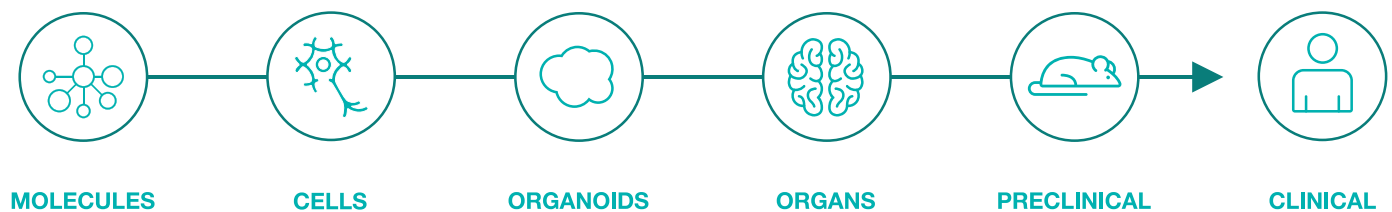


# Neuroscience Solutions



From *in vitro* to *in vivo*,  
we've got you covered.



When multiple experiments back up your findings, it adds real power to your research. To make this happen, you need a well-rounded strategy that brings together different methods for rock-solid results.

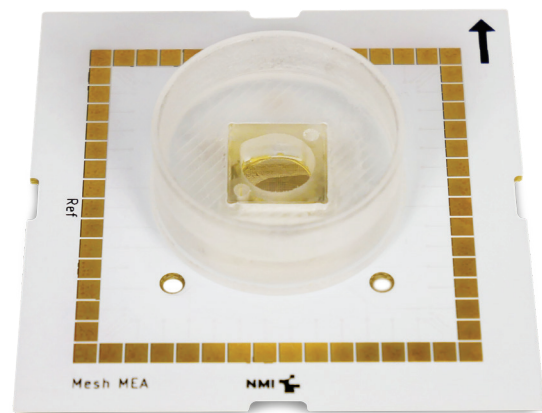
Harvard Bioscience offers a comprehensive suite of solutions designed to meet your research needs, from high-throughput cellular applications to recording data in freely moving animals.

# *In Vitro* Solutions for Molecular, Cellular, and Organoid Models

*In Vitro* Electrophysiology

## New!

Generate true-to-life recordings from inside an organoid without impacting its morphology for the first time with Mesh MEA.



Multi Channel Systems' multi-electrode arrays (MEAs) allow for the recording and analysis of neuronal activity and neural network synchronicity in cell cultures, brain slices, or organoids.

- Achieve noninvasive, high spatio-temporal resolution recordings of extracellular field potentials and single unit activity.
- Accelerate neuropharmacological screening, delivering detailed insights into neural circuit function.
- Run up to eight experiments at once using our unique modular system.

## Ion Channel Studies

HEKA offers patch clamp amplifiers as well as complete patch clamp rigs to study neuronal excitability, synaptic transmission, and ion channel currents in isolated neurons and brain slices.



## Genetic Expression & Editing

BTX's electroporation and electrofusion instrumentation enable the transfection of neurons as well as the generation of genetically manipulated animals.



- Facilitates delivery of molecules, including nucleic acids, gene-editing tools, and proteins, into different biological systems.
- Suitable for targeted in vitro and in utero genetic manipulation, transfection, cell programming, and gene therapy.
- Includes access to our free protocol library containing over 1,000 cell-specific protocols.

## Molecular Analysis

Biochrom's UV/visible spectrophotometers, colorimeter, and cell density meter offer quantification of nucleic acids, proteins, cell density, and enzyme activity from biological samples for quality control and biomarker identification.



## In Vivo Solutions for Animal Models

### Longitudinal Recordings in Freely Moving Animals

Data Sciences International (DSI) telemetry implants permit the remote and continuous data collection of intracranial pressure, cerebral perfusion pressure, EEG and locomotor activity in freely moving animal.

- Reduced animal stress and translatable data through wireless collection of physiological endpoints.
- Longitudinal recordings of naturally behaving laboratory animals.
- Seamlessly synchronize other techniques, such as optogenetics, respiratory plethysmography, and behavioral evaluation, to obtain comprehensive insights into the neurological regulation of systemic physiological processes. DSI's data acquisition is supported by automated analysis of sleep stages, seizures and other behavior.



**New! Monitor physiological endpoints in socially housed animals with DSI's next generation implantable telemetry platform. SoHo™ enables reduced lab space usage and improved animal welfare.**

### In Vivo Electrophysiology

Multi Channel Systems' Multi-electrode arrays (MEAs) aid the in-depth neurological monitoring and analysis of freely moving animals, anesthetized animals, or organ explants with tethered and wireless electrophysiology solutions.

