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Final Review*

BIO 100 Principles of Biology
Cedarville University

*This series of slides is not intended to be viewed as “all inclusive” but does present a broad view of the major emphasis of BIO 100.

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TABLE 1-4 Major Worldviews and Philosophies

Theism **God is the infinite, personal Creator and Sustainer of the whole universe**

Supernaturalism **Explanation of ‘natural phenomena’ must consider the possibility of divine influence**

MODEL:

WORLDVIEW → PHILOSOPHY (PARADIGM) → SCHOLARSHIP
 [Foundation] → [Mediation] → [Expression]


EXAMPLES:
 THEISTIC WORLDVIEW > SUPERNATURALISM > **CREATIONISM**
 ATHEISTIC WORLDVIEW > NATURALISM > **EVOLUTIONISM**

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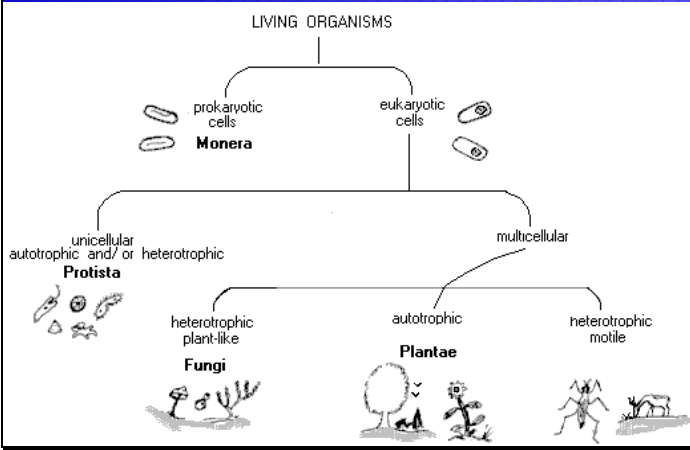
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Table 3-7 Classifications in Biology (Continued)

Populations → 	Taxonomic (Binomial Nomenclature)	Kingdom: Monera Protista Fungi Animalia Plantae Phylum: etc.
	Ecological (Trophic Structure)	Producers Consumers Decomposers Detritivores

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Figure 9-11. Major Distinctions Among the Five Kingdoms



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Energy Relationships

- Food Webs
- Food Pyramids
- Photosynthesis
- Respiration
- Priestley's Jar
- Biosphere
- Chloroplasts
- Mitochondria

Can you discuss the significance of each?

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Organismic Biology

Three Basic Life Functions:

1. Nutrition – Chapter 10
2. Reproduction -- Chapters 11, 12
3. Coordination - - Chapters 13, 14

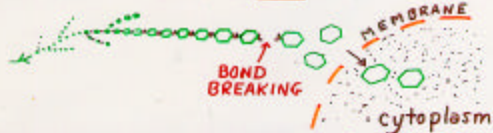
____ Overview of Part II-b and Part III of our study_____

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Nutrition -- Why Digestion?

FUNCTIONS:

- 1) REDUCE MOLECULE SIZE — CROSS MEMBRANES



- 2) RENDER "FOREIGN MOLECULES" NON-ALLERGENIC

AGENTS INVOLVED — DIGESTIVE ENZYMES:

- 1) BIO-CATALYSTS
- 2) LARGE PROTEIN MOLECULES
- 3) SUBSTRATE-SPECIFIC

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Nutrition -- Molecules Digested:

- 1) CARBOHYDRATES → SIMPLE SUGARS
e.g. STARCH amylase → GLUCOSE
- 2) PROTEINS pepsin → AMINO ACIDS
- 3) LIPIDS lipase → FATTY ACIDS
- 4) NUCLEIC ACIDS DNA-ase → NITROGEN BASES
e.g. DNA

____ Enzyme and Substrate relationships are very specific._____

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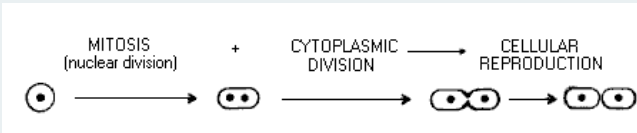
Cellular Reproduction - Overview

CELL THEORY

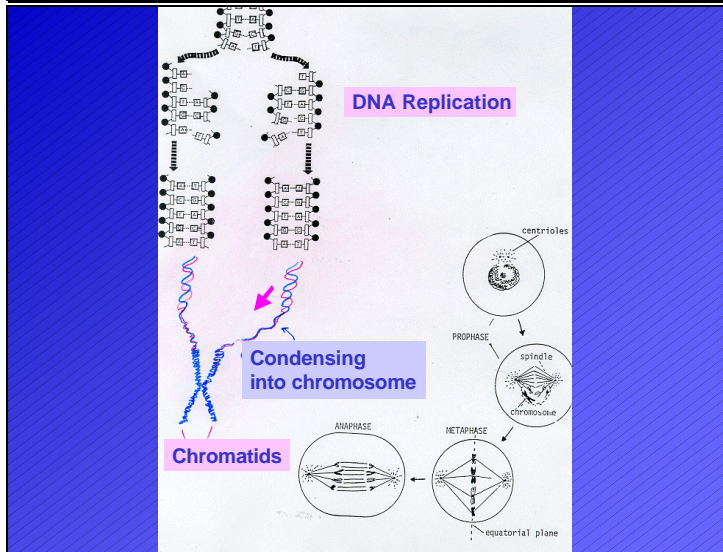
“living organisms are composed of cells”

