

# **Protect Science Education!**

**A Toolkit for Keeping  
Evolution in Schools**



**This toolkit is part of a new series of special reports addressing threats to America’s public school system. We hope you will find it useful in your own efforts to stand up for our public schools.**



**People For the American Way Foundation believes that a strong public education system is an essential component of our American democracy.**

**Throughout our 25-year history, PFAWF has confronted the Right’s attempts to weaken public schools and impose their ideological agendas on teachers, students, and textbooks.**

**We advocate proven, effective reforms that help ensure that every child in America has access to a quality public education – and will continue to oppose attempts by Radical Right leaders and their ideological allies to undermine or dismantle public education.**

**For more information about PFAWF’s education work visit the [Public Education](#) section of our web page.**

**People For the American Way Foundation** is a staunch defender of public education. We believe that public education – like an independent judiciary and fair elections – is an essential component of our American democracy.

Unlike private schools, public schools are intended to provide an education to every child, regardless of religion or creed. Some Religious Right activists, however, have attempted to use public school curricula to promote the beliefs of particular religious traditions in ways that are unconstitutional and at the expense of a proper education.

In the science classroom in particular, some activists have fought to ban or undermine the teaching of Darwin’s theory of evolution. In its place, they’ve offered up a variety of replacements: outright religious instruction, religious belief cloaked in the language of science, false science designed to undermine scientific pursuit, and sometimes nothing at all. In every case, though, anti-evolution activists have fought against quality science education.

People For the American Way Foundation works to defend and ensure the religious freedom of all Americans. Public school students can and should be taught about the beliefs of religious groups in appropriate courses like World Religions or the History of Religion. But science classes are reserved for the teaching of science. This is what the Constitution requires, and what all students deserve.

We hope this toolkit will help you to defend proper science education and ensure that students in your community receive the quality education they deserve.

# **Evolution Activist Toolkit**

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# Evolution FAQs

## **What is evolution?**

Evolution, as propounded by Charles Darwin in *On the Origin of Species* in 1859, is the theory that living things have descended, with changes, from common ancestors. The most important mechanism of evolution is natural selection, which observes that organisms that are well adapted to their environments thrive and reproduce, while organisms that are poorly adapted die off. Change thus occurs in populations through time. Every living species – palm trees, eagles, and even humans – has evolved over billions of years, from single-celled organisms.

## **Evolution is just a theory, right?**

Yes, but scientists use the word “theory” differently than most other people do. When we say “I have a theory about why Susan is angry,” we mean that we have a hunch or an educated guess. For a scientist, a theory is much more than that. A scientific theory is an explanation that is supported by many experiments and observations. Scientifically, gravity is also a theory. The theory of evolution is an explanation of the natural world that is supported by decades of scientific investigation.

## **What is Creationism?**

Creationism is the religious belief that all life was created by God out of nothing. There are many kinds of creationism, but all include the idea that God created things in their present form: living things did not descend with modification from common ancestors. Creationists reject the theory of evolution.

One common form of creationism is Biblical Creationism, whose believers accept a literal interpretation of the story of creation presented in the first chapter of the book of Genesis. Another kind is Intelligent Design creationism.

## **What is Intelligent Design?**

Intelligent Design Creationism is less detailed than Biblical Creationism. Its proponents contend that living things are so complex, they could not possibly be the result of evolution. Instead of admitting that ID is a religious belief that God created all organisms, though, ID advocates claim that they are promoting “scientific” evidence that an unidentified “intelligent designer” did so. In fact, federal courts and the overwhelming consensus among scientists agree that both Biblical Creationism and ID are religion, not science: they can not be tested using scientific observation and reasoning, and have no place in a high school science class.

## **What's the matter with teaching Creationism or Intelligent Design in Biology class?**

There are two reasons we shouldn't teach ID or creationism in science classes.

The first is that students deserve a quality science education. The claims of creationism and Intelligent Design are factually wrong; to teach them means teaching pseudoscience in the biology classroom. And teaching that super-natural explanations for natural phenomena are part of science miseducates students. It undermines their education.

The second, equally important, reason is the need to respect the constitutional principle of separation of church and state that is one of our nation's bedrock principles. The Constitution does not permit public schools to endorse religion generally or one faith over another. Undermining science education by teaching one particular religious view of the world would be inappropriate and run counter to our most basic American values. This does not mean, however, that students cannot be taught about religious views of creation. They can study about these beliefs in appropriate courses, such as World Religions.

### **Why not just teach the controversy?**

That sounds like a good idea, but in reality it's another way for creationists to undermine science. The slogan, "Teach the controversy" means "teach students that scientists are debating whether evolution took place," which is not true. Scientists debate details of evolution, but "teach the controversy" isn't about students evaluating legitimate contrasting views. It's about attacking science and miseducating our children.

