

Feeding and Digestion

- Sponges feed primarily on particles suspended in the water pumped through their canal systems.
- Detritus particles, planktonic organism and bacteria are consumed non – selectively.
- Pinacocytes may phagocytize particles at the surface are consumed in the canals by archaeocytes that move close to the lining of the canal .
- The smallest particles are phagocytized by the choanocytes .
- Digestion is entirely intracellular (occurs within cells) .

Respiration and excretion

Excretion and respiration are performed by the water current which provides constant supply of oxygen as well as a vehicle for the wastes such as CO_2 , NH_3 and undigested materials .

Reproduction and development

- All sponges are capable of both sexual and asexual reproduction .
- In sexual reproduction ova are fertilized by motile sperm in the mesohyl .
- The zygotes develop into flagellated larvae .
- Flagellated larvae carried away by water currents .
- The larvae swim about for some time then settle , become attached and grow into adults .
- Some sponges are monoecious (having both male and female sexes in one individual) , and some are dioecious (having separate sexes) .
- Sponges reproduce asexually by forming external buds that detach or remain to form colonies .
- In addition to external buds , which all sponges can form , freshwater sponges and some marine sponges reproduce asexually by the regular formation of internal bud called gemmules .
- These dormant masses of encapsulated archaeocytes are produced during unfavorable conditions .
- Gemmules can survive period of drought and freezing, later with the return of favorable conditions for growth , the archaeocytes in the gemmules escape and develop into new sponges .

Regeneration in sponges

- Sponges have a remarkable ability regenerate .
- Any piece is capable of ultimately regeneration into complete sponges

Classification of phylum Porifera

Class 1 : Calcarea (cal – ca're – a) (L . , calcis = lime + Gr . sponges = sponge) (Cacospongiae)

- A. Have spicules of calcium carbonate that often form a fringe around the osculum .
- B. Three types of canal systems (asconoid , syconoid , leuconoid) represented .
- C. All marine .

Examples : Sycon , Leucosolinia .

Class 2 : Hexactinellida (hex- ak – tin – el'l – da) (Gr . hexa = six + aktis = ray) (Hyalospongiae) .

- A. Have six – rayed , siliceous spicules extending at right angles from a central point .
- B. Spicules often united to form network .
- C. Body often cylindrical or funnel shaped .

Example : Hyalonem .

Class 3 : Demospongiae (de-mo-spun ' je – e) (Gr . demos = chain , tie , bond + spongos = sponge) .

- A. Have skeleton of siliceous spicules that are not six – rayed .
- B. Leuconoid – type canal system .
- C. One family found in freshwater , all others marine .

Example : Cilona , Spongilla .

Class 4 : Sclerospongiae (skler'o – spun'je – e) (Gr . skleros = hard + spongos = sponge) .

- A. Skeleton of calcium carbonate .**
- B. Have siliceous spicules similar of Demospongiae .**

Example : Astrosclera .

Phylum : Cnidaria

Note : Because the word " Cnidaria" alludes to that out standing characteristic of these animals , the nematocyst , it is preferred to Coelenterata , which describes ctenophores just as well as cnidarians .

(Ny- dar'e – a) (Gr . knida = nettle + L . aria = suffix) .

Characteristics of phylum Cnidaria

- 1. Entirely aquatic , some in freshwater but mostly marine .**
- 2. Radial symmetry or biradial symmetry around a longitudinal axis with oral and aboral ends , no definite head .**
- 3. Two basic type of individuals : Polyps and Medusae .**
- 4. Exoskeleton or endoskeleton of chitinous , calcareous , or protein components in some .**
- 5. Body with two layers , epidermis and gastrodermis , with mesoglea , with cells and connective tissue in some .**

6. **Gastrovascular cavity or coelenteron with single opening that serves as both mouth and anus ; extensible tentacles usually encircling the mouth or oral region .**
7. **Nematocysts (stinging cell) in either or both epidermis and gastrodermis .**
8. **Nerve net with symmetrical and asymmetrical synapses , some sensory organs .**
9. **Muscular system (epitheliomuscular type) of an outer layer of longitudinal fibers at base of epidermis and an inner one of circular fibers at base of gastrodermis .**
10. **Reproduction by asexual budding (in polyp) or sexual reproduction by gametes (in all medusa and some polyps) . Sexual forms monoecious or dioecious ; planula larva ; holoblastic cleavage .**
11. **No excretory and respiratory system .**
12. **No coelomic cavity .**