by intellect : RATIONAL

in·tel·li·gent de·sign \in-'te-l&-j&nt di-'zIn\ *n* **1:** The theory of [illegible] holds that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection.

a : having or indicating a high or satisfactory

The College Student's Back to School Guide to Intelligent Design

Resources to help you understand the debate between Darwinian evolution and intelligent design

www.intelligentdesign.org

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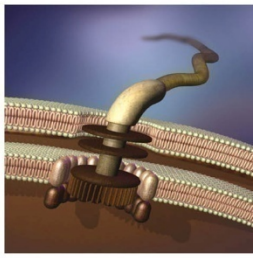

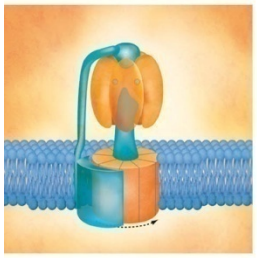

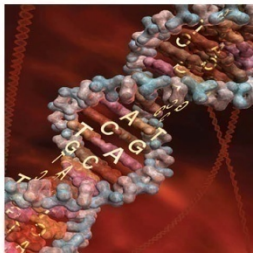

Part III: Information About the Discovery Institute's Summer Seminars on Intelligent Design

Part I: Letter of Introduction: Why This Student's Guide?

Welcome to College, Goodbye to Intelligent Design?

The famous Pink Floyd song that laments, "We don't need no education / We don't need no thought control," is not just the rant of a rebellious mind; it is also a commentary on the failure of education to teach students how to think critically and evaluate both sides of controversial issues.

Few scientists understood the importance of critical thinking better than Charles Darwin. When he first proposed his theory of evolution in *Origin of Species* in 1859, Darwin faced intense intellectual opposition from both the scientific community and the culture of his day. To help restore objectivity to the debate over evolution, Darwin wisely counseled, **"A fair result can be obtained only by fully stating and balancing the facts and arguments on both sides of each question."**[1]

One would think that adopting Darwin's approach to discussing evolution would be uncontroversial, but a lot has changed in the past 150 years. Unfortunately, many evolution lobbyists today reject Darwin's sound advice and are dogmatically opposed to teaching anything but the viewpoint that supports Darwinian evolution.

For example, in 2005, Bruce Alberts, author of a leading college-level biochemistry textbook and former president of the U.S. National Academy of Sciences (NAS), published an editorial in the journal *Cell* suggesting that "intelligent design [ID] should be taught in college science classes but not as the alternative to Darwinism that its advocates demand."[2] Instead, Alberts argued that students should only be taught "why intelligent design is not science."[3]

Unsurprisingly, even major scientific groups like the NAS endorse Alberts' one-sided and dogmatic position. In early 2008 the NAS proclaimed that, "there is no scientific controversy about the basic facts of evolution" and therefore "the intelligent design movement's call to 'teach the controversy' is unwarranted."[4] Is this education, or indoctrination?

You Deserve More Than One-Sided Education

The evolutionist educational agenda seems clear: like judges who would ask a jury to give a verdict after only hearing one side of the case, evolution lobbyists push educators to give students only one-sided presentations of Darwin's theory in the classroom. Are evolutionists secure enough to let their viewpoint be subjected to hard questions? You decide for yourself: In recent years, many evolutionists have openly adopted an educational approach that indoctrinates students in only one side of the debate. Some examples include:

- The president of the University of Idaho instituted a campus-wide classroom speech-code, where "evolution" was "the only curriculum that is appropriate" for science classes.[5]

- Cornell's interim president devoted a State of the University Address "to denounce 'intelligent design,' arguing that it has no place in science classrooms and calling on faculty members in a range of disciplines" to similarly attack ID.[6]

- The University of California at San Diego's website stated that "all first quarter freshmen" were "required to attend" a lecture at the campus's sports arena given by an anti-ID activist, titled, "Why the Judge Ruled Intelligent Design Creationism Out of Science."[7]

- A professor of biochemistry and leading biochemistry textbook author at the University of Toronto stated that a major public research university "should never have admitted" students who support ID, and should "just flunk the lot of them and make room for smart students."[8]

