

## Undergraduate Research/John Hay

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### **Pitt student’s research traces history of anti-evolutionism from “biblical creationism” to “scientific creationism” to “intelligent design”**

*This is the seventh in a series of Pitt Chronicle articles profiling outstanding University of Pittsburgh undergraduate researchers*

The continuing debate in the United States (and it’s a debate largely limited to this country) over whether public schools should teach creationism as an alternative to evolutionary biology began long before the emergence of “intelligent design” theory in the early 1990s.

It even predates the notorious Scopes Monkey Trial of 1925, which pitted agnostic defense attorney Clarence Darrow against Bible-thumping politician-lawyer William Jennings Bryan and was widely hailed as a victory for evolutionary biology—despite the fact that it was only when the Supreme Court of Tennessee found a technical error in his initial conviction that the defendant, schoolteacher John T. Scopes, was cleared of charges that he had violated a Tennessee law banning the teaching in state-funded schools of “any theory that denies the story of the Divine Creation of man as taught in the Bible.”

Actually, the “creation versus evolution” battle has been raging in America for more than a century, Pitt undergraduate student John Hay found in writing a research paper on the subject.

Hay, who graduated from Pitt April 29 with a double major in English and the history and philosophy of science (HPS), learned that the anti-evolution movement really caught fire with the rise of Protestant Christian fundamentalism, beginning around 1910, and the boom in U.S. high school enrollments around the same time.

Prior to that, Charles Darwin's theories of evolution and natural selection, first detailed in his 1859 book, *On the Origin of Species*, had begun infiltrating American public school classrooms "but the number of students still attending school into their late teenage years was very small," Hay wrote in his research paper. However, "American secondary education grew exponentially" during the first two decades of the 20th century, he noted.

Suddenly, millions more American adolescents were attending high school, where—to the outrage of biblical literalists—many were being taught godless evolution.

"What I find especially interesting is the rhetoric, the arguments going back and forth between the two sides," says Hay. "The fact that proponents of intelligent design and other forms of creationism have invented theories involving a supernatural creator doesn't interest me nearly so much as their arguments against evolution. Likewise, I'm very interested in the arguments that scientists make in response to creationism."

One of Hay's professors in the Pitt School of Arts and Sciences' HPS department recommended last spring that Hay approach Jeffrey H. Schwartz, a Pitt professor of anthropology with a joint appointment in HPS, to sponsor his investigation of the creation-versus-evolution conflict.

Schwartz agreed to work with Hay, and a mutually satisfying collaboration evolved.

"When John proposed the idea to me, I thought, 'Here's an opportunity for me to learn from John's research about the history of this debate,'" says Schwartz, who himself disputes the Darwinian model of evolution (more on that later) and is the author of several books, including *Sudden Origins: Fossils, Genes, and the Emergence of Species* (Wiley, 2000) and *The Red Ape: Orang-utans and Human Origins* (Westview Press, 2005), which argues that the orang-utan, not the chimpanzee, is our closest animal relative.

"One of the things I gained from John's research," Schwartz says, "is a clearer picture of the distinction between creation science and intelligent design."

After the U.S. Supreme Court ruled in 1968 that it is unlawful for states to ban the teaching of evolution, creationists "sought instead equal time for their own views," Hay wrote. "'Creation-science' ... emerged as a scientific response to 'evolution-science.' Creation science includes evidence against evolution and evidence for sudden creation and a young Earth."

Proponents of intelligent design, in contrast, "often distance themselves from creationists and emphasize that their methods are empirical and do not contain *a priori* assumptions about God, great floods, etc.," Hay wrote, adding: "Intelligent design maintains that complex biological processes are most likely productions of an intelligent craftsman. While this theory does not rule out the possibility of extraterrestrials as intelligent designers, the designer is usually implied to be divine. However, there are rarely any

positive statements made about such a designer, and proponents of intelligent design never make references to biblical accounts of creation.”

