

Biology 1020 **Lectures 13-18** Spring 2006
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Lecture 13 6 February 2006

Phylum Platyhelminthes

Campbell & Reece 7th Edition Readings

Chapter 33 pp. 646-648

Chapter 41 pp. 853-855

Chapter 44 pp. 929-930

Table 33.2

Figs. 32.8, 33.10, 33.11, 33.12, 44.10, 46.7, 48.2c,
49.16

Campbell & Reece 6th Edition Readings

Chapter 33 pp. 651-655

Table 33.2

Figs. 32.6, 33.10, 33.11, 33.12, 44.18, 46.6, 48.15c, 49.7

Phylum Platyhelminthes flatworms

1) Grade vs Clade

a) acoelomate Fig. 32.8

b) protostomous lophotrochozoan

2) Body plan

a) bilateral, triploblastic

b) dorsoventrally flattened

i) unidirectional movement

ii) moderate cephalization

- c) gastrovascular cavity
- d) organ systems
 - i) reduced in parasitic forms
- 3) Digestive system Fig. 33.10
 - a) food processing Concept 41.3 p, 853
 - i) ingestion
 - ii) digestion
 - iii) absorption
 - iv) elimination
 - b) branched gastrovascular cavity
 - c) extracellular & intracellular digestion
- 4) Nervous system Fig. 48.2c
 - a) cephalization
 - i) paired eye cups Fig. 49.16
 - ii) lateral auricles
 - iii) enlarged ganglia
 - b) pair of ventral longitudinal nerve cords
 - c) transverse nerves
- 5) Excretory system Fig. 44.10

- a) protonephridia
 - i) flame bulb
 - ii) nephridiopore
 - iii) osmoregulatory function
- 6) No respiratory system
- 7) No circulatory system
- 8) Reproductive system
 - a) hermaphrodites (most spp.)
 - b) cross-fertilization
- 9) Free living vs parasitic
 - a) problems of endoparasitic life
 - b) solutions
 - c) complex life cycles in parasitic forms
- 9) Classes Table 33.2
 - a) **Turbellaria** planarians
 - (1) habitat
 - (2) diet
 - b) **Trematoda** flukes
 - (1) anatomy Fig. 46.7

(2) life cycle of blood fluke Fig. 33.11

(i) sexual & asexual stages

(ii) final (definitive) & intermediate
hosts

c) **Cestoidea** tapeworms Fig. 33.12

(1) anatomy

(i) scolex (= "head")

1. suckers and hooks

2. no mouth

(ii) proglottids

(2) life cycle of beef tapeworm

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**Phylum Nemertea, Phylum Rotifera,
lophophorate phyla**

Campbell & Reece 7th Edition Readings
Chapter 33 pp. 648-650
Figs. 32.8, 32.10, 32.11, 32.13

Campbell & Reece 6th Edition Readings
Chapter 33 pp. 654-655
Fig. 32.6

Phylum Nemertea ribbon worms

- 1) Grade vs Clade
 - a) protostomous bilaterian
 - b) acoelomate?
 - c) lophotrochozoan
- 2) Similarities to free-living platyhelminthes
- 3) Differences from platyhelminthes
 - a) circulatory system
 - b) alimentary canal
 - c) rhynchocoel

Phylum Rotifera rotifers

- 1) Grade vs Clade
 - a) protostomous
 - b) lophotrochozoan?
- 2) Body plan
 - a) bilateral, triploblastic
 - b) pseudocoelomate
- 3) Habitat
- 4) Ingestion and digestive system
 - a) ciliated corona
 - i) suspension feeders
 - b) tube-within-a-tube
 - c) mouth, mastax, stomach, intestine, anus
- 5) Nervous system
 - a) ladder-like with cephalization
 - b) antennae, eye spot
- 6) Excretory system
 - a) protonephridia

- b) bladder
- 7) Reproduction
 - a) parthenogenesis
 - i) diploid females reproduce asexually
 - (1) clone of identical diploid daughters
 - b) sexual
 - i) diploid females produce gametes
 - (1) unfertilized gamete → haploid male
 - (2) fertilized gamete → diploid female
 - ii) haploid males produce sperm
- 8) No respiratory system
- 9) No circulatory system

Lophophorate phyla

- 1) Grade vs Clade
 - a) deuterostome?
 - b) lophotrochozoan
- 2) Anatomy
 - a) Lophophore (Fig. 32.13)
 - i) ciliated tentacles around mouth
 - ii) suspension (filter) feeding
 - b) eucoelomate
 - i) U-shaped digestive tract
 - ii) anal opening outside lophophore
 - c) Not cephalized
- 3) Sessile
- 4) Three phyla

