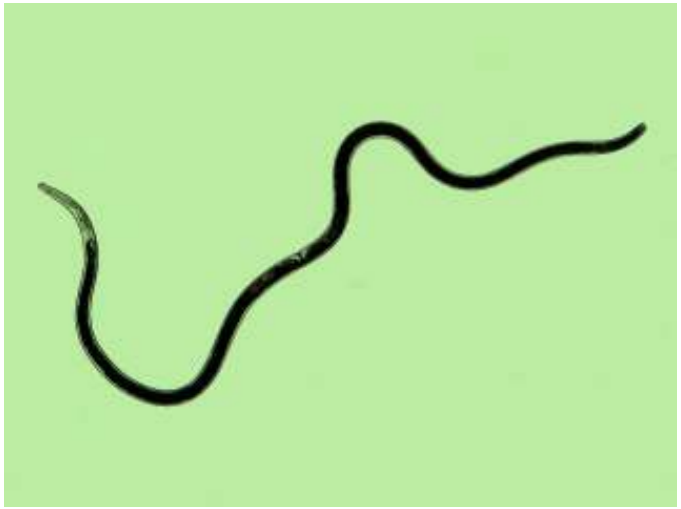
PHYLUM NEMATODA

The Roundworms

Nematodes!!



General characteristics of phylum Nematoda

1. Round, cylinder shaped body
2. Pseudocoelomate body cavity
3. Complete digestive tract – mouth and anus
4. Bilateral symmetry and basic cephalization
5. Organs and organ systems
6. Dioecious
7. Can be free-living or parasites

Fun Facts

- Some of the most abundant animals on our planet!!
- 16,000 known species
- Scientists estimate there may be as many as 500,000 species!
- One rotting apple could have 90,000 worms in it
- Fertile soils may contain up to 5 billion animals per acre

