

November 8, 2013

Tunga → flea that lives in people's toes (tropical) → *Tunga penetrans*
Egg → soil → larvae → instars → pupa → adult
Female stays in foot, drops eggs

Pulex irritant → gets on humans
Xenopsylla cheopis "oriental rat flea" → plague

Bubonic plague → Bubo: inflamed and infected lymph nodes
Pneumonic plague → lungs

Mongol empire → biggest empire ever → flea caused downfall of Mongol empire (plague)

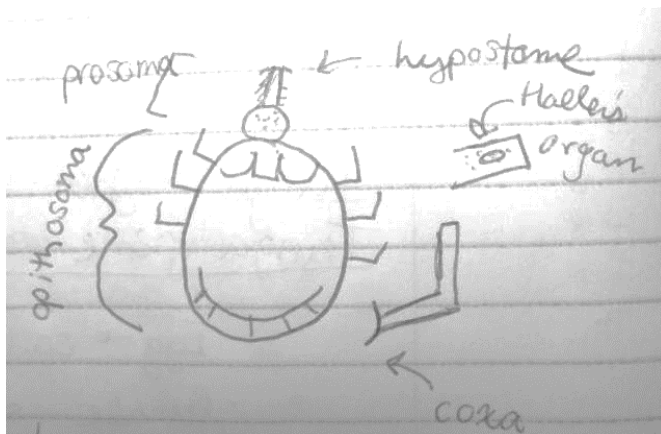
Phylum Arthropoda, Class Arachnida: spiders, ticks, mites

- Synapomorphy: 8 legs
- Tagmatization: fusion of thorax / abdomen
- *Argiope*: garden spiders
- *Lactrodectus mactans*: black widow
 - o Females big, males small; neurotoxic bite – venom
- *Loxosceles reclusa*: brown recluse spider
 - o Venom that degrades protein → causes skin to come off
- Almost all spiders are predators
- Dispersal → ballooning

November 11, 2013

Synapomorphies for Arachnida: silk, chelicerae, 8 legs

Tick – have Haller's organ on first pair of legs. Used for locating host.



Opisthosoma
Prosoma

Order Opiliones: harvestmen

Order Acari (Acarina): ticks, mites

- Tagmentation: fusion of posterior body parts
- Egg → larva → nymph → adult
- Ticks are good hosts for rocky mountain fever
- Questing: tick hanging around for mammal
- Family Ixodidae (hard ticks) → everywhere
- Family Argasidae (soft ticks) → mostly dry places

Mite	Tick
Hypostome hidden (not larvae)	Big hypostome exposed
Small body	Large body as adult
No Haller's organ	Yes Haller's organ

- Mites
 - o Family Demodicidae
 - *Demodex folliculorum*: eyelash mites
 - Live in sebaceous glands at root of hair in eye lashes
 - *Demodex cranium*: mange in dogs
 - o Chiggers are larval mites (family Trombiculidae)
 - Adults live in soil; feed on vegetation
 - Females mate → eggs → larvae → small mammal → lymph → nymph → adult