### **Is ID the only threat to science education?**

No! Creationists are attacking evolution in the classroom through a variety of means. One of the most recent and widespread strategies is to claim that there is legitimate scientific evidence "questioning evolution." There isn't. Students should know that evolution has been overwhelmingly accepted by the scientific community.

The important thing is to remember that there's no replacement for comprehensive, honest science education. Every student deserves it. And in the increasingly competitive global economy, America needs students to have a solid grounding in science.

### **What can I do to help protect quality science education?**

Make sure your local school district teaches evolution in an honest, scientific way. If not, remind administrators that they have a responsibility to teach quality science. Learn about your local and state school boards' position on science education, and let us know if evolution is threatened in your town.

## **The Right's War On Science How Creationism "Evolved"**

Pardon the irony, but creationism is evolving. To be sure, the goal of the movement, to force public schools to teach certain religious beliefs as science, has never wavered. But the movement's strategies and methods have evolved over time in an effort to adapt to new conditions.

These strategies have changed for two reasons. First, the Supreme Court has made clear that it is unconstitutional for public schools to teach religious belief as science. Second, and just as important, Americans have come to understand the important role science education plays in our country's security and international competitiveness.

Creationists have adapted to these developments by changing not their agenda, but the language they use to talk about it. The original argument, that schools should teach nothing that contradicted a literal reading of the Bible, has given way to the argument that creationism – now called "Intelligent Design" – *is* science, a claim that the vast majority of scientists dismiss as preposterous. Some have even tried to claim that evolution is itself a religion.

Students should learn about religion in History, Social Studies, Art and Literature courses, but anti-evolution activists have worked hard to insert religious instruction into science classrooms at the expense of quality education.

### **The Creationism Period**

When Darwin proposed the modern theory of evolution, creationists instantly opposed it on religious grounds. For years the creationism movement was clear in its message: evolution is wrong because it contradicts the Bible. Creationists in this period did not pretend to be concerned with science: they opposed outright any attempt to teach evolution in the classroom.

#### **1859 – *The Origin of the Species* is published**

Darwin's *The Origin of Species* sets forth the modern theory of evolution and its chief mechanism, natural selection. Many Christian fundamentalists of the day object immediately to what they see as the book's contradiction of Biblical literalism.

#### **1913 – Flood geology first proposed**

As acceptance of evolution grows, a Seventh-day Adventist and amateur geologist named George McCready Price writes *The Fundamentals of Geology*. Using profoundly flawed logic, he argues that the vast majority of fossils must have been created during the Great Flood described in the book of Genesis, and that geological dating methods must be "corrected" to conform to that fact. He then uses the newly "corrected" rock dating to "prove" that assertion about the fossils was correct. Initially, flood geology has few proponents even within the creationist community.

### **1914 – Evolution Appears in Textbooks**

George William Hunter's *A Civic Biology*, the book that is later used in biology courses in Dayton, Tenn., is published. *A Civic Biology* describes evolution as "the belief that simple forms of life on the earth slowly and gradually gave rise to those more complex and that thus ultimately the most complex forms came into existence."

### **1923 - The First Anti-Evolution Bills**

Led by three-time presidential nominee William Jennings Bryan, a campaign to outlaw the teaching of evolution in public schools succeeds in convincing the legislatures of Oklahoma and Florida to pass anti-evolution legislation. Bryan is unapologetic about the religious basis of his crusade. "What shall it profit a man," he writes, "if he shall gain all the learning of the schools and lose his faith in God?" In 1925, Tennessee passes similar legislation, resulting in the famous Scopes Trial, pitting Bryan against legendary lawyer Clarence Darrow.

### **1940s – Teaching of evolution hits low**

Due to the political, commercial, and legal attacks of Biblical literalists, the number of schools teaching evolution hit a new low point.

### **1947 and 1948 - Supreme Court on Government Endorsement of Religion**

In 1947 the Supreme Court makes clear that government may not aid religion generally, or prefer one religion over another. A 1948 ruling forbids religious instruction in public schools.

### **1950 – Pope Pius XII rejects Biblical literalism**

Calling evolution an "open question," Pope Pius XII rejects literal Biblical creationism as the sole explanation for biological origins, acknowledging the importance of scientific principles in conjunction with spiritual faith.

### **1957 - Sputnik**

The perceived threat posed by Sputnik focuses America's attention on the importance of a sound math and science education. Popular support for comprehensive science education spreads and leads even many ultra-conservative school districts to teach scientifically accepted evolution curriculum.

