

Contents

To the Reader

Topic Guide

Selected World Wide Web Sites

iv

x

xiii



UNIT 1

The Evolutionary Perspectives

Eight articles examine evolutionary perspectives from Darwin's theories to creationism to new genetic concepts.

Unit Overview

xv

1. **The Growth of Evolutionary Science**, Douglas J. Futuyma, from *Science on Trial*, Pantheon Books, 1982

Before the rise of **science**, the causes of orderly events were sought in the **divine purposes** they were thought to have served. Today, patterns and designs are seen to be the result of **natural selection**.

2

2. **Hooke, Fossils and the Anti-Evolutionists**, Keith Stewart Thomson, *American Scientist*, May/June 2003

Some of the most important thoughts on the **history of the Earth** and the **evolution of life** were written more than 300 years ago—and the **anti-evolutionists** still do not have an answer for them.

12

3. **Darwin's Influence on Modern Thought**, Ernst Mayr, *Scientific American*, July 2000

As Ernst Mayr points out, our conception of the world and our place in it is, at the beginning of the twenty-first century, drastically different from the **Zeitgeist**, or "spirit of the times," at the beginning of the nineteenth century. The one person most responsible for this change is **Charles Darwin**.

15

4. **15 Answers to Creationist Nonsense**, John Rennie, *Scientific American*, July 2002

Opponents of evolution are trying to tear down real science by setting forth a series of specious arguments. In reality, they intend to use the **intelligent-design theory** as a "wedge" in order to reopen science classrooms to the discussion of **God**. This article consists of a series of rebuttals to some of the most common "scientific" arguments raised against the idea of evolution.

19

5. **Profile of an Anthropologist: No Bone Unturned**, Patrick Huyghe, *Discover*, December 1988

Patrick Huyghe reports that the skills displayed by **physical anthropologists** and **archaeologists** in the analysis of old bones have resulted in the development of a whole new field: **forensic anthropology**.

26

6. **Go Ahead, Kiss Your Cousin**, Richard Conniff, *Discover*, August 2003

Moderate **inbreeding** has always been the rule, not the exception, for humans. Despite the fact that close matings can unmask **deleterious recessives**, new research suggests that they may also confer **evolutionary and social advantages**. This is significant, especially when considering the **social benefits**.

31

7. **Curse and Blessing of the Ghetto**, Jared Diamond, *Discover*, March 1991

Tay-Sachs disease is a choosy killer, one that for centuries targeted Eastern European Jews above all others. Jared Diamond reports that, by decoding its lethal logic, we can learn a great deal about how **genetic diseases** evolve—and how they can be conquered.

36

8. **The Saltshaker's Curse**, Jared Diamond, *Natural History*, October 1991

Physiological adaptations that at one time helped West Africans and their descendants cope with unusually high **salt loss** may now be predisposing African Americans to **hypertension** and a premature **death**.

41



UNIT 2

Primates

Six selections examine some of the social relationships in the primate world and how they mirror human society.

Unit Overview

46

9. **What Are Friends For?**, Barbara Smuts, *Natural History*, February 1987

Barbara Smuts reports that an understanding of **friendship bonds** among baboons is not only destroying our stereotypes about monkeys in the wild, but it is also calling into question traditional views concerning the **relationships** between the **sexes** in early hominid evolution.

49

10. **Fossey in the Mist**, Robert M. Sapolsky, *Discover*, February 2001

The memory of **Dian Fossey** will be forever filled with contradictions and controversy. She began as a scientist studying gorillas in the wild and quickly became a **conservationist**. Her methods, however, would ultimately lead to the murders of both the gorillas and herself.

54

11. **The Mind of the Chimpanzee**, Jane Goodall, from *Through a Window*, Houghton Mifflin, 1990

It has long been recognized that the differences in anatomy and physiology between apes and humans are a matter of degree. Because of the work of Jane Goodall, we have come to realize that there is continuity in **mental** and **emotional development** as well.

58

12. **Got Culture?**, Craig Stanford, from *Significant Others*, Basic Books, 2001

The **rudimentary cultural abilities** of the **chimpanzee** not only sharpen our understanding of our uniqueness as humans, but they also suggest an **ancient ancestry** for the **mental abilities** that we and the chimpanzees have in common.

63

13. **Dim Forest, Bright Chimps**, Christophe Boesch and Hedwige Boesch-Achermann, *Natural History*, September 1991

Contrary to expectations, forest-dwelling **chimpanzees** seem to be more committed to **cooperative hunting** and **tool use** than are savanna chimpanzees. Such findings may have implications for the course of human evolution.