- Biology professors at Southern Methodist University taught a course attacking ID. The course website stated, "You don't have to teach both sides of a debate if one side is a load of crap."[9]

- Three top biology professors at Ohio State University derailed a doctoral student's thesis defense by writing a letter claiming "there are no valid scientific data challenging macroevolution" and therefore the student's teaching about problems with neo-Darwinism was "unethical" and "deliberate miseducation."[10]

- A Biology 101 lecturer at Wesleyan College endorsed teaching students "inaccuracies" that are "wrong" if that enables educators to "gain their trust" and "help them accept evolution."[11]

- At Iowa State University, over 120 faculty members signed a petition denouncing ID and calling on "all faculty members to ... reject efforts to portray Intelligent Design as science."[12]

ID-critics in some arenas have become so intolerant that in 2007, the Council of Europe, the leading European "human rights" organization, adopted a resolution calling ID a potential "threat to human rights"![13]

Go Educate Yourself: Three Tips for Studying Intelligent Design and Evolution

After attending public schools from kindergarten through my masters degree, I learned a few lessons about staying informed while studying a biased and one-sided origins curriculum. My large, inner-city public high school was rich in diversity, and I learned to appreciate a multiplicity of viewpoints and backgrounds. Unfortunately, this diversity did not extend into the biology classroom. There I was told there was one, and only one, acceptable perspective regarding origins: neo-Darwinian theory. As students head back to school this year, I want to share some tips I've learned to help students stay informed on this topic:

Tip #1: Never opt out of learning evolution. In fact, learn about evolution every chance you get.

I hope you are going to college because you want to be educated. But if the above examples are any indication, there's a good chance that when it comes to intelligent design and evolution, your institution has no intent to educate you, but to indoctrinate you in only one side of the issue.

Despite the one-sided nature of education, I found that the more evolutionary biology I took, the more I became convinced that the theory was based upon unproven assumptions, contradictory methodologies, and supported weakly by the data. So my first tip is to never be afraid to study evolution. But when you do study evolution, always think critically and keep yourself proactively informed about a diversity of viewpoints (see tips 2 and 3 below).

Tip #2: Think for yourself, think critically, and question assumptions.

Though my professors rarely (if ever) would acknowledge it, I quickly discovered in college that nearly all evolutionary claims are based mostly upon assumptions. Modern evolutionary theory is assumed to be true, and then the data is interpreted based upon Darwinian assumptions. The challenge for you, the truth-seeking student, is to always try to separate out the raw data from the assumptions that guide interpretation of the data.

Keep your eyes out for circular reasoning. You'll see that very quickly, evolutionary assumptions become "facts," and future data must be assembled in order to be consistent with those "facts."

Realize that evolutionary thinking often employs contradictory logic and inconsistent methodologies. The logic employed to infer evolution in situation A may be precisely the exact opposite of the logic used to infer evolution in situation B. Here are a couple examples:

- Biological similarity between two species implies inheritance from a common ancestor (i.e. vertical common descent) except for when it doesn't (and then they appeal to processes like "convergent evolution" or "horizontal gene transfer").
- Neo-Darwinism predicts transitional forms may be found, but when they're not found, that just shows that the transitions took place too rapidly and in populations too small to (statistically speaking) become fossilized.

- Evolutionary genetics predicts the genome will be full of useless junk DNA, except for when we discover function for such "junk" DNA. Then evolution predicts that cells would never retain useless junk DNA in the first place.

When both A and (not) A imply evolution, you know a theory is based upon an inconsistent scientific methodology. Keep an eye out for assumptions and contradictory methodologies, for they abound in evolutionary reasoning.

Finally, you must be careful to always think for yourself. Everyone wants to be "scientifically literate," but the Darwin lobby pressures people by redefining "scientific literacy" to mean "acceptance of evolution" rather than "an independent mind who understands science and forms its own informed opinions." Evolutionary thinking banks on you letting down your guard and letting its assumptions slip into your thought processes. This is why it's vital that you think for yourself and question assumptions.

