Osmosis

- The net movement of water molecules across a selectively permeable membrane from an area of higher water DILUTION (less solutes) to an area of more CONCENTRATION (more solutes)

Osmotic Pressure

- Pressure required to prevent the movement of pure H2O into a solution containing solutes when the two fluids are separated by SPM

Osmolarity

= the total solute concentration of a solution

  Increased concentration of solutes in a solution will create an increase in osmolarity.
  Decrease in concentration of solutes in a solution (making it more dilute) will reduce osmolarity

Cell Division

- Mitosis - somatic cells
- Meiosis - sex cells = gamates

Mitosis

- Division of one cell into two identical daughter cells with same # chromosomes as parent cell (46 in humans)

Interphase

- Normal functions
- Duplication of organelles
- Replication of DNA

End of Interphase

- 92 strands of DNA forming 46 pairs of chromosomes
- Each strand = CHROMATID
- Chromatids connected by CENTROMERE
Mitosis

- Prophase
- Metaphase
- Anaphase
- Telophase
- Cytokinesis

Cell Differentiation
= cell diversity

- Process of cell specialization
- Activated by specific genes

- Totipotent (zygot first 5 days of development)
- Pluripotent (inner mass of blastocyst = embryonic stem cells)
  (blastocyst = developmental stage at 5 days after conception)
- Multipotent (adult stem cells)
- Specialized cells (e.g. muscle cells, red blood cells, bone cells etc.)

PLEASE REFER TO THIS SITE:

Question:  Why are some scientists promoting the use of embryonic stem cells, while other scientists are promoting the use of adult stem cells?

Abnormal Cell Division

- Excess growth of tissue: tumor=growth=neoplasm
- Oncology (onco=swelling)

- Benign = non-cancerous
- Malignant = cancerous
• Metastasis = spread of malignant tissue

Types of Cancer
• Carcinoma
• Melanoma
• Sarcoma
• Leukemia
• Lymphoma
• Glioma

Effects of Cancer
• Cancer cells displace normal cells
• Tumors block
• Tumors have high metabolic rate

Possible causes
• Carcinogens
• Viruses
• Hereditary

Treatment
• Prevention
• Early detection
• Chemotherapy
• Radiotherapy
• Surgery