



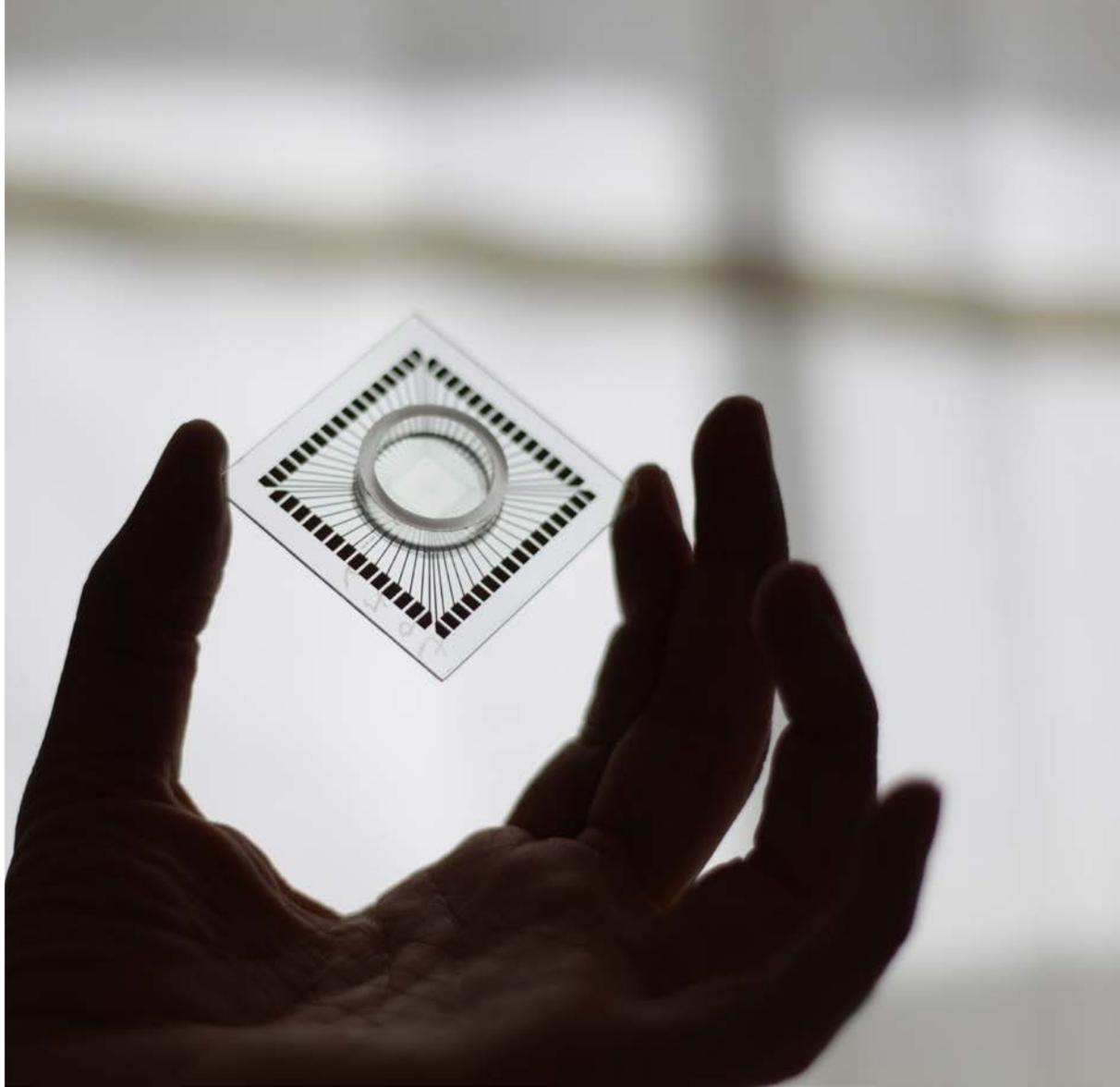
ALTERNATIVE TOXICITY SERVICES

We provide a high content screening service for evidence based chemical neurotoxicity and general cytotoxicity assessment.

