Sexual versus Asexual Reproduction

Type of Reproduction	Methods	Advantages	Disadvantages
Sexual	Internal fertilization	Diversity in offspring Offspring less likely to have mutations show up	Requires a mate to reproduce Population increases are limited
	External fertilization		
	Conjugation		
Asexual	Budding	Can increase populations rapidly Does not require a mate for reproduction to take place	Lack of diversity in offspring Because they reproduce offspring genetically identical to parents, the offspring inherit any mutations of the parent.
	Spores		
	Fission		

- Definitions:

  - Diversity in offspring

    > *def.* – ***Diversity*** **-** the relative uniqueness of each individual in the population

  - offspring less likely to have mutations show up

    > *def.* – Mutation – changes in DNA

Reproduction

Advantages

Disadvantages

Sexual

Advantages

Disadvantages

Asexual

Invertebrates

What are they?

Sponges

Roundworms

Animals without a backbone

Flatworms

Cnidarians

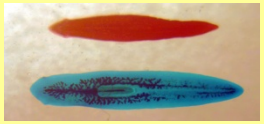
Echinoderms

Mollusks

Anthropods

Segmented Worms

Invertebrates

Type of Invertebrate	Major Characteristics	Means of obtaining oxygen	Examples	Type of Reproduction
Sponges 	-Simplest animals -can regenerate body parts		Sponges	Asexual
Cnidarians 	2 basic body shapes; medusa (Ex. Jellyfish) & polyp (ex: Hydra)		Jellyfish Hydra	Asexual
Flatworms 	Can regenerate some are parasites		Planaria ** **Flukes** Flatworms	Sexual or Asexual

Type of Invertebrate	Major Characteristics	Means of obtaining oxygen	Examples	Type of Reproduction
Roundworms 	Most are parasites		Pinworms Hook Worms	Sexual
Mollusks 	Broad Muscular foot Layer of tissue called mantle Have shells Group includes: gastropods bivalves & cephalopods	Gills	Snails Slugs Clams Oysters Squids Octopuses	Sexual
Segmented Worms 	Closed circulatory system	Skin	Earthworm Bristle Worms Leeches	Sexual(majority) Asexual

Invertebrates (cont'd)

Type of Invertebrate	Major Characteristics	Means of obtaining oxygen	Examples	Type of Reproduction
Echinoderms 	Endoskeleton covered with spines	Tube Feet	Starfish Sea Urchins Sand Dollar	Asexual

Invertebrates (cont'd)

Type of Invertebrate	Major Characteristics	Means of obtaining oxygen	Examples	Type of Reproduction
Anthropods	-Jointed Legs -Segmented body parts -**Exoskeleton** -Head and well-developed brain	Centipedes Millipedes		Sexual
		Crustaceans 	Gills	Sexual
		Arachnids 	Book Lungs (Spiders)	Sexual
		Insects 	Spiracles (grasshoppers)	Sexual

Sponges

- Simplest animals
- can regenerate body parts

Reproduction: ASEXUAL

Cnidarians

- 2 basic body shapes
- Examples: Jellyfish/Hydra

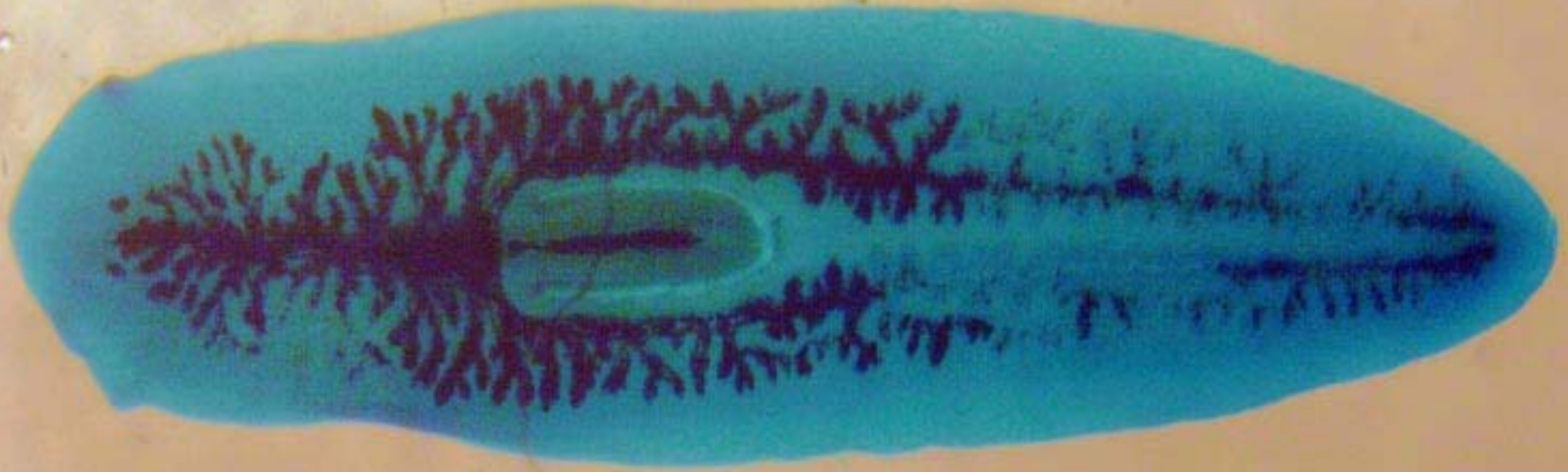
  medusa (Ex. Jellyfish) & polyp (ex: Hydra)

