Concerns with gene editing

What is the issue?

\n\n

\n
- Gene editing with CRISPR can eradicate diseases, and it may also lead to mutations with dangerous result.
\n

\n\n

What are the significance of CRISPR?

\n\n

\n
- CRISPR are naturally occurring repetitive sequences of genetic code, which are part of the immune system.
\n
- Techniques based on CRISPR CAS-9 gene editing are to be done with extraordinary precision.
\n
- When an alien bacteria or virus invades the body, CRISPR is “programmed” to recognise the alien material.
\n
- It then uses CAS-9, an enzyme produced by the CRISPR system to bond with the alien DNA and excise it.
\n
- Apart from being used as a gene-editing tool, CRISPR CAS-9 can also function as a diagnostic tool.
\n
- It can recognise target DNA very quickly and identify viruses such as Zika and dengue very efficiently.
\n

\n\n

What are the wide arenas of this technique?

\n\n

\n

- **Nerve disorder -** Scientists have removed the muscular dystrophy gene and a nervous disorder of brain cells in mice using CRISPR.
  \n
- **Organ transplant -** Experiments with pigs suggest that CRISPR could help grow organs for human transplants in cloned pigs.
  \n
- **Dengue & Zika -** It may even be possible to breed the Aedes aegypti mosquito (female is the carrier of zika and dengue) into extinction by encoding a “male only” instruction.
  \n
- **Non-communicable disease -** Diabetes, cancer, Parkinson’s, exposure to heart disease are known to be caused by specific genes, the diseases could be eradicated if those genes could be safely removed.
  \n

\n\n

What are the concerns need to be addressed?

\n\n

  \n
- The dangers of research involving humans is high.
  \n
- Most nations have laws to prevent such research from being conducted in an irresponsible fashion.
  \n
- As edited DNA repairs itself, it can result in unforeseen mutations with dangerous consequences.
  \n
- The methods of the experiments didn’t work 100 per cent, further research is obviously required.
  \n
- The ethical debate will also need to be updated to take this study into account.
  \n

\n\n

\n\n

Source: Business Standard

\n



SHANKAR
IAS PARLIAMENT
Information is Empowering