These notes are posted on my site for the following reasons:

- **for students to copy in their own hand-writing**
  - **in order to complete their class notes**
  - **if student did not have enough time in class**
  - **if student was away and missed this section**
- **for assistants and tutors to follow progress of the concepts taught**

Photocopied/printed notes can not be used during the Unit Notebook Check in class.

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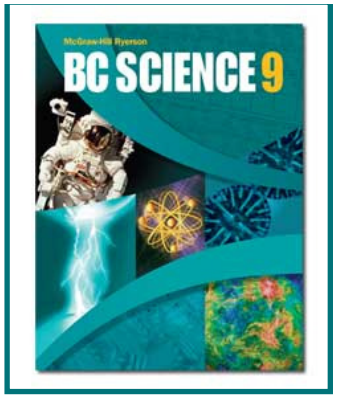
6.2 Sexual Reproduction

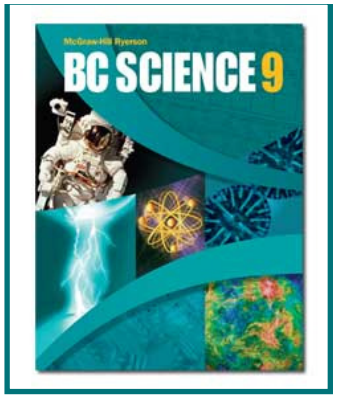


Sexual reproduction brings non-identical gametes together to form a new organism - it occurs in 3 stages:

- Mating - the process by which gametes are bought together at same place and same time
- Fertilization - process by which egg and sperm join to form a new organism
- Development - the process by which an organism develops as an embryo

See pages 204 - 206

Methods of Fertilization



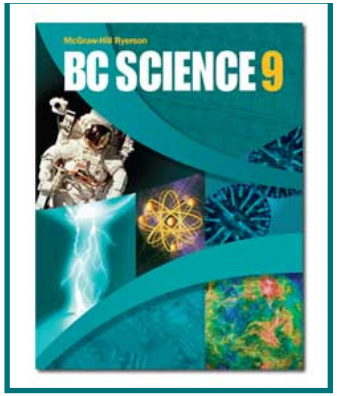
External or Internal Fertilization

- In order for either of these methods to produce a successfully developing embryo, certain conditions must be met:

1. Embryo must have enough nutrients.
2. Temperature must not be too cold or too hot.
3. There must be enough moisture so that embryo does not dry out.
4. Embryo must be protected from predators and items in environment that can potentially harm it.

See page 207

External Fertilization



- In external fertilization, sperm and egg join outside parents

Advantages

- Very little energy required to mate
- Large numbers of offspring produced
- Offspring can be spread widely in the environment - less competition between each other and parents

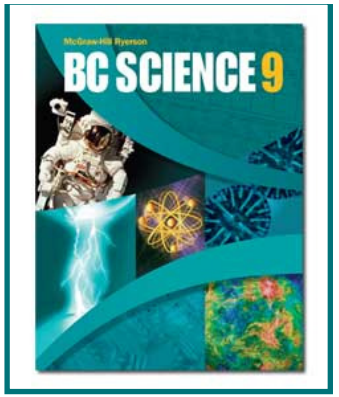
Disadvantages

- Many gametes will not survive
- Many eggs will not be fertilized
- Offspring are often not protected by parents, so many of them die

Frog Eggs - GNU Free Doc Photo

See pages 208 - 209

Internal Fertilization



- In internal fertilization, sperm and egg join inside parents, embryo is nourished inside mother

Advantages

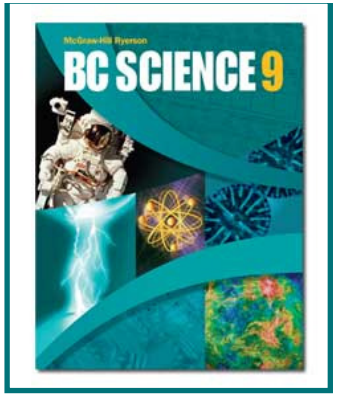
- Embryo protected from predators
- Offspring more likely to survive, as many species will protect their them while they mature

