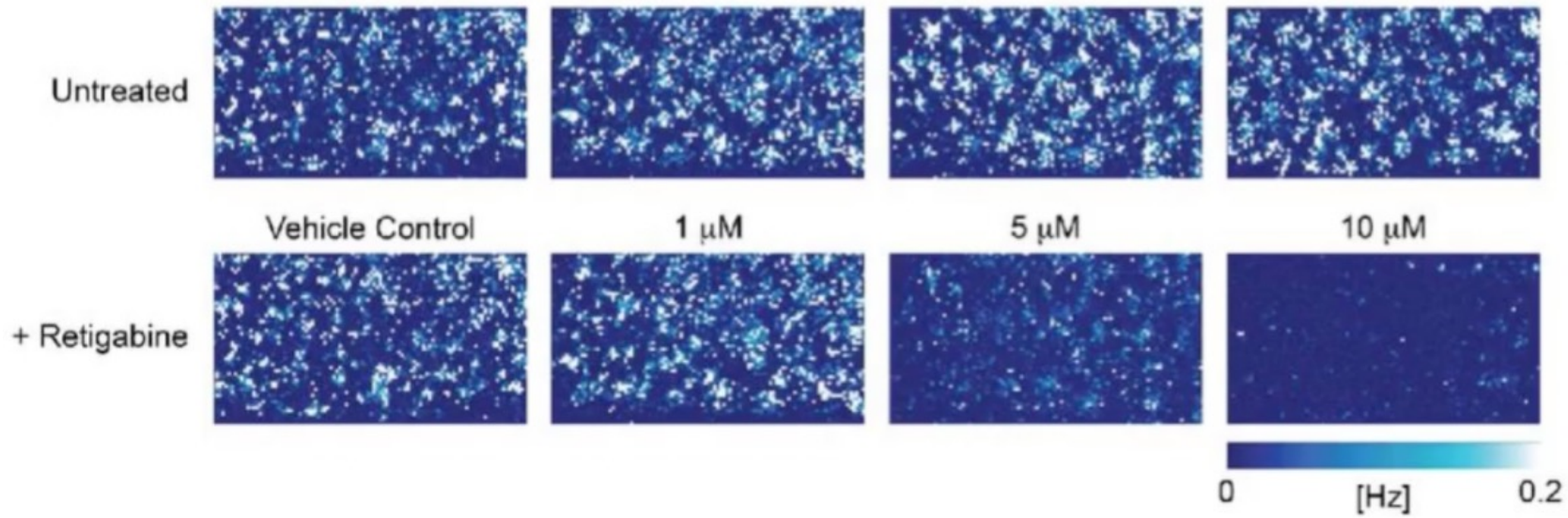
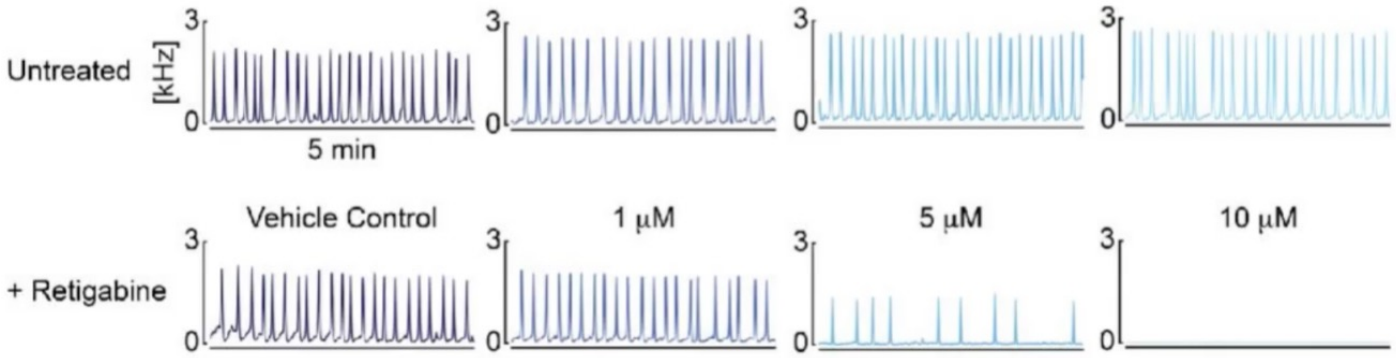
COMPOUND TESTING

