Johns Hopkins Engineering

Methods in Neurobiology

Research Models of Aging

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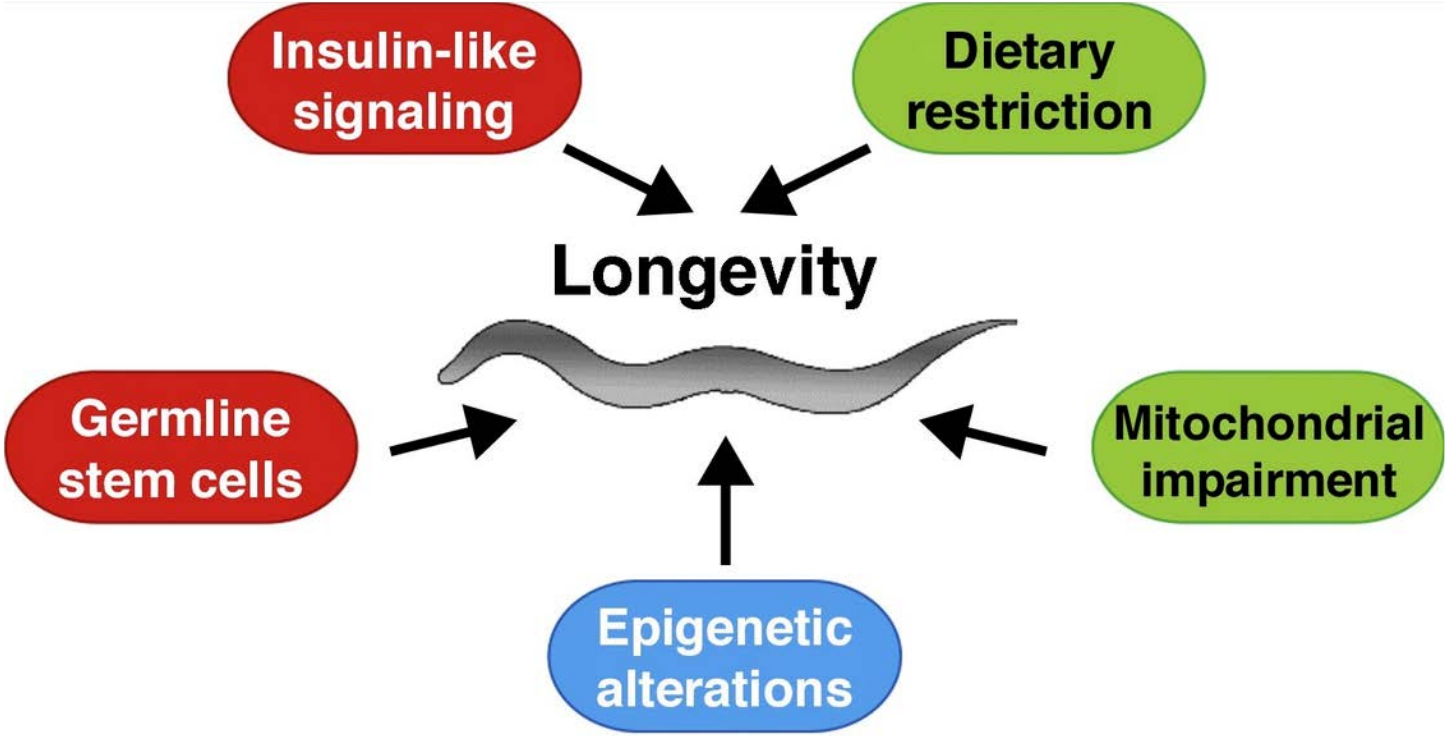
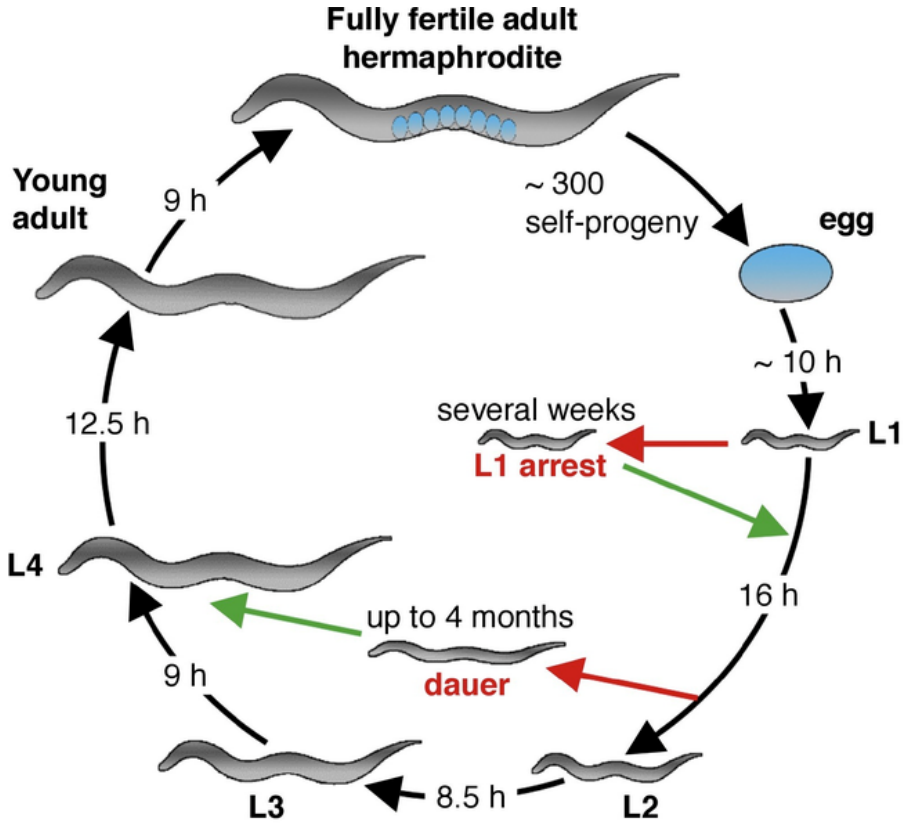
Nematode: *C. Elegans* as Model of Aging

