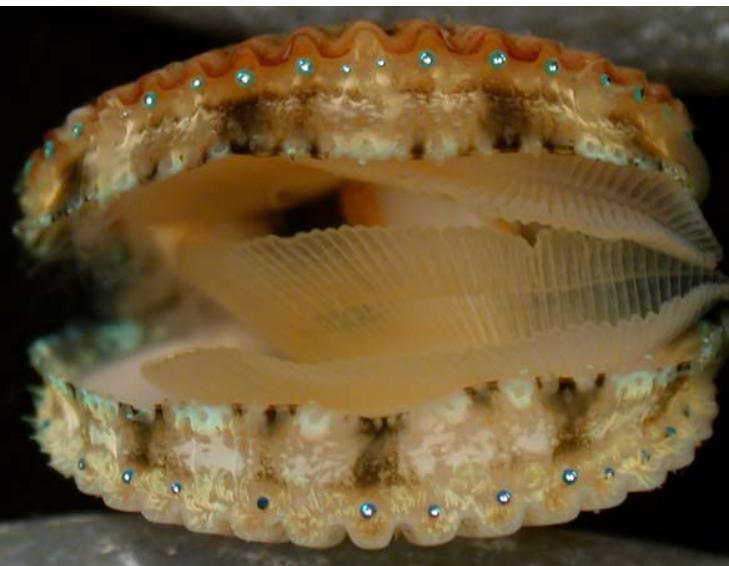


# Bivalve Anatomy & Classification



# Class Bivalvia

- ~15,000 species; includes clams, scallops, mussels, oysters
- 2-valved (hinged) shells w/ adductor muscles
- Body laterally flattened
- Lack of cephalization
- Spaceous mantle cavity
- Sedentary lifestyle
- NO radula