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Phylum Mollusca

Campbell & Reece 7th Edition Readings

Chapter 33 pp. 650-653, Table 33.3

Figs. 32.8, 32.9, 33.16, 33.19, 33.21, 42.20c, 48.2f & g

Campbell & Reece 6th Edition Readings

Chapter 33 pp. 656-659, Table 33.3

Figs. 33.16, 33.18, 33.21, 42.19c, 48.15f&g

Review protostome / deuterostome

Review eucoelomate

- 1) Grade vs clade
 - a) protostomous eucoelomate
 - b) protostomous lophotrochozoan
- 2) Basic molluscan body plan Fig. 33.16
 - i) mantle
 - ii) visceral mass
 - iii) muscular foot
- 3) Other molluscan characters

- i) shell
 - (a) external
 - (b) internal
 - (c) absent
 - ii) mantle cavity
 - iii) radula Fig. 33.16
- 4) Classes Table 33.3
- i) **Polyplacophora** chitons
 - ii) **Gastropoda** snails and slugs
 - (a) torsion Fig. 33.19
 - iii) **Bivalvia** Fig. 33.21
 - clams, oysters, mussels, scallops
 - iv) **Cephalopoda**
 - nautilus, cuttlefish, squids,
 - octopus
- 5) Organ systems Fig. 33.16, Fig. 33.21
- i) respiratory Fig. 42.20c
 - ii) circulatory
 - iii) excretory

- iv) digestive
- v) nervous Fig. 48.2f, g

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Phylum Annelida

Campbell & Reece 7th Edition Readings

Chapter 33 pp. 653-655

Table 33.4

Figs. 33.23, 41.14a, 42.3b, 42.20b, 44.11, 48.2d,
49.25

Campbell & Reece 6th Edition Readings

Chapter 33 pp. 659-661

Table 33.4

Figs. 32.6, 32.7, 33.23, 41.12a, 42.2b, 42.19b, 44.19, 49.27

Phylum Annelida segmented worms

1) Grade vs Clade

- a) protostomous eucoelomate
- b) protostomous lophotrochozoan

2) Body plan

- a) bilateral, triploblastic
- b) eucoelomate
 - i) schizocoelous & protostomous
- c) metamerism

3) peristaltic locomotion Fig. 49.25

- 4) digestive system Fig. 33.23, Fig. 41.14a
 - a) tube-within-a-tube
 - b) mouth, pharynx, esophagus, crop, gizzard, intestine, anus
- 5) excretory system Fig. 44.11
 - a) metanephridia
- 6) nervous system Figs. 33.23, 48.2d
 - a) ladder-like with cephalization
 - b) sensory organs
- 7) circulatory system Fig. 42.3b
- 8) Classes Table 33.4
 - a) **Oligochaeta** earthworms
 - i) habitat
 - ii) anatomy
 - iii) reproduction
 - b) **Polychaeta** bristle worms
 - i) habitat and diet
 - ii) anatomy
 - (a) cephalization

- (b) parapodia Fig. 42.20b
- iii) reproduction
- c) **Hirudinea** leeches
 - i) similarities to oligochaetes
 - ii) differences from oligo- & polychaetes

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Ecdysozoa

Phylum Nematoda

Campbell & Reece 7th Edition Readings
Chapter 33 pp. 655-656
Figs. 21.2, 21.15

Campbell & Reece 6th Edition Readings
Chapter 33 pp. 661-662
Fig. 21.4

Phylum Nematoda round worms

- 1) Grade vs Clade
 - a) pseudocoelomate protostome
 - b) protostomous ecdysozoan
- 2) Body plan
 - a) bilateral, triploblastic
 - b) pseudocoelomate
 - c) exoskeleton
 - i) cuticle shed by ecdysis
- 3) Habitat
- 4) Anatomy

- a) Not segmented
- b) Standard shape
- 5) Digestive system
 - a) tube-within-a-tube
 - b) mouth, pharynx, intestine, anus
- 6) Nervous system
 - a) ladder-like with cephalization
 - b) sensory organs
- 7) Excretory system
 - a) non-nephridial
- 8) No respiratory system
- 9) No circulatory system
- 10) Reproduction
 - a) separate sexes
 - i) amoeboid sperm
 - b) copulation & internal fertilization
 - c) zygote → shelled egg → juvenile → adult
- 11) Parasitic life cycles

Reading Week

No classes 20 - 24 February

Next class Monday 27 February

Lectures 19-29 see John Bain's lecture outlines

Next set of animal lectures start 27 March