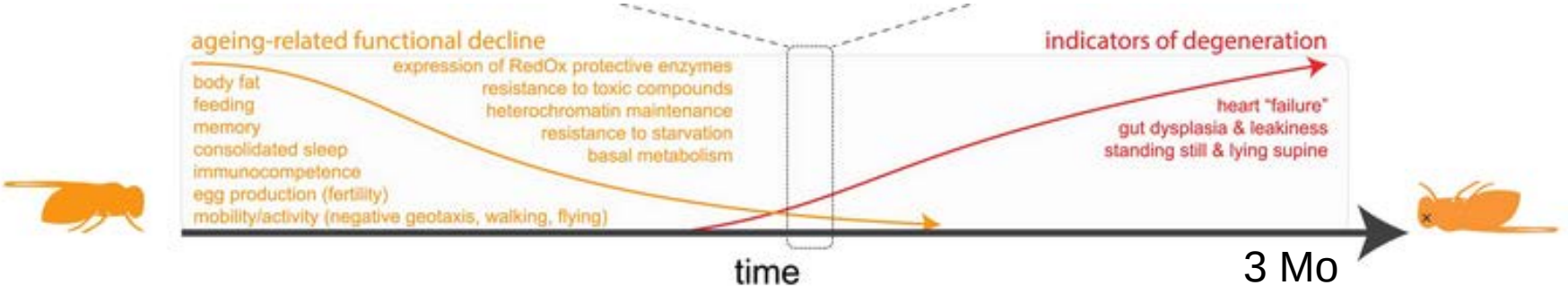


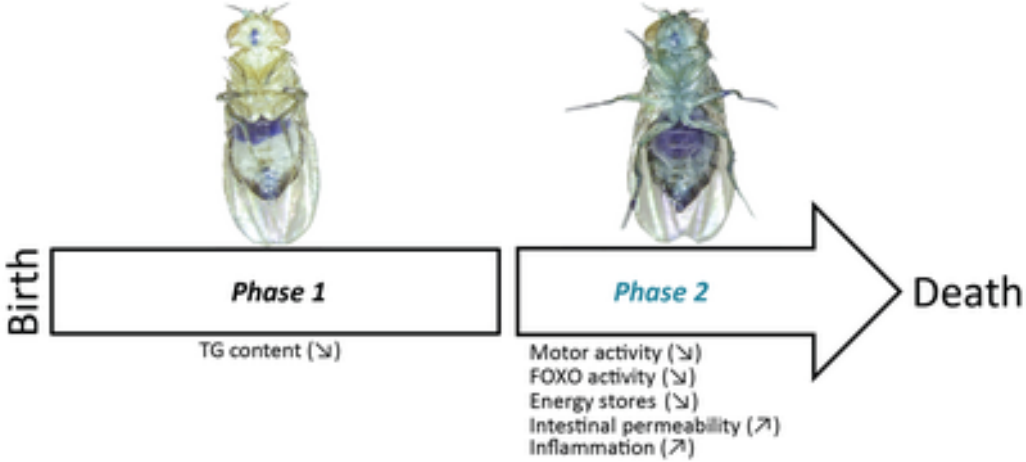
C. Elegans Cife Cycle



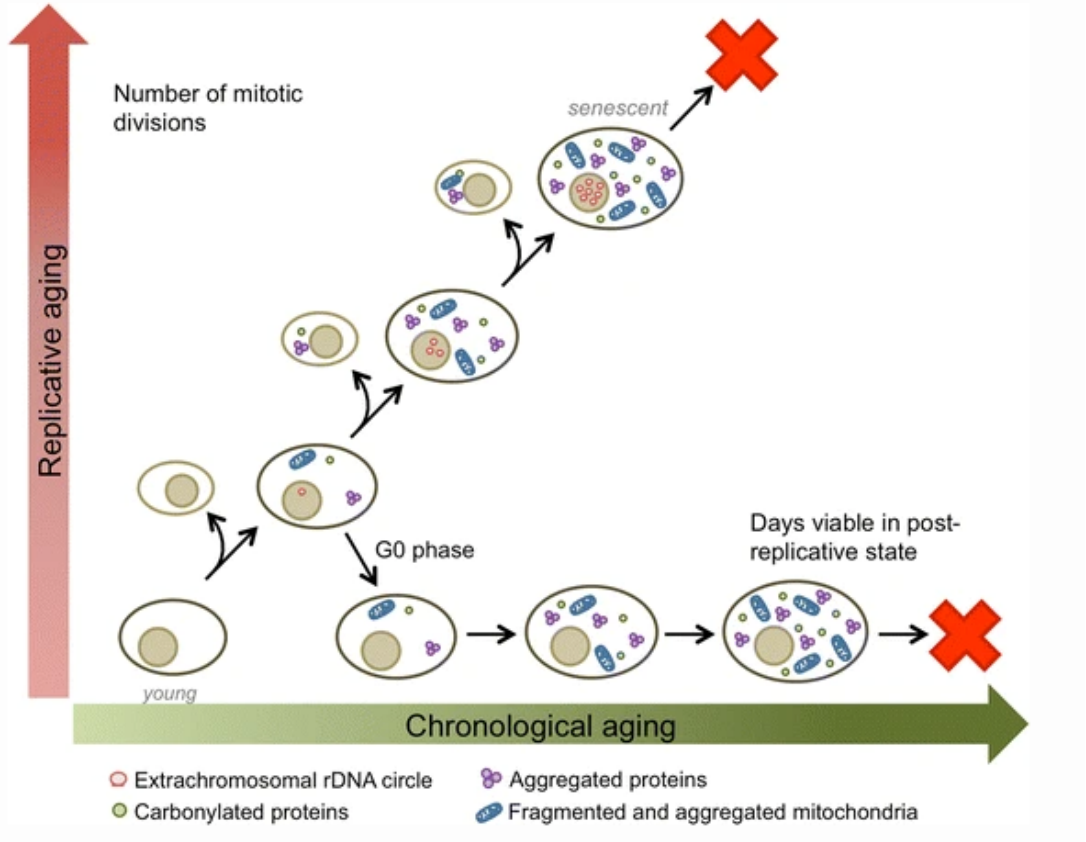
- Short generation time (~3 days at 20 °C)
- Short maximum lifespan of ~3 weeks (at 20 °C)
- Several distinct tissues, including SN
- Transparent body

