# **General Characteristics of** Protozoans

- 1. unicellular eukaryotes (some multinucleate, a few loosely multicellular), not all have
  mitochondria (microspores, many flagelats).
- 2. up to about 400 micrometarin size (some larger)
- 3. all have
- 4. most are free living, but many parasitic forms including entire phyla
- 5. motile by a variety of mechanisms but also several non-motile taxa
  - Pseudopodia
  - Flagella
  - Cilia
- 6. Many have cyst stages secreted by trophic or spore stages
- Cysts/spores have four basic functions:
  - protect against unfavorable conditions
  - serve as sites for multiplication
  - assist in attachment to surfaces such as hosts
  - transmission stage from host to host

# Subphylum Sarcodina

- Sarcodina consists of amodes. E.g. Amoeba preteus
- •Consists of outside membrane called the pellicle.
- Movement by pseudopodia which are cytoplasmic extensions.
- Two section of the cytoplasm namely, ectoplasm and endoplasm
- •Asexual reproduction occurs by fission of the cell.
- the food vacuole is formed by the process of phagocytosis .
- •Osmoregulation is by **contractile vacuole**.
- Sarcodina includes two marine groups known as foraminiferans and radiolarians.
- •Another member, *Entamoeba histolytica*, is the cause of amoebic dysentery (amoebiasis).
- •This organism can cause painful lesions of the intestine if it is contracted from contaminated water.

# CILIOPHORA Notesale.co.uk • Ciliats and relatively large protozoans

# **CILIOPHORA**





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# Conjugation cont...

- tesale.co.uk independently. Conjugants separate and g
  - eeus divi totically forming 8 daughter nuclei
  - Four transform into macronuclei and other four into micrinuclei
  - Three daughter micronuclei degenerate leaving only one
- the ex-conjugants undergo binary fission
  - two macronuclei enter each new cell and micronucleus divides mitotically
  - further division takes place where the two macronuclei separate one going into separate cell and respective micronucleus dividing.
  - The result is 8 daughter cells from two separated ex-conjugants with four from each.

- The apicomplexan Place of 221
   The transite that causes matching of 221
   Plas account peoplires both mosquitoes and
- humans to complete its life cycle
- Approximately 2 million people die each year from malaria



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c (a) Sea anemone: a polyp



(b) Jelly: a medusa



### nematocyst





Fig. 25-15a, p.411

#### **NEMATOCYSTS**

#### functions

- anchorage, tene and prey to gree 56 of 221 basis of ten basis of taxonomy for some groups made only by Cnidaria;
- some predators able to use nematocysts ٠

Nematocyst types

- •Volvent- entangles
- •Penetrant- penetrates prey, injects toxin
- •Glutinant- sticky, anchorage
- •Discharge- chemical or mechanical discharge; Hydrostatic pressure within nematocyst

# Men tron Hotelan page

# Scyphozoa ns

#### Some Jellyfish Some Jellyfish



## A marine flatworm



## (b) A sea slug

- The mantle cavity of a braily contains gills that are used for feating as well as gas exchange
  These valves are joined by a hinge on the demoderate of the second seco
- dorsal side of the animal

Fig. 33-27





Fig. 33-31



•Most modern cheliceriferns are arachnids, which include spiders, scorpions, ticks, and mites review page





# Myriapods

- Subphylum Myriapoda escudes millipedes and centipedes from 61 of 22
   Myrapods are errestrial, and have jaw-like
  - mandibles
- Millipedes, class Diplopoda, have many legs
  - Each trunk segment has two pairs of legs

# Insects

- Subphylum Hexapoda ensects and relatives, has more species than all other forms of life combined Page
- They live in almost every terrestrial habitat and in fresh water
- •The internal anatomy of an insect includes several complex organ systems



- Flight is one key to the seat success of insects
  An animal that each fly can escape predators, find food, and all perse to new habitats much faster than organisms that can only crawl





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Fig. 33-37b



# **Echinoderms**

- •Sea stars and most othes echinoderms are A thir epidernas covers an endoskeleton of hard
- calcareous plates
- •Echinoderms have a unique water vascular system, a network of hydraulic canals branching into **tube feet** that function in locomotion, feeding, and gas exchange
- Males and females are usually separate, and sexual reproduction is external



## (a) A sea star (class Asteroidea)



## (d) A feather star (class Crinoidea)



## (f) A sea daisy (class Concentricycloidea)



Key Concept	Phylum	Description
<b>Concept 33.1</b> Sponges are basal animals that lack true tissues	Calcarea, Silicea (sponges)	Lack true tissues; have choanocytes (collar cells—flagellated cells that ingest bacteria and tiny food particles)