IMPLICATIONS

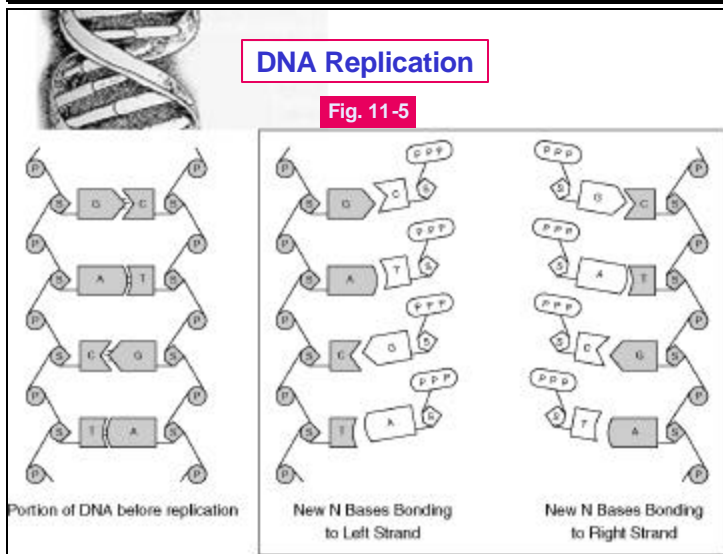
1. Genetic material is “localized” within cells where it exerts control over cell metabolism
2. Therefore, growth in size and volume requires “cellular reproduction”



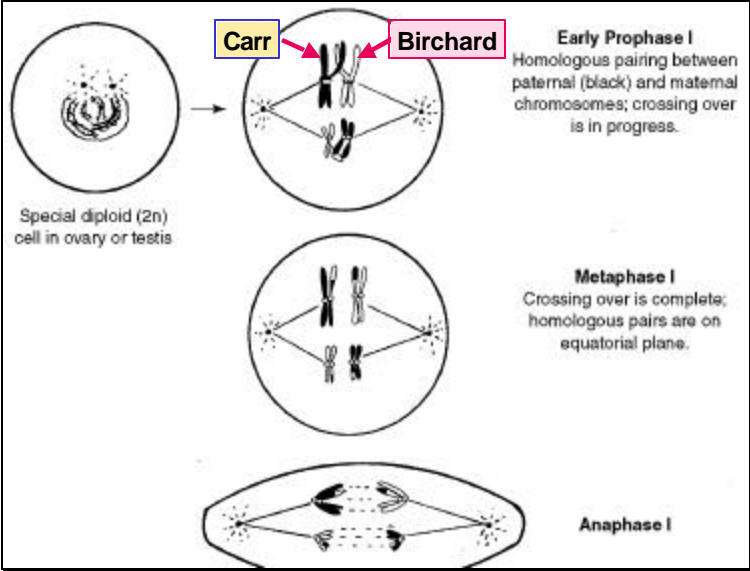
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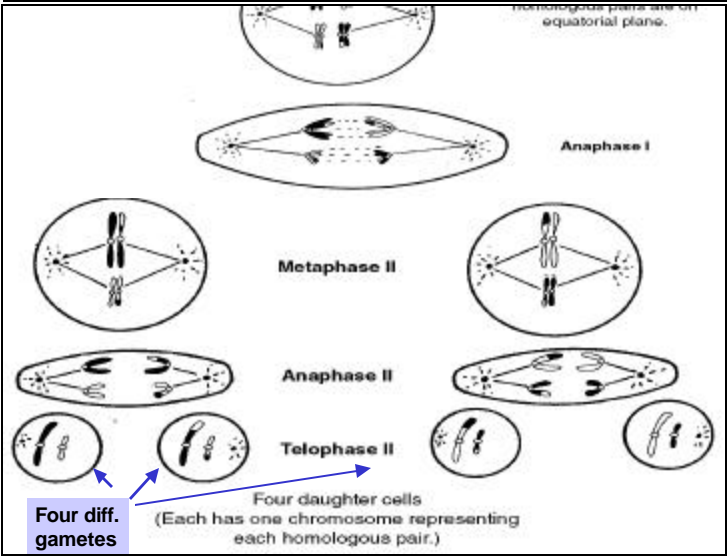
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Slide 19



Slide 20



Slide 21

Reproduction

genetic variation – promoted by...
 genetic variation – suppressed by...
 genetic information (amounts in order)
 hurdles of sexual reproduction
 dealing with DNA in cell reproduction
 gene pools – what are they?
 What makes them change?
 continuous and discontinuous variation

