

# AP Biology - Core Concept Cheat Sheet

## 01: Introduction to AP Biology

### Key Terms

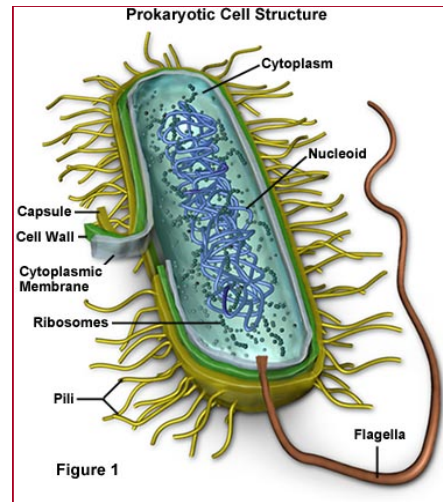
- AP Biology Exam:** The AP Biology exam is a combination of multiple-choice (60%) and essay (40%) questions. The exam is scored between 1 and 5; individual institutions set their standards for credit but, on average, scores ranging between 3 and 5 will be enough to gain credit.
- Scope of the Exam:** the writers acknowledge that teachers vary a little in the content and emphasis of a General Biology Course. Therefore, they write questions over every topic and do not expect any one student to know them all!
- Free Energy Changes:** Gibbs free energy ( $\Delta G$ ) refers to the energy that a system has available for work.  $\Delta G$  is the net change in free energy (products - reactants), given as kcal/mol or kJ/mol.
- Enzymes:** Enzymes lower the activation energy, as compared to the same reaction without one, which helps ensure the reaction will proceed.
- Cell Cycle:** The cell cycle is a series of events that takes place before the cell divides, during mitosis (M phase). G1 Phase, S Phase, G2 Phase, M Phase.
- Photosynthesis:** converts  $\text{CO}_2 + \text{H}_2\text{O} + \text{energy}$  into sugars and oxygen; this process is mainly done by plant life on land and phytoplankton of the oceans.
- Meiosis:** Meiosis is the process of gamete formation. Before meiosis, the chromosomes also have to be duplicated. The first division involves a prophase, a metaphase, an anaphase and a telophase, which are very similar to mitosis.
- Gene Regulation:** The regulation of genes allows cells to adapt to changing environments, respond to cellular stress, and perform functions, such as cell division.
- Phylogenetic Tree:** A phylogenetic tree is a branching graph that shows the evolutionary inter-relationships between species and shows the common ancestor. Each node represents the most recent common ancestor of the descendants. The lengths of the branches are time estimates.
- Community Ecology:** is the study of all the populations that inhabit a particular area and their interactions with each other.

### Free Energy Changes

If $\Delta G < 0$	Spontaneous reaction (exergonic)
If $\Delta G > 0$	Non-spontaneous reaction (endergonic)
If $\Delta G = 0$	Reaction at equilibrium

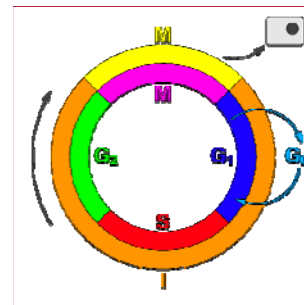
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### Prokaryotic Cell



### Prokaryotic Cell

### Cell Cycle



The cell cycle is a series of events that takes place before the cell divides, during mitosis (M phase). There are regulatory molecules, such as cyclins and cyclin-dependent kinases, which determine a cell's progression through the cell cycle.

### Phylogenetic Tree

