

THE AMERICAN BIOLOGY TEACHER



About Our Cover

During observation of several butterflies wandering over an unknown plant in India, these caterpillars were found. They are the larvae of *Anaphaeis aurota*, the caper white (or pioneer white) butterfly. The larval host plant is *Maerua oblongifolia*, a member of the Capparaceae (the caper family), which is closely related to the Brassicaceae (the mustard family).

This butterfly has two phenotypic variants, a wet-season form and a dry-season form. Butterflies living in tropical climates often have adaptations for fluctuations in weather, thereby increasing their survival rates. These include variations in wing patterns, such as the size of eye markings, to avoid predation; body changes to increase drought resistance; and hormonal variation to postpone reproduction. This developmental plasticity allows environmental factors to influence development so that the resulting butterflies have different physical traits yet remain the same genetically.

This image was taken by Kishore Pawar, Department of Seed Technology, Holkar Science College, Indore, India. She used a SP510UZ Olympus camera.

Contents

Feature Article

Strategies for Incorporating Long-Term, Distributed-Network Research Projects into the Undergraduate Curriculum: Lessons from the Ecological Research as Education Network's Decomposition Project
Practical solutions aimed to inform and inspire potential research coordinators or collaborators in an existing network
Tracy B. Gartner, Carolyn L. Thomas, Kevin Geedey, Kim Bjorgo-Thorne, Jeffrey A. Simmons, Kathleen L. Shea, Jerald J. Dosch, Craig R. Zimmermann 142
Available online at <https://www.nabt.org/ABT-Online-Current-Issue>

Using the FRAMER Scaffold Design Framework to Support Students in Learning & Understanding Biology
Suggestions and examples for instructors interested in developing scaffolds for implementation in undergraduate biology courses
Jaime L. Sabel 150

Research on Learning

Supervising Students in Scientific Writing for Peer Review & Possible Publication
A research-integrated course assignment designed to increase students' self-motivation and improve their learning outcomes
Diyora Abdulkhakimova, Yingqiu Xie 158

Microbe Art Can Educate & Correct Misconceptions about Microorganisms
Artistic representations of microorganisms that serve as effective educational tools for both academic and nonacademic audiences
Davison Sangweme, Evan Lampert, Erin McIntosh 162



Inquiry & Investigation

From DNA Extraction to Sequence Analysis: A Semester-Long Undergraduate Research Project on Fish Mislabeled
A practical opportunity for students to master molecular techniques in a place-based learning setting
Kalee E. Rumpf, Nicole E. Wonderlin, Daniel Hulbert, Peter J. T. White 170



Tips, Tricks & Techniques

Gas Exchange Gamified: Teaching Respiration Physiology with a Novel Board Game
A novel board game designed for use in a second-semester anatomy and physiology course
Katie Wibking 175

Using Digital Microscopes in an Online Lab
Low-cost digital microscopes that enable students to enjoy the experience of viewing images of microbes from their own samples and preparation
Sandra Buerger, Lynn Foord 178

Departments

Guest Commentary • "I Have Learned to Hate Science" • Melanie Peffer 137
The ABT BioMystery 138
Letter from the Editor • Thank You to the ABT Production Team and Reviewers • William McComas 139
Book Reviews • Amanda L. Glaze-Crampes, Department Editor 181
Classroom Materials & Media Reviews • Jeffrey D. Sack, Department Editor 186
Sacred Bovines • *The Counter-Roll in Science* • Douglas Allchin 188