

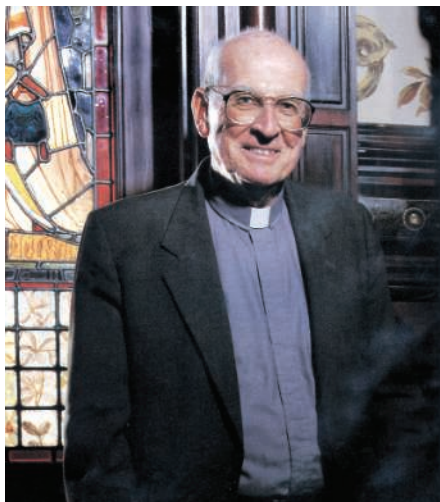
EVOLUTION

Vatican Astronomer Rebuts Cardinal's Attack on Darwinism

Is the Catholic Church rethinking its support for evolution? That's what Cardinal Christoph Schönborn, the archbishop of Vienna, suggested last month in *The New York Times* when he asserted that the church does not accept "neo-Darwinism." His 7 July opinion piece disturbed many scientists, especially those in the United States already worried about a resurgence of creationism and its "scientific" cousin, intelligent design.

Last week, with no utterance forthcoming from the new pope, the Vatican's chief astronomer George Coyne took it upon himself to rebut Schönborn. Writing in the 5 August edition of *The Tablet*, Britain's Catholic weekly, the Jesuit priest accused the cardinal of "darken[ing] the already murky waters" of the evolution debate. He also pointed out that the International Theological Commission under the presidency of Cardinal Ratzinger, now Pope Benedict XVI, issued a statement last year that saw no conflict between Darwin's ideas and the teachings of the Church.

In his *Times* piece "Finding Design in Nature," Schönborn last month dismissed as "vague and unimportant" the declaration of Pope John Paul II in 1996 that evolutionary



Evolutionary face-off. Astronomer and priest George Coyne.

theory is compatible with Catholic doctrine. "Evolution in the sense of common ancestry might be true," the cardinal wrote, "but evolution in the neo-Darwinian sense—an unguided, unplanned process of random variation and natural selection—is not."

It didn't take scientists long to react. On 13 July, three figures prominent in defending the teaching of evolution in the United States sent a letter to the new pope urging him to reaffirm his predecessor's statement. In these "difficult and contentious times," wrote physicist Lawrence Krauss of Case Western Reserve University in Cleveland, Ohio, Francisco Ayala of the University of California, Irvine, and Brown University biologist Kenneth Miller, "the Catholic Church [must] not build a new divide ... between scientific method and religious belief."

Biologist Peter Raven, head of the Missouri Botanical Garden and a member of the Pontifical Academy of Sciences, thinks scientists may have "overreacted" to Cardinal Schönborn's comments. In fact, Raven says, there is no evidence that the statement was cleared with the pope. It reflects "a pretty serious misunderstanding of what evolution is and what the church had done before," he adds. Raven doubts that Benedict, who was an honorary member of the Pontifical Academy before he succeeded John Paul II, is about to switch course. "The church has had the same view on evolution for about 75 years," he says. But Krauss is not so optimistic. "Based on what I've read about this pope," he says, "it's not at all clear" where he stands. Cardinal Schönborn's spokesperson Erich Laetenberger did not make the matter any clearer: "The cardinal only expresses what the church thinks about the issue," he told *Science*. ▶

AVIAN INFLUENZA

'Pandemic Vaccine' Appears to Protect Only at High Doses

This week, a U.S. health official trumpeted apparently good news: An ongoing trial suggests that a vaccine can protect humans from H5N1, the bird flu strain many worry may evolve into a pandemic. But some flu experts found the glass half-empty. The vaccine seems to work only at doses so high that the world's flu vaccine factories could not churn out enough to combat a pandemic, they say. Based on the preliminary data, the current U.S. stockpile of the vaccine, produced by Sanofi Pasteur, is enough for only 450,000 people—not the more than 2 million the administration hoped it would protect.

The findings, although an encouraging proof of principle, show the urgent need to develop ways to use vaccine more sparingly and to replace chicken eggs—the limiting step in current flu vaccine technology—with

cell-based production systems, says Jeroen Medema, a vaccine scientist at Solvay, another flu vaccine producer. At the moment, he notes, "it's a vaccine for the happy few."

The new vaccine is based on an H5N1 strain isolated from a Vietnamese patient and genetically weakened to make it grow in eggs by researchers at St. Jude Children's Research Hospital in Memphis, Tennessee. Last weekend, Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, which funded the trial, announced in newspaper interviews that initial data from 113 of the trial's 452 subjects show the vaccine eliciting protective antibodies. But to reach "levels that give you confidence," says Fauci, two doses of 90 micrograms of purified killed virus, or "antigen," had to be given 4 weeks apart.

The most common seasonal influenza vaccine is one shot of 45 micrograms of antigen—just 15 micrograms for each of the three circulating strains it targets. Because no one has immunity to H5N1, most researchers believed more than that might be needed in the new vaccine; plans for the U.S. stockpile were based on the assumption that two shots of 15 micrograms would work. "But 180—that really is a lot," says virologist Albert Osterhaus of Erasmus Medical Center in Rotterdam, the Netherlands.

Fauci says trials with dose-sparing strategies, including immune boosters called adjuvants, are next on the agenda. Many experts hope that with powerful adjuvants, a single dose of less than 2 micrograms of the vaccine might be enough, says Osterhaus.

—MARTIN ENSERINK

CREDIT: USED WITH PERMISSION OF ASTRONOMY MAGAZINE (WWW.ASTRONOMY.COM); PHOTO BY WILLIAM ZUBACK