

# Just One Question

## What's the next step in human evolution?

**Luigi "Luca" Cavalli-Sforza**, professor emeritus of genetics, is a pioneer in "genetic geography," a field that uses DNA to help understand human migration throughout history. His full answer appears at [www.stanfordmag.org](http://www.stanfordmag.org). ... A major genetic change which started already some centuries ago, with the navigation of the oceans, and is becoming faster now, is globalization. This is having major genetic consequences. It will bring back greater unity of the species, by diluting and eventually canceling differences among ethnic groups existing today, that are largely if not exclusively the consequence of adaptation to environments that differ mostly climatically, to which modern humans spread in the last 50,000 years. ...

**Albert Bandura** is the David Starr Jordan Professor of Psychology.

Human forebears evolved into a sentient agentic species through the evolutionary emergence of language and abstract and deliberative cognitive capacities. This advanced symbolizing capacity enabled humans to transcend the dictates of their immediate environment and made them unique in their power to shape their life circumstances and the courses their lives take. Humans are not just reactive products of selection pressures served up by a one-sided evolutionism. They are not only prime players in the coevolution process, but are gaining primacy in this bidirectionality of influence. For example, humans have not evolved morphologically to fly but they are soaring through the air and even in the rarified atmosphere of outer space at breakneck speeds despite major biological constraint. Agentic inventiveness trumped biological design in getting them airborne. Humans are not only cutting and splicing nature's genetic heritage but, through synthetic biology, they are even creating new types of genomes.

Were Darwin writing today, he would be underscoring the overwhelming human domination of the environment. Many of the species in our degrading planet have no evolutionary future. We are wiping them out and the ecosystems that support life at an accelerating pace. Unlike former mass extinctions by meteoric disasters, the current mass extinction of species is the product of human behavior. As the unrivaled ruling species atop the food chain, we are drafting the requiem for biodiversity. Let's hope we do not outsmart ourselves into irreversible ecological crises.

**Hilary Price, '91**, creates the comic strip *Rhymes with Orange*.

Good news! Our appendix will come out of retirement and regain its status as a major organ. It will control the secretions of our stupiditary gland, which heretofore has been wreaking havoc in Homo sapiens.

**Francine "Penny" Patterson**, PhD '79, is president and director of research of The Gorilla Foundation/Koko.org. Her full answer appears at [www.stanfordmag.org](http://www.stanfordmag.org).

... The next, and perhaps most critical, stage in human evolution at this time is "conscious evolution," evolution directed by human self-reflective consciousness to go *beyond* thought into an alert state of awareness of the beauty, wisdom and unity of the universe exactly as it is now. This doesn't mean we don't change things, it just means that when we do, our actions come from a deeper and more peaceful place. ...

**Sebastian Thrun**, director of the Stanford Artificial Intelligence Lab, led the Stanford team that won the DARPA Grand Challenge for robotic cars.

We'll stop walking, and instead will use all kinds of motorized devices to get around.

**Joan Roughgarden**,

professor of biological sciences, is the author of *Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People*.

I think the next step in human evolution is that racial categories will dissolve because of gene flow from immigration and intermarriage. Prejudice won't disappear, however—it will merely attach to new categories with different biological markers, most likely traits that predispose people to various occupations. Biological stratification will grow between occupational groups that don't mix, such as those with and without college educations, and inside and outside evangelist faiths. We will become a contemporary counterpart of India's ancient system of castes that isolates people into groups where they can assume biological distinctiveness.

Next Question: What mistake taught you the most?

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