Cell Theory

Section A1.1

The cell is the basic unit of living things…

Living things are different from nonliving things…

- You are surrounded by life, but how would you define a living thing?
  - Does it use ***energy***?
  - Does it move?
  - Does it consume food and water?

- **Organism**- any individual form of life that uses energy to carry out its activities.

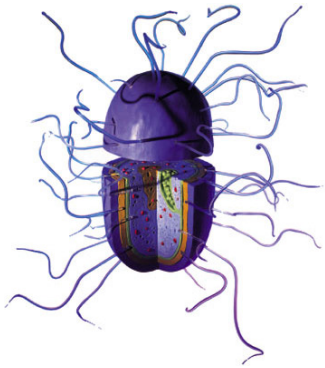
Characteristics of Living Things ….(a review)

- All living things:
  - are made up of cells (organization).
  - respond to the environment.
  - have the ability to reproduce.
  - move.
  - grow and develop.
  - perform metabolic processes.

- ***Metabolism***- the sum of the physical and chemical processes in an organism

Organization…

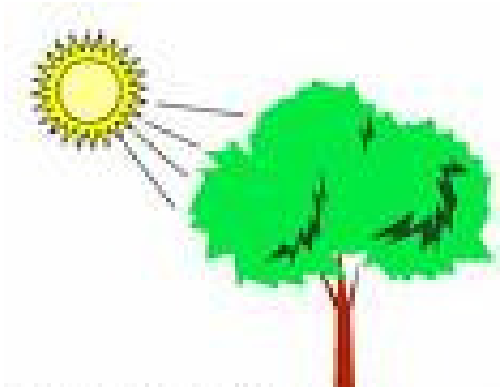
- An organism's body must be organized in that enables it to meet its needs.
- Some organisms are simple:
  - Bacteria
  - Archaea
  - Most Protists



- Some organisms are more complex:
  - When different parts of the organism performs different functions.
  - Examples: Humans, dogs, fish, mushrooms, oak trees

Needs for life…

- Organisms need energy, materials, and living space.
- All energy comes from the sun.
  - Some organisms use this energy directly (photosynthesis)
  - Others harness this energy by eating food



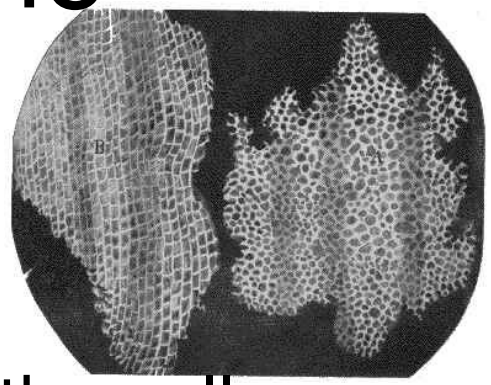
- Materials needed:
  - Carbon dioxide, oxygen, nitrogen, water

All living things are made up of cells….

- The cell is the smallest unit of a living thing.
- If an organism is unicellular, all functions of life happen within that one cell.

- If an organism is multicellular, different cells have different jobs and they all work together.

The microscope led to the discovery of cells.



- 1660's – Robert Hooke discovered the cell
  - He looked at cork under the microscope (30x)
  - He noticed little compartments, which he named after the little rooms that monks lived in…"Cells"
- 1670's – Anton von Leeuwenhoek described microorganisms in pond water
  - He looked at pond water under the microscope (300x)
  - He noticed that the water was full of moving living things

