



CAENORHABDITIS ELEGANS: SCIENCE & TECHNOLOGY

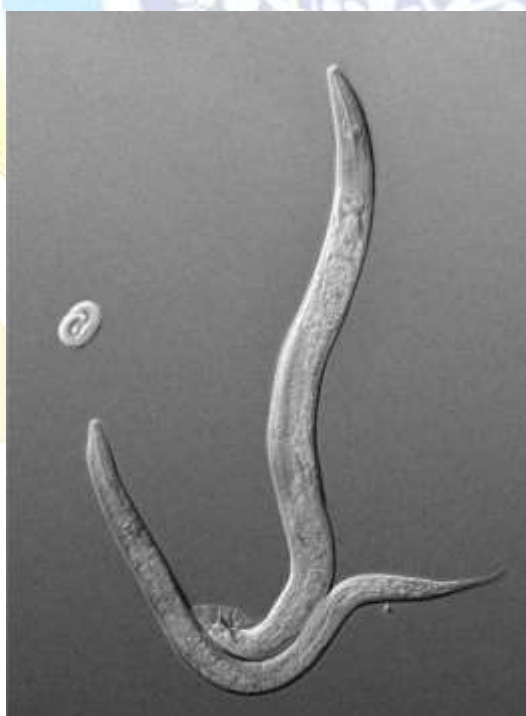
NEWS: How curiosity-driven research in a worm won four Nobel Prizes

WHAT'S IN THE NEWS?

Caenorhabditis elegans has significantly advanced genetic and developmental biology by providing insights into genetic regulation, programmed cell death, RNA interference, and gene expression. These discoveries have earned Nobel Prizes and revolutionized biological research.

Introduction to *Caenorhabditis elegans*

- **Species Overview:** A 1-mm transparent nematode widely used in scientific research.
- **Habitat:** Found in soil, feeding on microbes, and easily cultivated in labs.
- **Anatomical Simplicity:**
 - Adult worm: 959 cells, 302 neurons.
 - Model for studying development, neuroscience, and cell biology.
- **Research Significance:**
 - Short lifespan and transparent body enable real-time observation of cellular processes.
 - Complete genome sequencing aids genetic research.





Groundbreaking Discoveries

1. Genetic Regulation & Programmed Cell Death (2002)

- Scientists: Sydney Brenner, H. Robert Horvitz, John Sulston.
- **Key Finding:** Genes control organ development and programmed cell death.
- **Impact:** Understanding cell death mechanisms helps in studying diseases like cancer.

2. RNA Interference (2006)

- Scientists: Andrew Fire, Craig Mello.
- **Key Finding:** Double-stranded RNA silences genes, preventing protein production.
- **Applications:** Tools for genetic research and therapies targeting diseases like cancer.

3. Green Fluorescent Protein (GFP) (2008)

- Scientists: Osamu Shimomura, Martin Chalfie, Roger Tsien.
- **Key Finding:** GFP enables visualization of cellular processes in real time.
- **Impact:** Revolutionized molecular biology and cellular research.

4. MicroRNAs (2024)

- Scientists: Victor Ambros, Gary Ruvkun.
- **Key Finding:** miRNAs regulate gene expression by silencing genes.
- **Applications:** Advanced genetic diagnostics and therapies for diseases.

Source: <https://www.thehindu.com/sci-tech/science/curiosity-driven-research-caenorhabditis-elegans-won-four-nobel-prizes/article69069396.ece#:~:text=This%20pioneering%20discovery%20was%20made,which%20have%20won%20Nobel%20Prizes.>