Disadvantages

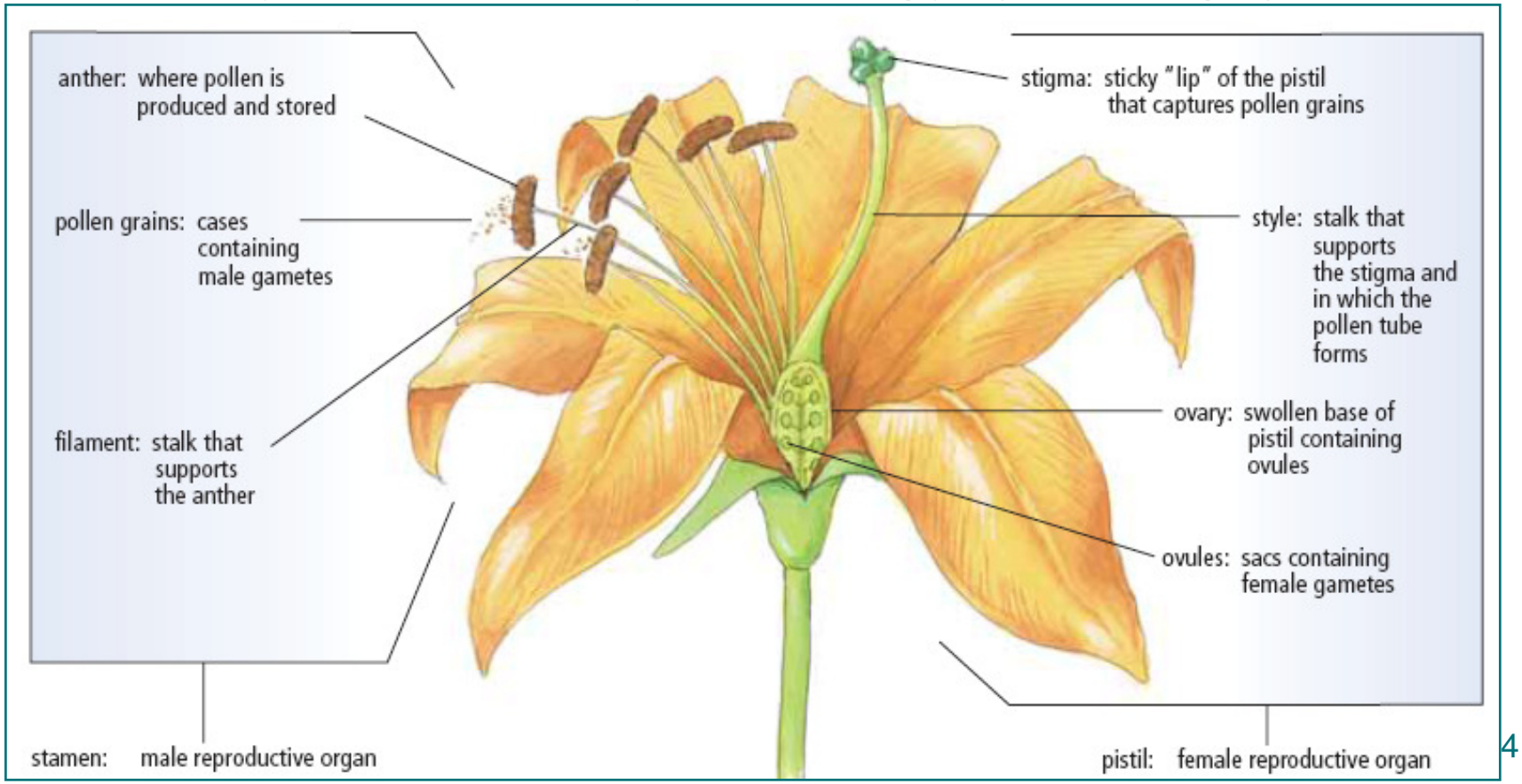
- Much more energy required to find mate
- Fewer zygotes produced, resulting in less offspring
- More energy required to raise and care for offspring

See pages 210 - 211

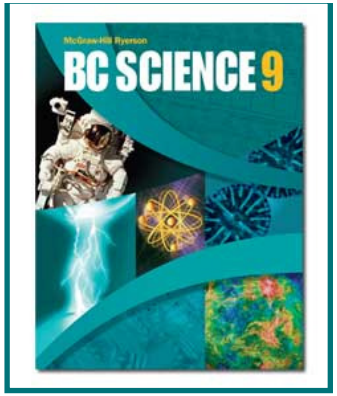
Pollination



- Most plants transfer male gametes as pollen. Pollen can be carried by wind or other organisms. [copy figure 5.28 page 212]



