

## Creationists in Lab Coats

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Darwinian evolutionary theory, expanded and revitalized by molecular biology, stands firmly as the grand unifying principle of all biological and biomedical sciences, from ecology to public health. It is ironic, therefore, that educators today face a growing challenge to the teaching of evolution in public schools.

To see the nature of the threat, take a look at the State of Kansas. Opponents of evolution there are trying (again) to rewrite state science education standards -destroying, in the process, the very definition of science. Current Kansas standards define science as "the human activity of seeking natural explanations for what we observe in the world around us." The anti-evolution crowd seeks to change "natural explanations" to "adequate explanations." Why the change? They want teachers to tell students that non-natural explanations (in other words, supernatural ones) are perfectly acceptable in science, and therefore in science classes. Get ready for a world in which natural phenomena such as tsunamis, eclipses, and fossils are attributed to the actions of demons, spirits, and karma, all redefined as science.

This assault on science education is being led primarily by proponents of "Intelligent Design" (ID). Disingenuously ignoring their movement's historical and ongoing ties to biblical creationists, ID advocates insist that their actions are not religiously motivated. They claim, instead, to offer a valid scientific alternative to evolutionary theory, which, they allege, "has failed" or is "in crisis." These twin assertions would be risible if they didn't provide legal cover for an anti-intellectual religious movement whose ultimate goal is nothing less than the destruction of science education in public schools.

ID's core argument is simple: "Look how complicated life is! We can describe some aspects of life from a scientific perspective. But certain components of living systems are so complex that we can't imagine how they could have evolved. Because evolutionary theory has thus far failed to explain this complexity to us, Darwinism has failed. Therefore, we invoke an agent acting outside of nature to explain anything we don't yet understand. We won't call this agent God, Allah, or The Force. We will speak, instead, of an unnamed Intelligent Designer, and we'll call this a scientific theory, so that it can be included in public school science curricula."

The problem is that ID is not a scientific idea; it offers no testable hypotheses or theories. The "ID literature" is a ramshackle collection of old and discredited creationist arguments against evolution, repackaged as something new and "scientific." Their effort to dress creationism in a lab coat is a thinly-veiled strategy to sidestep the First Amendment. And behind the "scientific" facade is a profoundly anti-scientific world view.

What would it really mean to teach about ID in science classes? It would be tantamount to telling students that it is acceptable for scientists, when faced with phenomena they cannot yet explain, to simply throw up their hands, stop trying to expand the frontiers of human knowledge, and write off the unknown to supernatural causes and effects.

Can you imagine the state of science today if early researchers had abandoned efforts to understand any phenomena that Aristotle couldn't fathom? What would be the state of modern medical knowledge if researchers over the last half century had simply chalked up then-unexplained diseases (cancer and AIDS, among many others) to divine will? Where will we be headed if ID-style alternatives to scientific inquiry are granted equal footing with genuine science education? The answer is not a happy one - be prepared to toss American scientific leadership in the world out the window.

Readers unfamiliar with the movement's history, motives, and allies might wonder why ID proponents want to distort science education so profoundly. Phillip Johnson, one of ID's leaders, provides a clear rationale: "The objective is to convince people that Darwinism is inherently atheistic, thus shifting the debate from creationism vs. evolution to the existence of God vs. the non-existence of God. From there people are introduced to 'the truth' of the Bible and then 'the question of sin' and finally 'introduced to

Jesus" (Church and State Magazine, April 1999). Despite any dissembling, therefore, the goal is to use the power of the state to promote a particular religious point of view in public school science classes.

The resulting legal gamesmanship might seem less serious if evolutionary theory was, in fact, "a theory in crisis" or even just an abstract intellectual notion. In reality, theoretical and practical research guided by evolutionary theory is racing ahead. ID proponents say that they can't imagine how complex living systems -- such as the "molecular machines" inside cells, or intricate body-wide systems such as the immune system -- could have evolved. But James Rothman of Columbia University, who won the 2002 Lasker Biomedical Research Prize for studying these molecular machines specifically points out that his work can "suggest in a natural way how the many and diverse compartments in eukaryotic cells could have evolved in the first place." And two scientists in Pennsylvania are using Darwin's ideas to explain "the descent of the immune system by gradual evolution."

Meanwhile, researchers studying diseases including influenza, AIDS, cholera, and drug-resistant staph infections see evolution at work - and are utilizing evolutionary theory to develop new treatments and public health measures. This interface between medical research and evolutionary theory is more vital than ever as humanity faces a score of new and emerging diseases. As Stewart Levy of Tufts University has written, "Medicine and public health would be much better off if medical students were taught as much about Darwin as they are about Pasteur."

Does ID belong in the science classroom out of a sense of fairness? Scores of scientific, educational, religious, and civil liberties organizations, including the American Association for the Advancement of Science and the National Academy of Science don't think so. Why? Because science isn't "fair." Science operates through a process of observation, experimentation, publication in peer-reviewed journals, and ruthless criticism. It isn't easy for a truly radical notion to gain acceptance in science. That's a good thing, even though some challenges to conventional wisdom do turn out to be scientifically valid. (Two that come to mind are the discovery of HIV and the identification of prions -- "rogue proteins" that apparently cause "Mad Cow" disease.) But others (remember cold fusion?) turn out to be scientifically invalid. The burden of proof in science is always on new ideas. That isn't an easy row to hoe. But for those who succeed, a Nobel Prize may await. And new discoveries validated by the process of science find their way into curricula automatically - without government intervention.

The rules that govern the scientific marketplace of ideas may be flawed, but they work, and they work brilliantly. If ID proponents can produce data, or suggest experiments, that could support or refute their ideas in a scientific manner, let them "bring it on!" Otherwise, their musings should remain protected by the First Amendment in venues like the New York Times and philosophy or religion classes, but outside public school science curricula.

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