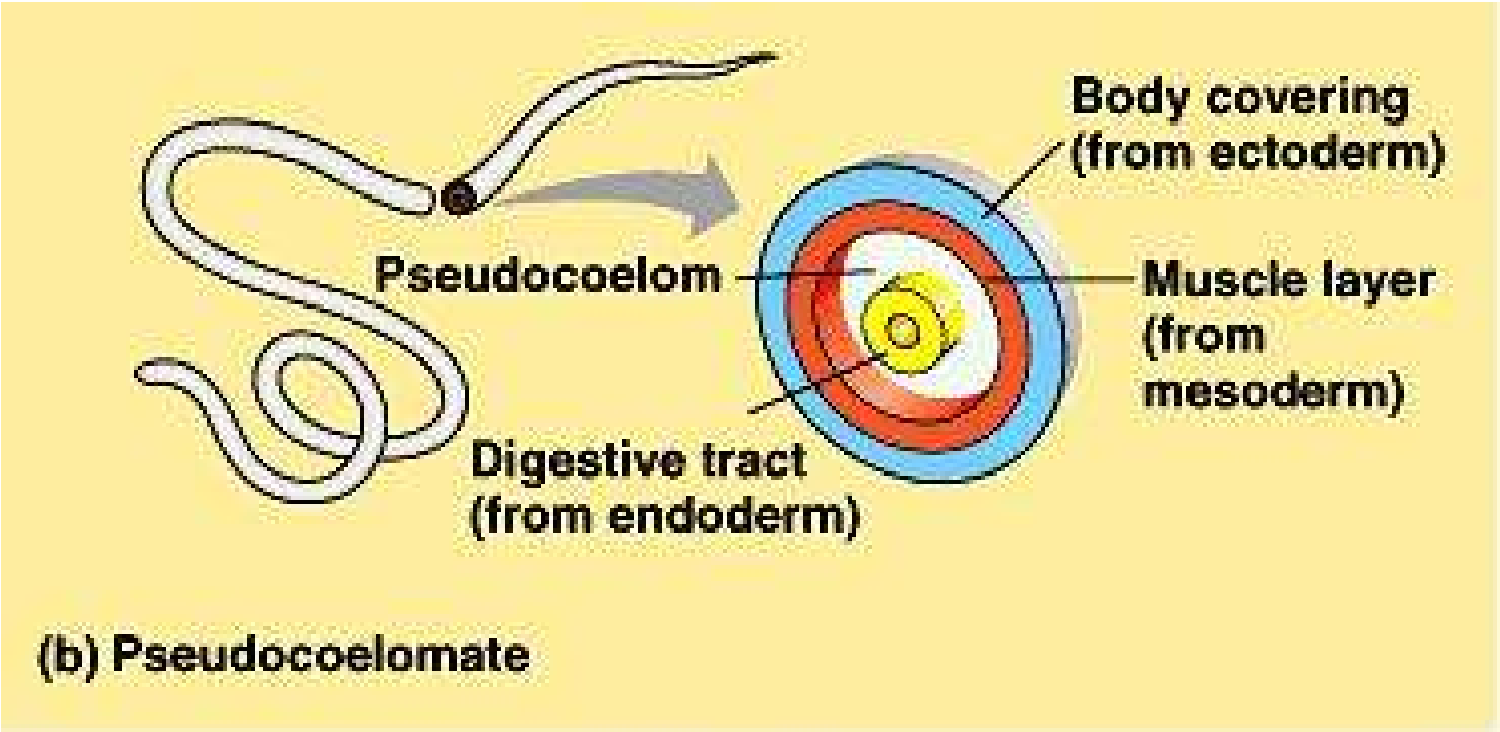
Fun Facts

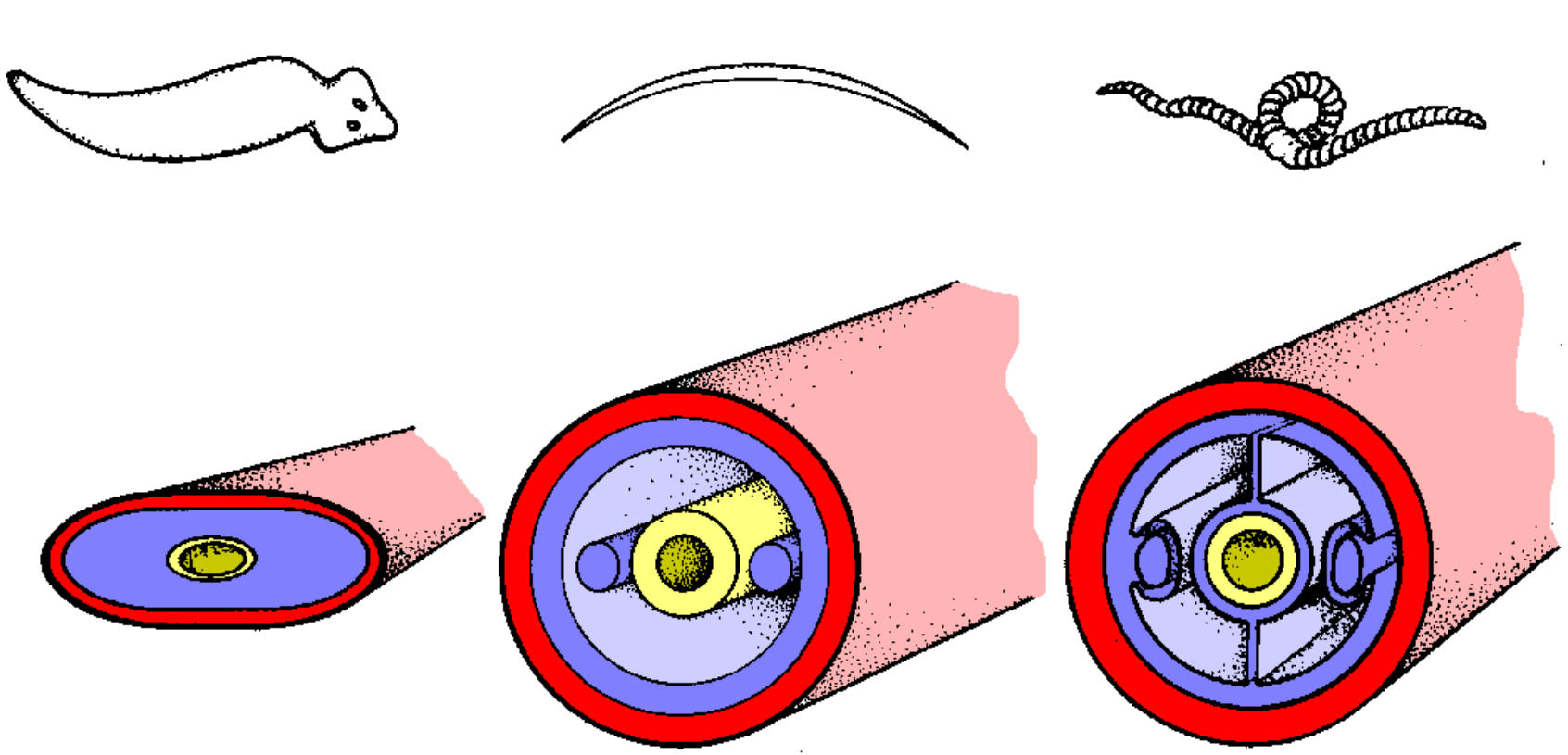
- Most are free-living: soils, marine or freshwater
- Some parasites of animals or plants
- The first animal to have its genome sequenced was a roundworm *Caenorhabditis elegans*
  - 959 cells in its body
  - 97 million DNA bases
  - 19,000 genes

