

A. INDEPENDENT LEARNING

You are responsible for learning the following information and diagrams in the textbook ("Unity and Diversity of Life") and on the Internet. You can draw diagrams, make notes, photocopy, or just read the material thoroughly:

- **Review of Cellular Organelles** (print the Internet table on Gr. 12 page)
- **Cell Membrane** (Section 5.1, pp. 78-79 and Section 5.2, pg. 80)
- **Diffusion** (Section 5.3, pg. 82)
- **Osmosis** (Section 5.4, pp. 82-83)
- **Routes Across Cell Membranes** (Section 5.5, pg. 85)
- **Protein-Mediated Transport** (Section 5.6, pg. 86 only)

B. ACTIVE TRANSPORT

- movement from an area of _____ concentration to an area of _____ concentration
- movement _____ concentration gradient
- _____ (_____) required
- usually used to _____ the concentration of a substance inside cell or to forcefully _____ substances

(1) _____ / _____ **Pump (Na⁺/K⁺ Pump)**

- located in _____ cells, etc.
- pumps 3 _____ ions from _____ concentration in ICF to _____ concentration in ECF
- pumps 2 _____ ions from _____ concentration in ECF to _____ concentration in ICF
- requires energy in form of _____ (_____)
- donation of _____ group from ATP to the pump is called _____; this provides the energy to cause a change in _____ of the pump; this change is what forces or carries ions
- both ions move in opposite direction, thus _____ process

(2) _____ / _____ **Pump (H⁺/K⁺ Pump)**

- located in _____ cells (mucosa)
- pumps 1 _____ ion INTO stomach cavity (lumen) and 1 _____ OUT of stomach cavity
- H⁺ combines with _____ to produce _____ which converts _____ into _____ (breaks down _____)
- requires _____
- drug called _____ used to inhibit pump (blocker) to reduce _____ production; used to treat gastric _____
- also _____ process

(3) _____ **Channel (Co-Transport)**

- located in many cells
- transport of _____ is COUPLED to transport of _____ into the cell
- if [glucose] is high inside cell, more glucose can only enter if _____ also enters
- Na⁺/K⁺ pumps produce _____ concentration of Na⁺ in ECF
- Na⁺ binds to one site on coupled channel carrier; it will enter cell by _____ diffusion, down it's concentration gradient
- glucose binds to another site on carrier; it will enter cell by _____ transport, against it's concentration gradient
- both substances enter cell together (coupled)
- whole process is driven by _____ concentration of Na⁺ _____ the cell which is achieved by the Na⁺/K⁺ pump (requires ATP)
- inward transport of glucose is COUPLED to facilitated diffusion of Na⁺
- both substances move in same direction, thus _____ process