1. Pig's Heart Beating Inside Human

Prelims Syllabus: Scientific Exploration

Mains Syllabus: GS-III Science and Technology - developments and their applications and effects in everyday life Achievements of Indians in Science & Technology; Indigenization of Technology and Developing New Technology.

Why in News?

- Recently, doctors Transplanted a pig heart into a patient in a last effort to save his life, in Maryland hospital in USA. It was done for the first time in the history of medical.

About the News:

- The patient is doing well three days after this highly experimental surgery.
- This marks a significant step in the decades-long debate on using animal organs for life-saving transplants. However, it is too soon to know, if the operation will work.
- As per Doctors at University of Maryland Medical Center, transplant highlighted that heart from a genetically modified animal can function in human body, without immediate Rejection.

Who was the Patient?

- The patient was David Bennett aged 57. He knew there was no guarantee of whether the experiment would work. But he was ready for the operation because he was dying and was ineligible for a Human Heart Transplant.

Why this Experiment was Conducted?

- There is a huge shortage of human organs, which are donated for transplant.
- This drives scientists to figure out how to use animal organs for transplant instead.
- In 2021, there were just around 3,800 heart transplants in the U.S. so, if this experiment works, there will be endless supply of these organs from animals for patients.

How about Prior Attempts?

- Prior attempts of such transplants have failed, largely. This is because, patients' bodies rapidly rejected the Animal Organ. For instance in 1984, Baby Fae, who was a dying infant, lived for 21 days with a Baboon Heart.

How was the Recent Transplant Different?

- In the recent transplant, Maryland surgeons used a heart from a pig after it underwent Gene-Editing in a bid to remove a sugar in its cells which is Responsible for hyper-fast organ Rejection.

About Xenotransplantation:

- Xenotransplantation or heterologous transplant, is the transplantation of living cells, organs or tissues from one species to another. Such cells, organs or tissues are called xenografts or xenotransplants.
- The technique of Xenotransplantation of human tumour cells into Immunocompromised mice is often used in Pre-Clinical Oncology Research.