- For your notes, all you need to write are the things that are highlighted in red

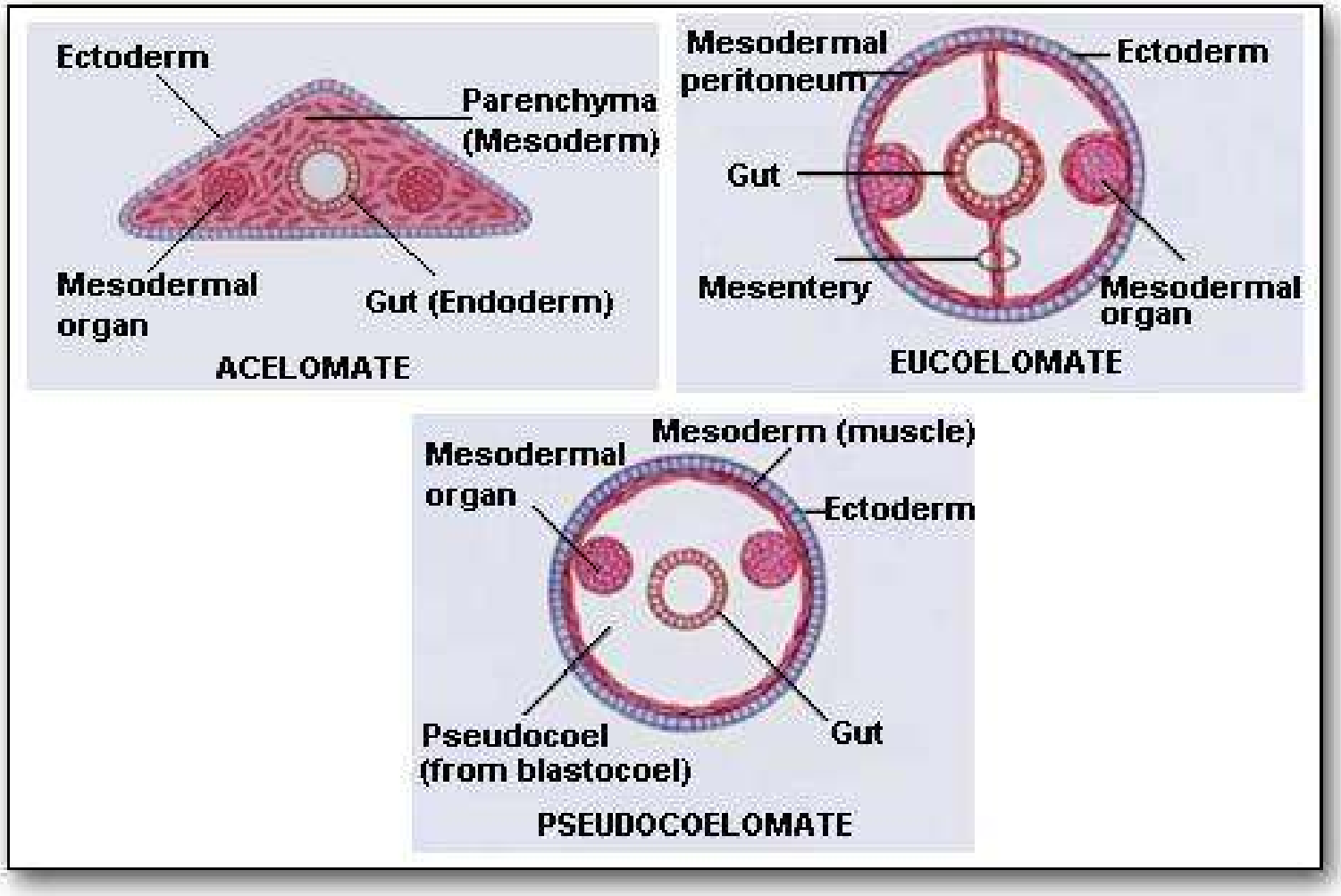
Body Structure

- Fluid filled pseudocoelom
  - Forms hydrostatic skeleton



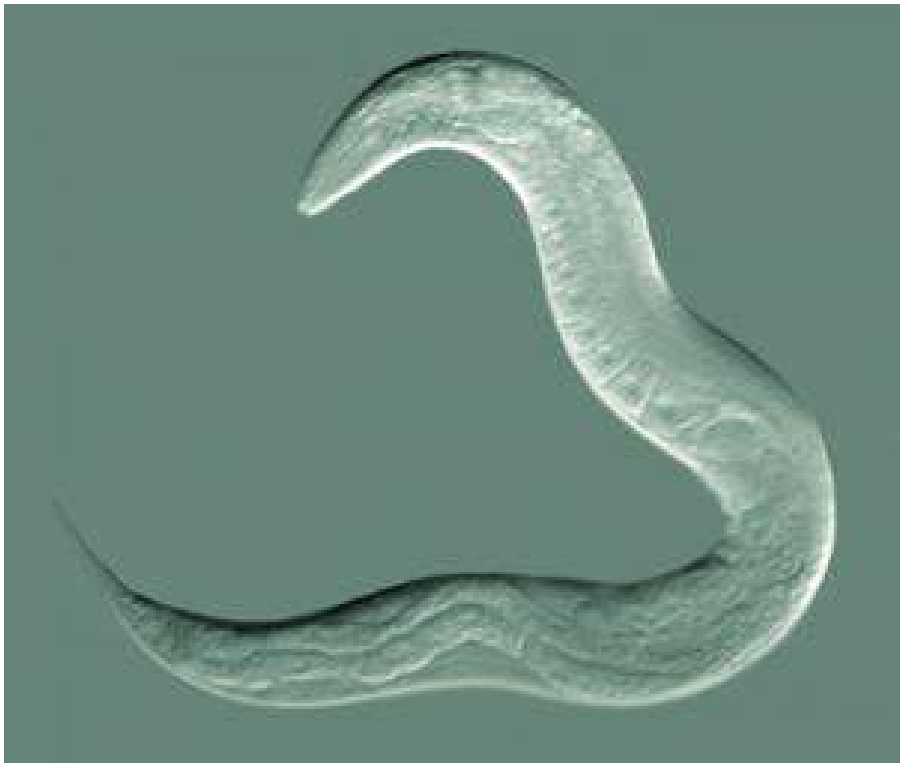


Livingstone © BIODIDAC


Ectoderm
Parenchyma
(Mesoderm)
Mesodermal
organ
Gut (Endoderm)
ACELOMATE
Mesodermal