# Phylum

# Mollusca

## Subphylum

## Conchifera

## Class

## Bivalvia

## Subclass

Protobranchia

Pteriomorphia

Paleoheterodonta

Heterodonta

Anomalodesmata

## Order

Veneroida

Myoida

## Family

Nuculidae,  
Nuculanidae,  
Solemyidae

Mytilidae,  
Pinnidae,  
Ostreidae,  
Pectinidae,  
Anomiidae

Unionidae

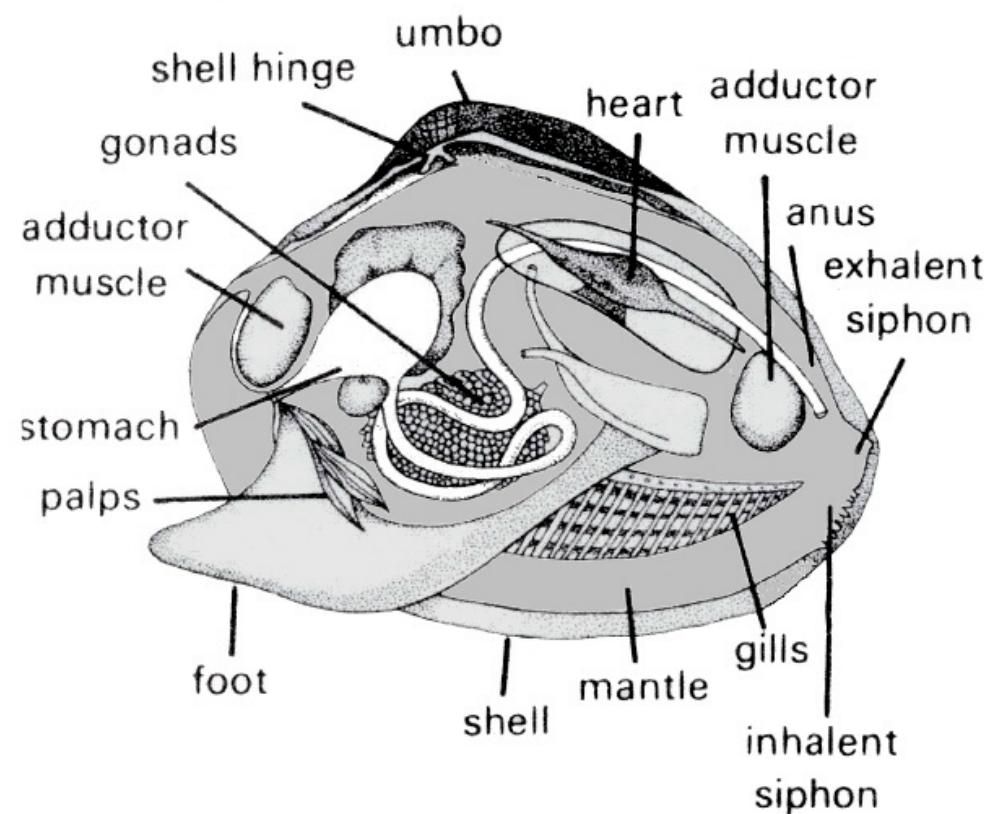
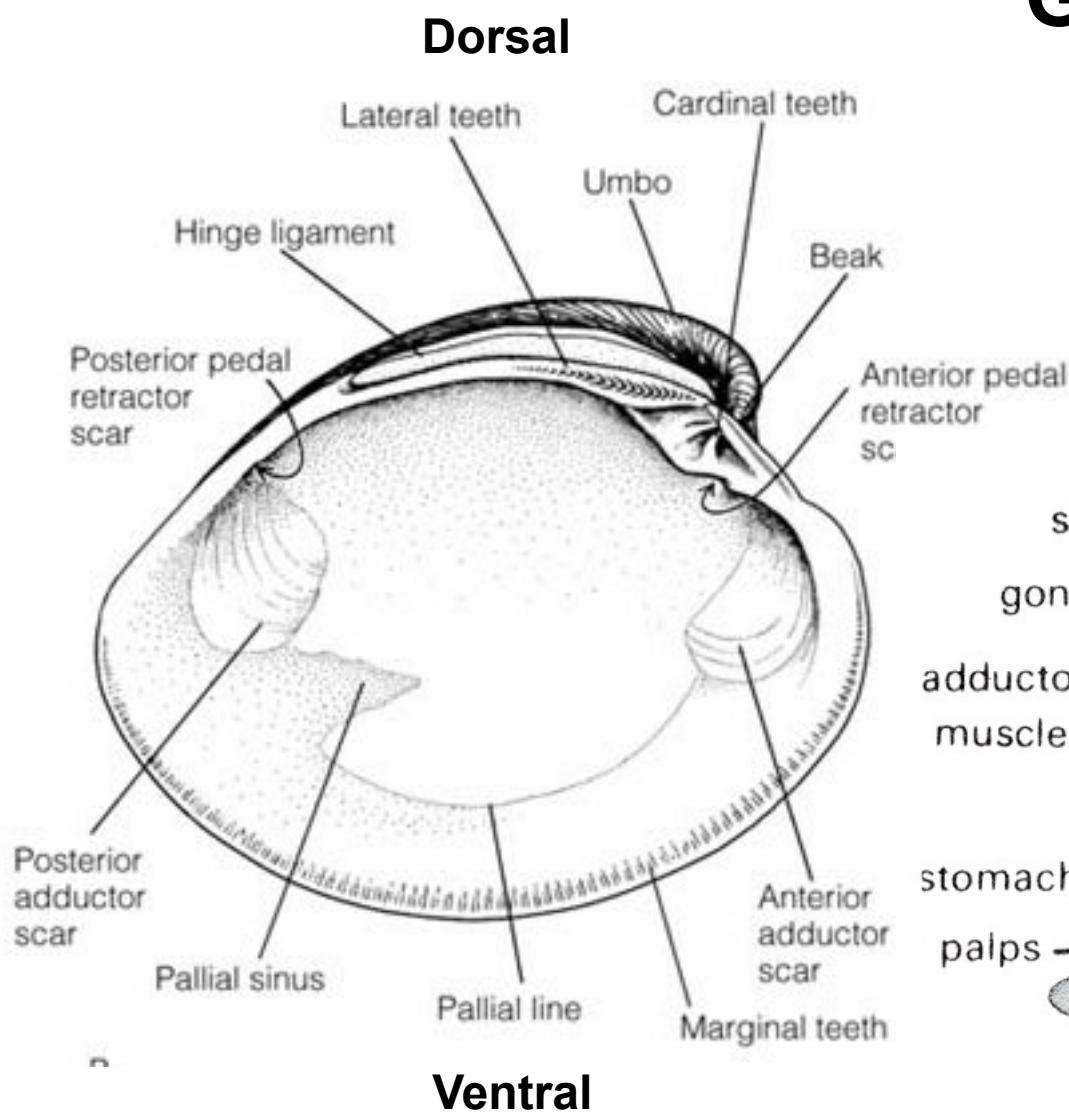
Lucinidae,  
Thyasiridae,  
Galeommatidae,  
Carditidae,  
Cardiidae,  
Tridacnidae,  
Mactridae,  
Pharidae,

