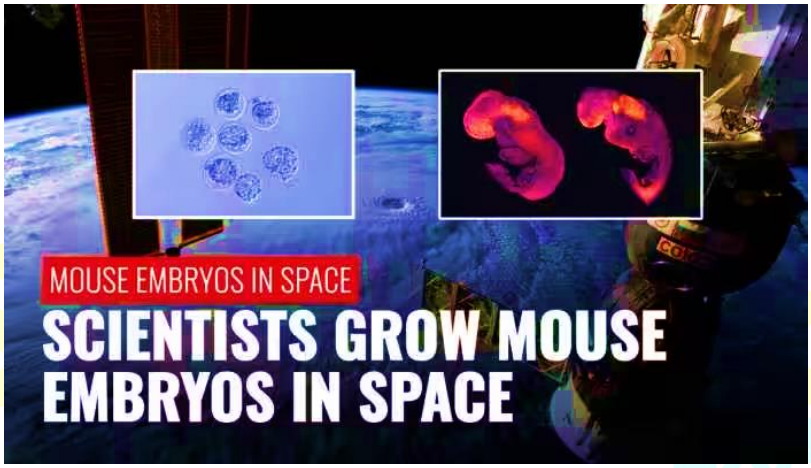
Mouse Embryos Grown In Space For First Time

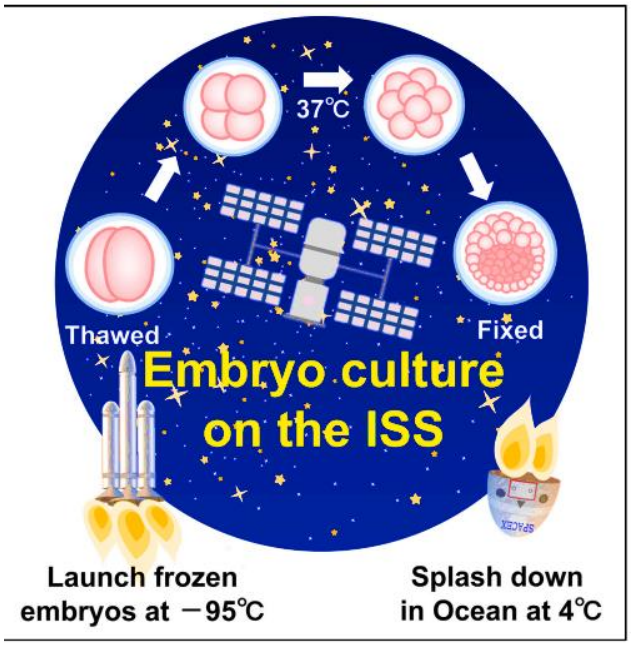
Why In News

- Mouse embryos have been grown on the **International Space Station** and developed normally in the **first study indicating** it could be possible for humans to reproduce in space, a group of Japanese scientists said.



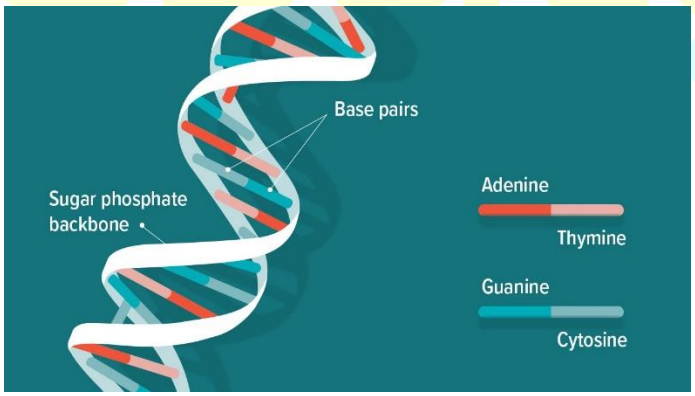
World's First Experiment

- T It is "**the world's first experiment** that cultured early-stage mammalian embryos under complete microgravity of ISS," the statement said.
- The researchers, including **Teruhiko Wakayama**, professor of University of Yamanashi's Advanced Biotechnology Centre, and a team from the Japan Aerospace Space Agency (JAXA), sent frozen mouse embryos on board a rocket to the ISS in August 2021.
- Astronauts thawed the early-stage embryos using a special device designed for this purpose and grew them on the station for four days.
- "The embryos cultured under microgravity conditions developed" normally into blastocysts, cells that develop into the foetus and placenta, the scientists said.

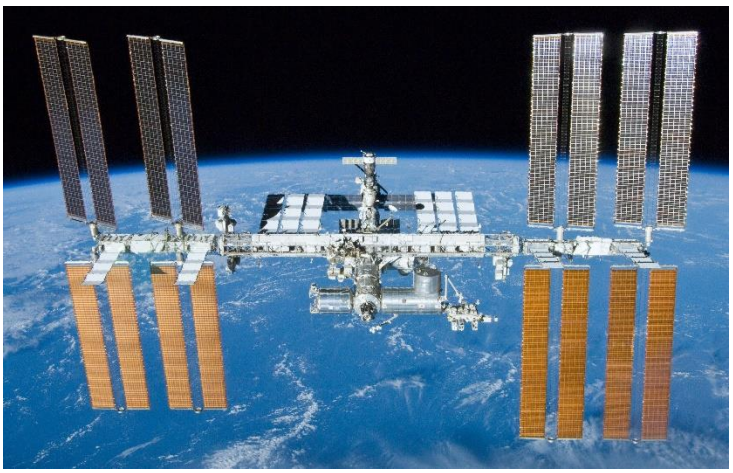


Outcomes

- The experiment "clearly demonstrated that **gravity had no significant effect**, **changes in condition of the DNA and genes**, after they analysed the blastocysts that were sent back to their laboratories on Earth.



- Back on Earth, the researchers examined the embryos and found no signs of DNA damage—**radiation levels are higher** in space as there is no protection from Earth's magnetic field and atmosphere—and normal structural development that was in line with embryos cultured under standard Earth gravity.
- This is "the first-ever study that shows **mammals may be able to thrive in space,"**



What's Next

- To ascertain the viability of these embryos, the next step involves **transplanting them into mice** to determine if normal births can occur.
- Such research carries significant implications for future space exploration and colonisation plans.
- The success of this experiment holds relevance to **NASA's Artemis programme**, which aims to return humans to the Moon as a stepping stone for eventual Mars missions.

- "There is a possibility of **pregnancy during a future trip** to Mars because it will take more than six months to travel there," Wakayama told New Scientist.
- "We are conducting research to ensure we will be able to safely have children if that time comes." **There's still a lot of work to be done** to determine whether pregnancy in space is advisable.

- The research did not take into account the effects of radiation, which is a lot higher in space than it is on Earth.
- The development was also **halted at the blastocyst stage**. It's not known whether development in utero would lead to different outcomes.