peritoneum
Ectoderm
Gut
Mesentery
Mesodermal
organ
EUCOELOMATE
Mesoderm (muscle)
Mesodermal
organ
Ectoderm
Pseudocoel
(from blastocoel)
Gut
PSEUDOCOELOMATE

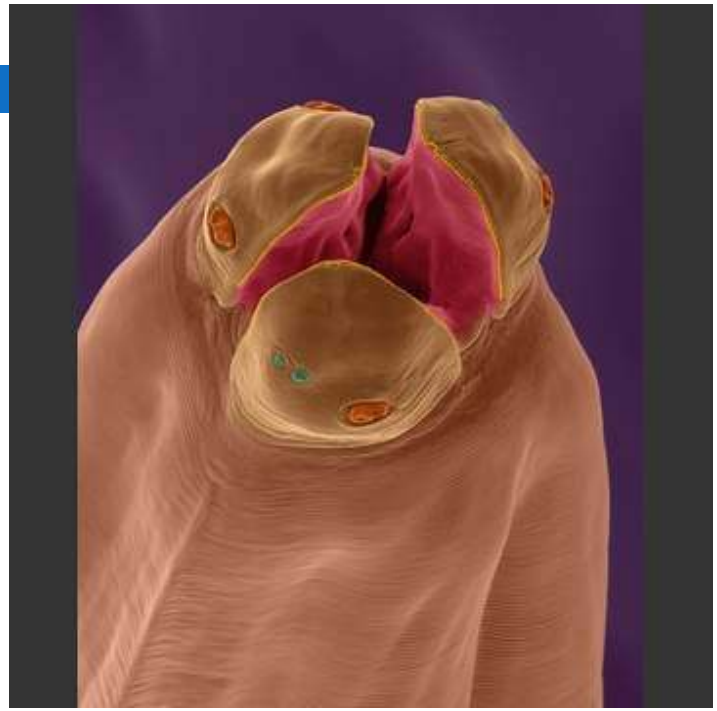
Body Structure

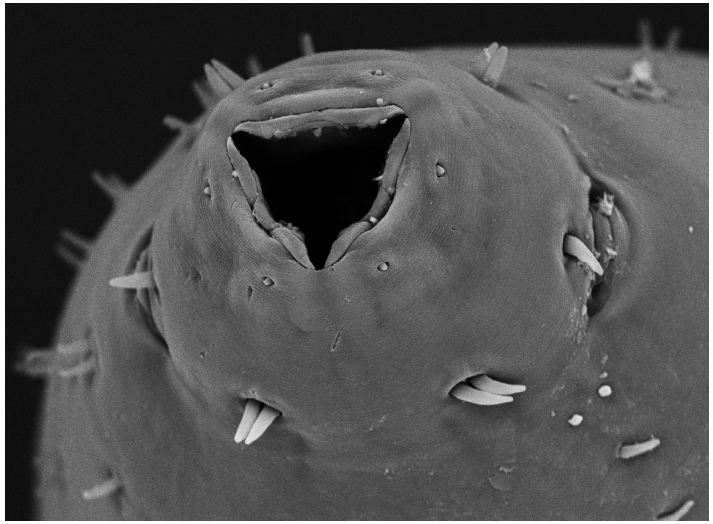
- Long, slender and tapered at both ends
- Stiff protective outer layer called cuticle



