+357 96 030922
info@marketpublishers.com

North America Microelectrode Array In Vitro Market Report (2021-2031) by Scope, Segmentation, Dynamics, and Competitive Analysis

https://marketpublishers.com/r/ND916AD26F71EN.html
Date: September 2025
Pages: 101
Price: US$ 3,450.00 (Single User License)
ID: ND916AD26F71EN

Abstracts

The North America microelectrode array in vitro market was valued at approximately US$ 8.44 million in 2023 and is projected to grow to US$ 11.94 million by 2031, reflecting a compound annual growth rate (CAGR) of 4.4% during this period.

Increasing Demand in Neuroscience Research

The rising demand for microelectrode arrays (MEAs) in neuroscience research is a significant driver of the North American market. These arrays are essential for testing new pharmaceuticals on neuronal cultures, allowing researchers to evaluate the impact of drugs on neural activity and develop targeted therapies. In vitro models are utilized to study a range of neurological and neuropsychiatric disorders, including Alzheimer's disease, Parkinson's disease, epilepsy, and various neurodevelopmental conditions. The growing prevalence of these disorders has led to an increased need for microelectrode array systems, which facilitate the examination of cellular and molecular changes associated with these diseases and their effects on neural functions.

By employing microelectrode arrays in in vitro cell models, researchers can measure neural activity and assess how drug compounds can modulate this activity, restore normal network function, or counteract disease-related abnormalities. This capability is crucial for identifying promising drug candidates early in the development process. As neuroscience research continues to expand, companies like Axion BioSystems, Multi Channel Systems, and MaxWell Biosystems are innovating and launching new products to meet this demand. For example, in April 2024, Axion BioSystems introduced the Maestro Volt, a cost-effective benchtop microelectrode array system designed for academic laboratories with lower throughput requirements. This 6-well device is suitable

+357 96 030922
info@marketpublishers.com

for both neurological and cardiovascular research, featuring user-friendly controls and high-quality standards associated with the Maestro brand.

North America Market Overview

Investors are increasingly interested in companies that manufacture high-throughput microelectrode arrays for in vitro research, which are essential for research institutions, pharmaceutical companies, and the biotechnology sector. Innovations in CMOS-based microelectrode arrays, stem cell research, neuroprosthetics, and in vitro toxicology testing are propelling the demand for these technologies. Notably, in June 2020, the Georgia State University Research Foundation received US$ 197.56 million from the US National Science Foundation to develop microelectrode array sensors for SARS-CoV-2 and other RNA viruses, showcasing the potential of these technologies to address global health challenges.

The US Environmental Protection Agency has also recognized microelectrode arrays as valuable tools for conducting in vitro toxicity tests, particularly for assessing developmental neurotoxicity, which poses significant challenges in the approval of new chemicals and drugs. Such regulatory support has led to increased use of microelectrode arrays for high-throughput screening in drug discovery and disease modeling, as researchers seek reliable platforms for real-time monitoring of cellular and tissue activity.

The adoption of microelectrode arrays in innovative in vitro models, such as organoids, has spurred the development of advanced technologies, including 3D microelectrode array technology and high-density CMOS-based microelectrode arrays. For instance, in January 2023, BMSEED, a US-based provider of microelectrode array technologies, filed a patent application for its 2D stretchable microelectrode array (sMEA) that has been enhanced into a 3D version, allowing for electrophysiological measurements from brain organoids and 3D tissue cultures, particularly in Alzheimer's research. This 3D-sMEA technology features adjustable pockets with embedded electrodes that conform to organoids, enabling researchers to capture neural signals from approximately 80% of the surface area of intact organoids.

Market Segmentation

The North America microelectrode array in vitro market is segmented by product, application, and country. In terms of product, the market is divided into classical MEA, multiwell-MEA, and CMOS-MEA, with the multiwell-MEA segment holding the largest

+357 96 030922
info@marketpublishers.com

market share in 2023. Regarding application, the market is categorized into cardiomyocytes, nerve, and others, with the cardiomyocytes segment also leading in market share. By country, the market is segmented into the US, Canada, and Mexico, with the US dominating the market in 2023.

Key Players

Leading companies in the North America microelectrode array in vitro market include Tucker Davis Technologies, SCREEN Holdings Co., Ltd., Plexon Inc., MaxWell Biosystems AG, Harvard Bioscience Inc., Axion BioSystems Inc., 3Brain AG, NeuroNexus Technologies Inc., MicroElectrodeDevices, Blackrock Microsystems, Inc., NMI Technologietransfer GmbH, and BMSEED. These companies are at the forefront of developing innovative solutions to meet the growing demands of neuroscience and related fields.

Reason to buy

Save and reduce time carrying out entry-level research by identifying the growth, size, leading players, and segments in the North America microelectrode array in vitro market.

Highlights key business priorities in order to assist companies to realign their business strategies.

The key findings and recommendations highlight crucial progressive industry trends in the North America microelectrode array in vitro market, thereby allowing players across the value chain to develop effective long-term strategies.

Develop/modify business expansion plans by using substantial growth offering developed and emerging markets.

Scrutinize in-depth North America market trends and outlook coupled with the factors driving the North America microelectrode array in vitro market, as well as those hindering it.

Enhance the decision-making process by understanding the strategies that underpin commercial interest with respect to client products, segmentation, pricing, and distribution.

+357 96 030922
info@marketpublishers.com

Companies

Tucker Davis Technologies

SCREEN Holdings Co., Ltd.

Plexon Inc.

MaxWell Biosystems AG

Harvard Bioscience Inc.

Axion BioSystems Inc

3Brain AG

NeuroNexus Technologies Inc.

MicroElectrodeDevices

Blackrock Microsystems, Inc.

NMI Technologietransfer GmbH

BMSEED

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

9. NORTH AMERICA MICROELECTRODE ARRAY IN VITRO MARKET - COUNTRY ANALYSIS

10. MICROELECTRODE ARRAY IN VITRO MARKET - INDUSTRY LANDSCAPE

11. COMPANY PROFILES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

List Of Tables

LIST OF TABLES

+357 96 030922
info@marketpublishers.com

List Of Figures

LIST OF FIGURES

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: North America Microelectrode Array In Vitro Market Report (2021-2031) by Scope, Segmentation, Dynamics, and Competitive Analysis

Product link: https://marketpublishers.com/r/ND916AD26F71EN.html

Price: US$ 3,450.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/ND916AD26F71EN.html