### **1961 – *The Genesis Flood* is published**

John C. Whitcomb, Jr. and Henry Morris publish *The Genesis Flood*, which attempts to demonstrate that Biblical literalism is supported by science. The book, which reintroduces Price's flood geology, is met with near-unanimous criticism from the scientific community.

### **1966 – Creationists Demand Equal Time**

Religious activist Nell Segraves demands that the California State Board of Education grant equal time in California schools for creationism. She bases her request on a



provision in the Civil Rights Act that allowed teachers to mention religion so long as they did not promote specific doctrines. The request is denied.

1968 – ***Epperson v. Arkansas***

In *Epperson v. Arkansas*, the United States Supreme Court invalidates an Arkansas statute that prohibited the teaching of evolution in public schools and universities.

**The Creationism “Science” Period**

As Americans came to value the teaching of authentic science in the science classroom, creationists changed their argument. Instead of opposing the teaching of evolution and science *per se*, they claimed that science proves that the first chapters of Genesis are literally true. The scientific community has consistently criticized this as pseudo-science.

1970 – **California Science Framework gives birth to creation science**

Reacting to now widespread opinion and the Supreme Court’s finding in *Epperson* that science classes should teach scientific theories, the California State Board of education approves language couching “creationism” in scientific vocabulary. The board writes, “Creation in scientific terms is not a religious or philosophical belief.” This moves creationism from religion to pseudo-science.

1970 – **Creation-Science Research Center is founded**

Continuing her effort to dress up creationism in scientific clothes, Segraves heads the effort to form the Creation-Science Research Center, which is affiliated with Tim LaHaye’s Christian Heritage College in San Diego. Henry Morris is also part of the effort but disagreements over the organization’s political role lead to the Center’s ending its affiliation with Morris and LaHaye in 1972.

1972 – **Institute for Creation Research is started.**

Henry Morris founds the Institute for Creation Research, affiliated with the Christian Heritage College, dedicated to refuting the theory of evolution and developing a scientific basis for the Biblical account of creation.

1974 - **Scientific Creationism**

Morris publishes his book *Scientific Creationism*, a bedrock text of the movement, in two editions: one for public schools that makes no explicit references to the Bible, and another that includes a chapter on "Creation according to Scripture." Creationists now argue that science can confirm the account of creation as given literally in the Bible.

1978 – **Wendell Bird**

Yale law student Wendell Bird publishes a strategy for introducing creationism into public schools across the country. His article, “Freedom of Religion and Science Instruction in Public Schools” in the Yale Law Journal, claims that “scientific creationism” is not religion, and that not teaching it would violate the free exercise rights of Biblical literalists.

### 1981 – **Equal time bills**

After graduating, Bird works at the Institute for Creation Science on equal time resolutions that the Institute hopes will be adopted by school boards. These resolutions are eventually adapted for state legislators to introduce. Both Arkansas and Louisiana approve versions of these model bills. The bill in Arkansas alludes to a worldwide flood, but does not use any explicitly Biblical language. The Louisiana bill makes no reference to flood geology even though it provides the underpinning for “scientific creationism.”

### 1987 – *Edwards v. Aguillard*

Dealing a crippling blow to creation science, in *Edwards v. Aguillard*, the U.S. Supreme Court declares Louisiana's "Creationism Act" unconstitutional. The law prohibited the teaching of evolution in public schools, unless “creation science” was also taught.

### **The Intelligent Design Period**

After the failure of “creation science,” creationists change tactics again. This time the movement focuses less on teaching creationism, and more on attacking evolution. By claiming that evolution is not universally accepted in the scientific community, creationists seek to discredit Darwin’s theory simply by confusing the issue and muddying the waters.

### 1987 - **A Good Point . . .**

Paul MacKinney, chairman of the Midwest Creation Fellowship, predicts that in the wake of the Supreme Court decision barring “equal time” for creationism, the movement will need to change its public relations and legal strategy in order to portray itself as a victim of discrimination. Soon after the *Edwards* decision was issued, the Institute proposes that opponents of evolution develop an “arguments against evolution” strategy, which is intended to undermine evolution, if not promote creationism outright.

### 1989 – *Of Pandas and People*

*Of Pandas and People: The Central Question of Biological Origins*, by Percival Davis and Dean Kenyon, is published. The biology “textbook” promotes the idea that life must have been created by an “intelligent designer.” The book is widely promoted by Christian Right leader James Dobson.

### 1991 – “**Intelligent Design**”

*Darwin on Trial*, by U.C. Berkeley law professor and born-again Christian Phillip E. Johnson is published. It becomes the handbook for the Intelligent Design movement and actually coins the term “Intelligent Design.”