Critical thinking showed me what neo-Darwinian evolution was really all about: a set of questionable assumptions, not a compelling conclusion. Self-initiated critical thinking can be a tall task, but seeking the truth is worth every mental calorie expended.

Tip #3: Proactively learn about credible scientific viewpoints that dissent from Darwinism on your own time, even if your classes censor those non-evolutionary viewpoints.

The Darwinian educational establishment doesn't make it easy for you to become objectively informed on the topic of evolution and intelligent design, but with a little work on your own, it can be done. If you want to base your views on a full and complete understanding of the scientific evidence, you may need to take the time to pro-actively research and investigate the pro-ID arguments that many of your faculty may be opposing, misrepresenting, or perhaps even outright censoring. Yes, take courses advocating evolution. But also read material from credible Darwin skeptics to learn about other viewpoints. Only then can you truly make up your mind in an informed fashion.

The purpose of this *College Student's Back to School Guide on Intelligent Design* is to help you in that investigation, and to give you direct rebuttals to some of your professors' misinformation and point you to further resources from academically credible, ID-friendly perspectives. Whatever conclusion you come to, study evolution, think for yourself, think critically, question assumptions, and investigate dissenting viewpoints on your own time!

While academia's intolerance towards the pro-ID viewpoint may be intimidating or discouraging, don't be discouraged: If the evidence were on their side, ID's critics would not resort to such extreme tactics of indoctrination.

And don't forget that most of the scientists and scholars in the ID movement were once students—quietly enduring misinformation or biased instruction from their faculty. Some of them even faced outright persecution due to their views on ID. You are not alone, and with a little proactive self-education, critical thinking, and patience, you will pass this test with flying colors. I wish you the best as you enter this exciting but sometimes difficult-to-handle debate.

Sincerely,

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- Intelligent Design: www.intelligentdesign.org
- Evolution News Blog: www.evolutionnews.org
- ID the Future Podcast: www.idthefuture.com

Part II: Answers to Your Professor's Most Common Misinformed Objections to Intelligent Design

Objection #1: Intelligent Design Is Not Science

The Short Rebuttal: Intelligent design is science because it uses the scientific method to make its claims. Specifically, it detects design by using empirical data to test its positive predictions. ID is based upon empirical data and uses well-accepted scientific methods of the historical sciences in order to detect in nature the types of complexity which we understand, from present-day observations, are derived from intelligent causes. One can disagree with ID, but one cannot characterize it fairly as a "faith-based" argument.

The Long Rebuttal: Intelligent design uses the scientific method to make its claims. The scientific method is commonly described as a four-step process involving observations, hypothesis, experiments, and conclusion.

- ***Observations:*** ID begins with the observation that intelligent agents produce specified complexity (also called complex and specified information, or "CSI"). ID theorist Stephen C. Meyer observes that, "Our experience-based knowledge of information-flow confirms that systems with large amounts of specified complexity (especially codes and languages) invariably originate from an intelligent source from a mind or personal agent."[14]
- ***Hypothesis:*** ID theorists hypothesize that if a natural object was designed, it will contain high levels of CSI.
- ***Experiment:*** Scientists then perform experimental tests upon natural objects to determine if they contain CSI. One easily testable form of CSI is irreducible complexity (IC), which exists in systems composed of "several interacting parts that contribute to the basic function, and where the removal of any one of the parts causes the system to effectively cease functioning."[15] IC can be experimentally tested by reverse-engineering biological structures to see if they require all of their parts to function.
- ***Conclusion:*** Irreducibly complex systems would be unlikely to evolve through a Darwinian process because there exists no evolutionary pathway wherein they could remain functional during each small evolutionary step.[16] IC is a reliable indicator of design because "[i]n all irreducibly complex systems in which the cause of the system is known by experience or observation, intelligent design or engineering played a role the origin of the system."[17] When ID researchers find IC in biology, they conclude that such structures were designed.

ID is an historical science, meaning it employs the principle of uniformitarianism, which holds that the "present is the key to the past." ID thus begins with present-day observations of the products of human or animal intelligence and notes the types of information that result. ID theorists then examine the historical record to determine if those same informational properties exist in nature and therefore warrant explanation by design. Design proponents thus use standard uniformitarian reasoning to apply an empirically-derived cause-and-effect relationship between intelligence and certain types of informational patterns to the historical scientific record in order to account for the origin of various natural phenomena.

