Discover what all the BUZZ is about!

Biology for the Informed Citizen

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OXFORD UNIVERSITY PRESS
Lactose Intolerance and the Geographic Variation of Human Traits

Do you like ice cream? How about a nice grilled cheese sandwich or yogurt for lunch, or perhaps some milk and cookies before bed? If you enjoy this sort of thing it might surprise you to learn that for most adults eating food like this has disastrous consequences: intestinal cramping, bloating, diarrhea, and embarrassing flatulence.

Dairy products contain a sugar called lactose. Humans—and all mammals—drink their mother’s milk as infants, and most infants are able to break down lactose in breast milk. But the majority of humans lose this ability around 2 years of age, around the time they are weaned. Worldwide, about 70% of us can’t digest dairy products, and only 25% can eat that ice cream sundae without suffering unmentionable side effects.

Lactose is broken down by an enzyme called lactase (FIGURE 9.1). Almost all of us can make lactase, but its production is controlled by another gene. In humans, this gene shuts down lactase production in adults. But there is a recessive mutation, or change in DNA, which allows lactase production to continue into adulthood. This mutation is not common worldwide, which explains why some people can enjoy dairy products—while others are not.

Lactose metabolism:

$$\text{CH}_2\text{OH}$$
$$\text{OH}$$
$$\text{OH}$$
$$\text{O}$$

Lactose is broken down by the enzyme lactase.

Variation of Human Traits

An engaging biological issue opens every chapter and is revisited throughout, connecting the chapter to the lives of today’s students.

In Biology for the Informed Citizen, students explore biological issues relevant to their everyday lives.

Foundational biological ideas are introduced within the context of important cultural and social issues.

The concepts and consequences of biology are connected in order to help students make informed decisions about biological issues.

Connecting Biology to Everyday Life

Four types of brief, high-interest essays, including Technology Connection, How Do We Know?, Scientist Spotlight, and Life Application, allow students to connect to biology.

A vibrant art program of simple, clear illustrations enable students to visualize concepts and consequences.

Chapter learning objectives at the start of every chapter help focus students’ reading, giving them a list of questions they should be able to answer after finishing the chapter.

End-of-chapter questions, including The Thinking Citizen and The Informed Citizen, challenge students to think critically about the main chapter concepts and ask them to apply biological concepts to relevant cultural and social issues.

The Nature of Biology and Evolution

Why Does Biology Matter to You?

Before we became such accomplished global travelers, people tended to be born, grow up, and die in the same locale. Doctors could focus their treatments on diseases and conditions that were specific to their locale. Now that we travel and mix much more, this approach does not work as well. From an evolutionary point of view, why does a person’s geographic origin affect the way they respond to medical treatment? Should doctors know about these evolutionary differences in order to treat patients better?

Identifying the “Inferior” Gene

“The race is narrow, for narrow is the channel that permits the passage of genes. This pathway is so narrow that the forces that make the race narrow are also the forces that make the race superior.”

C. B. Davenport (1927)

Geneticists have long been interested in identifying “inferior” genes.
Support for Instructors and Students

For Instructors

A Text Image Library includes all images from the text for clear projection in class.

A Test Item File includes more than 1200 multiple-choice, true/false, and short-answer questions in Microsoft Word format.

Using the same questions that appear in the Test Item File, the Computerized Test Bank enables instructors to create and edit questions, create randomized quizzes and tests, publish those quizzes and tests to online courses, and print quizzes and tests for paper-based assessments.

An Instructor's Resource Manual includes a list of chapter learning outcomes, chapter outlines and summaries, question prompts for in-class discussions and activities, and a Video and Animation Guide for each chapter with a customized YouTube playlist.

The Ancillary Resource Center (ARC) is a convenient, instructor-focused single destination for resources to accompany the text. The ARC includes the Text Image Library, the Test Item File, the Instructor's Resource Manual with Video and Animation Guide, and the Computerized Test Bank.

All of the above material is available at www.oup.com/us/bozzone.

For Students

The open-access Companion Website at www.oup.com/us/bozzone provides online quizzes, learning objectives, key-concept summaries, animations, videos, podcasts, and more.

Designed to be simple, intuitive, and mobile, Oxford’s nationally hosted online course system, Dashboard, delivers quality content, tools, and assessments to track student progress in a web-based learning environment. Assessments are automatically graded so that instructors can easily check students’ progress, and the color-coded gradebook illustrates at a glance where students are succeeding and where they can improve.

A Study Guide features summaries and step-by-step analyses of each chapter, review questions, and study tips.

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