67

14. **Are We in Anthropodenial?**, Frans de Waal, *Discover*, July 1997

To endow animals with **human emotions** and **mental qualities** has long been a **scientific taboo**, but the more we learn about them, especially our closer relatives, the more it seems that there really are similarities, as Frans de Waal's research indicates.

71



UNIT 3

Sex and Society

Six articles discuss the relationship between the sexes and the evolution of a social structure.

Unit Overview

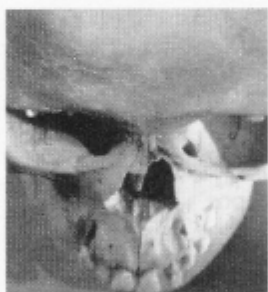
74

15. **The Evolution of Human Birth**, Karen R. Rosenberg and Wenda R. Trevathan, *Scientific American*, November 2001

"The difficulties of **childbirth** have probably challenged humans and their ancestors for millions of years—which means that the modern custom of **seeking assistance during delivery** may have similarly ancient roots."

76

16. **Mother's Little Helpers**, Meredith F. Small, *New Scientist*, December 7, 2002
Human children take an incredibly long time to grow up. Meredith Small wonders whether an **evolutionary trick** designed to **help the family** has backfired on today's parents. 82
17. **Mothers and Others**, Sarah Blaffer Hrdy, *Natural History*, May 2001
 In many species, including our own, **mothers are assisted** by others in rearing their offspring. The more we adhere to this evolutionary heritage of "**cooperative breeding**," the more likely we are to raise **emotionally healthy children**. 85
18. **A Woman's Curse?**, Meredith F. Small, *The Sciences*, January/February 1999
 Meredith Small reports on an anthropologist's study of the **ritual of seclusion** surrounding **women's menstrual cycles**, which has some rather profound implications regarding human evolution, certain cultural practices, and **women's health**. 91
19. **What's Love Got to Do With It?**, Meredith F. Small, *Discover*, June 1992
 The **bonobos'** use of sex to reduce tension and to form **alliances** is raising some interesting questions regarding human evolution. In Meredith Small's review, this question is raised: Does this behavior help to explain the origins of our **sexuality**, or should we see it as just another primate aberration that occurred after humans and primates split from their common lineage? 95
20. **Apes of Wrath**, Barbara Smuts, *Discover*, August 1995
 Whether or not males beat up females in a particular species seems to have a great deal to do with who is forming **alliances** with whom. Barbara Smuts indicates that this, in turn, has powerful implications as to what can be done about **sexual coercion** in the human species. 99



UNIT 4 The Fossil Evidence

Six selections discuss some of the fossil evidence for hominid evolution.

- Unit Overview 102
21. **Survivor**, Richard Stone, *Discover*, March 2003
 Older, more primitive skulls from Eurasia and Africa are calling into question previous assumptions about **hominid evolution** and the **expansion of our ancestors out of Africa**. 104
22. **Food for Thought: Dietary Change Was a Driving Force in Human Evolution**, William R. Leonard, *Scientific American*, December 2002
 William Leonard asserts that **dietary change** was a driving force in human evolution. Studies of people of the past as well as traditional cultures of today show that humans evolved to be **flexible eaters**. 109
23. **Father of Us All?**, Michael Lemonick and Andrea Dorfman, *Time*, July 22, 2002
 The quest to reconstruct the **hominid family tree** has just gotten more complicated. New finds from **sub-Saharan Africa** are not only **older than any other hominids** previously found, but they also conjure up an image far different from what anyone would have suspected. 117
24. **Scavenger Hunt**, Pat Shipman, *Natural History*, April 1984
 Microscopic analyses of tooth wear and cut marks on bone, combined with an increased understanding of the advantages of **bipedalism**, point in the direction of a "**man the scavenger**" model rather than "**man the hunter**," Pat Shipman reports. 121

25. **Erectus Rising**, James Shreeve, *Discover*, September 1994
Most paleoanthropologists used to agree that *Homo erectus* was confined to Africa until one million years ago. James Shreeve notes that new finds and a new **dating method** are challenging that view. 125
26. **The Scavenging of "Peking Man"**, Noel T. Boaz and Russell L. Ciochon, *Natural History*, March 2001
Excavations from 1921 to 1982 at **Dragon Bone Hill** in China uncovered the remains of 45 individuals, *Homo erectus pekinesis*, with their tools and debris dating from 300,000 to 600,000 years ago. The authors try to determine whether these relatives of ours used **fire** and whether they were **cannibals, hunters, or the hunted**. 131



UNIT 5 Late Hominid Evolution

Four articles examine archaeological evidence of human evolution.