Tellinidae,  
Donacidae,  
Arcticidae,  
Corbiculidae,  
Dreissenidae,  
Sphaeriidae,  
Vesicomyidae  
,  
Veneridae,  
Petricolidae

Myidae,  
Hiatellidae,  
Pholadidae,  
Teredinidae

Panoridae,  
Poromyidae,  
Cuspidariidae,  
Clavagellidae

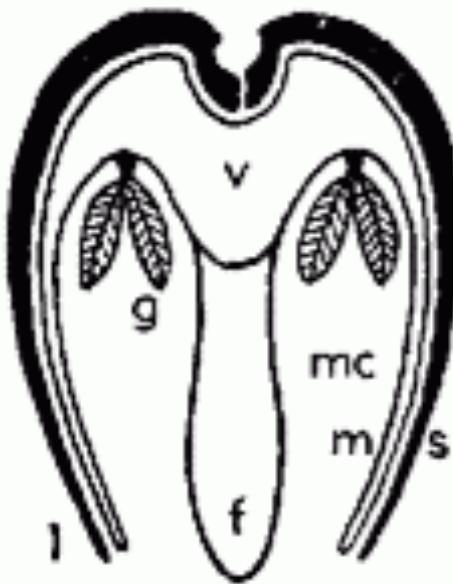
# General Bivalve Morphology



- Compare Filibranch and Eumellibranch Bivalves
  - Filibranch = “thread gills” attached by ciliary tufts; mussels, oysters, scallops, jingle shells
  - Eulamellibranch = filaments connected w/ tissue bridges; clams



- **Protobranch** - small and leaf like. Considered primitive
- **Filibranch** - form lamellar sheets of individual filaments in a "W" shape. They hang downwards into the mantle cavity but have their terminal portions bent upwards
- **Eulamellibranch** - have the same "W" shape but with cross partitions laterally joining the filaments to create water filled cavities. Most advanced and most common
- **Septibranch** - only found in rock borers (Order Pholadomyoida). Run transversely across the mantle cavity forming a partition that divides the mantle cavity



