

GAERS

**GIVING MOLECULES
THE VALUE THEY DESERVE**



ABSENCE EPILEPSY is a non-convulsive generalized epilepsy characterized by recurrent episodes of brief unresponsiveness to environmental stimuli, associated on the electroencephalogram (EEG) with bilateral synchronous 3 c/s spike and wave discharges (SWDs).

GAERS (Genetic Absence Epilepsy Rats from Strasbourg) is a genetic rat model of absence epilepsy that displays the EEG, behavioural and pharmacological features of absence seizures.

For the last twenty years, the GAERS has become a gold standard to study the mechanisms underlying absence epilepsy.

This model offers a very high predictivity and face validity for both anti-absence and aggravating effect of an AED in development. In addition, GAERS is useful to predict adverse effects of other drugs targeting the CNS (e.g., anti-psychotic and anxiolytic drugs).

Our solutions

SYNAPCELL provides customized solutions which cover the entire range of customers needs, from early steps to the final answer.

In vivo

We assess the anti-epileptic, anti-epileptogenic or pro-epileptic effects of your drug candidates through :

- PREDICTIVE** animal models of epilepsy
- PROTOCOLS MIMICKING** clinical trials (e.g., cross-over, add-on, chronic treatment)
- QUANTITATIVE RESULTS** using EEG.

In vitro

We define the activity profile of your drug candidates on neuronal network through :

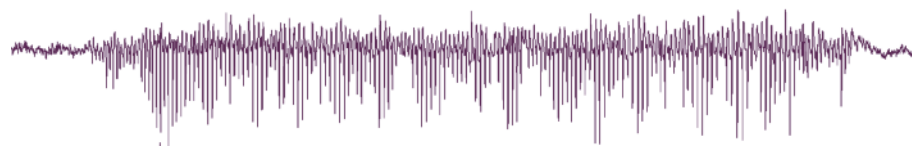
- INTEGRATED MODELS** on acute / organotypic brain slices
- VARIOUS EXPERIMENTAL** conditions (e.g., physiological, excitotoxic, epileptic)
- MULTISITE RECORDING** using MEA.

About us

SYNAPCELL is a preclinical CRO which provides highly predictive solutions to evaluate the therapeutic potential of CNS drug candidates in Epilepsy.

SYNAPCELL
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Frontal cortex



Parietal cortex



SPONTANEOUS SPIKE-AND-WAVE DISCHARGES

Bilateral generalized SWDs
 Frequency : 7-9Hz
 Mean duration = 18-25 s
 Recurrence = 45-60 SWDs/h at rest
 Behavioral arrest
 Onset at P30, no remission



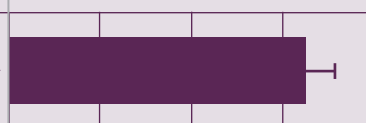
PREDICTIVITY

Analogy between Human and GAERS pharmacoreactivity

1. Saline



Cumulated duration of SWDs post-injection (s/80 min)



2. Valproate



(F: frontal cortex; P: parietal cortex) Acute Treatment: saline or valproate

AED	GAERS	HUMAN
Carbamazepine	Aggravation	Aggravation
Gabapentine	Aggravation	Aggravation
Phenytoin	Aggravation	Aggravation
Pregabalin	Aggravation	Aggravation
Tiagabine	Aggravation	Aggravation
Vigabatrin	Aggravation	Aggravation
Benzodiazepine	Suppression	Suppression
Ethosuccimide	Suppression	Suppression
Levetiracetam	Suppression	Suppression
Trimethadione	Suppression	Suppression
Valproate	Suppression	Suppression