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# Advanced Nutrition and Regulation of Metabolism

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## **Abstract**

**INTRODUCTION** The body, and metabolism in particular, is a very dynamic process that has to respond appropriately to an ever-changing environment, including the supply of nutrients. The vast majority of cells in the body are quite similar with respect to structure; however, not all cells respond the same to nutrients and hormones or produce the same proteins to carry out specific metabolic processes and other protein-driven functions. But before we can discuss nutrition, the first goal is to have a basic understanding of cell biology, as well as some additional biological concepts.

**Activity** Proteins are dynamic and regulated molecules that perform a diverse array of functions. Develop a “real-life” analogy to describe how proteins function and how they are regulated. For example, a transport protein like transferrin, which transports iron in the circulation to cells in the body, is similar to a car using roads to transport people from one place to another. Enzyme kinetics can be difficult to understand—we will have an in-class activity where you, the student, will function as an enzyme as a method to illustrate the concept of maximal velocity, affinity, and how maximal velocity can be altered.

**Reflection/Discussion Questions** Discuss in small groups what happens when a protein is dysfunctional? What could make a protein dysfunctional? Relate this back to the analogy you developed initially. For the car example, if the car cannot accommodate the people, then they cannot get where they need to go; if transferrin cannot bind iron, other cells in the body can become deficient in iron.

## **Disciplines**

Food Science | Human and Clinical Nutrition

## **Comments**

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