Slice electrophysiology

in vitro assays under the most relevant physiological conditions



WE DESIGN CUSTOM COMPLEX ELECTROPHYSIOLOGICAL PROTOCOLS TO RECORD FROM:



Rodent brain slices



Rodent spinal cord slices

PROTOCOLS AVAILABLE TO DESIGN YOUR STUDY PLAN

PATCH CLAMP

Passive membrane properties

– Input resistance
– Membrane capacitance
– Access resistance
– Resting Membrane Potential (RMP)

Active membrane properties

– Rheobase
– Spike threshold
– Spike Amplitude
– Firing frequency
– Voltage-gated ion channels
– Ligand gated ion channels
– GPCR modultation

Synaptic transmission and plasticity

– Evoked responses
– Miniature currents
– Spontaneous currents

MULTI ELECTRODE ARRAY & HD MEA

– Spontaneous firing activity
– Short term synaptic plasticity
– Long term synaptic plasticity
– NMDA overactivation-induced excitotoxicity
– AMPA fEPSP
– 4 AP induced Epileptiform Discharges
– Paired-Pulse Inhibition

TOP-NOTCH FACILITIES AND EQUIPMENT

20
RIGGS FOR PARRALLEL RECORDINGS

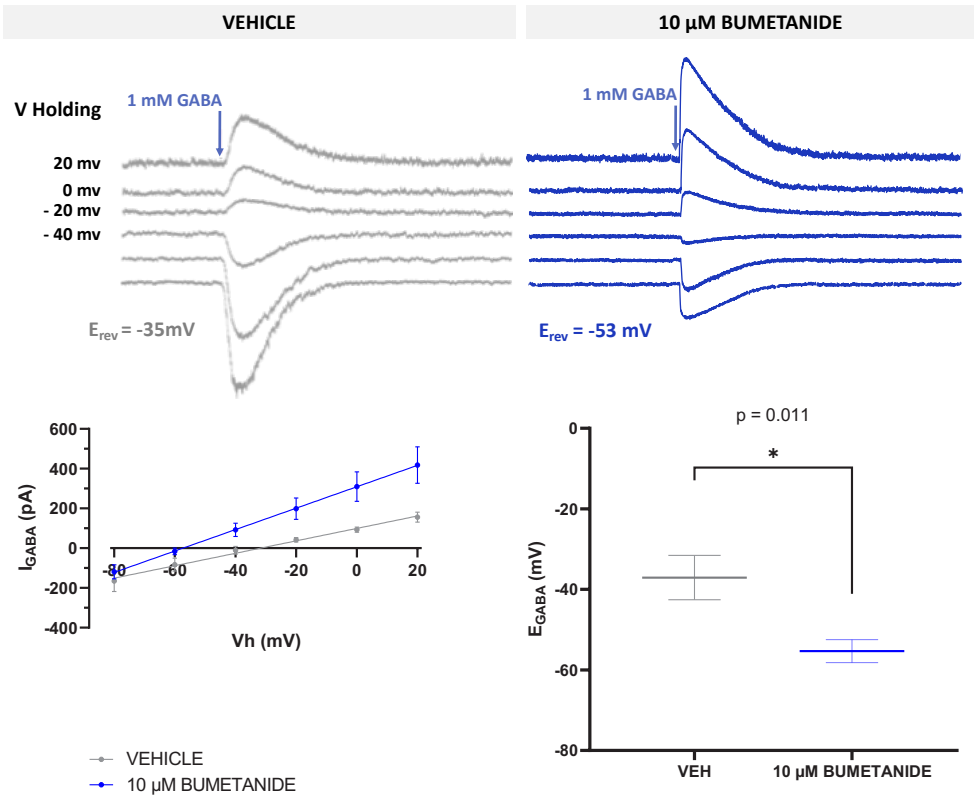
15
YEARS OF EXPERIENCE

15+
DEDICATED SCIENTISTS & RESEARCHERS

PATCH CLAMP SAMPLE DATA

E_{GABA} MEASUREMENT USING THE GRAMICIDIN-PERFORATED PATCH CLAMP TECHNIQUE

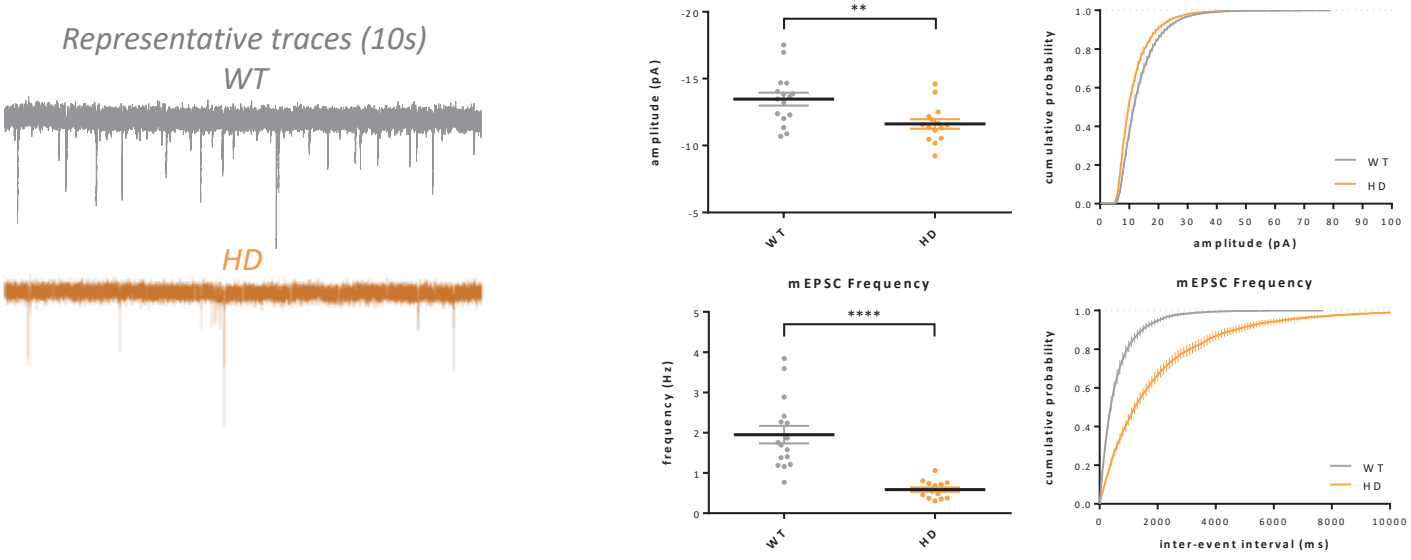
Molecules acting on CCCs such as bumetanide (NKCC1 antagonist) alter EGABA as shown on the figures



Using the perforated patch-clamp technique, Neuroservice can provide experimental scientific support to drug discovery programs targeting cation-chloride cotransporters.

Tg MICE PHENOTYPING - R6/2 HD MICE MODEL

Amplitude and Frequency of mEPSCs is altered in HD animals versus WT animals.

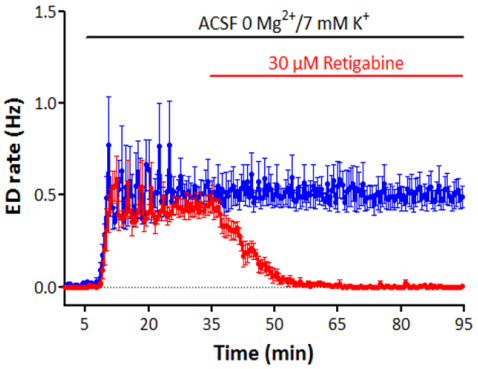


Data used with permission from CHDI Foundation, Inc

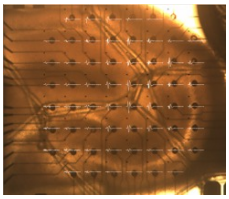
IN VITRO MODEL FOR PRO- OR ANTI-EPILEPTIC DRUG PROFILING

Zero-Mg2+-induced Epileptiform Discharges (4-AP, NMDA and bicuculline models also available)