Wireless headstage recordings of neuronal activity (spikes, LFP, EEG, and ECoG) in freely moving animals with high spatio-temporal resolution.



## Behavioral Monitoring

Panlab's behavior solutions enable assessment of the impact of neurological disorders on cognition, learning, memory, sensory processing, motor control and emotional state.

- Comprehensive behavioral suite facilitates numerous paradigms.
- From basic mazes and video tracking to integrated fear and operant conditioning boxes, solutions can be tailored to explore processes related to learning, memory, attention, executive function and more.
- Holistic *in vivo* neuronal analysis through integration with telemetry, *in vivo* electrophysiology, optogenetics, and microdialysis.

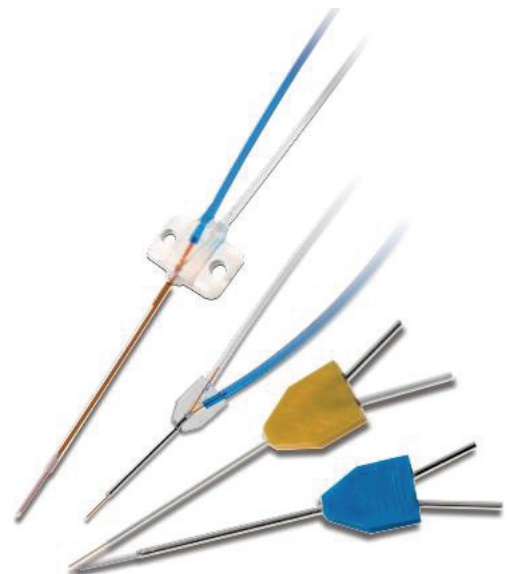


**New! High throughput, GLP compliant neuropharmacology and neurotoxicology activity studies are enabled through VivaMARS™ Mobile Activity Rack System.**

## Brain Chemistry Evaluation

As a probe-based sampling and delivery technique in conscious, freely moving animals, CMA's microdialysis offers a way to explore the molecular microenvironments in specific brain regions and spinal cord.

- Continuous neurochemical monitoring within discrete brain regions of neurotransmitter dynamics, or endogenous compounds involved in neuropathophysiological disease (amyloid beta and tau proteins, inflammatory molecules, etc.), and cerebral metabolism.
- Supports localized, longitudinal administration as well as sampling of molecular targets.



## Complementary Tools

### Surgical Solutions

Harvard Apparatus' portfolio of surgical equipment enables high-quality experimentation and humane care of the animal during surgery.

- Monitor vital signs through real-time display of physiologic parameters.
- Precise brain region targeting using stereotaxic instruments for creating lesions, placement of cannulas, optogenetics, and compound or gene delivery.
- Ensure optimal surgical conditions with advanced anesthesia systems, ventilators, and temperature control devices.



### Syringe & Peristaltic Pumps

Harvard Apparatus' state of the art syringe pumps offer precision infusion for accurate, reliable, and repeatable results. Facilitate controlled compound infusion into specific brain regions with a comprehensive solution for neuroscience and stereotaxic applications.



## Services to Ensure Your Success Every Step of the Way

When you leverage services and support from Harvard Bioscience, you have an extra set of hands from start to finish. With multiple packages available, we are here to help you execute your project successfully and on time. Whether you are publishing research or bringing a new drug to market, our service packages give your lab the tools it needs to help you meet your goals.



### Getting Started

Our trained engineers and technicians get you started on the right foot with installation and on-site training for your team.



### System Qualification

Your system will be tested to ensure it is installed and operates within specifications needed for your lab space.



### Study Execution

Our scientists and engineers help you optimize application-specific settings. This ensures collection of reporting of data you trust.



### System Maintenance

Hardware maintenance keeps your system functioning correctly, producing accurate data throughout the study, and reducing unwanted interruptions.



**Harvard Bioscience**  
84 October Hill Road  
Holliston, MA 01742  
USA

**Sales:**  
[sales@harvardbioscience.com](mailto:sales@harvardbioscience.com)

**Technical Support:**  
[support@hbiosci.com](mailto:support@hbiosci.com)

**Web:** [harvardbioscience.com](http://harvardbioscience.com)

**Telephone:**  
(+1) 508 893 8999  
Toll Free (USA ONLY)  
(+1) 800 272 2775



Copyright © 2024 Harvard Bioscience

Product information is subject to change without notice. Harvard is a registered trademark of Harvard University. The mark Harvard Bioscience is being used pursuant to a license agreement between Harvard University and Harvard Bioscience, Inc.