C. ELEGANS DEVELOPMENT

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Caenorhabditis elegans (C. elegans)

[see-nor-hab-die-tuss ell-uh-ganz]

gametes:

♀ hermaphrodites undergo:
- spermatogenesis during late L4
- oogenesis during young & early adulthood

♂ males undergo:
- spermatogenesis throughout adulthood

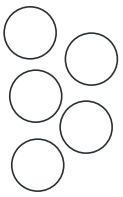
crosses should be done with L4 ♀s to preempt self-fertilization

lethargus:

is a state of inactivity that occurs at each **molt** during the transition between larval stages
- collagen is synthesized
- old cuticle is shed

mitochondrial DNA:

95% resides in the germline



mtDNA is unchanged until L4
mtDNA copy number increases:
- 5-fold between L4 and Day 1
- 6-fold between Day 1 and Day 4

stabilizes at ~Day 2

metabolism:

before L2: glyoxylate-based metabolism
L2 and beyond: aerobic respiration
- glycolysis
- oxidative phosphorylation

temperature affects mtDNA and metabolism, too

dauer:

is an alternative development state - like a holding pattern
- occurs as a result of harsh environmental conditions:
  - population density,
  - food scarcity,
  - temperature
- occurs at L2 molt
- is triggered by a pheromone

dauer worms are
- thin,
- fast-moving,
- resist metabolic stress,
- long-lived,
- undergo glyoxylate-based metabolism.

temperature:

- 16˚C - slows development
- 20˚C - typical development
- 25˚C - speeds development

development at 20˚C