  - Reproduction: Asexual

Flatworms

- Can regenerate
- some are parasites

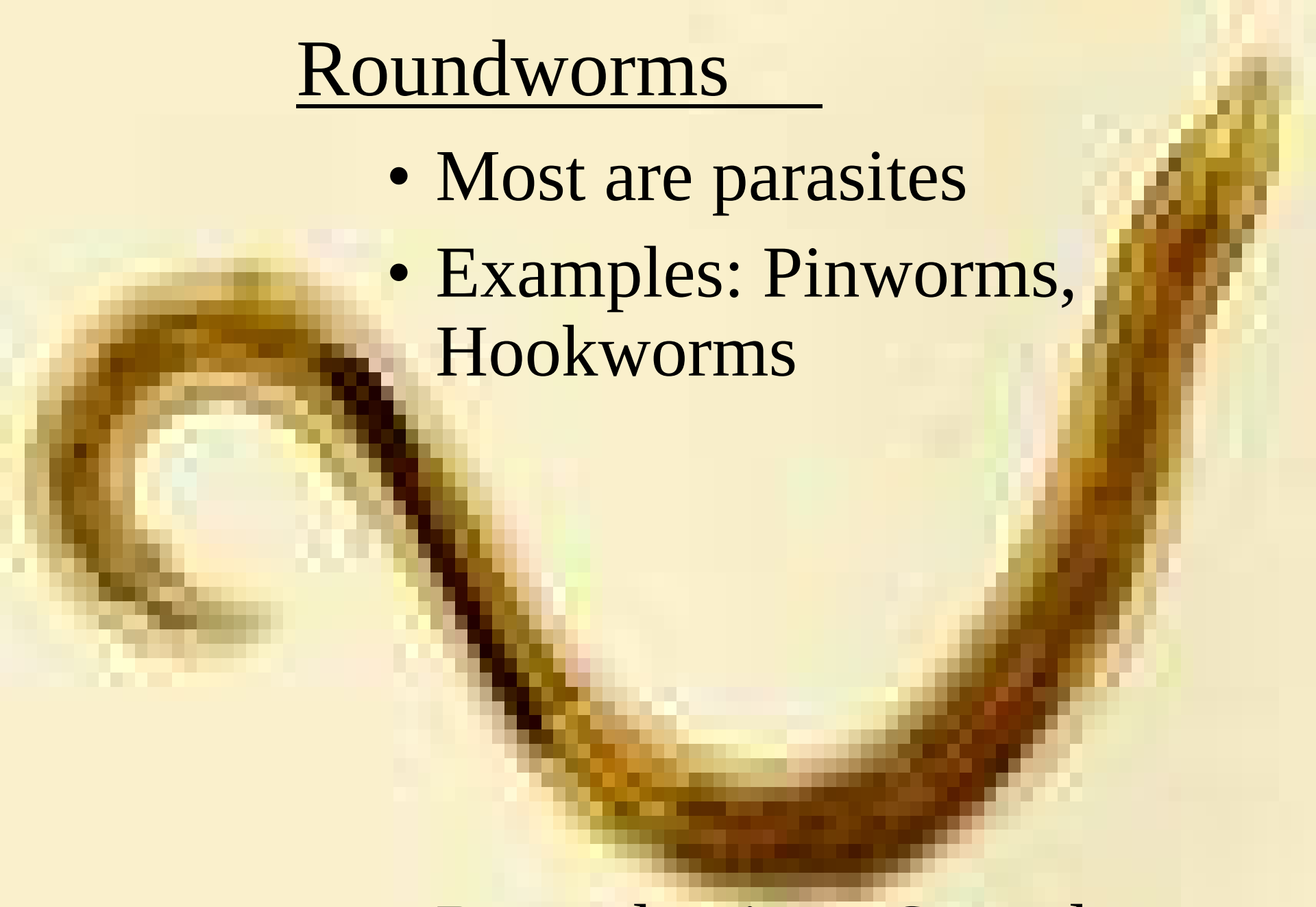
Examples: Planaria*, Flukes, Flatworms



Reproduction: Sexual or Asexual

Roundworms

- Most are parasites
- Examples: Pinworms, Hookworms



- Reproduction: Sexual

Mollusks

- Broad Muscular foot
- Layer of tissue called **mantle**
- Have shells
- Group includes:
  - gastropods
  - bivalves & cephalopods
- **Gills**
- Examples: Complex ganglia,Snails, Slugs, Clams, Oysters, Squids, Octopuses
- Reproduction: **SEXUAL**

Segmented Worms

- Closed Circulatory System
- Skin
- Examples: Earthworm, Bristle Worm, Leeches
- Reproduction: **SEXUAL or ASEXUAL**

Echinoderms

- Endoskeleton
- covered with spines
- use Tube Feet to obtain oxygen
- Examples: starfish, sea urchin, sand dollar
- Reproduction: Asexual

Arthropod

-- Jointed Legs

-- Segmented Body parts

-- Exoskeleton

-- Head and well-developed brain

- Reproduction: SEXUAL

Review

- What are Invertebrates?
  - Animals without a backbone
- What is difference between sexual and asexual reproduction?
  - Sexual reproduction requires a mate, Asexual reproduction doesn't
- What is an advantage of sexual reproduction?
  - Diversity/Offspring less likely to have mutations
- What is a disadvantage of sexual reproduction?
  - Population increases are limited/requires mate

Review Cont'd

- What is an advantage of asexual reproduction?
  - Increases population rapidly/no mate needed
- What is a disadvantage of asexual reproduction?
  - Reproduce offspring identical to parents
  - No diversity
- Which category does a flat worm belong in (Asexual or Sexual)?
  - both

The End.