Unit Overview

27. **Hard Times Among the Neanderthals**, Erik Trinkaus, *Natural History*, December 1978
Despite the coarseness of their lifestyle and the apparent **violence** between individuals, **Neanderthal** skeletal remains reveal a prehistoric record of affection and respect, and they should be accorded the status of **human beings**. 136
28. **Care-Worn Fossils**, Bruce Bower, *Science News*, November 23, 2002
Scientists are reexamining **fossil data** and specimens collected over the last century in order to clear up the issue of **how Stone Age folk treated their weakened comrades**. 139
29. **The Gift of Gab**, Matt Cartmill, *Discover*, November 1998
While the **origin of human language** is rooted in aspects of psychology and biology that we share with our close animal relatives, Matt Cartmill proposes that our kind of communication seems to be associated with **making tools and throwing weapons**. 143
30. **Archaeologists Rediscover Cannibals**, Ann Gibbons, *Science*, August 1, 1997
From digs around the world, researchers have unearthed strong new evidence of **cannibalism**. People may have eaten their own kind from the early days of human evolution through recent prehistory, as indicated by author Ann Gibbons. 149



UNIT 6 Human Diversity

Four articles examine human racial evolution and diversity.

Unit Overview

31. **The Lost Man**, Douglas Preston, *The New Yorker*, June 16, 1997
Recent skeletal findings of "Kennewick Man" indicate that the **first Americans** might not be who we think they were. Before the evidence could be adequately studied, however, the U.S. government withheld the bones. Native Americans want to rebury the bones, and archaeologists have gone to court to reclaim them. Douglas Preston asserts that, in the process, issues of **race** and **ethnicity** have been brought to a steaming head. 154
32. **Black, White, Other**, Jonathan Marks, *Natural History*, December 1994
With regard to classifying human beings, Jonathan Marks notes that the central message of anthropology is, "You may group humans into a small number of **rac**es if you want to, but biological evidence does not support it." 158

33. **Racial Odyssey**, Boyce Rensberger, *Science Digest*, January/February 1981

Despite the many attempts over the past 200 years to classify humans into separate and "pure" **rac**es, Boyce Rensberger reports that the consensus among geneticists and anthropologists is that there are overlapping differences among us that are matters of degree rather than of kind.

173

34. **The Tall and the Short of It**, Barry Bogin, *Discover*, February 1998

Rather than being able to adapt to a single environment, we can—thanks to our **genetically endowed plasticity**—change our bodies to cope with a wide variety of environments. In this light, Barry Bogin reports on research that suggests that we can use the average **height** of any group of people as a barometer of the **health** of their society.

178



UNIT 7

Living With the Past

Six articles discuss evolutionary theory and the impact of genetic heritage on our present and our future.

Unit Overview

182

35. **Saving the Mountain Gorillas**, Ruth Keesling, *The World & I*, October 2002

Working to save the gorillas requires that **international funding sources collaborate with the national and local governments** to institute a wide range of **people-saving practices**.

184

36. **It Takes a Forest**, Djuna Ivereigh, *Nature Conservancy Magazine*, Summer 2003

A newly discovered population of orangutans holds hope for the **species' survival** in the wild if the **rampant deforestation** of Indonesian Borneo can be halted.

190

37. **Great Apes as Food**, Dale Peterson, *Gastronomica*, Spring 2003

The taste for **bush meat** is rooted in the **cultural identity** and **village traditions** of many Central Africans. If current levels of **deforestation** and **commercial hunting** continue, however, the eating of the **great apes** of Africa will very shortly lead to their **extinction** in the wild.

197

38. **On Feel-Good Conservation**, Karl Ammann, from *Eating Apes*, University of California Press, 2003

In order to **maintain good relations** with African **governments**, indigenous **peoples**, and even the **timber industry**, some **conservation groups** may actually be easing the way toward **great ape extinction**.

204

39. **The Viral Superhighway**, George J. Armelagos, *The Sciences*, January/February 1998

According to George Armelagos, international travel and **environmental disruptions** have accelerated the occurrence of serious, new **diseases in humans**. However, protective cultural practices could provide a countervailing effect to fight the encroachments of many diseases.

210

40. **Dr. Darwin**, Lori Oliwenstein, *Discover*, October 1995

Lori Oliwenstein reports that the application of **Darwin's theory of evolution** to the understanding of **human diseases** will not only help us to better treat the symptoms of diseases, but it also promises to help us understand how microbes and humans have evolved in relation to one another.

215

Index

219

Test Your Knowledge Form

222

Article Rating Form

223