Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties.

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Interactions within biological systems lead to complex properties.

The subcomponents of biological molecules and their sequence determine the properties of that molecule.

The structure and function of subcellular components, and their interactions, provide essential cellular processes.

Interactions between external stimuli and regulated gene expression result in specialization of cells, tissues and organs.

Organisms exhibit complex properties due to interactions between their constituent parts.

Communities are composed of populations of organisms that interact in complex ways.

Interactions among living systems and with their environment result in the movement of matter and energy.

Competition and cooperation are important aspects of biological systems.

Interactions between molecules affect their structure and function.

Cooperative interactions within organisms promote efficiency in the use of energy and matter.

Interactions between and within populations influence patterns of species distribution and abundance.

Distribution of local and global ecosystems changes over time.

Naturally occurring diversity among and between components within biological systems affects interactions with the environment.

Variation in molecular units provides cells with a wider range of functions.

Environmental factors influence the expression of the genotype in an organism.

The level of variation in a population affects population dynamics.

The diversity of species within an ecosystem may influence the stability of the ecosystem.