

About the Cover

Microbiology is moving ahead at an astounding pace. Research in the microbial sciences has solved many practical problems in the environment, agriculture, and medicine. Although these areas are still important today, microbiology is now navigating the uncharted waters of synthetic biology and the microbiome, areas featured on the front cover of this book.

The large green cocci on the cover are cells of a *Mycoplasma* species whose genome was assembled—nucleotide by nucleotide—by a machine. The genome was then placed into cells of a different *Mycoplasma* species that proceeded to replicate according to their new genomic instructions. Although these “synthetic cells” were not entirely human-made, this accomplishment was a major step forward in the creation of totally synthetic life forms, a feat that may now be within reach.

Our ability to dissect the human microbiome has shown that our complement of microbes controls our health in a major way. The yellow- and red-colored cells on the cover are known human gut bacteria transplanted into microbe-free mice to study how and where in the gut each species colonizes. From such research, it may be possible to engineer the human microbiome to both maximize its benefits and minimize its harmful activities.

These and many other exciting research stories are woven into the basic principles of microbiology in *Brock Biology of Microorganisms*, Fifteenth Edition. This edition paired with **MasteringMicrobiology** both guides beginning students through learning essential concepts and reveals the excitement of modern microbiology to readers at all levels. MasteringMicrobiology™ offers stunning molecular animations, practice quizzes, pre- and post-lab tutorials and assessments, and other study tools to bring the study of microbiology to life!

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