

Animal Characteristics

- Multicellular
- Heterotrophs
- Monophyletic

5 key innovations in animal evolution:

- 1)Symmetry
- 2)Tissues
- 3)Body Cavity
- 4)Various embryonic development patterns
- 5)Segmentation

Gametic Life Cycle

- Haploid – Sex Cells (egg and sperm)
- Diploid – All other cells in the organism
- Haploid sperm and haploid egg fuse to form diploid zygote – develops into diploid adult

- Zygote undergoes divisions and forms a blastula (ball of cells)
- Blastula divides into three germ layers

Embryonic Development

Embryonic Development

- Cells divide into three germ layers:
 - Ectoderm: outer layer; forms skin and nervous system
 - Mesoderm: middle layer; forms skeleton and muscles
 - Endoderm: inner layer; forms digestive system

Body Cavity

- Coelom: body cavity inside the organism that is isolated from the exterior of the animal; houses internal organs.

- Acoelomate: Organism does not have a coelom
- Pseudocoelomate: Organism has a coelom, but it is between the mesoderm and endoderm tissue
- Coelomate: Organism has a coelom and it is entirely within mesoderm tissue

Invertebrates

- Organisms do not have a backbone
- Very diverse – contain about 95% of all known animal species