In an interview, Hay points out: “Court decisions have repeatedly struck down the teaching of creationism and creation science, so the creationist camp stepped back and reworded their terms. Intelligent design is the result. You’ll never see a reference to ‘god’ in intelligent-design literature. You’ll see ‘intelligence’ or ‘intelligent being,’ but it’s never ‘god’ or ‘the God of the Bible.’”

For those reasons, intelligent design has won support as a so-called “reasonable alternative to evolution” from some parents, students, and school board members who would reject the teaching of biblical creationism in science courses (although a federal judge ruled last year that the theory cannot be included in the science curriculum of the Dover, Pa., school district because it presupposes the existence of supernatural entities).

Another reason for intelligent design’s popularity, according to Hay and Schwartz, is the fact that, for the last 60-plus years, mainstream science has equated evolution with the *Darwinian* model of evolution, characterized by gradual and constant change. Creationists cite gaps in the fossil record as evidence against Darwinian evolution—and therefore, against biological evolution per se.

But prior to the 1940s many scientists believed, as Schwartz does, that evolutionary changes occur suddenly, explaining the abrupt appearances of new species and the absence of so-called “missing links.” If molecules in humans and animals were constantly changing, strange new organisms would rapidly be emerging all over the world—and, more than likely, dying off just as rapidly, argues Schwartz.

“As we now know from developmental biology, if things were constantly changing you wouldn’t see speciation, you would see death,” he says. “If your cells were constantly having their molecules change, they would die and you’d die along with them. Because evolution has become synonymous with Darwinism, most people don’t know any default position to Darwinism. And so, when they hear quite reasonable arguments against Darwinian evolution, they can be susceptible to nonscientific theories like intelligent design.”

While Hay believes intelligent design should not be taught as science in public schools, he also criticizes what he calls “an alarming trend” within the sciences to dismiss as false any religious claims about divine intervention in the natural world.

“Science relies on empirical methods and consists of falsifiable, testable statements about the natural world,” Hay wrote. “Science (as opposed to scientists) has nothing to say, positive or negative, about supernatural elements, including God and all of His actions. Since science makes no truth-claims about untestable entities like God (and no claims that its theories represent absolute truth), it does not conflict with religious beliefs. Much opposition to science, particularly to evolutionary biology, stems from a misunderstanding of what science can say.”

Hay wrote his research paper last summer as a Brackenridge Fellow. The summer fellowship program awards Pitt undergraduates stipends of \$3,000 each, freeing them to pursue research projects rather than having to work paying jobs.

“My paper hasn’t been published, but it’s a subject I’m still very interested in,” Hay says. At Schwartz’s invitation, Hay took Schwartz’s graduate course this spring on the history of evolutionary biology. “Taking Professor Schwartz’s course enabled me to read a lot more of the primary sources [on evolutionary biology], dating back to Darwin and continuing through the 20th century. It’s really strengthened my understanding of the history of biology,” he says.

Hay, who’s from Youngstown, Ohio, was awarded a full-tuition Chancellor’s Scholarship through the University honors college to attend Pitt. At the same time the honors college was wooing him, so was Pitt’s baseball team. As a right-handed pitcher, Hay was part of the 2003 Pitt recruiting class that won an honorable mention in the Collegiate Baseball Newspaper’s 21st annual breakdown of top NCAA Division I baseball-recruiting classes. During the University’s scholar-athletes awards ceremony in 2004, Hay received a gold award (for earning a G.P.A. between 3.5 and 3.99), but he regretfully left the team as an upperclassman when baseball threatened to interfere with his studies.

He plans to attend graduate school at Columbia University this fall, pursuing a Ph.D. degree in English and comparative literature. Hay’s career plans? “Probably to be a professor of English,” he says.

Schwartz has no doubts about Hay’s scholarly future. “It was a pleasure to work with John, and I’m sure he’ll do well” in academia, Schwartz says. “I’d worked with undergraduate researchers before, but in a more regimented way—taking on an undergraduate as a teaching fellow or supervising independent-study projects. John’s project, in contrast, wasn’t connected to any particular course. It was more a case of a student pursuing an intellectual interest.

“As a faculty member, I found it to be enjoyable as well as intellectually satisfying.”