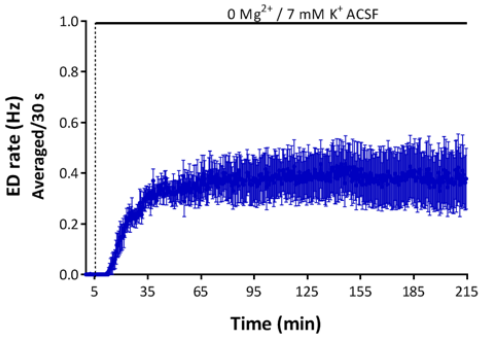
Evaluation of Retigabine (30 µM)



MEA electrodes on hippocampal slice



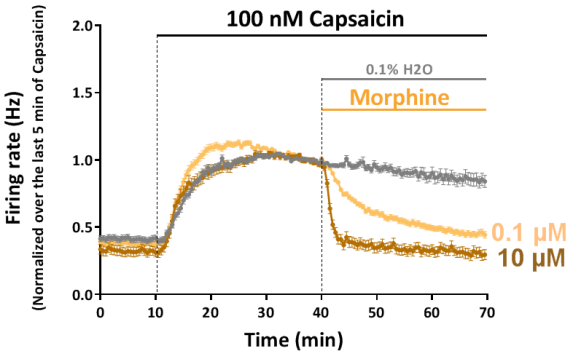
Zero-Mg2+-induced ED



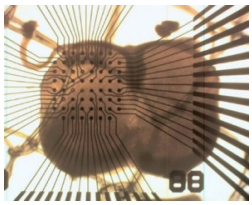
PROFILING OF PAINKILLERS DRUGS

Capsaicin-induced neuronal firing in spinal cord

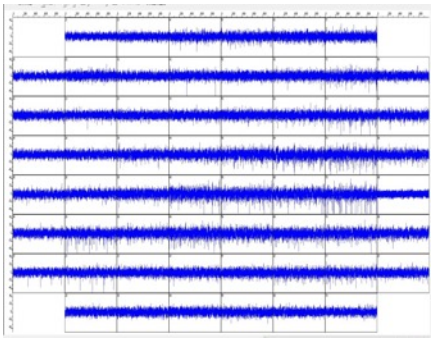
Evaluation of Morphine



MEA electrodes on spinal cord slices

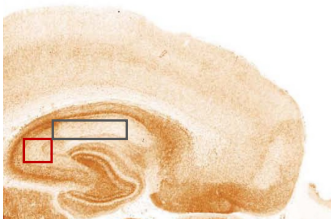


Neuronal firing activity



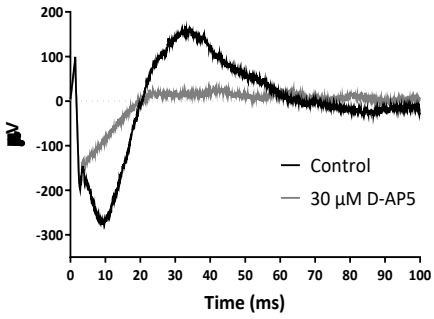
NMDA-MEDIATED FEPSP

Extracellular recording of Excitatory Post-Synaptic Potential (EPSP)



Stimulation area

Recording area



After 30 µM D-AP5 application, only the afferent volley and the system background noise remain (grey trace).

Area Under Curve
(NMDA-mediated EPSP AUC from 0 to 100 msec range)

Sampling
(1 Minute bin)

Normalization
(over the baseline period)

Background noise and afferent volley suppression
(subtraction of AUC during the D-AP5 period)