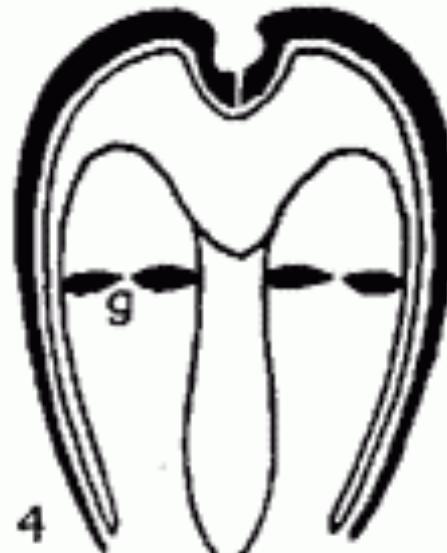
1  
Protobranch



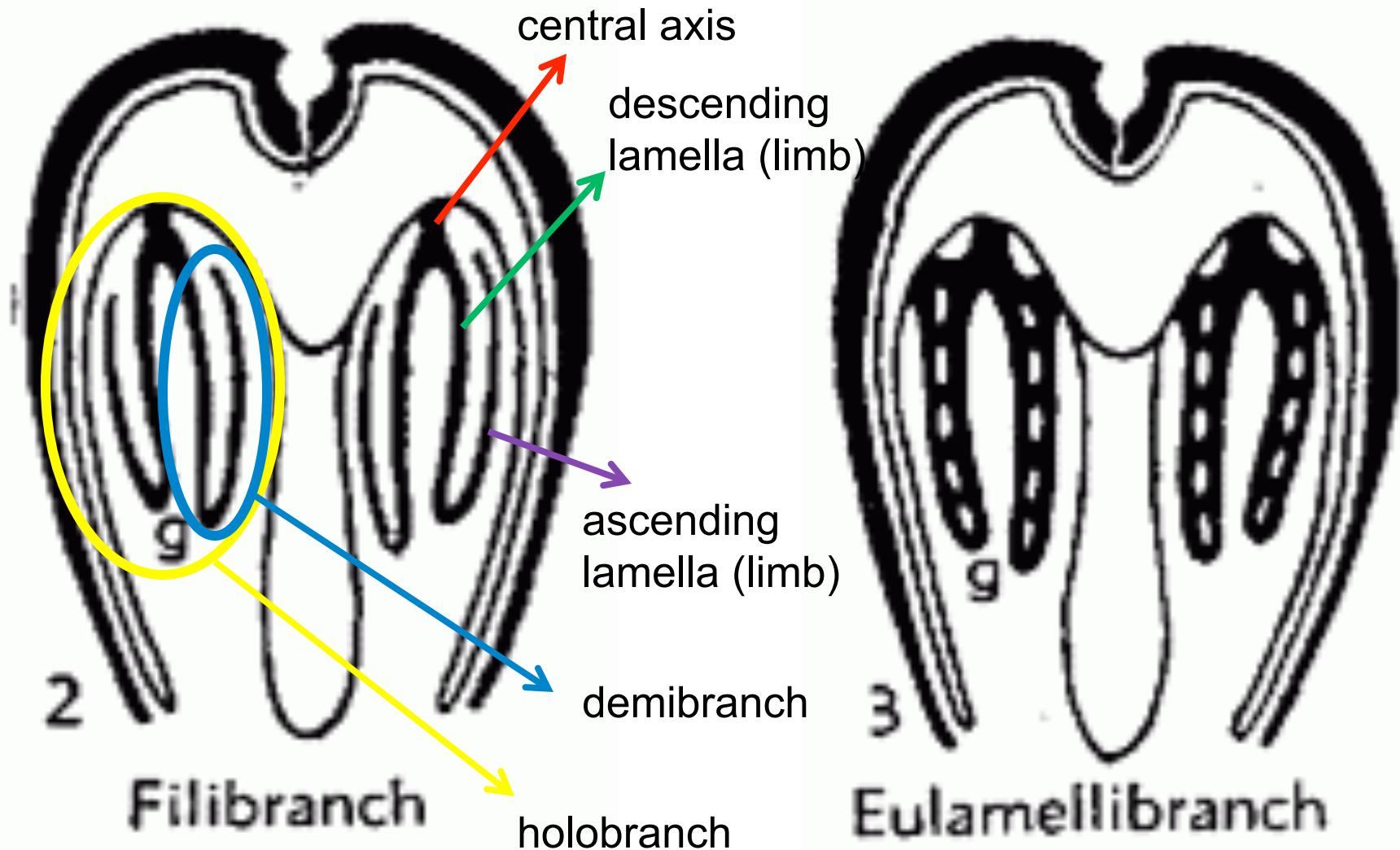
2  
Filibranch



3  
Eulamellibranch

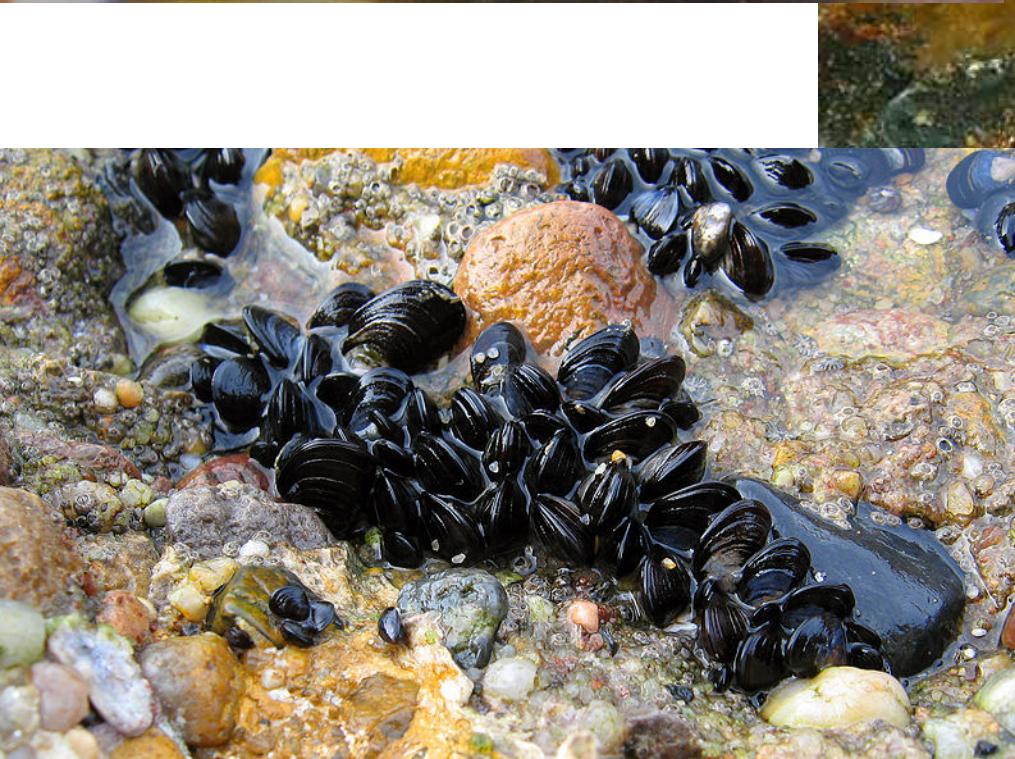