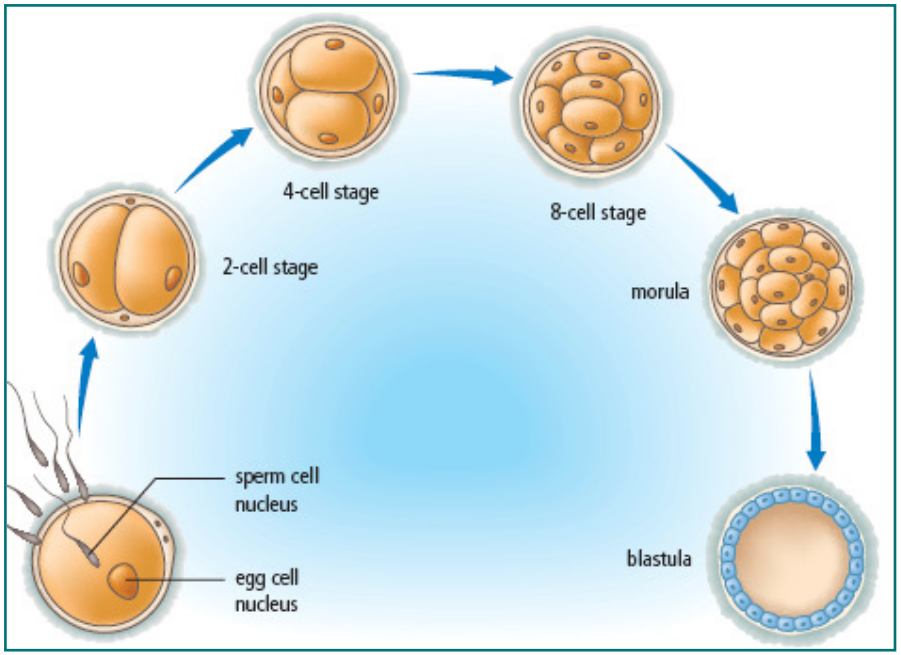
Embryonic Development



- Embryonic development is the early development of an organism - in humans, it is the first two months after fertilization

Stages

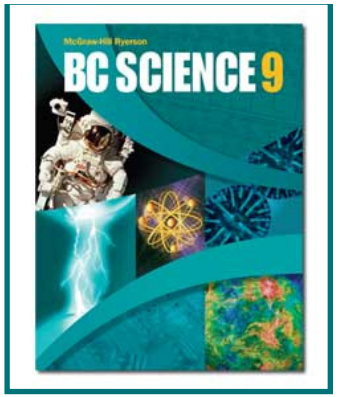
- End of the first week - ball of cells called **morula**
- By end of second week it is a hollow ball called a **blastula**
- Cells at this stage are stem cells, and have the ability to develop into any kind of cell
- In the next stage the embryo is known as a **gastrula** and develops 3 layers: ectoderm (skin, nerves), mesoderm (muscles, bones), and endoderm (lungs, liver, digestive system lining)



Copy figure 6.33 page 216
Mitosis and cell division

See pages 216 - 217

Fetal Development



- The cell layers now differentiate into the organs and tissues of a baby - this is divided into 3 trimesters.

First Trimester (0-12 weeks)

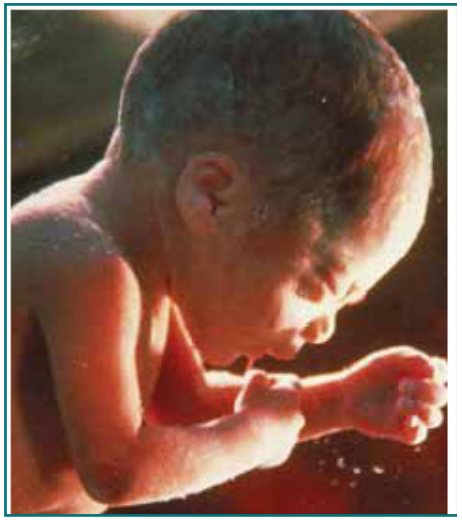
- Organ systems begin to develop and form. Bone cells form.

Second Trimester (12-24 weeks)

- Rapid growth from 12-16 weeks.

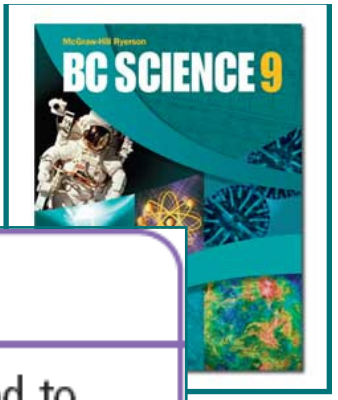
Third Trimester (24+ weeks)

- Continued growth, especially of brain. Fat begins to deposit at 32 weeks to keep baby warm at birth.



See pages 218 - 219

Sexual Reproduction Advantages and Disadvantages



Advantages	Disadvantages
• Very little energy required to find a mate (external fertilization).	• More energy generally required to find a mate (internal fertilization).
• Greater numbers of offspring can repopulate an area after a disaster (external fertilization).	• Fewer offspring produced, so if the number of predators increases a population will decline (internal fertilization).
• More protection is given to the embryo and more parental care is given to offspring (internal reproduction).	• Gametes, embryos, and offspring are unprotected and are often preyed upon (external fertilization).
• Offspring are genetically different from their parents, so they may survive new diseases or other threats that appear in a population.	

Take the Section 6.2 Quiz

See page 220