November 13, 2013

Cedar Point Biological Station → summer courses

1206 Chinggis Khan – born

1219 – 1226 – Mogol Empire expanded

1331 – Black Death emerged in China

1345 – Plague reached Volga River – East Europe

1348 – Italy

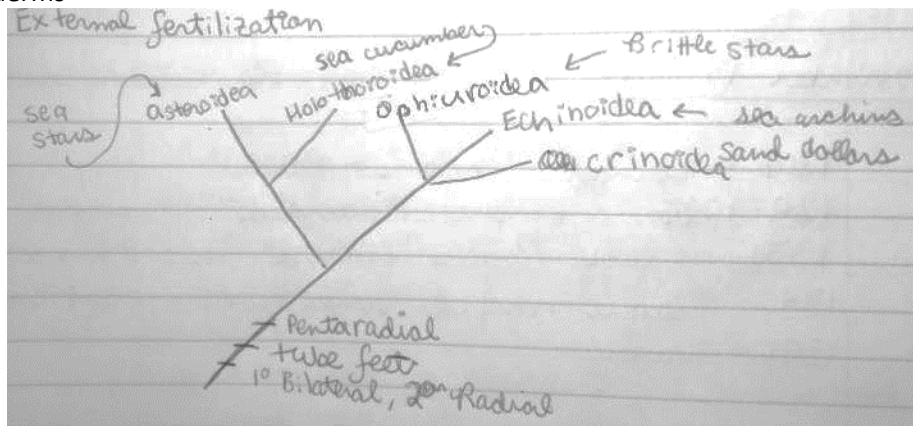
Deuterostomes → first invagination becomes anus, second invagination becomes mouth

Phylum Echinodermata

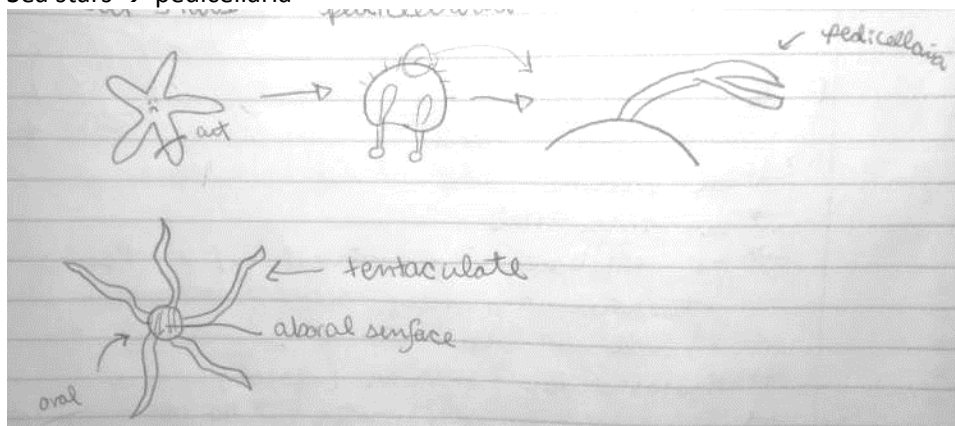
- Spiny skin
- No terrestrial
- Primary bilateral symmetry with secondary pentamerous radial symmetry
 - o Radial symmetry allows interactions with environment from all angles
- Hydrovascular system (closed)
- Isosmotic with sea water → no osmoregulation at all
- Circumoral commissure = brain
- Tube feet with ampulla

November 15, 2013

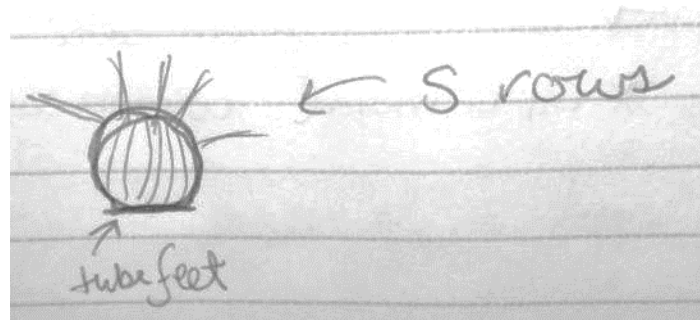
Echinoderms



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- All marine → ecological character
- External fertilization
- If you cut off leg, it will grow back
- Regeneration of body after automaty
- Sea stars → pedicellaria



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- Class Echinoidea



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- Test
- Spines
- Regular urchins

- Irregular urchins → sand dollars → secondarily derived bilateral
- Many are venomous
- Holotheroidea
 - 3° bilateral symmetry
 - 2° radial
 - Autoevisceration

Phylum Chordata

- Dorsal hollow nerve chord
- Pharyngeal "gill" arches (branchial arches)
- Bilateral symmetry
- Deuterostomes
- cephalization