

2. Cell Biology and Cell division

Content Area: **Science**
Course(s): **Generic Course**
Time Period: **Marking Period 1**
Length: **6 weeks**
Status: **Published**

Standards

AP Biology Essential Knowledge Standards:

1B.1, 1D.2

2A.1, 2A.2, 2A.3, 2B.1, 2B.2, 2B.3, 2C.1, 2C.2, 2D.1, 2E.1

3A.1, 3B.1, 3B.2, 3D.1, 3D.2, 3D.3, 3D.4

4A.2, 4B.2, 4C.1

Goals/Objectives

LO 2.13 The student is able to explain how internal membranes and organelles contribute to cell functions. [See **SP 6.2**]

LO 2.14 The student is able to use representations and models to describe differences in prokaryotic and eukaryotic cells. [See **SP 1.4**]

LO 4.4 The student is able to make a prediction about the interactions of subcellular organelles. [See **SP 6.4**]

LO 4.5 The student is able to construct explanations based on scientific evidence as to how interactions of subcellular structures provide essential functions. [See **SP 6.2**]

LO 4.6 The student is able to use representations and models to analyze situations qualitatively to describe how interactions of subcellular structures, which possess specialized functions, provide essential functions. [See **SP 1.4**]

LO 2.10 The student is able to use representations and models to pose scientific questions about the properties of cell membranes and selective permeability based on molecular structure. [See **SP 1.4, 3.1**]

LO 2.11 The student is able to construct models that connect the movement of molecules across membranes with membrane structure and function. [See **SP 1.1, 7.1, 7.2**]

LO 2.12 The student is able to use representations and models to analyze situations or solve problems qualitatively and quantitatively to investigate whether dynamic homeostasis is maintained by the active

movement of molecules across membranes. [See **SP 1.4**]

LO 3.31 The student is able to describe basic chemical processes for cell communication shared across evolutionary lines of descent. [See **SP 7.2**]

LO 3.32 The student is able to generate scientific questions involving cell communication as it relates to the process of evolution. [See **SP 3.1**]

LO 3.33 The student is able to use representation(s) and appropriate models to describe features of a cell signaling pathway. [See **SP 1.4**]

LO 3.34 The student is able to construct explanations of cell communication through cell-to-cell direct contact or through chemical signaling. [See **SP 6.2**]

LO 3.35 The student is able to create representation(s) that depict how cell-to-cell communication occurs by direct contact or from a distance through chemical signaling. [See **SP 1.1**]

LO 3.36 The student is able to describe a model that expresses the key elements of signal transduction pathways by which a signal is converted to a cellular response. [See **SP 1.5**]

Content

- Cell Biology
- The Endomembrane System
- Energy & Matter Processing Organelles
- Cellular Structure & Support
- Cell Membrane Structure & Function
- Transport of Molecules
- Cell Division
- Mitosis Control of Cell Division Meiosis Chromosomal Abnormalities

Skills

Science Skills Practices for AP Biology

- use representatives and models to communicate scientific phenomena and solve problems
- use mathematics appropriately
- engage in scientific questioning to extend thinking or to guide investigations
- plan and implement data collection
- perform data analysis and evaluation
- work with scientific explanations and theories
- connect and relate knowledge across various scales, concepts, and representations in and across

domains.