ID is not a "faith-based" argument. It is an empirically-based argument that seeks to detect in nature the types of complexity which we know derive from intelligent causes. One can disagree with the conclusions of ID, but one cannot reasonably claim that it is an argument based upon religion, faith, or divine revelation.

More Information:

- *Signature in the Cell: DNA and the Evidence for Intelligent Design* by Stephen C. Meyer (HarperOne, 2009).
- *The Design of Life: Discovering Signs of Intelligence in Biological Systems* by William Dembski and Jonathan Wells (Foundation for Thought and Ethics, 2007) — www.thedesignoflife.net
- *Darwin's Black Box: The Biochemical Challenge to Evolution* by Michael J. Behe (Free Press, 1996).
- "DNA and Other Designs," by Stephen C. Meyer, *First Things* (April, 2000) — www.discovery.org/a/200
- "Intelligent design (ID) has scientific merit…," by Casey Luskin — www.discovery.org/a/7051
- "The Positive Case for Design" — www.ideacenter.org/contentmgr/showdetails.php/id/1394

Objection #2: Intelligent Design Rejects All of Evolutionary Biology

The Short Rebuttal: Intelligent design does not reject all of evolutionary biology. ID "does not challenge the idea of 'evolution' defined as either change over time or common ancestry, but it does dispute Darwin's idea that the cause of biological change is wholly blind and undirected."[18]

The Long Rebuttal: The debate over evolution can be confusing because equivocation has crept into the discussion. Some people use "evolution" to refer to something as simple as small changes in the sizes of bird beaks. Others use the same word to mean something much more far-reaching. Used one way, the term "evolution" isn't controversial at all; used another way, it's hotly debated. Used equivocally, "evolution" is too imprecise to be useful in a scientific discussion. Darwin's theory is not a single idea. Instead, it is made up of several related ideas, each supported by specific arguments:

- ***Evolution #1:*** First, evolution can mean that the life forms we see today are different than the life forms that existed in the distant past. Evolution as "change over time" can also refer to minor changes in features of individual species — changes which take place over a short amount of time. Even skeptics of Darwin's theory agree that this type of "change over time" takes place.
- ***Evolution #2:*** Some scientists associate the word "evolution" with the idea that all the organisms we see today are descended from a single common ancestor somewhere in the distant past. The claim became known as the Theory of Universal Common Descent. This theory paints a picture of the history of life on earth as a great branching tree.
- ***Evolution #3:*** Finally, some people use the term "evolution" to refer to a cause or mechanism of change, the biological process which Darwin thought was responsible for this branching pattern. Darwin argued that natural selection had the power to produce fundamentally new forms of life. Together, the ideas of Universal Common Descent and natural selection form the core of Darwinian evolutionary theory. "Neo-Darwinian" evolution combines our knowledge of DNA and genetics to claim that mutations in DNA provide the variation upon which natural selection acts.

Intelligent design does not conflict with evolution if by "evolution" one simply means "change over time," or even that living things are related by common ancestry (Evolution #1 or Evolution #2). However, the dominant theory of evolution today is neo-Darwinism (Evolution #3), which contends that evolution is driven by natural selection acting on random mutations, an unpredictable and purposeless process that "has no discernable direction or goal, including survival of a species."[19] It is this specific claim made by neo-Darwinism that intelligent design directly challenges.

More Information:

- IntelligentDesign.org — www.intelligentdesign.org/science.php

- *The Edge of Evolution: The Search for the Limits of Darwinism* by Michael Behe (Free Press, 2007).