Fruit Fly, *Drosophila Melanogaster* as Model of Aging

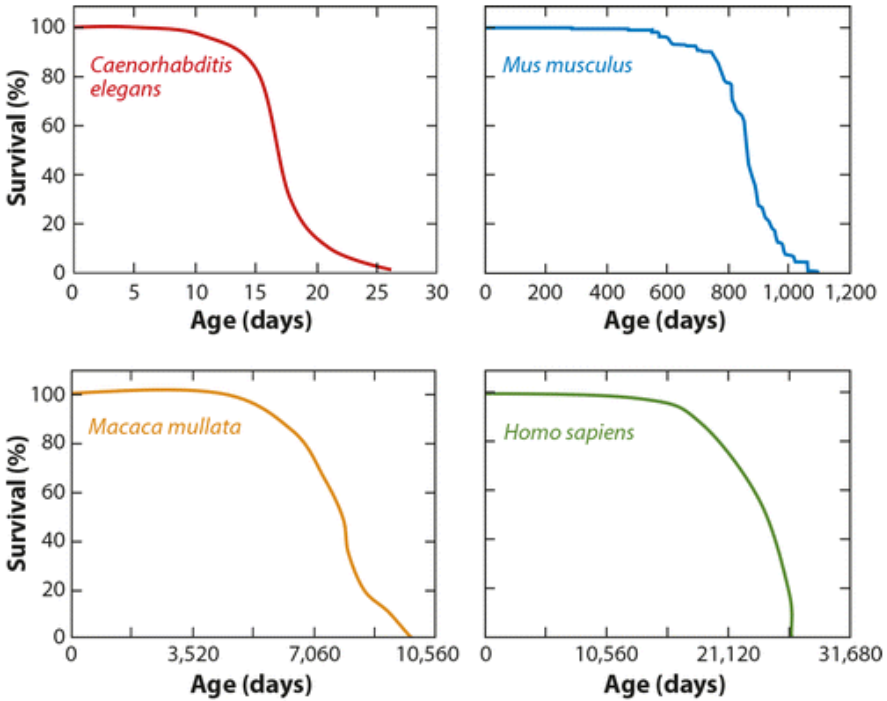




Baker Yeast: Saccharomyces Cerevisiae



Mus Musculus in Aging Research

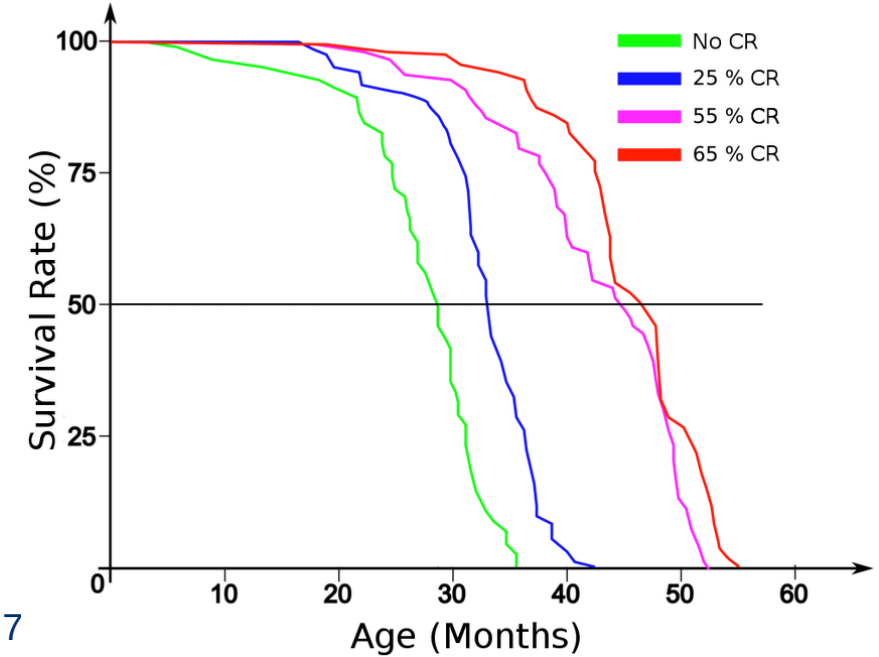


- In-bred lines (SAMP mice);
- Out-bred lines;
- Genetic modified lines:

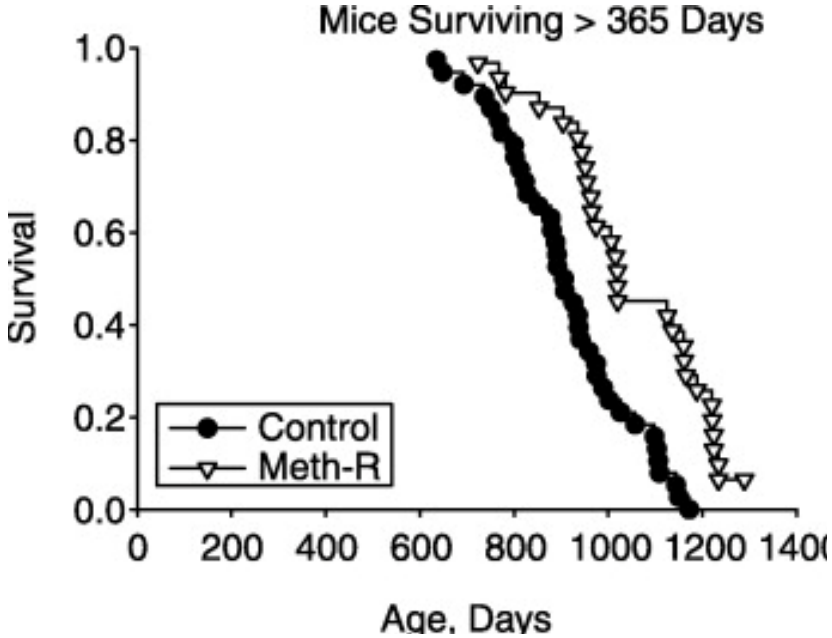
I. Accellerating aging (Mutator mouse, Werner KO mice
II. Delayed aging (GHR KO mice, Ames and Snell dwarf mice)

