THE STANDARD

Food & Chemical Reactions

Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

DCI
DISCIPLINARY CORE IDEA

LS1.C · Organization for Matter and Energy Flow in Organisms

> *Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy.*

Food isn't a magic energy potion. It's matter. Carbs, fats, and proteins are big molecules that get broken apart in digestion, shipped to cells, and either burned for energy or rebuilt into new molecules the body needs. Same atoms, new arrangement. **The chicken sandwich a student ate at lunch is, at the molecular level, becoming part of their muscles, hormones, and ATP.**

SEP
SCIENCE & ENGINEERING PRACTICE

Developing and Using Models

> *Develop a model to describe unobservable mechanisms.*

Students aren't memorizing the digestive tract. They're building a model that shows an unobservable process: food molecules getting broken down, transported, and rearranged inside cells. The model is how they make the invisible visible. **If it can describe what's happening to the matter, it's doing its job.**

CCC
CROSSCUTTING CONCEPT

Energy and Matter

> *Matter is conserved because atoms are conserved in physical and chemical processes.*

Atoms in the food don't vanish and atoms in the body don't appear from nowhere. Every carbon atom in a slice of pizza either ends up exhaled as CO_2, stored as fat or muscle, or used in a new molecule. Matter is tracked. Energy is tracked. **Nothing leaks out of the system.**