- "How Should Schools Handle Evolution? Debate it," by John Angus Campbell and Stephen C. Meyer in *USA Today* (August 26, 2005) — www.discovery.org/a/2786

- "The Meanings of Evolution," by Stephen C. Meyer & Michael Newton Keas, in *Darwinism, Design, and Public Education*, edited by John Angus Campbell and Stephen C. Meyer (Michigan State University Press, 2004) — www.discovery.org/a/645

Objection #3: Intelligent Design Has Been Banned From Public Schools by the Federal Courts

The Short Rebuttal: ID has *not* been banned from America's public schools by the U.S. Supreme Court or by any federal appeals court. The only court that has squarely ruled on teaching of ID was one federal district court (the lowest level of the federal court system), whose ruling is not binding precedent outside the small school district in Dover, Pennsylvania. Spend a day in law school and you'll learn that judges get things wrong all the time. In fact, the district court ruling in *Kitzmiller v. Dover* misrepresented the arguments given by pro-ID expert witness biologists and wrongly denied the existence of peer-reviewed scientific articles and research supporting ID. The judge who ruled in the *Kitzmiller v. Dover* case (Judge Jones) copied over 90% of his section on whether ID is science verbatim or nearly verbatim from an inaccurate brief written by plaintiffs' lawyers working with the ACLU. Judge Jones' ruling satisfied the textbook definition of judicial activism, and even leading anti-ID legal scholars have argued his ruling is "dangerous" to religious, scientific, and academic freedom.

The Long Rebuttal: In our 3-tiered system of federal courts, the *Kitzmiller v. Dover* ruling was issued by the lowest level of a federal trial court. No other court case has squarely dealt with the issue of teaching ID. Thus, despite all its fanfare, the *Kitzmiller* ruling *only applies to the parties in that case*; no other school district in the United States is subject to a judge's ruling banning ID. The *Kitzmiller v. Dover* ruling made many factual and legal mistakes. To be specific, Judge Jones:

- ***Incorrectly Defined ID*** by presuming that ID requires "supernatural creation" — a position refuted during the trial by ID proponents who testified in court;
- ***Ignored the positive case for ID*** and falsely claimed that ID proponents make their case solely by arguing against evolution;
- ***Overstepped the bounds of the judiciary and engaged in judicial activism*** by declaring that ID had been refuted when in fact the judge was presented with credible scientific witnesses and publications on both sides showing evidence of a scientific debate;
- ***Used poor philosophy of science*** by presuming that being wrong precludes being scientific;
- ***Blatantly ignored and denied the existence of pro-ID peer-reviewed scientific publications*** that were in fact testified about in his own courtroom;
- ***Blatantly ignored and denied the existence of pro-ID scientific research and data*** that was in fact testified about in his own courtroom;
- ***Adopted an unfair double-standard*** of legal analysis where religious implications, beliefs, and motives count against ID but never against Darwinism;
- ***Violated a fundamental rule of constitutional law*** by declaring a religious belief to be "false" from the bench of a U.S. government court;
- ***Uncritically reused material*** from a legal brief written by attorneys working with the ACLU. Indeed, "90.9% (or 5,458 words) of Judge Jones's 6,004-word section on intelligent design as science was taken virtually verbatim from the ACLU's proposed 'Findings of Fact and Conclusions of Law' submitted to Judge Jones nearly a month before his ruling"[20];
- ***Engaged in textbook judicial activism*** by presuming that it is permissible for a federal judge to define science, settle controversial social questions, settle controversial scientific questions, and settle issues for parties outside of the case at hand so that his ruling would be "a primer" for people "someplace else";
- ***Wrongly—and dangerously—turned science into a voting contest*** by claiming that popularity is required for an idea to be scientific. Stephen Jay Gould, writing with other scientists, eloquently explained why science should never be a popularity contest: "Judgments based on scientific evidence, whether made in a laboratory or a courtroom, are undermined by a categorical refusal even to consider research or views that contradict someone's notion of the prevailing "consensus" of scientific opinion. . . . Automatically rejecting dissenting views that challenge the conventional wisdom is a dangerous fallacy, for almost every generally accepted view was once deemed eccentric or heretical. Perpetuating the reign of a supposed scientific

> orthodoxy in this way, whether in a research laboratory or in a courtroom, is profoundly inimical to the search for truth. … The quality of a scientific approach or opinion depends on the strength of its factual premises and on the depth and consistency of its reasoning, not on its appearance in a particular journal or on its popularity among other scientists.[21]