4  
Septibranch



Ascending lamella not  
attached to body wall

Ascending lamella  
attached to body wall



# Today's Dissection

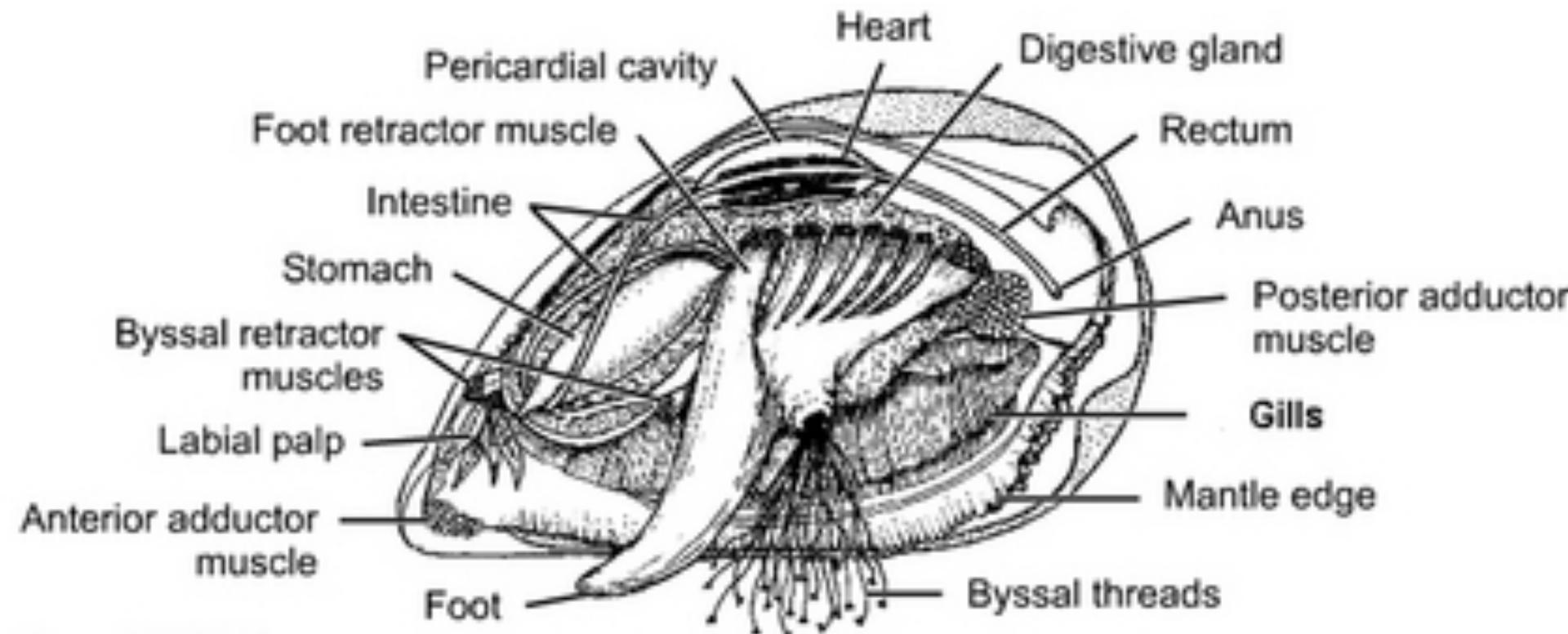
## *Mytilus edulis*

### (blue mussel)

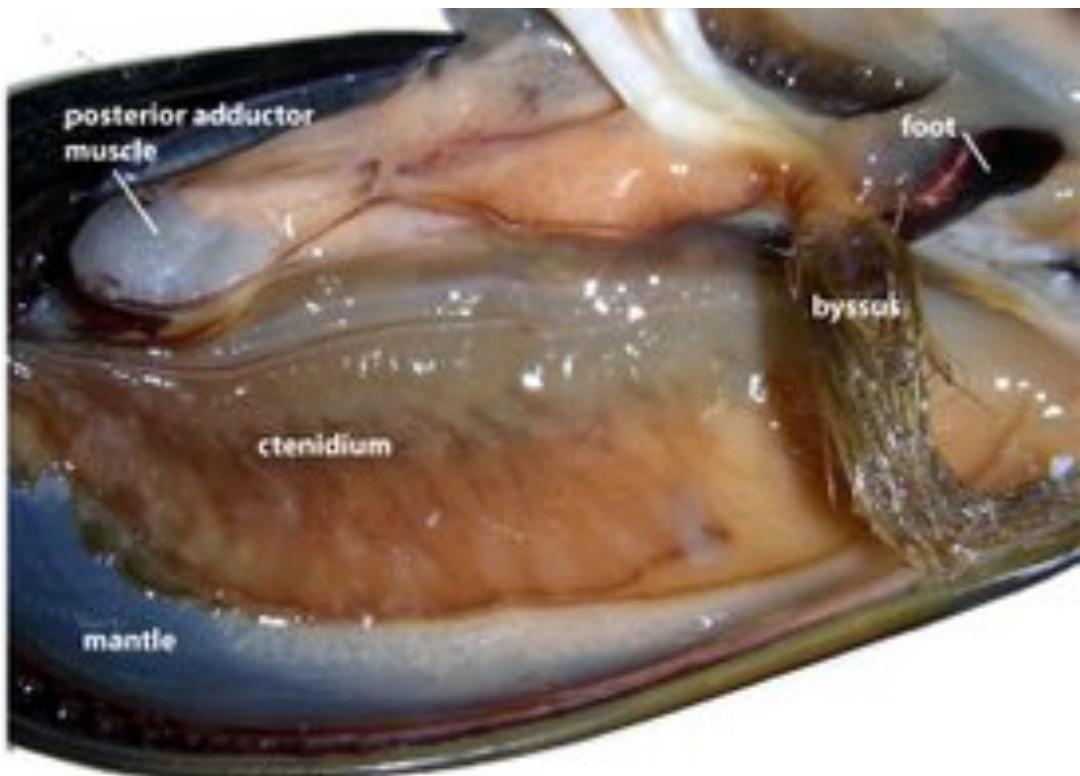


Are mussels filibranchs or eulamellibranchs?