Our solutions are based solely on in vitro methods in respect of the international principle of the 3Rs - Replacement, Reduction and Refinement - related to animal use.

We offer tests tailored to explore the effect of a single substance or complex mixtures on single cell or neuronal network level.

MEA BASED TECHNOLOGY



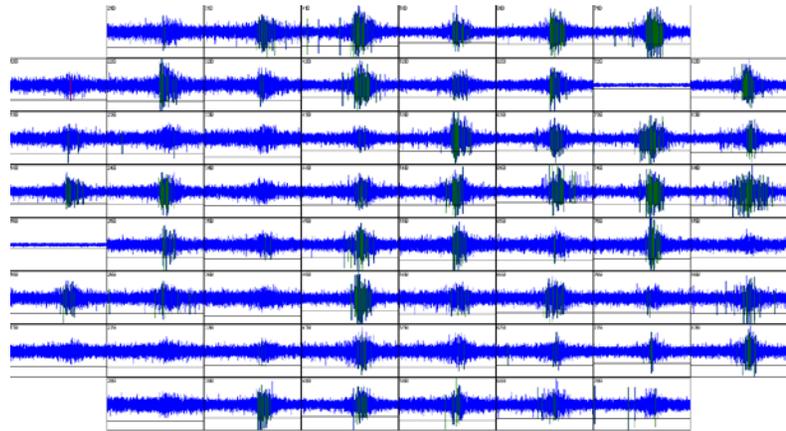
ALTERNATIVE
TOXICITY
SERVICES

MEA BASED MID-THROUGHPUT TESTING

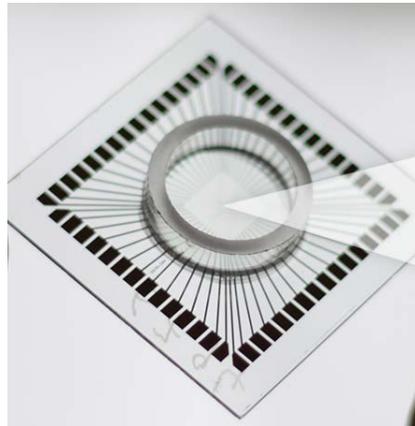
MEA technology allow real time and parallel recording of the spontaneous electrical activity developed from multiple cultured neuronal networks.

By means of multiparametric MEA data analysis, ATS provides you with innovative system to characterize chemical-induced effect on neuronal functionality.

