**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