### 1992 - **The Wedge Strategy**

At a Southern Methodist University conference called “Darwinism: Scientific Inference or Philosophical Preference?” a new strategy is proposed. The idea grows into the so-called “wedge strategy” set forth in a 1999 memorandum by the Discovery Institute (see

below). The wedge strategy aims to insert religion into public schools as the first step towards returning American culture to a pre-scientific state that accepts religious, not scientific, explanations for natural phenomena.

#### **1996 - The Discovery Institute**

The Discovery Institute establishes the Center for the Renewal of Science and Culture to promote Intelligent Design using the Wedge Strategy.

#### **1997 - *Freiler v. Tangipahoa Parish Bd of Ed***

In *Freiler v. Tangipahoa Parish Board of Education*, the United States District Court for the Eastern District of Louisiana rules unconstitutional a public school board policy requiring teachers to read aloud a disclaimer of endorsement of the scientific theory of evolution whenever they teach about evolution, ostensibly to promote "critical thinking." Besides striking down the disclaimer policy, the decision is noteworthy for recognizing that "Intelligent Design" is an alternate description of "creation science." The United States Court of Appeals for the Fifth Circuit upholds the ruling and the Supreme Court declines to hear an appeal of the decision.

#### **1999 - Bleeding Kansas**

The Kansas State Board of Education votes 6-4 to accept diminished science standards that removed virtually all reference to evolution.

#### **2000 - *LeVake v Independent School District***

A state judge in Minnesota dismisses the case of *Rodney LeVake v Independent School District No. 656, et al.* High school biology teacher LeVake had claimed a constitutional right to teach "evidence both for and against the theory" of evolution, contrary to the school district's science curriculum. The decision is upheld Minnesota Court of Appeals and further review is denied by the Minnesota and U.S. Supreme Courts.

#### **2001 - The Santorum Amendment**

Phillip Johnson, a senior fellow at the Discovery Institute, helps draft the Santorum Amendment to what later becomes the *No Child Left Behind Act*, promoting the teaching of Intelligent Design. The amendment – which encourages science teachers to teach criticisms of evolution – is ultimately stripped from the bill, although Intelligent Design proponents consider the effort a victory.

#### **2003 - Johnson Comes Clean (Finally)**

Johnson states on a Christian radio talk show that "Our strategy has been to change the subject a bit, so that we can get the issue of intelligent design, which really means the reality of God, before the academic world and into the schools."

#### **2004 - ID Comes to Dover**

Lawyers for the Thomas More Center, a right-wing Catholic legal group, persuade the Dover, PA school board to teach Intelligent Design in science classes and promise to defend the school board from the inevitable lawsuit.

### **2005 - Bush Sides Against Science**

In August, President Bush states that schoolchildren should be taught about Intelligent Design along with evolution as competing theories. “Teach the controversy” becomes the latest mantra of Creationists.

### **2005 - Court Rejects ID**

From October to December, in *Kitzmiller v. Dover*, a team of lawyers, on behalf of eleven parents of Dover students, argues that Intelligent Design undermines basic definitions of science and is nothing more than religious belief under a new name. The court rules that ID is not science and, as with creationism, that teaching ID as science violates the constitutional separation of church and state. Even before the ruling is made, all six pro-Intelligent Design Dover School Board members are voted off the school board and replaced by a pro-evolution slate.

### **2006 - Kansas Tug-of-War**

In 2002, an election had turned the board back over to pro-science members, who returned the state curriculum to scientifically accepted standards. A 2004 election changed the board’s make-up again. In November 2005, the board changes the state’s science standards to add substantial criticism of evolution. In 2006 primary elections, moderate candidates are again victorious, guaranteeing a pro-science majority after the November general election.

### **2006 - Evolutionary Biology Disappears from Federal Grant List**

In a list of majors eligible for federal Smart Grants – named for the National Science and Mathematics Access to Retain Talent program – the Department of Education leaves off Evolutionary Biology. Majors are listed by Classification of Instructional Programs (CIP) codes, but the DOE leaves a blank line for number 26.1303, the CIP code for Evolutionary Biology.

## **Conclusion**

Despite defeat after defeat, creationists have continued to attack science and refused to accept the constitutional mandate that prohibits government from endorsing any particular religious viewpoint. Over the course of the fight to ensure science’s critical place in the classroom, anti-Darwin activists have reshaped and renamed their tactics, but it’s clear that their goal – to discredit science and promote a specific religious worldview in public schools – has remained the same. No doubt creationists will continue their efforts as the country continues to stave off attacks on quality science as an accepted standard for schools and textbooks.