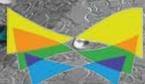
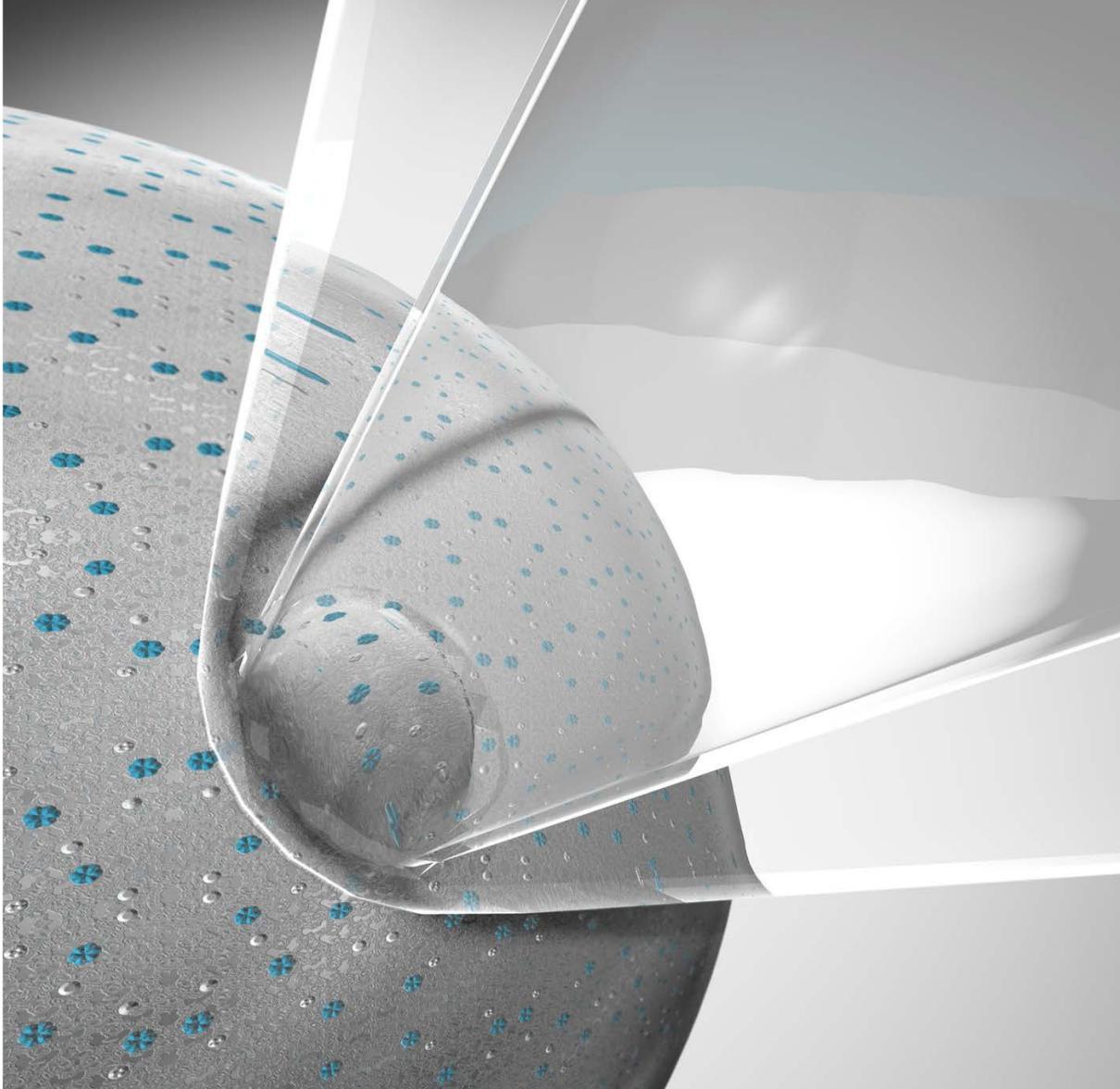
Specific protocols developed permit to detect neurotoxicity for single compound or complex mixture (e. g. marine microalghe biotoxins, industrial waste).



Neuronal network spontaneous electrical activity



SINGLE-CELL ELECTROPHYSIOLOGY



ALTERNATIVE
TOXICITY
SERVICES

SINGLE-CELL ELECTROPHYSIOLOGY: THE PATCH CLAMP TECHNIQUE

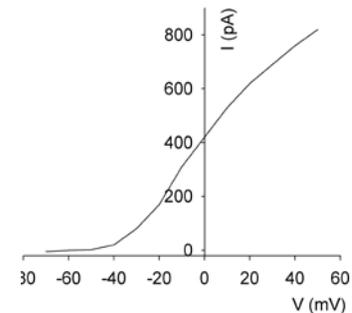
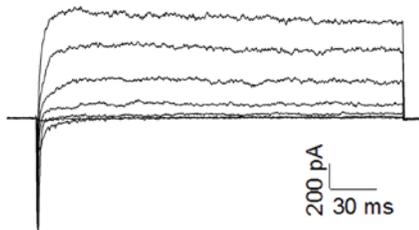
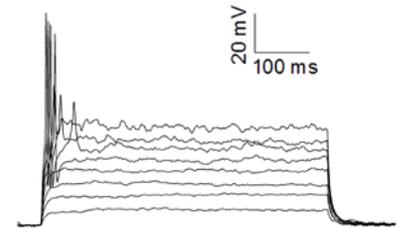
Patch Clamp is a highly accurate and sensitive evaluation method and provides complementary information to MEA based electrophysiology.

