When DNA is the new hard drive

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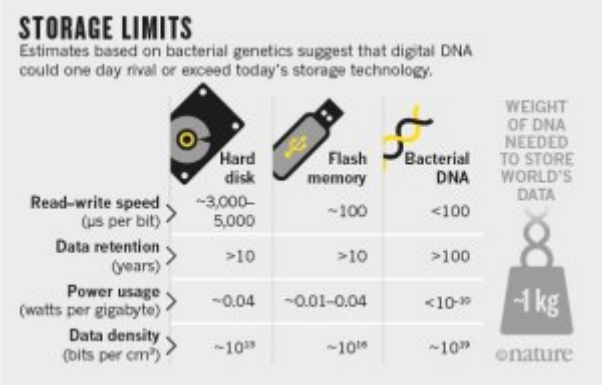

Scientists have successfully encoded a movie in the DNA of a living cell, where it can be retrieved at will and multiplied indefinitely as the host divides and grows. It is the latest and perhaps most astonishing example of the genome's potential as a vast storage device.

How was the movie encoded in the cell?

- The geneticists ended up with a sequence of DNA molecules that represented the entirety of the film. Then they used a powerful **new gene editing technique, Crispr, to slip this sequence into the genome of a common gut bacteria, E. coli**.
- Despite the modification, the bacteria thrived and multiplied. The film stored in the genome was preserved intact with each new generation of progeny.

What is CRISPR?

CRISPR, short for clustered regularly interspaced short palindromic repeats, was named "2015 Breakthrough of the Year" by the U.S. journal Science.

- It allows scientists to selectively edit genome parts and replace them with new DNA stretches.
- Cas9 is an enzyme that can edit DNA, allowing the alteration of genetic patterns by genome modification.
- CRISPR is a collection of DNA sequences that direct Cas9 where to cut and paste.

To be looked in UPSC Paper 3 Topic: Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights