

## 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*