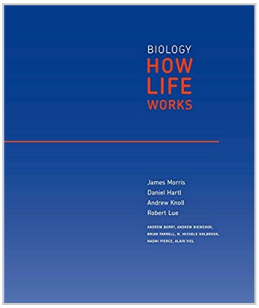

Biology: How Life Works, Volume 2

By James Morris, Daniel Hartl, Andrew Knoll, Robert Lue, Melissa Michael, Andrew Berry, Andrew Biewener, Brian Farrell, N. Michele Holbrook

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Rethinking biology means rethinking the text, the visual program, and assessment.

Ordinarily, textbooks are developed by first writing chapters, then making decisions about art and images, and finally, once the book is complete, assembling a test bank and ancillary media. This process dramatically limits the integration across resources, and reduces art, media, and assessments to ancillary material, rather than essential resources for student learning.

Biology: How Life Works is the first project to develop three pillars—the text, the visual program, and the assessment—at the same time. All three pillars were developed in parallel to make sure that each idea is addressed in the most appropriate medium, and to ensure authentic integration. These three pillars are all tied to the same set of core concepts, share a common language, and use the same visual palette. In this way, the text, visual program, and assessments are integral parts of student learning, rather than just accessories to the text.

RETHINKING THE TEXT

Integrated

Biology: How Life Works moves away from a focus on disparate topics, towards an integrated approach. Chemistry is presented in context, structure and function are covered together, the flow of information in a cell is introduced where it makes the most conceptual sense, and cases serve as a framework for connecting and assimilating information.

Selective

Biology: How Life Works was envisioned not as a reference book for all of biology, but a resource focused on foundational concepts, terms, and experiments. This allows students to more easily identify, understand, and apply critical concepts, and develop a framework on which to build their understanding of biology.

Thematic
Biology: How Life Works was written with six themes in mind. Introduced in Chapter 1 and revisited throughout, these themes provide a framework that helps students see biology as a set of connected concepts. In particular, the theme of evolution is emphasized for its ability to explain and predict so many patterns in biology.

RETHINKING THE VISUAL PROGRAM

Integrated
Across *Biology: How Life Works*—whether students are looking at a figure in the book, watching an animation, or interacting with a simulation—they always see a consistent use of color, shapes, and design.

Engaging
Every image—still and in motion—engages students by being vibrant, clear, and approachable. The result is a visual environment that is expertly designed to pull students in, deepens their interest, and helps them see a world of biological processes.

A Visual Framework
To help students think like biologists, the visual program is designed to be a framework for students to hang the concepts and connect ideas. Individual figures present foundational concepts; Visual Synthesis figures tie multiple concepts across chapters together; animations bring these figures to life; and simulations let students interact with the concepts. Collectively, this visual framework allows students to move seamlessly back and forth between the big picture and the details.

RETHINKING THE ASSESSMENT

Range
Developed by a broad community of leading science educators, the assessments for Biology: How Life Works address all types of learning, from recall to synthesis. They are designed to be used in a variety of settings and come in a wide range of formats (multiple choice, true/false, free response).

Integrated
Assessment is seamlessly integrated into the text and the visual program (both in print and interactive). Each time an instructor asks a student to engage with *Biology: How Life Works*—whether it is reading a chapter, watching an animation, or working through an experiment—the opportunity to assess that experience exists.

Connected
Many of the questions and activities for *Biology: How Life Works* are organized in sets called Progressions. Questions in a Progression are aligned with one or more core concepts, and are designed to move a student from basic knowledge to higher order skills and deeper understanding. Progressions questions can be used individually or in a series as pre-class quizzes, in-class clicker questions or

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Editorial Review

About the Author

James R. Morris is Associate Professor in the Biology Department at Brandeis University. He teaches a wide variety of courses for majors and non-majors in evolution, genetics, genomics, anatomy, and health sciences. In addition, he teaches a first-year seminar focusing on Darwin s "On the Origin of Species." He is the recipient of numerous teaching awards from Harvard and Brandeis. His research focuses on the rapidly growing field of epigenetics, making use of the fruit fly "Drosophila melanogaster" as a model organism. He currently pursues this research with undergraduates in order to give them the opportunity to do genuine, laboratory-based research early in their scientific careers. Dr. Morris received a Ph.D. in genetics from Harvard University and an M.D. from Harvard Medical School. In addition, he was a Junior Fellow in the Society of Fellows at Harvard University, gave talks to the public on current science at the Museum of Science in Boston, and works on promoting public understanding of personal genetics and genomics.

Daniel L. Hartl is the Higgins Professor of Biology in the Department of Organismic and Evolutionary Biology at Harvard University. He has taught highly popular courses in genetics and evolution at the introductory and advanced levels. His lab studies molecular evolutionary genetics and population genetics and genomics. Dr. Hartl is the recipient of the Samuel Weiner Outstanding Scholar Award and the Medal of the Stazione Zoologica Anton Dohm Naples. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. He has served as President of the Genetics Society of America and President of the Society for Molecular Biology and Evolution. Dr. Hartl s Ph.D. was awarded by the University of Wisconsin, and he did post-doctoral studies at the University of California, Berkeley. Prior to joining the Harvard faculty, he served on the faculties of the University of Minnesota, Purdue University, and Washington University Medical School. In addition to publishing more than 350 scientific articles, Dr. Hartl has authored or coauthored 30 books.

Andrew H. Knoll is the Fisher Professor of Natural History in the Department of Organismic and Evolutionary Biology at Harvard University. He is also Professor of Earth and Planetary Sciences. Dr. Knoll teaches introductory courses in both departments. His research focuses on the early evolution of life, Precambrian environmental history, and the interconnections between the two. He has also worked extensively on the early evolution of animals, mass extinction, and plant evolution. He currently serves on the science team for NASA s mission to Mars. Dr. Knoll received the Phi Beta Kappa Book Award in Science for "Life on a Young Planet." Other honors include the Paleontological Society Medal and Wollaston Medal of the Geological Society, London. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical Society. He received his Ph.D from Harvard University and then taught at Oberlin College before returning to Harvard.

Robert A. Lue is Professor in the Department of Molecular and Cellular Biology and Director of Life Science Education at Harvard University. He regularly teaches in Harvard s first-year Life Sciences program and upper-level courses in cell biology. He has a longstanding commitment to interdisciplinary teaching and research, and chaired the faculty committee that developed an integrated science course to serve multiple science majors and premedical students. Dr. Lue has also developed award-winning multimedia, including the animation "The Inner Life of the Cell." He has coauthored undergraduate biology textbooks and chaired education conferences on college biology for the National Academies and the National Science Foundation,

and diversity in science for the Howard Hughes Medical Institute and the National Institutes of Health. He also founded and directs a Harvard life sciences outreach program that serves over fifty high schools. He received his Ph.D. from Harvard University."

Users Review

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Kevin Ostby:

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Fredrick Alfred:

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Stacey Thompson:

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protect, so do you still needing an additional sixth sense to pick that!? Oh come on your reading sixth sense already said so why you have to listening to an additional sixth sense.

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