## Caenorhabditis elegans



E' un nematode trasparente, tutte le sue 959 cellule somatiche sono facilmente osservabili al microscopio ottico

Viene manipolato come un microrganismo (+ RNA interference)

E' un ermafrodita che si riproduce essenzialmente per autofertilizzazione.



<u>C.elegans</u> A free living 1mm nematode

- ~ 50 hours life cycle (egg to egg; facultative hermaphrodite)

- Life span ~ 3 weeks
  Ease of Culture (Grows on *E.coli* lawns at 20°C)
  Power of Genetics (Screen for Supressor, Complementation, etc.)
- Strains Can Be Frozen
- 959 Cells
- Complete Cell Lineage Characterized (from zygote to adult)

## Males (1031 cells)

In *C. elegans*, males (5AA;X0) arise spontaneously in XX hermaphrodite populations by means of X chromosome nondisjunction during meiosis in the germ line at a frequency of about 0.1-0.3 %. The males mate with hermaphrodites to produce a 1:1 ratio of male and hermaphrodite cross-progeny, but additional hermaphrodites are almost always produced by selfing.





Questo nematode ha cellule differenziate, tessuti ed organi (cellule muscolari, neuroni, faringe, intestino, gonadi .... Adult hermaphrodite 959 cells (302 neurons, 152 muscle cells, ~7000 synapses) The pattern of differentiation is so rigid it has been possible to trace the lineage of every single somatic cell in the animal.

EUTELY - the pattern of development and cell number is INVARIABLE from worm to worm.

558 cells at hatching, ; in the developing embryo 131 cells die by APOPTOSIS.



## **C. elegans** develops from Six Founder Cells

Adverse environmental conditions induce dauer arrest in *C. elegans* 







adverse environment



- growth arrest
- increased fat
- extended lifespan



JOVE Journal of Visualized Experiments

