

Indian Researchers release most detailed 3D Cell-Resolution images of human fetal brain

For the first time in the world 5132 Brain sections were digitally imaged at cell-resolution using cutting-edge Brain Mapping Technology developed by IIT Madras

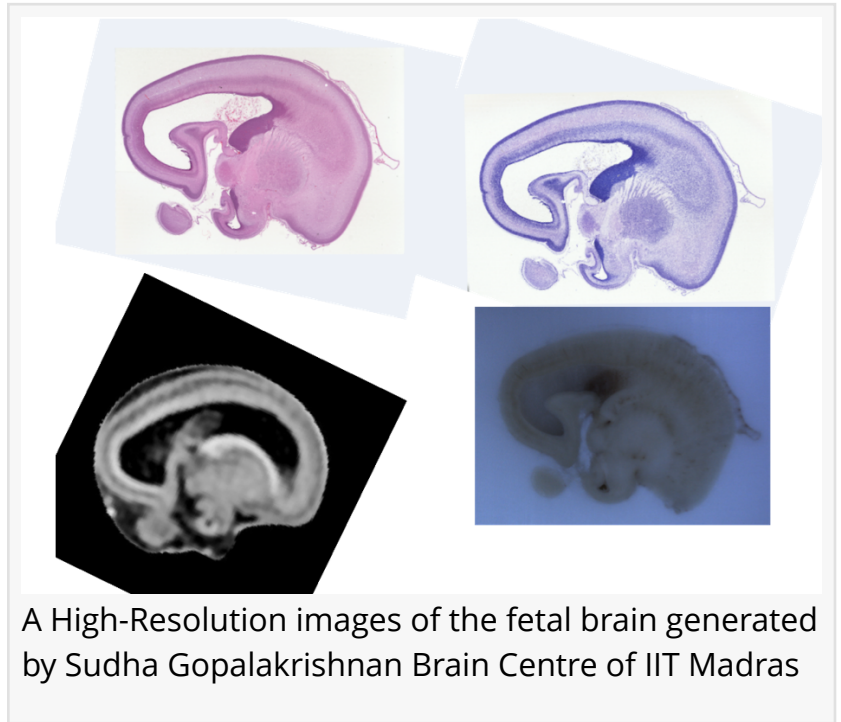
CHENNAI, TAMIL NADU, INDIA, March 6, 2025 /EINPresswire.com/ -- Indian Researchers have become the First in the world to release the most detailed 3D Cell-Resolution images of the second trimester fetal brain.

This pioneering work from Sudha Gopalakrishnan Brain Centre of IIT Madras, the No: 1 ranked Institute in the country, pushes the frontiers of Brain Mapping Technology and places India in the global league of brain mapping science as this is first-of-its-kind work anywhere in the world

This Data Set, terms 'DHARANI' has been made available open source (<https://brainportal.humanbrain.in/publicview/index.html>), making it freely available for all researchers world-wide. NVIDIA, the leading AI company, partnered with the Centre to help process these petabytes of brain data.

For the first time globally, 5,132 Brain sections of second trimester human fetal brains have been captured digitally using cutting-edge Brain Mapping Technology developed by Sudha Gopalakrishnan Brain Centre in the Institute.

This monumental work, led by Prof. Mohanasankar Sivaprakasam, Head, Sudha Gopalakrishnan Brain Centre, IIT Madras, is the first time such advanced human neuroscience data has been produced from India. The project was done at less than 1/10th of the costs in Western Countries.



A High-Resolution images of the fetal brain generated by Sudha Gopalakrishnan Brain Centre of IIT Madras

The [research](#) was undertaken by a multidisciplinary team at IIT Madras with researchers from India, Australia, U.S., Romania and South Africa, and medical collaborations with Chennai-based Mediscan Systems and Saveetha Medical College Hospital.

The key applications of generating such high-resolution brain images is advancements to current fetal imaging technologies, for early diagnosis and treatment for developmental disorders.

These findings of this Research were brought out as a Special issue by Journal of Comparative Neurology (<https://doi.org/10.1002/cne.70006>), a century-old peer-reviewed systems neuroscience journal. The journal's special issue carries an editorial titled "India Gets a Seat at the Table of Human Brain Cartography" (<https://doi.org/10.1002/cne.70005>) highlighting the significance of this work.

Elaborating on the importance of this research, Dr. Suzanaerculano-Houzel, Editor-in-Chief, Journal of Comparative Neurology, said, "DHARANI is now the largest publicly accessible digital dataset of the human fetal brain, created with less than one-tenth of the initial funds that powered the Allen Brain Atlas, and with a technology platform that was entirely custom-made in India between 2020 and 2022, during the COVID pandemic. IIT Madras, thus, joins the Allen Brain Institute, and India joins the US, at the table of human brain cartography, where large sums are invested to provide mankind with freely- available atlases of the available knowledge about the structures that compose the human brain."

Further elaborating on the importance of this research, Prof. Mohanasankar Sivaprakasam, Head, Sudha Gopalakrishnan Brain Centre, IIT Madras, said, "This Study will pave way for new scientific discoveries, allowing quantification of neurodevelopmental disorders and advances in fetal medicine. This is now the largest publicly accessible digital dataset of the human fetal brain, advancing current knowledge by 20X. This is the first time such advanced human neuroscience data has been produced from India and made freely available as a global resource."

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ABOUT IIT MADRAS

Recognized as an Institution of Eminence (IoE) in 2019, IITM has been ranked No.1 in the 'Overall' Category for the sixth consecutive year in India Ranking 2024 released by National Institutional Ranking Framework, Ministry of Education, Govt. of India. The Institute has also been ranked No.1 in the 'Engineering Institutions' category in the same Rankings for nine consecutive years – from 2016 to 2024. It was also adjudged as the 'Top innovative Institution' in the country in Atal Ranking of Institutions on Innovation Achievements (ARIIA) in 2019, 2020 and 2021.

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