

## Unit 3: Cell Processes

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### Chapters and Sections:

7.1-7.5, 8.1-8.5, 9.1-9.5, 10.1-10.3

### Essential Knowledge Code and Learning Objectives (LO):

#### 2.B.1

- 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]

#### 2.B.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]

#### 2.A.1

- LO 2.1 The student is able to explain how biological systems use free energy based on empirical data that all organisms require constant energy input to maintain organization, to grow and to reproduce. [See SP 6.2]
- LO 2.2 The student is able to justify a scientific claim that free energy is required for living systems to maintain organization, to grow or to reproduce, but that multiple strategies exist in different living systems. [See SP 6.1]
- LO 2.3 The student is able to predict how changes in free energy availability affect organisms, populations and ecosystems. [See SP 6.4]

#### 4.B.1

- LO 4.17 The student is able to analyze data to identify how molecular interactions affect structure and function. [See SP 5.1]

#### 2.A.2

- LO 2.4 The student is able to use representations to pose scientific questions about what mechanisms and structural features allow organisms to capture, store and use free energy. [See SP 1.4, 3.1]
- LO 2.5 The student is able to construct explanations of the mechanisms and structural features of cells that allow organisms to capture, store or use free energy. [See SP 6.2]