Arnold H. Loewy, a self-described "liberal First Amendment theorist," has critiqued Judge Jones' judicial opinion by arguing that "it is not the Court's job to distinguish good science from bad in the realm of education."[22] Similarly, anti-ID legal scholar Jay Wexler argues that "the part of *Kitzmiller* that finds ID not to be science is unnecessary, unconvincing, not particularly suited to the judicial role, and even perhaps dangerous both to science and to freedom of religion."[23] Judge Jones' ruling represented an ACLU-scripted attempt to legislate from the bench—not an accurate or fair assessment of intelligent design.

More Information:

- *www.TraipsingingIntoEvolution.com* has an extensive collection of materials relating to the *Kitzmiller v. Dover* case, including legal briefs filed by Discovery Institute.

- *Traipsing Into Evolution: Intelligent Design and the Kitzmiller vs. Dover Decision*, by David K. DeWolf, John G. West, Casey Luskin, Jonathan Witt (Discovery Institute Press, 2006) — www.TraipsingIntoEvolution.com

- "Intelligent Design will Survive *Kitzmiller v. Dover*," by David K. DeWolf, John West, Casey Luskin, in *Montana Law Review*, Vol. 68:7 (Winter, 2007) — www.discovery.org/scripts/viewDB/filesDB-download.php?command=download&id=1372

Objection #4: Intelligent Design Is Just Politics

The Short Rebuttal: Intelligent design has a growing, promising, and thriving scientific research program and by no means is ID "just politics." The charge that ID is "politics" ignores the vast body of pro-ID academic literature that makes scientific arguments for design in nature and ignores the research into intelligent design being conducted by pro-ID scientists who hold respectable academic credentials and present their views in peer-reviewed scientific publications. Additionally, the priority of the ID movement is actually to do research and *avoid* politicizing ID, which is why leading ID organizations oppose mandating ID into public schools.

The Long Rebuttal: Leading ID proponents are well-credentialed scientists and scholars who have conducted scientific research and have made their case for design to the scientific community. Not only do notable ID proponents hold tenured positions at respected universities, but they have have published more than a decade of scholarship in reputable academic books and journals about the empirical evidence supporting design. Pro-ID scientific works have come from prestigiously published scientific sources such as Cambridge University Press, MIT Press, *Proceedings of the Biological Society of Washington*, Michigan State University Press, *Protein Science*, *Rivista di Biologia / Biology Forum*, and *Journal of Molecular Biology*. (Documentation of some of these publications is given in the response to Objection 8: "Intelligent Design Proponents Don't Conduct or Publish Scientific Research.")

Additionally, the Biologic Institute is a vibrant center of research by pro-ID scientists who are conducting both laboratory experiments and computer simulations to study the scientific evidence for intelligent design. Some of the areas of research being conducted at the Biologic Institute include:

- ***The origin and role of information in biology:*** Biologic researchers and collaborators are measuring the functional information in proteins by examining their ability to withstand sequence alterations. Teaming up with mathematicians like William Dembski, they examine the issue of fundamental constraints on search-based acquisition of information. They are also building and testing computational models that mimic the role of genetic information in specifying functions by means of structure-forming sequences.
- ***Functional constraints and design constraints:*** To understand the requirements for life, Biologic scientists are examining the properties of stars that make Earth-like planets possible. They are also looking at the nature of information and codes and probing molecular machines and enzyme folds. This includes modifying, analyzing, and modeling genes and genomes and building model systems to see how they evolve.
- ***Design patterns and hallmarks:*** Biologic scientists make scientific investigations of the way that humans go about designing complex things. Some of the questions they ask include, *What are the universal principles of complex design? What stamp, if any, do these principles leave on things manufactured according to a complex design specification? Are any of these stamps present in living systems?* Are there consistent aesthetic aspects of design—aspects of designed things that are neither functional nor logical necessities, but which are reliably present in human designs? Are any of these present in life?

