

## IIT-M & MIT grow human brain tissues from 3D-printed bioreactor

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**To accelerate medical and therapeutic discoveries for cancer, Alzheimer's and Parkinson's.**

Indian Institute of Technology Madras (IIT-M) and Massachusetts Institute of Technology (MIT) scientists have grown human brain tissues called 'organoids' with help of a 3D Printed Bioreactor that they developed.

The objective was to observe the brain tissues while they grow and develop a technology that can potentially accelerate medical and therapeutic discoveries for diseases such as cancer and neurological disorders like Alzheimer's and Parkinson's.

A 3D printed micro-incubator and imaging chamber was made into a single palm-sized platform, which was successfully demonstrated for long-term human brain cells culture and real-time imaging.

This technology has been patented in India. The research team is exploring the feasibility of international collaborations. This project was taken up with the support of the [Center for Computational Brain Research \(CCBR\)](#) at IIT Madras for funding and [Sur's Lab](#) at Massachusetts Institute of Technology (MIT), U.S., which guided the researchers.

Further elaborating on the applications of this technology, Ikram Khan S.I., IIT Madras Alum (MS Opto-Electronics, 2015–19) and CEO of ISMO Bio-Photonics, an IIT Madras-incubated startup, said, "Considering the importance of our micro-incubator in the field of healthcare and in the pharmaceutical industry, we are working through ISMO Bio-Photonics to develop a user-friendly minimum viable product, and raising seed grants for its further development. This will enable biologists or laboratory technicians to operate, control and monitor the growth of organoids with a user-friendly system powered by Artificial Intelligence-assisted automated cell culture protocols."

*Image caption- (L-R) Chloe Delepine, Hayley Tsang and Ikram Khan .S.I., the MIT & IIT Madras team that worked on this research*