**AP Bio Topic Guide PowerPoints 11-13**

# Chapter 11

Potentially Unfamiliar Vocab Terms: signal transduction pathway, ligand, quorum sensing, biofilms, paracrine, phosphorylation, kinase, secondary messenger, transcription factor, protein phosphatase, scaffolding protein, and apoptosis

### 1. Basic Signaling Types

a. Paracrine

b. Synaptic

c. Hormonal

### 2. Basics of Signal Transduction Pathways

a. Reception

b. Transduction

c. Response

### 3. **Specifics of Signal Transduction Pathways**

#### a. GPCR

1. Reception

2. Transduction

3. Response

#### b. RTK

1. Reception
2. Transduction
3. Response

### 4. Other examples of signal transduction pathways

a. Ligand Gated Ion Channel Receptors

b. Intracellular receptors

### 5. Role of \_\_\_\_\_\_\_\_\_ in signal transduction pathways

a. kinases

b. phosphatases

c. secondary messengers (cAMP & Ca2+)

e. scaffolding proteins

### 6. Distinguish between nuclear and cytoplasmic responses

### 7. Explain how cells respond differently to the same signal or not at all.

### 8. Apoptosis

a. What happens during and what proteins are involved

b. Inside vs. Outside signals

c. Purposes for

d. Evolutionary significance

# Chapter 12

Potentially Unfamiliar Vocab Terms: somatic cell, gamete, genome, gene, cell cycle, chromatin, centrosome, centromere, chromatid, centriole, mitotic spindle, origin of replication, transformation, metastasis, PDGF, CdK, cyclin, MPF, kinetochore, binary fission

### 1. Cell Cycle Overview

a. Why cells divide

b. What types of cell division they use and when they use each type

c. Chromosome numbers/ploidy

### 2. Interphase

a. G1

b. S

c. G2

### 3. Composition of the mitotic spindle

a. Role of centrosome

b. microtubules

1) Kinteochore microtubules

2) Non-kinetochore microtubules

c. kinetochore

### 4. Mitosis (Important Events)

a. Prophase

b. Metaphase

c. Anaphase

d. Telophase

e. Cytokinesis

Plant vs. Animal Cell Differences

### 6. Cell Cycle Checkpoints

a. G1

b. G2

c. M

d. role of cyclin, Cdk & MPF, and growth factors

### 7. Cancer Cells

a. benign vs. malignant

b. characteristics

1. Density Independent Division

2. Anchroage Independent Division

3. Chromosome Numbers

4. Growth Factors Production/Response to

c. Treatments

## Chapter 13

Potentially Unfamiliar Vocab Terms: locus, karyotype, autosomes, life cycles, homologous chromosomes, synapsis, chiasmata, independent assortment, random fertilization, sister chromatids, zygote, alleles

### 1. Chromosome basics

a. autosomes vs. sex chromosomes

b. karyotypes (applications)

c. homologous chromosomes

d. sister chromatids

### 2. Life Cycles

a. Diploid Life Cycle

b. Alternation of Generations

c. Haploid Life Cycle

### 3. Meiosis (Major Events, chromosome ploidy etc.)

a. Meiosis I

b. Meiosis II

### 4. Genetic Variation

a. Mechanisms

1. Independent Assortment

2. Crossing Over

3. Random Fertilization

b. Importance/Significance

## Short Answer Topic List:

Cell signaling: RTK’s & GPCRs (everything) also review secretion pathways in cells

Chromosome organization: eukaryote vs prokaryote, important regions and their functions, evolutionary significance

Cell Cycle: phases, important structures, regulation of

Reproduction: life cycles, gamete production, asexual vs sexual & advantages/ disadvantages of each, how genetic variation is created