

SciAm Perspectives

A Theory for Everyman

Evolution should be taught as a practical tool for understanding drug resistance and the price of fish

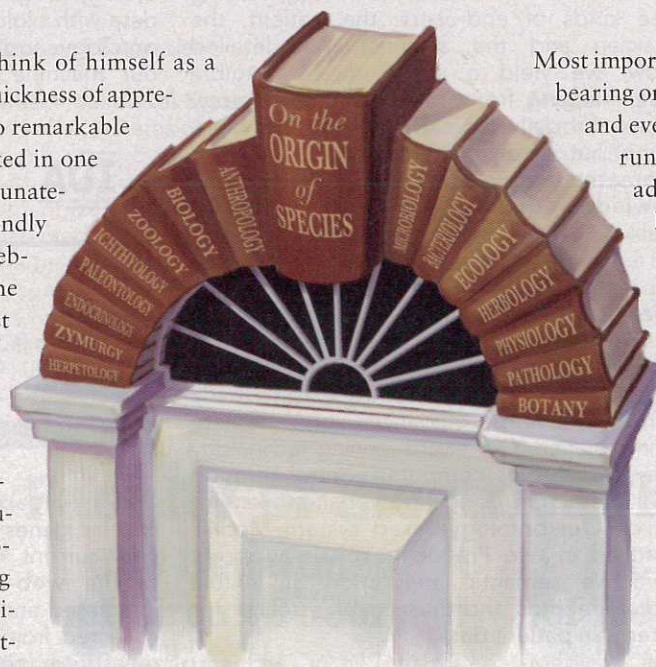
BY THE EDITORS

Charles Darwin did not think of himself as a genius. “I have no great quickness of apprehension or wit which is so remarkable in some clever men ...” he remarked in one passage of his autobiography. Fortunately for the rest of us, he was profoundly wrong in his assessment. So on February 12 the world will mark the bicentennial birthday of a scientist who holds a rightful place alongside Galileo, Copernicus, Newton and Einstein.

Darwin’s genius—and, yes, genius is the right word—is manifest in the way his theory of evolution can tie together disparate biological facts into a single unifying framework. Evolutionary geneticist Theodosius Dobzhansky’s oft-cited quotation bears repeating here: “Nothing in biology makes sense, except in the light of evolution.”

Yet it is also worth noting during this anniversary year that Darwin deserves a lot better than he gets. When the popular press needs an iconic image of a brilliant scientist, it invariably recycles the famous photograph of Albert Einstein having a bad hair day. (Einstein accompanies John Lennon and Andy Warhol on *Forbes*’s list of top-earning deceased celebrities.) Darwin’s failure to achieve icon status is the legacy of creationists and neocreationists and of the distortion of his ideas by the eugenics movement a century ago.

But Darwin is so much more than just a quaint, Victorian historical figure whose bust in the pantheon deserves a place among those of other scientific greats. Theory needs to explain past, present and future—and Darwin’s does all three in a form that requires no simplifying translation. His theory is readily accessible to any literate person who allots a pleasurable interlude for *On the Origin of Species*, its prose sometimes bordering on the poetic: “... from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.”



Most important, Darwin’s legacy has a direct bearing on how society makes public policy and even, at times, on how we choose to run our lives. Overfishing of mature adults selects for smaller fish (and higher prices at the supermarket), and excessive use of antibiotics leads, by natural selection, to drug resistance, all considerations for regulators and legislators. Many modern diseases—obesity, diabetes and autoimmune disorders—come about, in part, because of the mismatch between our genes and an environment that changes more quickly than human genomes can evolve. Understanding this disparity may help convince a patient to make a change in diet to better conform to the demands of a genetic heritage that leaves us unable to accommodate excess, refined carbohydrates and saturated fats from a steady intake of linguine alfredo and the like.

Biologist David Sloan Wilson initiated a program in evolutionary studies called EvoS at Binghamton University that extends beyond just the life sciences to encompass the humanities and the social sciences: the program is now being adopted at other schools. Students learn the basics, that evolution is both theory and fact and, crucially, that it serves as a way of looking at the world that provides deep predictive and explanatory power. They then proceed to use this analytical framework to explore subjects as diverse as cancer, pregnancy, mate choice, literature and religion.

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