Preface

Science Is All Around Us

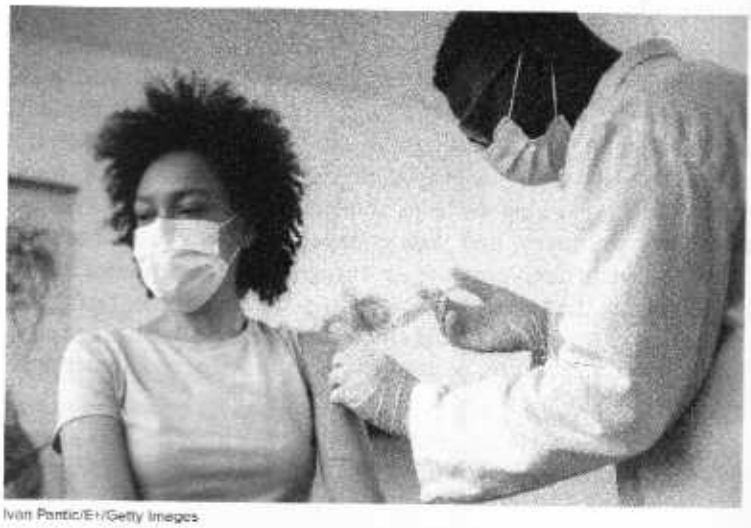
Day in and day out, every person is making observations, forming hypotheses, and drawing conclusions. The global pandemic has highlighted the importance of making the observations and being scientifically literate. Does wearing a mask reduce your risk of COVID-19 infection? Is COVID-19 effectively treated with hydroxychloroquine? With news coming at us from around the globe, on our television, our phone, and social media, how can you identify what is accurate and correct? The first step is for you to grasp clearly how science is done. This book highlights the essential biological concepts which will let you do this.



pixelfit/Getty Images

Today, Biology Hits Close to Home

Up until 2019, many people did not give much thought to how science impacted their daily lives. But with the onset of the COVID-19 pandemic and how this virus impacted everyone, the understanding of science and what it accomplishes came into sharp focus. This has allowed the public to gain a better awareness of the two biggest issues facing humans: (1) the COVID-9 pandemic and how to prevent a future outbreak and (2) climate change and how that is impacting the world around us and what we can do to try to reduce the harm. In this text, we have tried to give you a useful tool for explaining the many ways the pandemic and climate change is impacting everyone's life. We have deliberately included pages about how the pandemic began, how a vaccine was developed, and how life has returned to the more routine nature we had before. We explore how our plastic waste is impacting our environment and different ways that we have of trying to reduce the harm. It is always exciting to be able to share the advances in science that place us in, hopefully, a better position today than we were before.



Ivan Pantic/E+/Getty Images

Making Learning Biology Relevant

The use of real-world examples to demonstrate the importance of biology in your lives not only makes learning biology more fun, but is also widely recognized as an effective teaching strategy for the introductory biology classroom. Every student wants to learn about things happening in their life, the posts they encounter on social media, and the topics their friends are interested in and talk about. To give students and their instructors tools to better address the relevancy of what is taught in the classroom, this edition offers several relevancy-based resources:

Relevancy Readings

In many chapters, new *Answering Your Questions About . . .* readings directly address matters of immediate interest to students. Topics include vaping and e-cigarettes, wearing masks in a pandemic, energy drinks, how to read a food label, global warming, cloning your dog, LGBTQ, the opioid epidemic, and many others. The *A Closer Look* feature "A Day in the Life of Your Body" lets students consider how often their heart beats and their lungs inhale, how fast their hair and fingernails grow, and other fascinating events.

Relevancy Modules

New Relevancy Modules correspond with each unit in *Essentials of the Living World,* 2025 Release. These modules demonstrate the connections between biological content and topics that are of interest to society as a whole. Each module consists of an overview of basic scientific concepts and then a closer look at the application of these concepts to the topic. Assessment questions, specific to the module, are also available. These modules are available as a supplementary e-book to the existing text within Connect and may be assigned by the instructor for use in a variety of ways in the classroom. Examples of topics covered include cancer biology, fermentation science, weed evolution, antibiotic resistance, mega crops, the biology of weight gain, and climate change. New topics are planned for launch each year to keep this resource current.

Relevancy Videos: BioNow

Like the *Inquiry and Analysis* feature at the end of each chapter of *Essentials of the Living World,* BioNow videos, narrated and produced by educator Jason Carlson, provide a relevant, applied approach that allows students to feel they can actually do and learn biology themselves. While tying directly to the content of your course, the series of videos helps students relate their daily lives to the biology you teach, and then connect what they learn back to their lives. Each video provides an engaging and entertaining story about applying the science of biology to a real situation or problem. Attention is given to using tools and techniques that the average person would have access to, so students see the science as something they can do and understand.



McGraw Hill

Relevancy Readings

Answering Your Questions About...

Medical Marijuana 114
Energy Drinks 127
Cancer Diagnosis and Staging 149
Cloning Your Dog 241
Pandemics 303
Weather and Climate 416
Global Warming 446
Vaping 493
Food Labels 500
The Opioid Crisis 556

A Closer Look

Beer and Wine—Products of Fermentation 101
The Biology of Sexual Orientation 163
CRISPR-Edited Human Babies 205
Darwin and Moby Dick 258
The Oldest Living Thing 337
Metabolic Efficiency and the Length of Food Chains 408
The Dance Language of the Honeybee 437
A Day in the Life of Your Body 472
On Being a Whale 489
How Hormones Control Your Kidney's Functions 520
A Sense of Where You Are 562
How the Platypus Sees with Its Eyes Shut 569

Today's Biology

The Polar Ice Caps Are Disappearing 27
Acid Rain 45
Prions and Mad Cow Disease 58
When Membranes Don't Work Right 86
Babies with Three Parents 156
Tracing Your Family History with DNA 182
The Biological Father's Age Affects the Risk of Mutation 197
How do we test for COVID? 233
DNA and the Innocence Project 236
Race and Medicine 287
Has Life Evolved Elsewhere? 298
SARS-CoV-2 Life Cycle 309
Answering Your Questions About Wearing Masks to Prevent the Spread of Coronavirus 310
Mycoremediation to Rid the World of Plastic Waste? 317
Marijuana—A Cash Crop? 339
Fish Out of Water 370
The War Against Urban Deer 387
How to Stop Cars from Hitting Deer? Add Wolves! 399
The Global Decline in Amphibians 450
Semaglutide: A breakthrough in diabetes management 511
Inventing a Vaccine for COVID-19 537
Why Do We Have a COVID Vaccine but Still Do Not Have One for HIV? 540
Does Sex Exist as a Binary? 597

Biology and Staying Healthy

Can People Who Are Lactose Intolerant Ever Enjoy Ice Cream? 98
The Paleo Diet 130
Curing Cancer 144
Cancer and COVID 148
Protecting Your Genes 199
Drugs from Dirt 223,301
Bird and Swine Flu 308
Why Don't Males Get Breast Cancer? 577