

It is now possible to make an assertion that would have delighted Darwin: Gaps of knowledge in the evolutionary history (phylogeny) of living organisms no longer need exist. Molecular biology has made it possible to reconstruct the “universal tree of life,” the continuity of succession from the original forms of life, ancestral to all living organisms, to every species now inhabiting the Earth. The virtually unlimited evolutionary information encoded in the DNA sequence of living organisms allows evolutionists to reconstruct phylogenetic relationships (including occasional reticulate events) leading to present-day organisms with as much detail as desired. The only limitation is logistical: a capacity to invest the necessary resources (time and laboratory expenses).

In the Light of Evolution

The theory of biological evolution by natural selection, as first proposed by Darwin, is the central organizing principle of biology. Indeed, as the great evolutionist Theodosius Dobzhansky asserted in 1973 in an address to the American Association of Biology Teach-

ers, “Nothing in biology makes sense except in the light of evolution.” Yet, in the United States, evolution is not generally accepted by the public.

According to a Gallup poll of 1,016 US adults, taken in November 2004, 45% of those surveyed favored the statement that “God created human beings in their present form within the last 10,000 years”; 38% favored that “Man developed over millions of years, but God guided the process”; and only 13% opined that “Man developed over millions of years from less advanced life forms.” Teaching creationism rather than evolution in the schools is preferred by a large number of American citizens. In a CNN/USA Today Gallup poll conducted in March 2005, 76% of 1,001 adult respondents would not “be upset if public schools in [their] community taught creationism,” compared with 63% who would not “be upset if the schools taught evolution”; and only 22% would be upset if creationism was taught, whereas 34% would be upset if evolution was taught. Other polls yield similar statistics.

In 1959, at a symposium celebrating the 100th anniversary of the publication

of the *Origin of Species*, the eminent geneticist and Nobel Laureate H. J. Muller proclaimed “One hundred years without Darwin are enough!” Fifty years later, the science of evolution is far from universally accepted by the American public, and activists throughout the country are advancing creationist or “intelligent design” alternatives to explain the origin, diversity, and adaptation of organisms, seeking that these “theories” be taught in science classrooms. Our educational system and society as a whole are best served when we teach science, not religious faith masquerading as science, in the schools. Scientists, educators, and the media have an obligation to convey to the American public that the evolution of organisms is well-established scientific knowledge and has important applications in agriculture, medicine, and much more. As biologists commemorate “two centuries of Darwin” with numerous festivals and colloquia during 2009, let us remember that an energetic commitment to enlighten the public about evolution, and thereby fulfill that obligation, would be a fitting celebration of Darwin’s work.

1. Darwin C (1859) *On the Origin of Species by Means of Natural Selection* (John Murray, London).
2. Barlow N (1958) *The Autobiography of Charles Darwin* (Collins, London).
3. Paley W (1802) *Natural Theology* (R. Fauldner, London).
4. Ahlberg PE, Clack JA (2006) Palaeontology: A firm step from water to land. *Nature* 440:747–749.
5. White TD, et al. (2006) Asa Issie, Aramis and the Origin of *Australopithecus*. *Nature* 440:883–889.
6. Dalton R (2006) Feel it in your bones. *Nature* 440:1100–1101.
7. Cela-Conde CJ, Ayala FJ (2007) *Human Evolution. Trails from the Past* (Oxford Univ Press, Oxford, UK).