DHARINI 3D Foetal Brain Atlas

Source: IE

Researchers at Indian Institute Of Technology (IIT) Madras have developed a revolutionary tool known as **DHARINI, a detailed 3D map of foetal (**unborn offspring that develops in the uterus of a mammal**) brain,** that holds significant implications for understanding brain disorders.

- DHARINI is the world's largest and most detailed high-resolution 3D foetal brain atlas, mapping over 5,000 brain sections and 500 brain regions.
    - The atlas focuses on brains from the **second trimester** (at 14, 17, 21, 22 and 24 weeks of pregnancy)**,** a key period for rapid growth and development.
- The tool can help identify brain disorders such as **autism** and provide insights into conditions like **cerebral palsy** and mental health issues like depression and **bipolar disorder.**
    - The research utilized thin slices of still-born brains, allowing for detailed cellular-level imaging.
- DHARINI is the only brain atlas to capture the growing brain in fetuses. The only other similar publicly available atlas, released by the **US Allen Institute in 2016, mapped the brain of an adult woman**.
- DHARINI is expected to support future advancements in **Artificial Intelligence and machine learning,** helping scientists better understand the human brain and improve **artificial intelligence models.**

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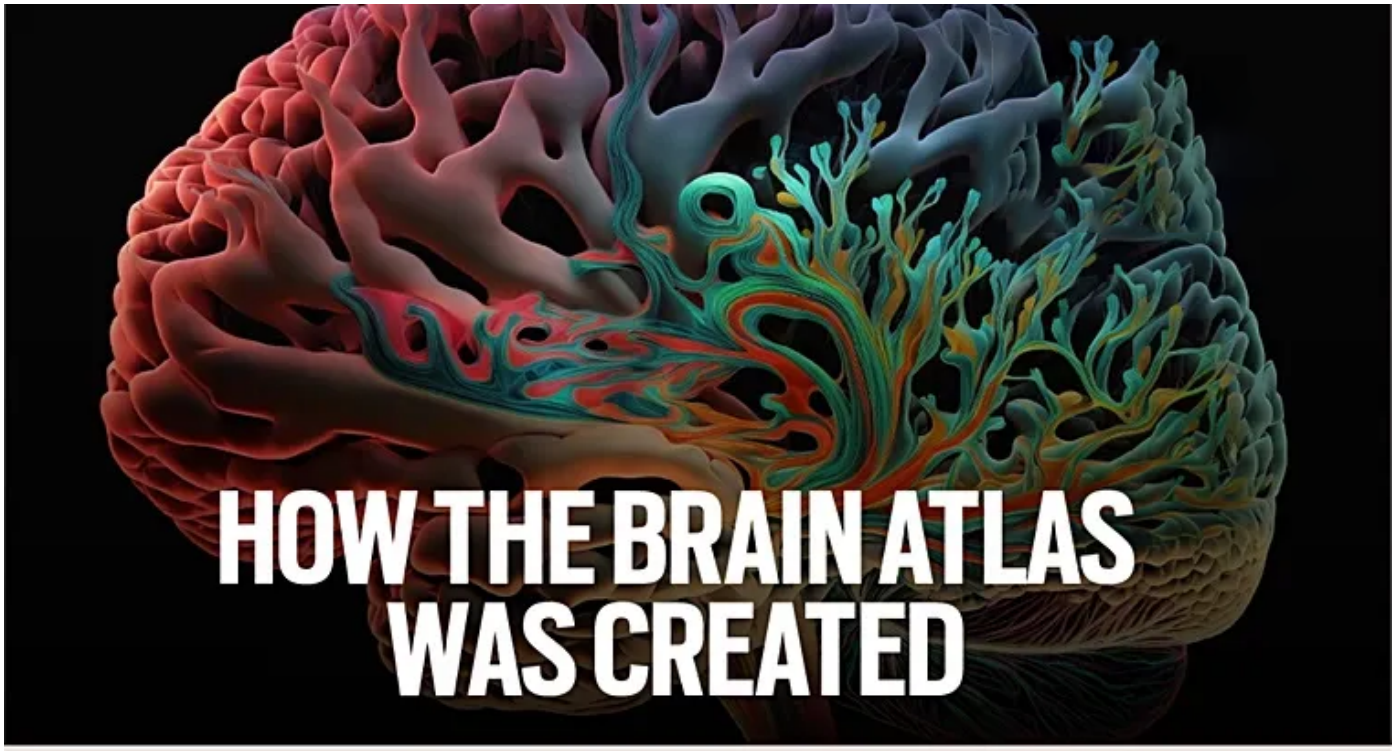

- Researchers from IIT Madras used the brains of five still-borns in the second trimester — at weeks 14, 17, 21, 22, and 24 of pregnancy
- The brains were frozen and thinly sliced using complex robotic instrumentation
- These thin, transparent slices were then stained and microscopically imaged in extreme detail
- The digitised images were then put together to create a 3D map – offering a rare insight into the insides of a foetal brain

Read more: [Brainware]