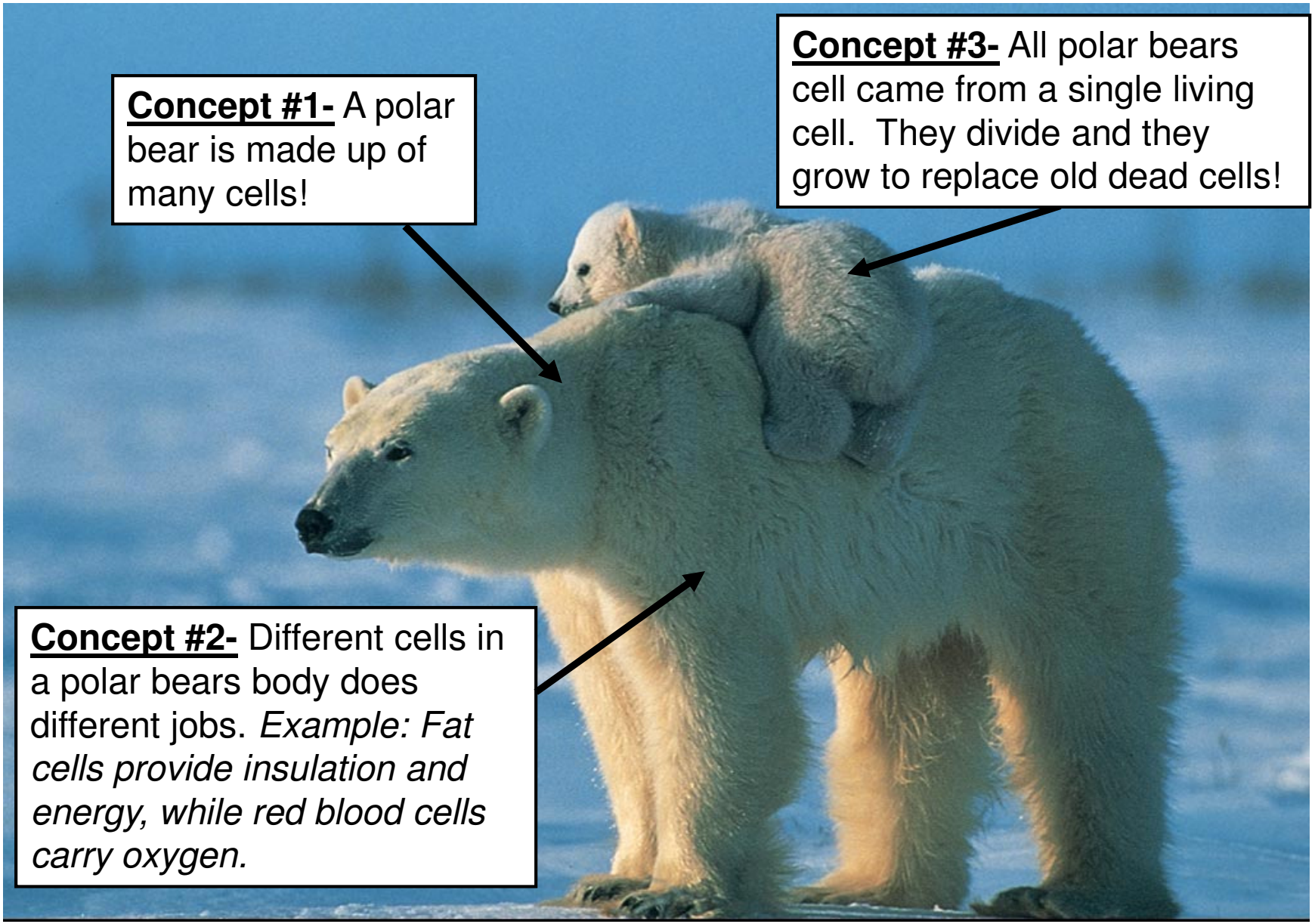
Cell Theory…

With the invention of the microscope and the contributions of many scientists, a very important question was answered in the 1850's. The question was:

Where do cells come from?

There are three concepts to the cell theory…

- Every living thing is made up of one or more cells.
- Cells carry out the functions needed to support life
- Cells come only from other living cells


Concept #1- A polar bear is made up of many cells!
Concept #3- All polar bears cell came from a single living cell. They divide and they grow to replace old dead cells!
Concept #2- Different cells in a polar bears body does different jobs. *Example: Fat cells provide insulation and energy, while red blood cells carry oxygen.*