# Internal Anatomy



Source: © BIODIDAC

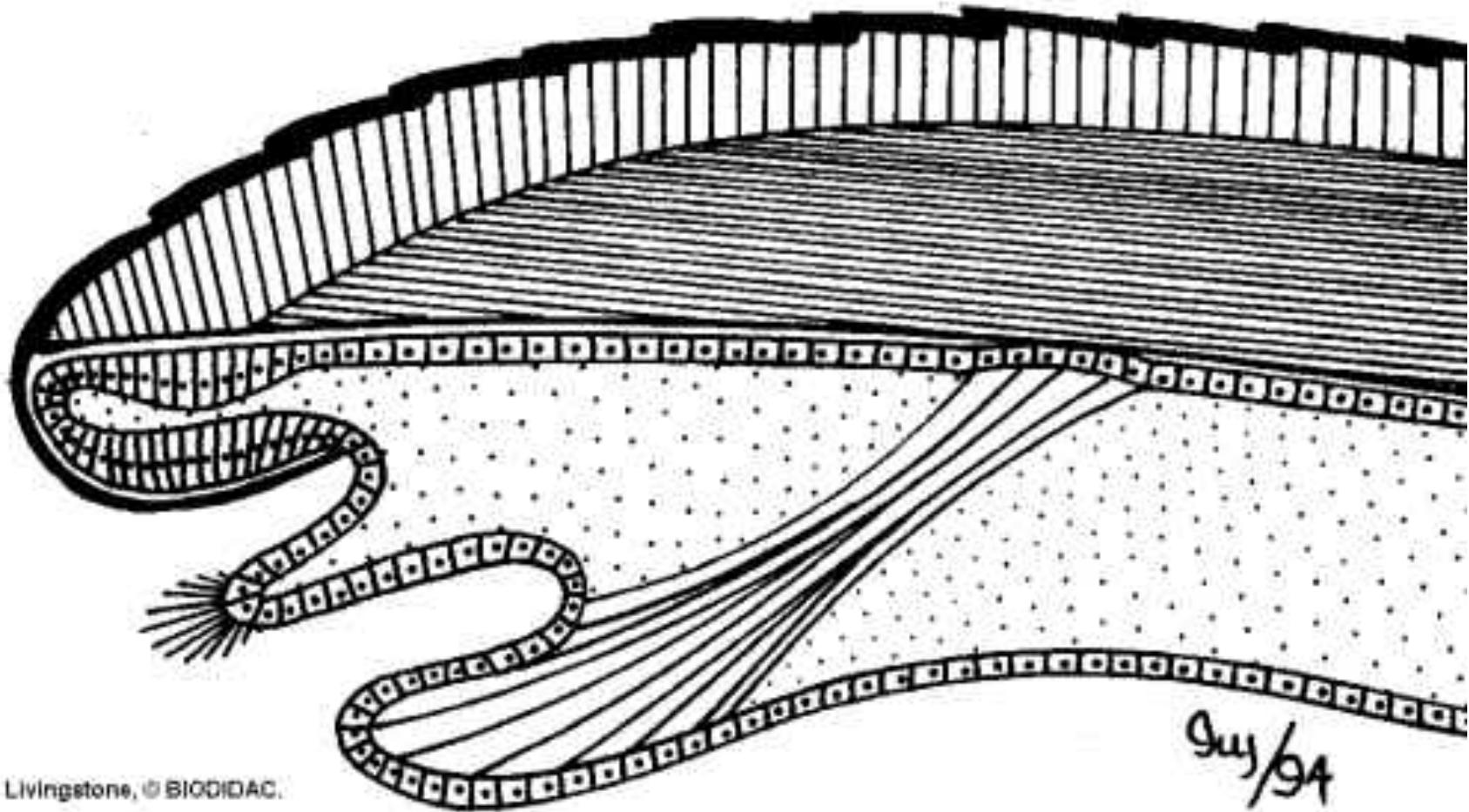


# Bivalve Feeding

- Water flows in ventrally and out dorsally
- Captured particles move along **food grooves** to the **labial palps**
- Palps sort particles moving food to mouth
- Non-food particles rejected and expelled as **pseudofeces**
- <http://www.biology.ualberta.ca/facilities/multimedia/?Page=252>