We employ single-cell patch clamp technique:

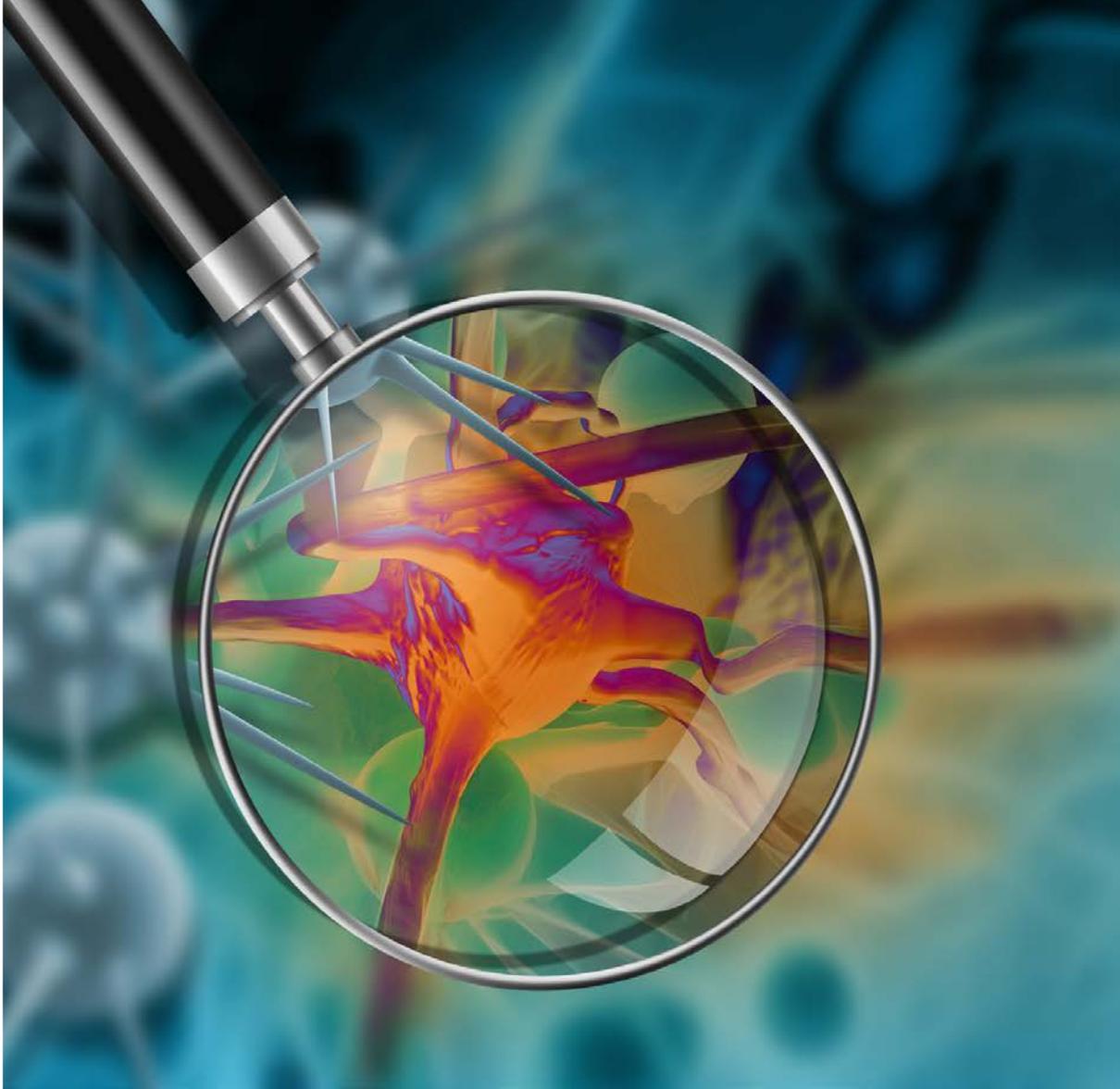
- to characterize the biophysical properties of specific ion channels and receptors;
- to gain insight into the chemical-induced effects on action potential development;
- to evaluate the differentiation process of stem cells toward a neuronal cell fate