Investigate compound effect on global firing activity



Effect of retigabine on motor neuron firing activity

Assess electric signature modulation by compound



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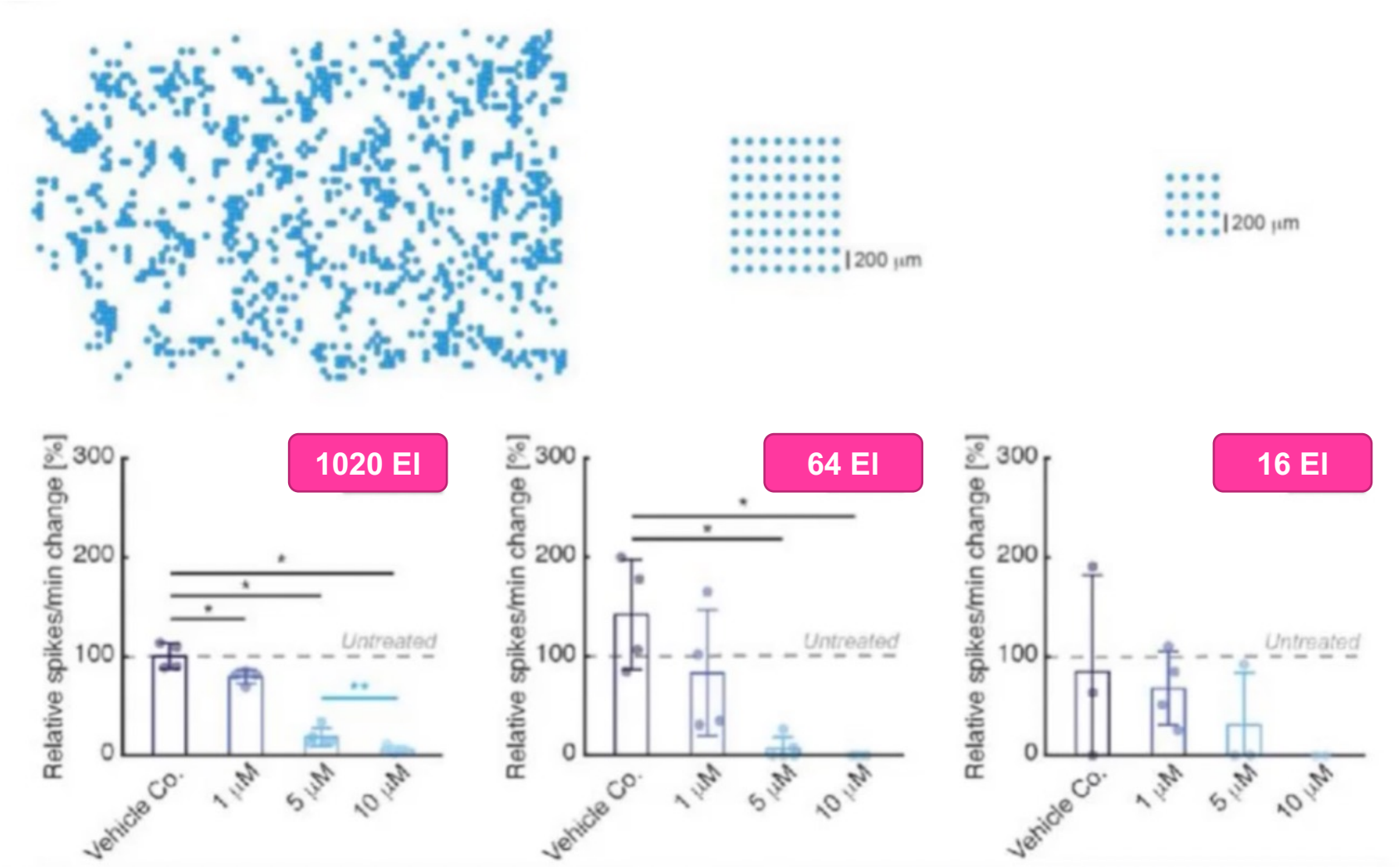
HD MEA ALLOWS HIGH STATISTICAL POWER