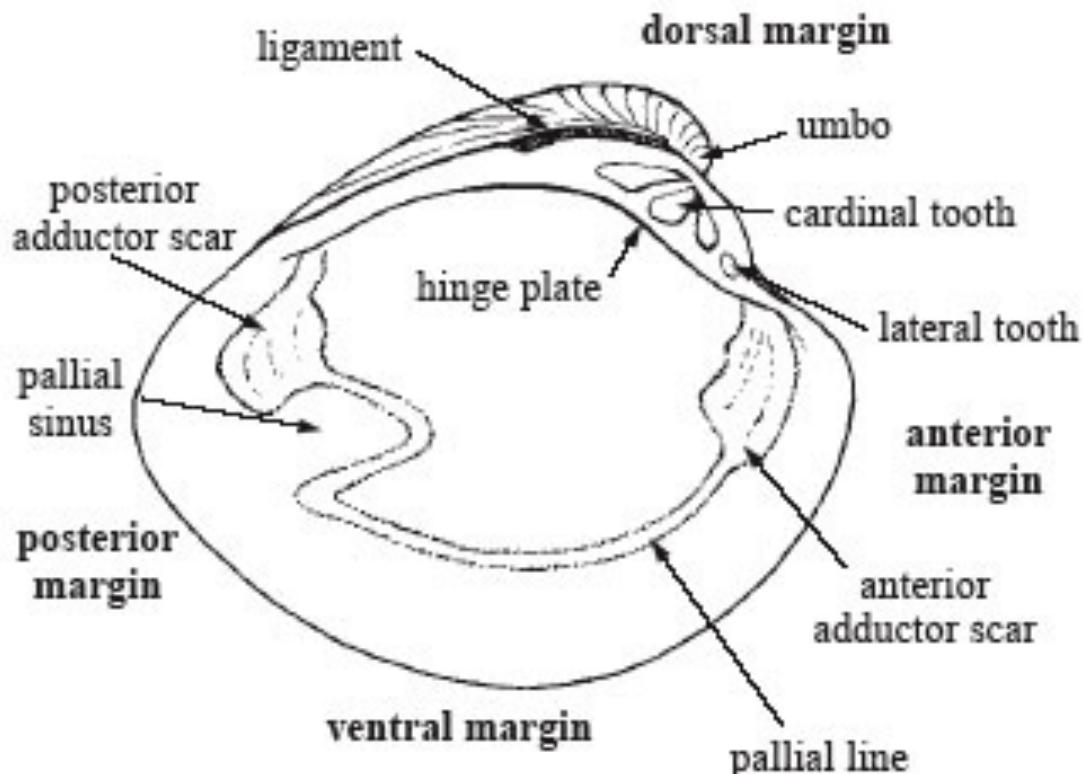
# Shell Layers

Compare manila clam and mussel shell

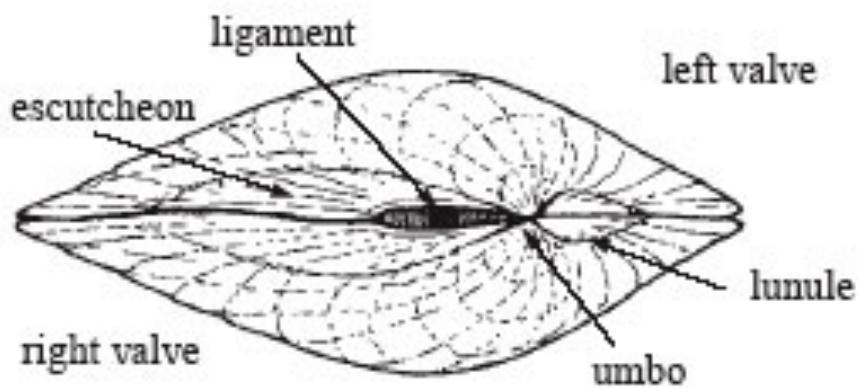


Livingstone, © BIODIDAC.

Do all bivalves possess 3 layers?



**interior of left valve**



**dorsal view of entire shell**

- Examine shells of different families of bivalves; what distinguishes each group?
- Think about shell composition, morphology & hinge features; very important in bivalve taxonomy (ie: # cardinal & lateral teeth)