Single cell electrophysiology on neuroblastoma cell line



SINGLE-CELL CALCIUM IMAGING



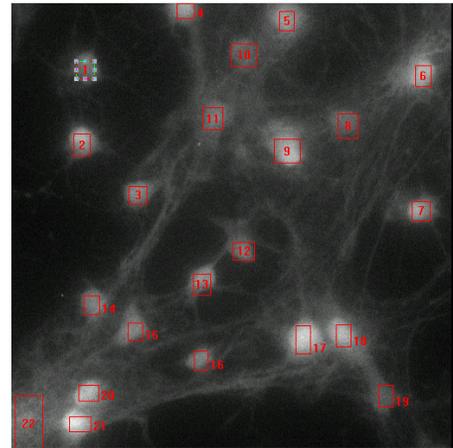
ALTERNATIVE
TOXICITY
SERVICES

SINGLE-CELL CALCIUM IMAGING

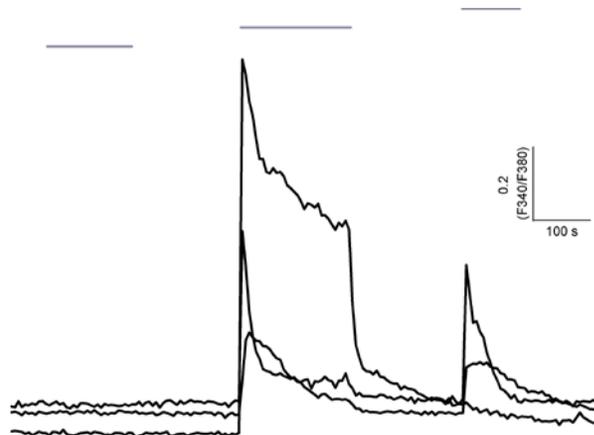
There is considerable evidence that a number of toxic environmental chemicals target intracellular Ca^{2+} signaling processes, alter them and induce Ca^{2+} overload-mediated cell death.

By means of single-cell spectrofluorimetry, ATS allows to evaluate the effect of chemical or mixture on calcium homeostasis of any cellular model.

Quantitative image analysis on fluorescent Ca^{2+} indicator Fura2-AM is used to assess dose-response curves.



E18 Rat neuronal cultures at 16 days in vitro



CELLULAR MODELS *vs* IN VITRO METHODS

ATS provides customized assays to best address customer's scientific questions. Cellular models are supplied from our catalog, commercial providers or customers.

	Cell model	MEA based electrophysiology	Patch Clamp electrophysiology	Ca2+ Imaging	Cytotoxicity assay
Neurotoxicity	Rat or Mouse Embryonic (E18) Cortical Neurons	●	●	●	●
	Rat or Mouse Neonatal (P0-P1) Cortical Neurons	●	●	●	●
	Human SH-SY5Y Neuroblastoma cell line		●	●	●
Glia Toxicity	Rat or Mouse Neonatal (P2) Cortical Astrocytes		●	●	●
	Rat or Mouse Adult Cortical Astrocytes		●	●	●
	Mouse BV2 Microglia cell line		●	●	●
Neural differentiation	Human Stem Cells and Induced Pluripotent Stem Cells (iPSs)	●	●	●	●

OUR SERVICES

We provide pre-clinical and toxicological in vitro screening of drugs, agrochemicals, cosmetics, food supplements, environmental biotoxins, biocides and chemicals.

Our solutions allow to fasten early stage drug development and minimize the risk of unpredicted and undetected toxicity both for single compound and mixtures.

Thanks to our cutting-edge screening platforms it is possible to investigate on critical cell functions, such as calcium signaling and electrophysiological activity. Toxicity and safety screening reports may include information about cell viability and cytotoxicity.

We put at disposal our expertise accumulated over many years to establish a customized study that best meets the customer's needs.



ALTERNATIVE
TOXICITY
SERVICES

by