If anything, the educational policies promoted by leading ID groups show that they do not want to turn ID into a political issue. The ID movement's priority is to see ID advance through scientific research, not to turn ID into a political hot potato. For this reason, Discovery Institute states on its education policy page, "As a matter of public policy, Discovery Institute opposes any effort require the teaching of intelligent design by school districts or state boards of education. Attempts to mandate teaching about intelligent design only politicize the theory and will hinder fair and open discussion of the merits of the theory among scholars and within the scientific community."[24]

More Information:

- Much of the above information was drawn from the Biologic Institute research website — BiologicInstitute.org/research
- The Evolutionary Informatics Lab Website — www.evoinfo.org
- *The Politically Incorrect Guide to Darwinism and Intelligent Design* by Jonathan Wells (Regnery, 2006) — www.darwinismandid.com

Objection #5: Intelligent Design Is a Science Stopper

The Short Rebuttal: ID does not "stop science" because if ID is correct, it brings scientists to a better understanding of reality, thereby advancing scientific knowledge. ID also promises to encourage and open up lines of scientific investigation in fields such as biochemistry, genetics, systematic, cell biology, systems biology, animal biology, bioinformatics, information theory, paleontology, physics, and cosmology. A prime example of ID's promise to further biology and medicine is research into "junk" DNA, where ID predicts function but Darwinism has hindered such investigations.

The Long Rebuttal: Intelligent design does not stop science. Science is supposed to be an empirical search for the truth, so if intelligent design is the correct answer, then concluding ID would further the progress of science. Moreover, ID promises to open up new avenues of scientific research in fields such as:

- ***Biochemistry,*** where ID encourages scientists to recognize and understand the origin of complex and specified information in proteins and DNA.
- ***Genetics,*** where ID encourages scientists to seek function for so-called "junk" DNA.
- ***Systematics,*** where ID encourages scientists to understand whether similarities between living species, including examples of extreme genetic "convergence," are best explained by ID rather than Darwinism.
- ***Cell biology,*** where ID encourages scientists to view the cell as "designed structures rather than accidental by-products of neo-Darwinian evolution,"[25] allowing scientists to better understand molecular machines.
- ***Systems biology,*** where ID encourages biologists to look at various biological systems as integrated components of larger systems that are designed to work together in a top-down, coordinated fashion.
- ***Animal biology,*** where ID encourages scientists to seek function for allegedly "vestigial" structures.
- ***Bioinformatics,*** where ID encourages scientists to look for new layers of information and functional language embedded in the genetic codes, as well as other codes within biology.
- ***Information theory,*** where ID encourages scientists to understand where intelligent causes are superior to natural causes in producing certain types of information.
- ***Paleontology,*** where ID encourages scientists to understand how the irreducibly complex nature of biological systems can predict punctuated change and stasis throughout the history of life.
- ***Physics and Cosmology,*** where ID encourages scientists to investigate and discover instances of fine-tuning of the laws of physics, which uniquely allow for the existence of advanced forms of life.

To elaborate on the second item, ID stands in contrast to neo-Darwinism in that it has encouraged scientists to seek function for non-coding DNA, also called "junk" DNA. As William Dembski wrote in 1998, "on an evolutionary view we expect a lot of useless DNA. If, on the other hand, organisms are designed, we expect DNA, as much as possible, to exhibit function. … Design encourages scientists to look for function where evolution discourages it."[26] A 2003 article in *Scientific American* exposes how evolutionary assumptions have stopped research into junk-DNA. According to the article, "introns," a type of non-coding DNA found within genes, "were immediately assumed to be evolutionary junk." But once it was discovered that introns play vital roles regulating gene production, a leading biologist was quoted saying the failure to recognize function for intronic DNA might have been "one of the biggest mistakes in the history of molecular biology."[27] Under an ID perspective, such mistakes might have been avoided much earlier, thus furthering our knowledge of biochemistry and progress in medicine.

In conclusion, ID is not "giving up" or "stopping science." Rather, ID is invoking precisely the correct causal mechanism to explain the origin of information in biology. When critics claim that one cannot invoke ID because it will "stop science," it is they who are actually stopping science.

