

The images on the cover represent the scope of modern biochemistry, which seeks to characterize the molecules and reactions of life. In all organisms, genetic information—in the form of a sequence of nucleotides in DNA—is selectively expressed, as shown by the lighted spots of the DNA microarray in the background. Genetic information directs the synthesis of proteins. Each protein has a unique shape that can be visualized in three dimensions, as depicted by the blue surface model, and also has a unique metabolic function. For example, the protein shown on the cover is an enzyme whose activity contributes to the uncontrolled growth of cancer cells. Biochemists build on their knowledge of molecular structure and function to design compounds that can selectively interact with proteins in order to modulate their behavior. In this example (discussed in Box 10-B on page 280), the drug imatinib is shown as a green shape that fits snugly into the active site of the enzyme, blocking its activity and thereby inhibiting cancer growth.

Appreciating the structures and functions of biological molecules requires more than looking at pictures or reading about them. This book is designed not only to present information but also to help students develop the ability to answer questions, creating opportunities for them to explore and discover all aspects of biochemistry.

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