

Evolution

Contents

Feature Article

- Why Are Chimps Still Chimps?**
“Teacher, if humans evolved from chimps, why are there still chimps?”
Norman A. Johnson, James J. Smith, Briana Pobiner, Caitlin Schrein. 74

Articles

- Dobzhansky’s Dictum: An Object Lesson for Critical Thinking**
Is Dobzhansky’s dictum a myth?
William D. Stansfield 81
Available online at <http://www.nabt.org/websites/institution/index.php?p=692>
- Darwin’s Invention: Inheritance & the “Mad Dream” of Pangenesis**
Charles Darwin invents the new science of pangenesis to explain variation and inheritance
William F. McComas 86
- Reasoning About Natural Selection: Diagnosing Contextual Competency Using the ACORNS Instrument**
Competency in one context is often not indicative of competency in another
Ross H. Nehm, Elizabeth P. Beggrow, John E. Opfer, Minsu Ha 92

Research on Learning

- Bringing Evolution to a Technological Generation: A Case Study with the Video Game SPORE**
Using a video game to teach science may seem strange, but students seemed to gain a stronger appreciation and engagement through using one with glaring errors
DorothyBelle Poli, Christopher Berenotto, Sara Blankenship, Bryan Piatkowski, Geoffrey A. Bader, Mark Poore 100

Inquiry & Investigation

- How We Got Here: Evolutionary Changes in Skull Shape in Humans & Their Ancestors**
What kind of evolutionary potential do we hold in our development?
Rebecca M. Price 106

RECOMMENDED
FOR AP Biology

How-To-Do-Its

- Letters to Darwin from the Future**
How writing letters to Darwin illustrates the collaborative and self-correcting nature of science
Joseph A. Walsh 111
- Endangered Species & Biodiversity: A Classroom Project & Theme**
Students learn about threats to biodiversity by conducting group research projects using endangered species databases
Brook Lauro. 114
- A Student Activity that Simulates Evolution**
Student experiments with an evolution simulation can increase acceptance of evolutionary concepts
Nichole L. Johnson, Rosalyn Lang-Walker, Joseph L. Fail, Jr., Timothy D. Champion 117



Departments

- From the President** • *Evolution as Part of the Bigger Picture* • Donald French 68
- Guest Editorial** • *Use Human Examples to Teach Evolution* • Briana L. Pobiner 71
- Biology Today** • *Australian History: A Long Story* • Maura C. Flannery, Department Editor 121
- Book Reviews** • Elizabeth Cowles, Department Editor. 125
- Classroom Materials Reviews** • Chris Monsour, Department Editor 128
- Classroom Media Reviews** • Roberta Batorsky, Department Editor 130
- Sacred Bovines** • *To Be Human* • Douglas Allchin, Department Editor. 132



About Our Cover

On our cover are reconstructive images of four skulls that represent four species of early humans that all lived in East Africa around the same time, illustrating the diversity of species that once coexisted on the human family tree. Today, we are – *Homo sapiens* – the only surviving human species on earth. (Top) KNM-ER 3733, *H. erectus*, about 1.8 million years old. This was the first early human species to have modern human-like body proportions and an expanded braincase relative to the size of its face; it may also be the first to have migrated out of Africa and to have incorporated a significant amount of meat into its diet. Fossils of this species date from about 1.89 million to 143,000 years ago and have been found in northern, eastern, and southern Africa as well as western and eastern Asia. (Left) KNM-ER 1813, *H. habilis*, about 1.9 million years old. This species is one of the earliest members of our genus; its name means “handy man” because it was originally thought to represent the first stone-tool maker – though we now know that tool-making slightly predates the first appearance of this species in the fossil record. Fossils of this species date from about 2.4 to 1.4 million years ago and have been found in eastern and southern Africa. (Right) KNM-ER 406, *Paranthropus boisei*, about 1.7 million years old (the species dated to about 2.3 to 1.2 million years old). It is characterized by a skull with specialized adaptations for heavy chewing: very large teeth, flaring cheekbones, and a sagittal crest on the midline of the top of the skull. Fossils of this species date from about 2.3 to 1.2 million years ago and have been found only in eastern Africa. (Bottom) KNM-ER 1470, *H. rudolfensis*, about 1.9 million years old. This is the only really well-preserved fossil skull of this species, which is distinguished from *H. habilis* in its larger brain size, longer face, and larger teeth. Fossils of this species date from about 1.9 to 1.8 million years ago and have been found only in eastern Africa. The image and caption were provided by Briana Pobiner and Jennifer Clark of the Human Origins Program, NMNH, Smithsonian Institution (e-mail: pobinerb@si.edu and clarkjb@si.edu). The focus of this issue of *ABT* is evolution.