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GREGOR MENDEL (Austrian Monk, 1822-1884)

"Father of Genetics"



From: MendelWeb by Roger B. Blumberg



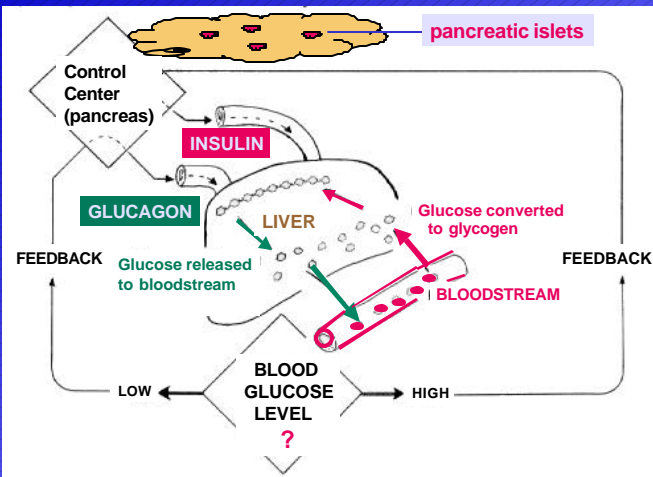
From: Simon Mawer.
<http://www.aconet.it/private/SimonMawer/Photopage.htm>

___ Can you solve genetics problems and use appropriate terminology?_____

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HOMEOSTASIS: EXAMPLE # 2: BLOOD GLUCOSE



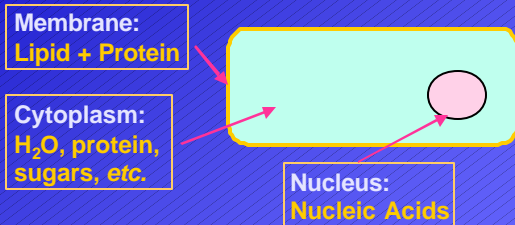
___ What are hormones and how do insulin and glucagons fit this definition?_____

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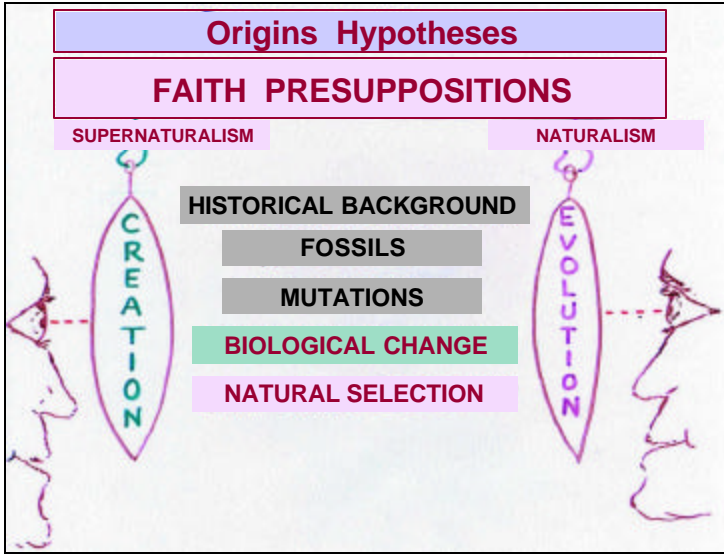
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Cellular Composition of LIFE

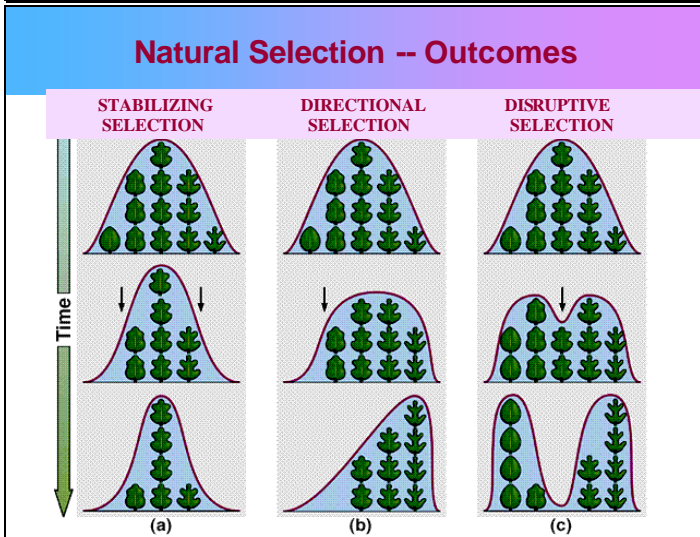
Concept: Cells are composed of precisely arranged molecules



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__ Can you relate this model to examples like changes in “peppered moth” wing color, or changes in root depth, or changes in Darwin’s finches as studied by the Grant’s? _____

__ Does “evolution” occur today? _____

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