Feeding and Digestion

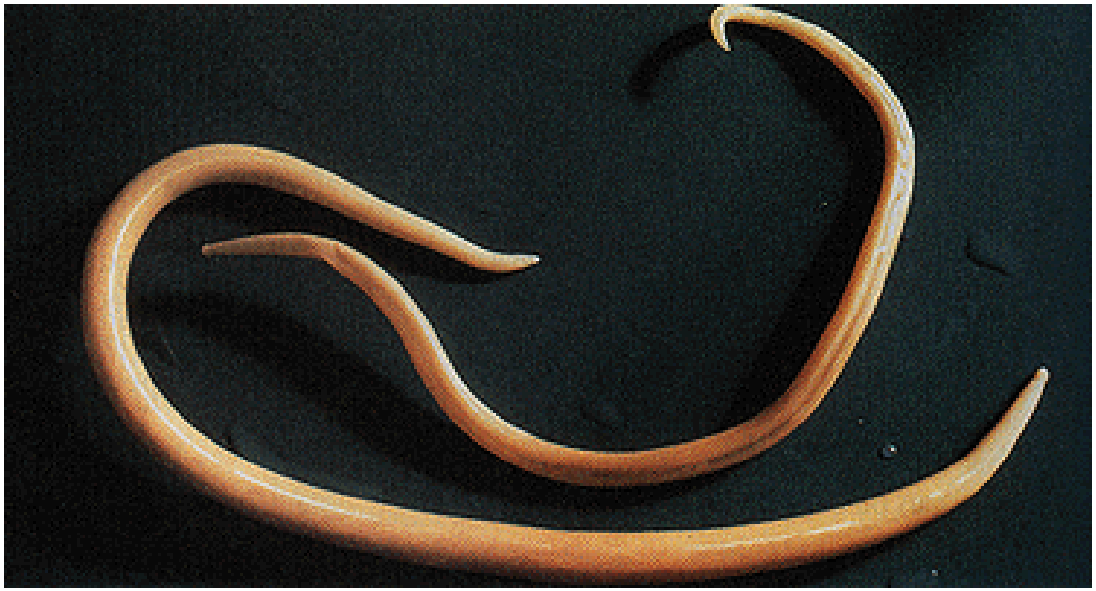
- Have digestive system with mouth and long intestine
  - Mechanical digestion with absorption followed by feces formation
- Nematodes eat algae, fungi and decaying matter
- Some are carnivores
  - And have teeth!





