

Dear Student

Joe Levine and I wrote this book for a very simple reason: We wanted to let you in on a secret. Biology isn't just a "subject" in school. Biology is the science of life itself. Biology is the study of what makes an eagle fly, a flower bloom, or a caterpillar turn into a butterfly. It's the study of ourselves—of how our bodies grow and change and respond to the outside world, and it's the study of our planet, a world transformed by the actions of living things. Of course, you might have known some of this already. So, what's the secret?

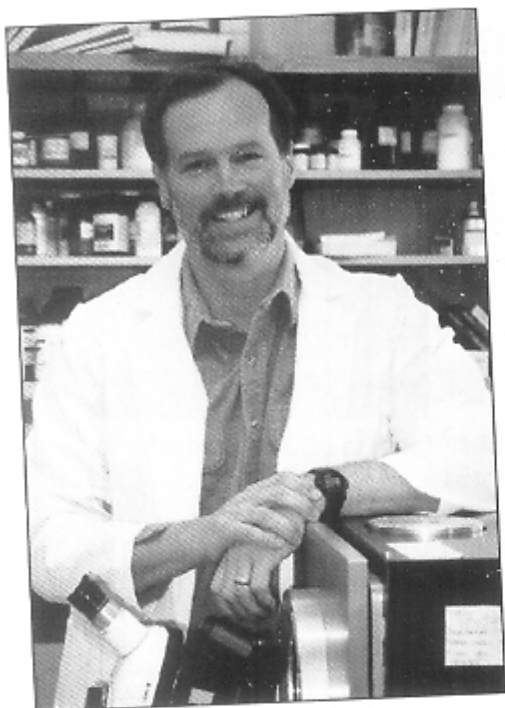
The secret is that you've come along at just the right time. In all of human history, there has never been a moment like the present, a time when we stood so close to the threshold of answering the most fundamental questions about the nature of life. You belong to the first generation of students who can read the human genome almost as your parents might have read a book or a newspaper. You are the first students who will grow up in a world that has a chance to use that information for the benefit of humanity, and you are the very first to bear the burden of using that knowledge wisely.

If all of this seems like heavy stuff, it is. But there is another reason we wrote this book, and we hope that is not a secret at all. Science is fun! Biologists aren't a bunch of serious, grim-faced, middle-aged folks in lab coats who think of nothing but work. In fact, most of the people we know in science would tell you honestly, with broad grins on their faces, that they have the best jobs in the world. They would say there's nothing that compares to the excitement of doing scientific work, and that the beauty and variety of life make every day a new adventure.

We agree, and we hope that you'll keep something in mind as you begin the study of biology. You don't need a lab coat or a degree or a laboratory to be a scientist. What you do need is an inquiring mind, the patience to look at nature carefully, and the willingness to figure things out. We've filled this book with some of the latest and most important discoveries about living things, but we hope we've also filled it with something else: our wonder, our amazement, and our sheer delight in the variety of life itself. Come on in, and enjoy the journey!

Sincerely,

Ken Miller



Dear Student

What do you think about biology? Are you interested in the natural world and the workings of your body? Or could you care less, and do you find yourself wondering "What's in it for me?" However you think, Ken and I wrote this book to convince you that biology is exciting, fascinating—and important to you. In fact, biology is more important to the daily lives of all humans today than it has ever been.

Why? You could answer in three words: "We are one." Now, this is a science text, so this statement isn't meant in any kind of "touchy-feely" or "New Age" way. "We" means all living things on earth. And "are one" means that all of us are tied together more tightly, in more different ways, than anyone ever dreamed of until recently. That's what biology tells us.

All forms of life—from bacteria to palm trees to humans are based on information written in a single, universal code carried in our genes. As biologists "read" those genes, they find nearly identical instructions directing life's processes in all of us. That's why medical researchers can learn about human diseases—diseases that may strike you or your family—by studying yeast. We are one on the molecular level.

All organisms interact with one another and with the environment in ways that create our planet's web of life. Organisms make tropical rain forests and coral reefs, prairies and swamps—and farms and cities. Our interactions involve not only each other—but also the winds and ocean currents that tie our planet together. Human activity can change, and is changing, local and global environments in ways that alter our ability to produce food and protect ourselves from diseases. We are one on the global ecological level.

All organisms change over time as they adapt to their surroundings. If humans alter the environment, we encourage other organisms to change. When we deploy antibiotics against bacteria, they develop resistance to our drugs. If we use pesticides against insects, they become immune to our poisons. We are one in our ability to evolve over time.

Those are the kinds of connections you will find in this book. Microscopic. Enormous. Amusing. Threatening. But always fascinating. That's why—no matter where you start off in your attitude about biology—we think you are in for some surprises!

Sincerely,

Joe Levin

