

### **18. Asexual reproduction and modular growth**

"Individual (n.): an object that is determined by properties peculiar to itself and cannot be divided into others of the same kind." --OED

#### **MAJOR THEMES**

Forms of asexual reproduction  
Clonal replication  
Ramet vs. genet  
Individuality and modularity

Parthenogenesis  
Resting stages  
Solitary and colonial growth  
Regeneration  
Superorganism

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#### **OUTLINE**

Recap: Historical patterns of diversity and some mechanisms to explain them

- 1) Distribution of asexual and sexual reproduction among phyla
- 2) Different forms of asexual reproduction among invertebrate groups
- 3) Individual and modular growth, coloniality, and their costs and benefits

#### **GOALS**

After studying from lecture notes and the associated reading, you should be able to:

- Explain why asexual reproduction is advantageous for replication, but why sexual reproduction may have other advantages
- Explain why there is often a connection between asexual reproduction and regeneration
- Identify the forms of asexual reproduction found among major phyla, and distinguish asexual reproduction in single celled and multi-celled organisms
- Explain why parthenogenesis is different from other forms of asexual reproduction
- Explain how parthenogenesis fits into seasonal reproductive cycles in rotifers and aphids, and describe the function of "resting stages" of some freshwater sponges and bryozoans
- Explain the differences between a ramet and a genet, and be able to identify the two in the body plans of different invertebrates
- Use evolutionary (and philosophical) concepts of individuality to debate: what is an aphid?
- Identify properties of modular organisms, and describe the connections between asexual reproduction, modularity, and coloniality
- Describe several benefits of modular growth as seen in at least four major animal phyla
- Explain the concept of a "superorganism" and features in common with modular organisms

#### **REFERENCES**

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