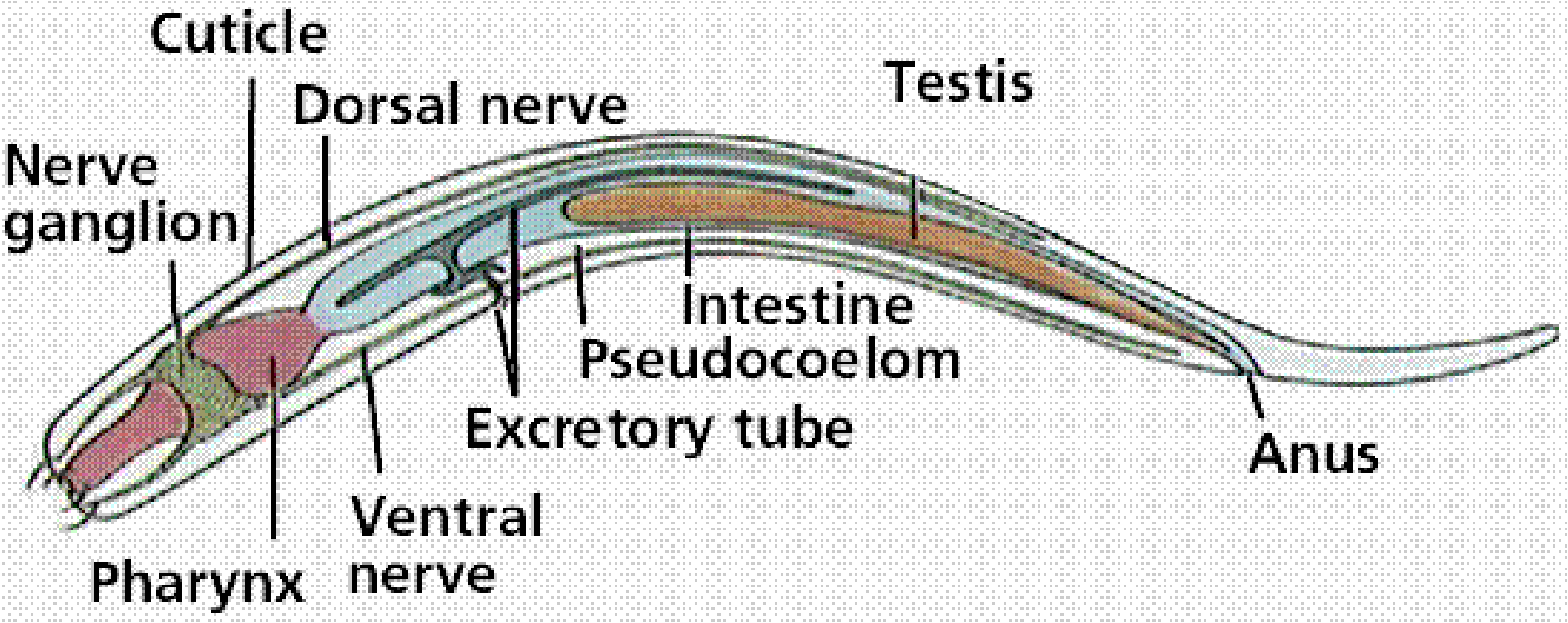
Respiration, Circulation and Excretion

- All 3 processes occur by diffusion
  - Gases and waste diffuse through body walls



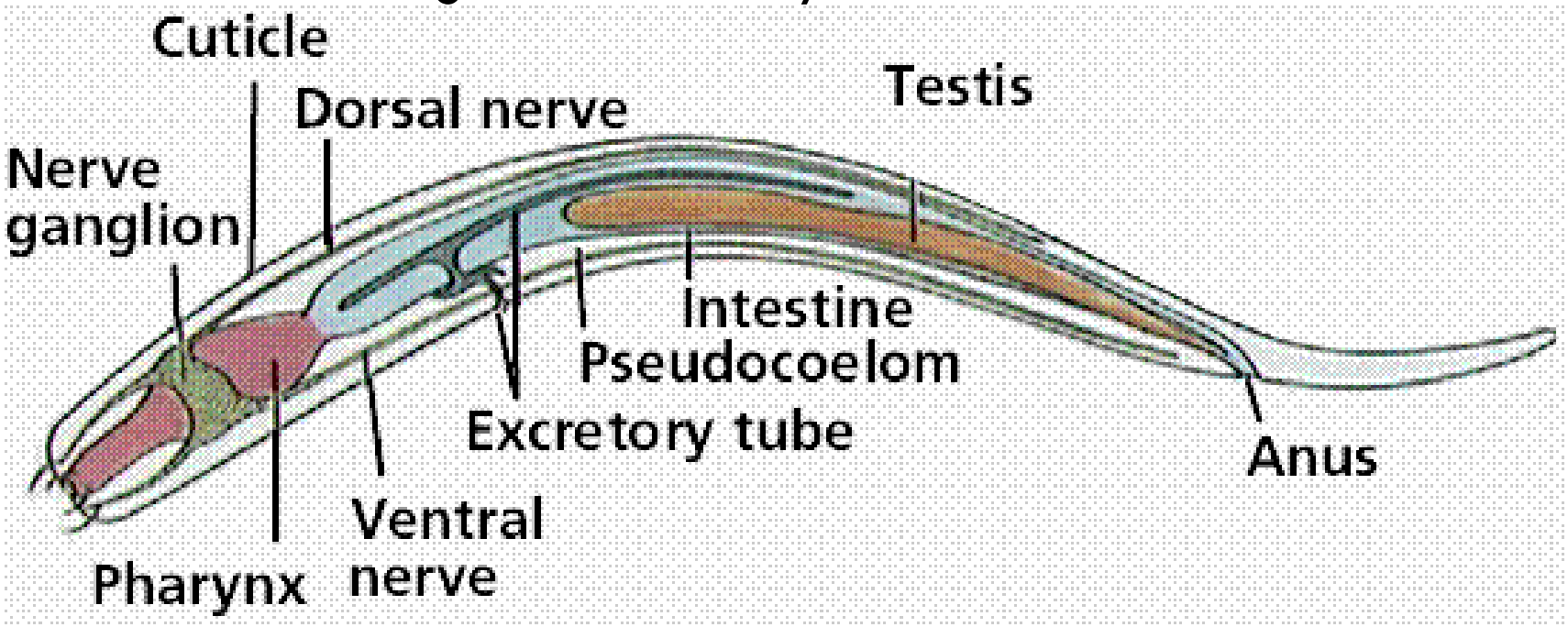
Response

- What systems are missing?



