

Foreword

This publication is a collection of multiple choice and true/false questions driven by and developed for and with the ASM community of undergraduate microbiology educators. The community sought a peer-reviewed resource to assess fundamental understanding of the microbial sciences put forth in the ASM Recommended Guidelines for Microbiology (Merkel, 2012, JMBE 13(1): 32-38). As a result, they generated a collection of sample questions for a wide range of microbiology courses for science majors as well as nursing and allied health sciences programs.

The collection is unique, even among others from book publishers. First, most questions promote critical or higher order thinking such as apply, analyze, evaluate, and create as described in Bloom's taxonomy of learning (Krathwohl, 2002, Theory into Practice 41(4): 212-218). Through an iterative process and collective wisdom, the community generated questions that require analysis, evaluation and synthesis on topics across the microbial sciences. Second, all questions are organized by core concepts and fundamental statements covered in the Guidelines. There are six core concepts - evolution, cell structure and function, metabolic pathways, information flow and genetics, microbial systems, and impact of microorganisms - and 27 fundamental statements providing foundational learning in the microbial sciences. Third, more than 50 volunteer educators from community colleges, liberal arts and specialized colleges to public and private colleges to bachelors, masters and doctoral degree-granting institutions responded to national solicitations for assessment questions. The collection covers the breadth and depth of microbiology content suitable for undergraduates in introductory and/or general microbiology. Additionally, questions may be adapted for upper level courses covering the microbial sciences from clinical and environmental microbiology to virology and immunology. Fourth, all questions were subject to two rounds of review, editorial review for scope and clarity and blind peer review for scientific accuracy and high quality pedagogy. Fifth, the publication is an ongoing works-in-progress. As community members use and adapt questions for their classrooms, we will learn about the collection's effectiveness and challenges. In response to and with the community members' input, we anticipate new editions of the collection on a regular rotation. This plan allows us to stay abreast of new findings in the microbial sciences and new understanding in the learning sciences.

On behalf of the American Society for Microbiology, Education Board, we extend much appreciation and thanks to (i) the Microbe Library Editorial Committee, especially Susan Bagley and Erica Suchman whose support made this publication possible, (ii) the Editorial Committee for the ASM Sample Questions in Microbiology under the leadership of Gary Kaiser and Samantha Parks who provided vision and direction, (iii) scores of authors who wrote questions and provided microbial and learning science expertise, (iv) many peer reviewers who carefully scored questions and provided comments, and (v) the ASM team, especially Rachel Horak for extensive hours shepherding the work of numerous volunteers and publishing the final edition.

Individuals interested in contributing to the next edition of this publication or seeking additional information about the works should contact education@asmusa.org.

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