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HD MEA RECORDINGS OF HUMAN iPSC-DERIVED NEURONS

HIGH DENSITY MEA – POWERFUL ANALYSIS

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WORLD-REKNOWNED ELECTROPHYSIOLOGY EXPERT

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TECHNOLOGY LEADER HD MEA PLATFORM

HIGH QUALITY

- Neuroservices-Alliance co-designs and drives your study thanks to **unparalleled electrophysiology expertise**

HIGH RESOLUTION

- Identify neuronal subpopulations
- Low technical variance
- Record at the single neuron level

HIGH THROUGHPUT

- Record from **large samples** of iPSC-derived neurons
- **Get robust statistical data**

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APPENDIX

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MAXTWO TECHNOLOGY

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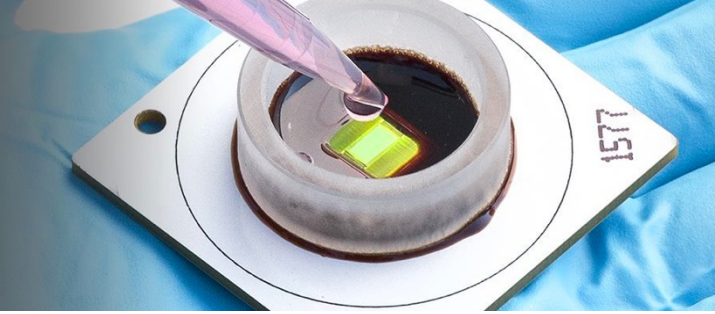
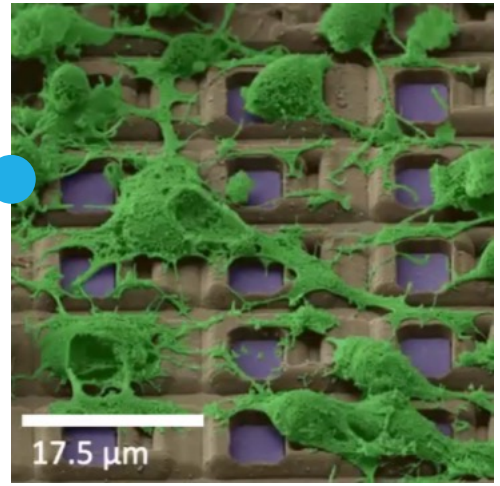
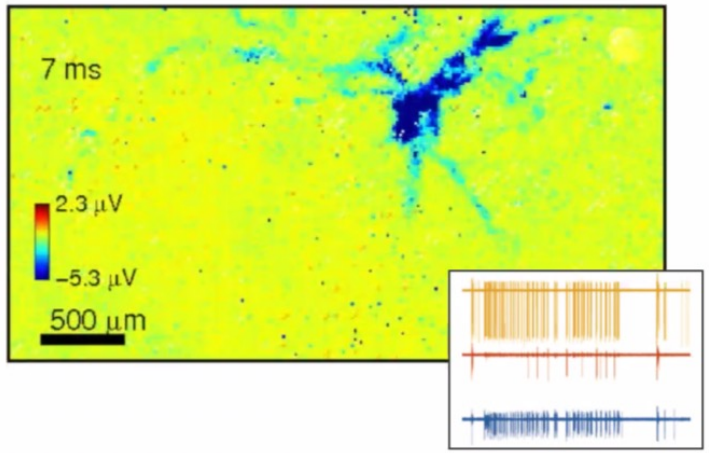
MAXTWO TECHNOLOGY: HD MICROELECTRODE ARRAY



26,400 electrodes per well





- **2x4 mm²** recording area
- **17.5 µm** electrode pitch
- Low-noise readouts, **2.4 µV$_{rms}$**
- Electrical stimulation

Interested? Contact marie.obien@mxwbio.com

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