Response

- Nervous system with ganglia in the head
- Simple sensory organs detect chemicals
- Nerve cords
  - Run the length of the body



Movement

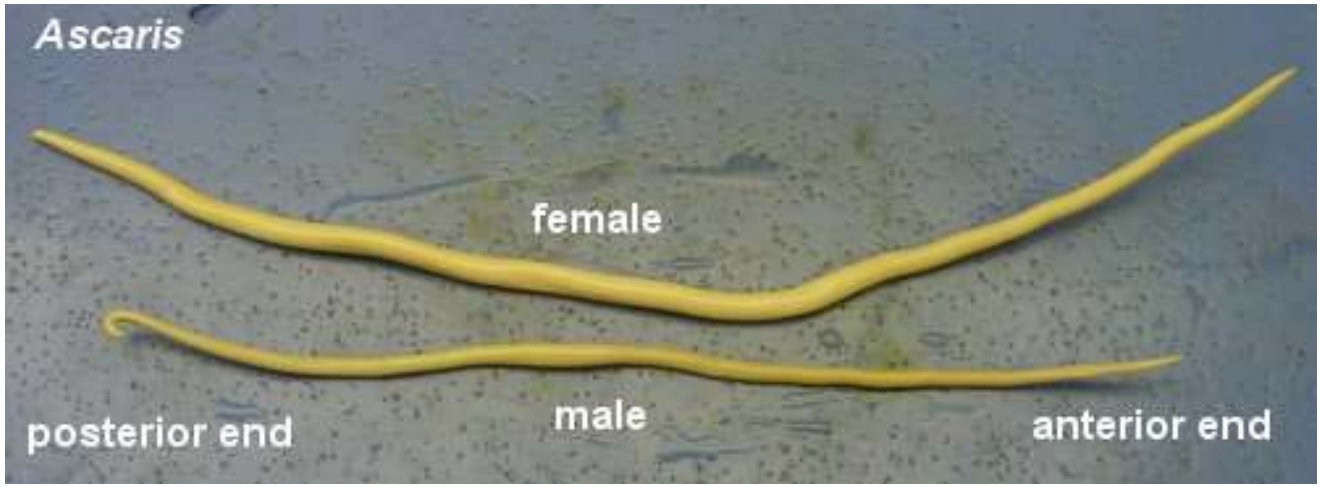
- Muscles make a wave-like thrashing movement
  - Uses hydrostatic skeleton

