



FIND YOUR VOICE. SPEAK YOUR MIND.

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Biology

This course centralizes the pervasive role of proteins as the molecular machinery of the cell and the relationship between each protein's shape and its function. Our exploration begins at the smallest level: in examination of atoms, their chemical tendencies, and patterns in the periodic table. From these principles, we are able to build an understanding of the organic molecules that form the foundation of life, with a particular emphasis on proteins. As we zoom out from DNA molecular structure to cellular organization, genetics, whole-organism function, ecology, and evolution, we are constantly reminded that all these ideas relate to the cellular activities of proteins. In addition, this course emphasizes the development of experimental thinking skills. Within each topic, we take the opportunity to examine experiments that have provided evidence for our current stories, and we practice designing experiments that could gather further data to support our ideas. We also introduce the concepts behind contemporary research techniques such as PCR, gel electrophoresis, and DNA sequencing, and learn to interpret data derived from these techniques.

Topics include:

- Experimental design
- Periodic table, atomic structure and bonding
- Carbohydrates and lipids
- Protein structure and function
- Cell structures and organelles
- DNA structure, replication, and protein synthesis
- Molecular biology techniques
- Cell division
- Genetics
- Photosynthesis and cellular respiration
- Ecology
- Evolution
- Anatomy and Physiology (esp. the nervous system)