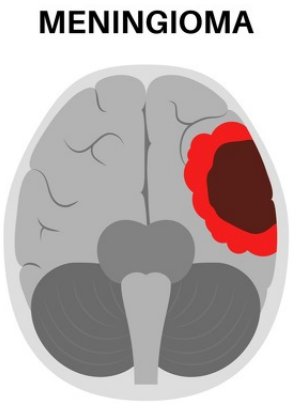
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

# Meningioma ExoChip

**TECHNOLOGY NUMBER: 2025-126**




**Technology ID**
2025-126

**Category**
Diagnostics
Life Sciences

**Inventor**
Sunitha Nagrath
Abha Kumari
Scott Smith
Harika Lingamarla

**Further information**
Katherine Pollard
kpollar@umich.edu

Innovation Partnerships Tech Marketing Team
IPInventions@umich.edu

**View online**

## OVERVIEW

Microfluidic technology isolating meningioma-specific extracellular vesicles for tumor analysis

- Efficiently isolates specific EVs using SSTR2 capture
- Early diagnosis and characterization of meningioma tumors

## BACKGROUND

Meningiomas account for a significant percentage of primary brain tumors, often requiring invasive procedures for diagnosis and monitoring. Traditionally, approaches to manage and study these tumors involved surgical biopsies, which pose inherent risks and are often not feasible for repeated monitoring. Extracellular vesicles (EVs) offer a non-invasive alternative, as these tiny particles naturally released by cells can provide substantial information about the tumor's presence and nature. However, existing technologies struggled with efficiently isolating EVs specifically linked to meningiomas, often leading to non-specific results and inconsistent findings. The need for targeted, non-invasive diagnostic tools is evident, as they would allow for more effective monitoring and therapeutic decision-making. Improved methods are essential to enhance early detection, accurate characterization of tumor malignancy, and effective treatment planning for patients with meningioma.

## INNOVATION

The Meningioma ExoChip represents a groundbreaking advancement in microfluidic technology, designed to isolate meningioma-specific extracellular vesicles using the protein

SSTR2—a marker highly expressed in these tumor cells. This innovation addresses prior limitations by employing “interconnected” bubble-like wells, which slow down particle velocity, enhancing capture efficiency and specificity compared to the older design of circular chambers and narrow channels. With a streamlined design featuring a singular inlet and outlet, the device simplifies the isolation process, leading to improved usability and consistency. The captured vesicles enable precise characterization of tumor malignancy, facilitating early diagnosis and potential treatment monitoring. Real-world applications include non-invasive diagnostics for meningioma, aiding clinicians in personalizing patient management, and contributing to the advancement of research in tumor biology and drug response profiling.