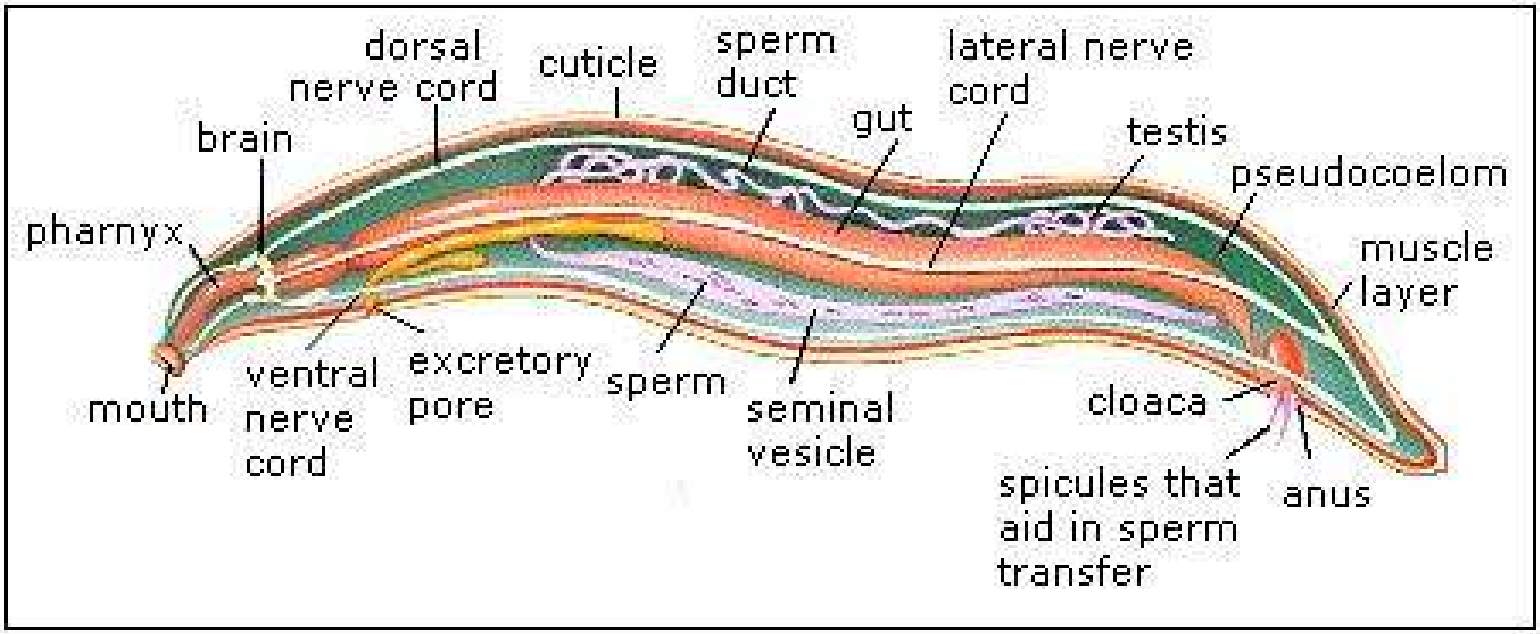
Movement

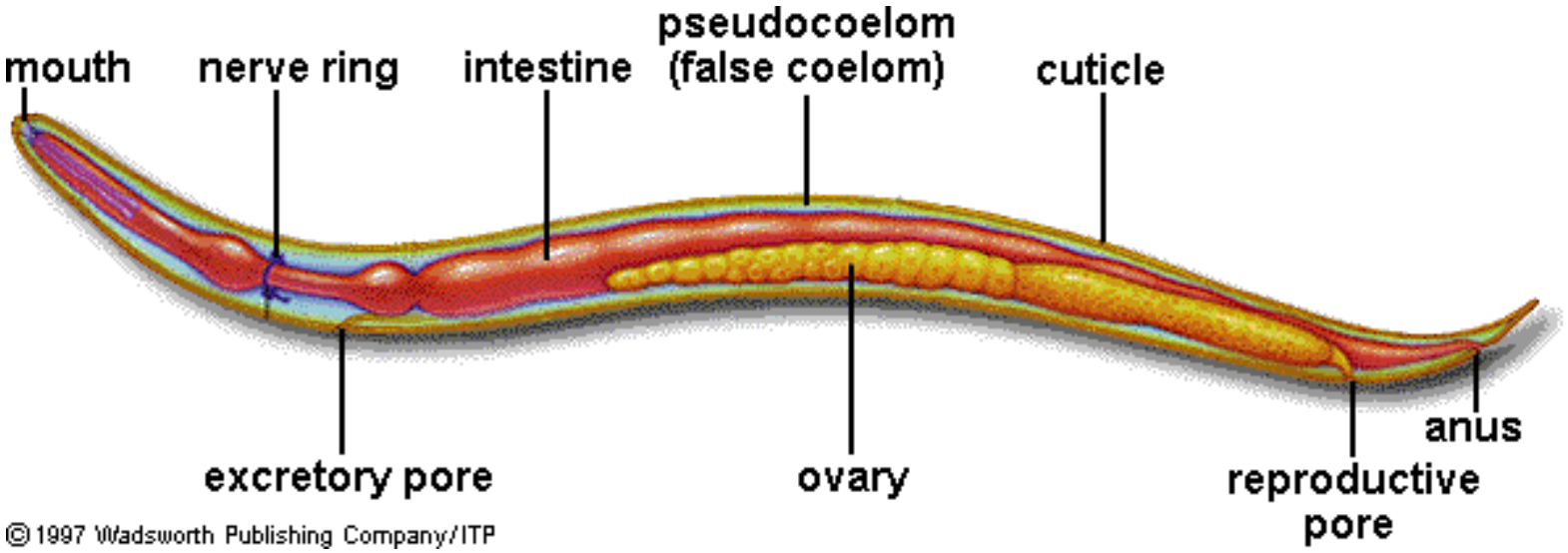
- Movement of a marine nematode
  - http://www.youtube.com/watch?v=SpgjnXEFadg
  - http://www.youtube.com/watch?v=tp-O3LME3OU
- Movement of a soil nematode

Reproduction and Development

- Only sexual reproduction
  - Males are smaller than females
- Internal fertilization
  - Males transfer sperm cells to female reproductive tract
  - Female stores eggs until they are laid
- Parasitic worms have 2 or 3 hosts







Important nematode species

- Ascaris lumbricoides- Intestinal round worms
- Enterobius vermicularis – Pin worm
- Necator americanus – Hookworm
- Trichinella spiralis – Pork worm
- Wucheria bancrofti- Filarial worm
- Dirofilaria immitis – Dog heartworm