Protocols for Delayed Aging

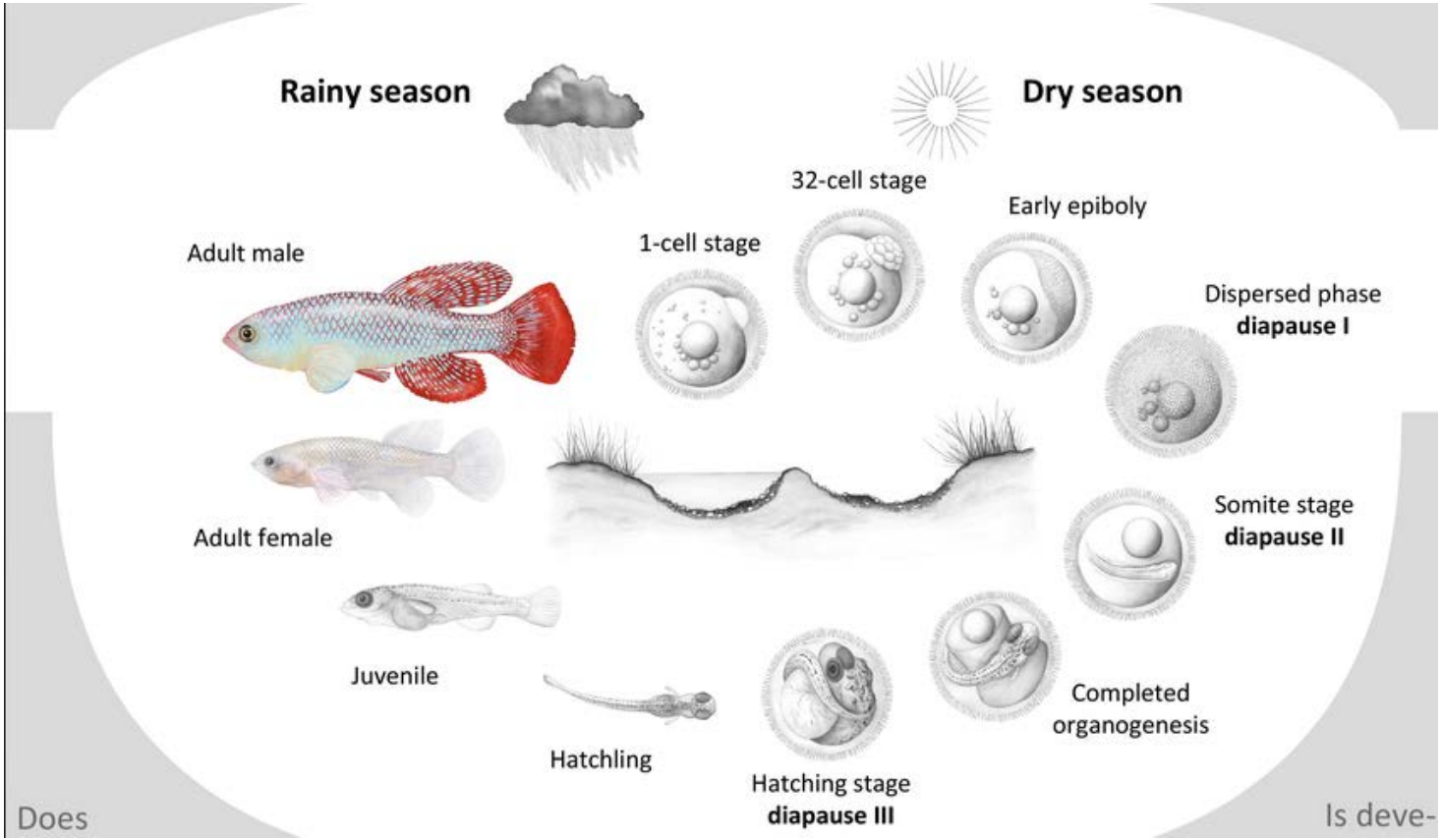
Calories Restriction (CR)



Methionine Restriction (Meth-R)



Fish as a Model of Aging: Nothobranchius Furzeri



Fish as a Model of aging: Nothobranchius Furzeri

- Shortest life spans (~13 weeks) of any vertebrate species
- Cheap storage (eggs dessication)
- Extremely fertile: each female produces several hundred eggs
- Extended life-span after CR or resveratrol treatment

Other Aging Models

- Fischer 344 as inbred strain and with CR diet.
- Primates (*Macaca mulatta*)

Adult naked mole rats have a daily chance of dying of about one in 10,000. NATIONAL GEOGRAPHIC CREATIVE/ALAMY STOCK PHOTO

Naked mole rats defy the biological law of aging

By Kai Kupferschmidt | Jan. 26, 2018 , 5:30 PM

References

Slide	Reference
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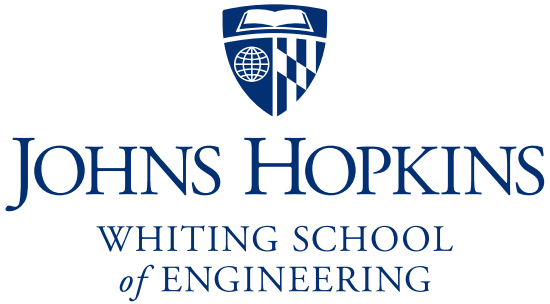
8-9	Platzer, M., Englert, C. 2016 Nothobranchius furzeri: A Model for Aging Research and More. Trends in Genetics, 32: 9, 543-552.
10	Kai Kupferschmidt Jan. 26, 2018 Naked mole rats defy the biological law of aging. Science https://www.sciencemag.org/news/2018/01/naked-mole-rats-defy-biological-law-aging#



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