Learning about religion is an important part of a high school education, but religious instruction shouldn’t shortchange science. Religion is, and should be discussed, in classes on World Religions, the History of Religion, and art and literature classes that draw on religion’s legacy.

People For the American Way Foundation is committed to protecting quality science education and will continue to inform Americans about the dangers of teaching religious beliefs in public school science classrooms.

## **Responding to Right-Wing Attacks on Science Education**

Challenges to science education can take many forms and can take aim at almost any level of the education system, so there's no one-size-fits-all solution to protecting quality science education where you live.

Whatever the circumstances, here are some simple steps you can take to address challenges to evolution and science education if they arise in your community:

### **1 - Identify the source.**

The source of the attack on science could be parents, teachers, administrators, the state or local school board, or a single elected official. Right-wing activists might be acting through or in cooperation with Religious Right organizations.

Find out who is instigating the challenge to help focus your next steps.

### **2 - Contact PFAWF.**

People For the American Way Foundation may be able to help you argue your case or put you in touch with other useful resources. We also want your help in tracking anti-evolution activists who are attacking science education across the country.

### **3 - Find allies.**

Many parents, community members, school administrators and science teachers are also concerned about quality science education. Working with others will help you to speak out more powerfully. Don't overlook local religious leaders -- many mainstream religious leaders will be your allies, and they can effectively make the point that the anti-science advocates don't have a monopoly on faith.

### **4 - Make your case.**

Speak to the person, or people, in positions of authority in the situation. If a teacher is advocating instruction in "bad" science, you may need to arrange a meeting with the principal. If a principal is allowing a teacher to get bullied by anti-science parents, you may need to speak out at a school board meeting. Don't be afraid to go speak to more than one person.

Remember to prepare in advance what you're going to say. Be polite but firm: science class should teach science, not religious belief.

If the attack is coming from a public official, such as the governor or superintendent of schools you may need to speak out publicly with letters to the editor or op-eds submitted to your local newspaper. You and your allies may need to organize your own community group and consider sponsoring a public forum with speakers who can help your neighbors understand the issues and how to address them.

## **Points to Consider**

Use these talking points to help make your case in favor of quality science education. They can assist you in talking to a teacher, speaking out at a school board meeting, or writing a letter to the editor of your local newspaper.

### **Quality Science Education Includes Evolution**

- Evolution is the cornerstone of biology. Students deserve a quality science education, and they can not get one without learning about evolution.
- Evolution has been overwhelmingly accepted by scientific and educational leaders nationwide, and attacks on evolution have been considered and rejected. Science classrooms should be in-step with the very best science available.

### **Students Need Science**

- Students will be expected to have enough scientific understanding to compete in the 21<sup>st</sup> century world. If your local school refuses to give its students a good science education, including the study of evolution, they'll be getting prepared for the 18<sup>th</sup> century instead.
- Students without an understanding of evolution are unprepared for college. They tend to fall behind and lack a firm grasp of the basics of scientific thought and discovery. Our children deserve the best science education, and they need it to live as adults in the 21<sup>st</sup> century.

### **Creationism Isn't Science**

- Science is a way of acquiring knowledge about the natural world through rigorous testing and observable data. Other explanations, like Intelligent Design, are based on super-natural, unobservable and unprovable phenomena and are not science. Non-scientific theories do not belong in a science classroom.
- “Teach the debate” is just another way to attack science. There is no real scientific debate about evolution: it's just political spin. Teaching the debater about evolution would be the same as teaching the debate about gravity – there isn't one. Pretending otherwise for political or religious reasons doesn't change the reality, it only undermines the quality of science our students are taught.
- Intelligent Design is not science; it is religious belief. As such, it cannot and should not be taught in a science classroom. There are, of course, suitable courses (such as World Religions) where students can learn about the beliefs of different faith groups, including those groups' beliefs about the origin of the universe and development of humans. Everyone's right to religion must be respected, and that

means that no particular religion should be given special preference in public school

- The campaign against evolution is not a scientific movement or an educational movement. It is a political campaign being waged by people who think their religious beliefs should be taught as science in our public school classrooms. It's not good science, good education, or good policy.



## **Send a Letter to the Editor**

All newspapers require a full name, address (including zip code), and daytime phone number to be included with the letter. Other than your city, none of your personal information will be published. The newspapers just need it to verify the letter's authenticity.

If sending a letter electronically, send it in plain text in the body of the email. Because of online security concerns, most newspapers will not open email attachments.

You should call to follow up with editorial page to make your letter is printed in a timely fashion. A simple call to the Editorial page can go a long way!