More Information:

- *Molecular Machines: Experimental Support for the Design Inference* by Michael J. Behe — www.discovery.org/a/54
- *The Privileged Planet: How our Place in the Cosmos Is Designed for Discovery*, by Guillermo Gonzalez and Jay Richards (Regnery, 2004) — www.privilegedplanet.com
- "Using Intelligent Design Theory to Guide Scientific Research," by Jonathan Wells, in *Progress in Complexity, Information, Design*, 3.1.2 (November 2004) — www.iscid.org/papers/Wells_TOPS_051304.pdf

Objection #6: Intelligent Design Is "Creationism" and Based on Religion

The Short Rebuttal: ID is simply an effort to empirically detect whether the "apparent design" in nature acknowledged by virtually all biologists is genuine design (the product of an intelligent cause) or is simply the product of an undirected process such as natural selection acting on random variations. Creationism typically starts with a religious text and tries to see how the findings of science can be reconciled to it. ID starts with the empirical evidence of nature and seeks to ascertain what scientific inferences can be drawn from that evidence. Unlike creationism, ID does not claim that modern biology can identify whether the intelligent cause detected through science is supernatural. The charge that ID is "creationism" is a rhetorical strategy on the part of critics who wish to delegitimize ID without actually addressing the merits of its case.

The Long Rebuttal: ID as a scientific theory limits its scientific claims to what can be learned from the empirical data and does not attempt to address religious questions about the identity or metaphysical nature of the designer. This makes ID distinct from creationism and shows that ID respects the limits of scientific inquiry. Setting any potential failings of methodological naturalism aside, ID does not violate methodological naturalism's requirements that scientific claims be based upon observable, repeatable, and reliable scientific investigations. Those who try to equate ID with creationism usually misconstrue the following facts about ID:

- ***ID detects design, not designers:*** Many critics mistakenly think ID is focused upon studying the designer, alleging that it specifically invokes supernatural forces or a deity. But ID is not focused on studying the actual intelligent cause responsible for life. Instead, ID studies objects in nature to determine if natural objects bear an informational signature indicating that an intelligent cause was involved in their origin.
- ***ID is limited in its scope:*** ID limits its claims to what can be learned from the empirical data, meaning that it does not try to address religious questions about the identity or nature of the designer. While the empirical data can allow us to study natural objects and determine whether they arose from an intelligent cause, the empirical data may not allow us to determine the identity or metaphysical nature of the intelligent cause.
- ***Principled, not rhetorical:*** The refusal of ID proponents to use ID to draw scientific conclusions about the nature or identity of the designer is principled rather than merely rhetorical. ID's non-identification of the designer stems from a desire to take a scientific approach, respect the limits of scientific inquiry, and not inject religious discussions about theological questions into science.
- ***Critics admit ID is different from creationism:*** Even ID's leading critics admit that ID is not creationism when defined as young earth creationism ("YEC"). As Eugenie Scott writes, "most ID proponents do not embrace a Young Earth, Flood Geology, and sudden creation tenets associated with YEC."[28]
- ***ID doesn't appeal to the supernatural:*** When creationism is defined broadly (i.e. the view that "supernatural" powers created life),[29] ***ID still is not creationism.*** In its 1987 *Edwards v. Aguillard* ruling, the U.S. Supreme Court basically adopted this definition, finding that creationism was religion because it referred to a "supernatural creator."[30] Since ID does not try to determine whether the designer is natural or supernatural, it lacks the key characteristic that causes creationism to be unscientific and unconstitutional.
- ***ID uses scientific methods:*** Creationists base their claims upon faith or divine revelation; ID makes its arguments using the scientific data, not faith or divine revelation.
- ***Implications don't disqualify ID from being science:*** Just like neo-Darwinism, the scientific theory of intelligent design may have *implications* for religion, but it is not *based* on religion.

More Information:

- *The Design Revolution: Answering the Toughest Questions About Intelligent Design* by William Dembski (InterVarsity Press, 2004).
- "Intelligent Design is not Creationism," by Stephen C. Meyer, *The Daily Telegraph* (February 9, 2006) — www.discovery.org/a/3191
- "ID Does Not Address Religious Claims About the Supernatural," by Casey Luskin — www.discovery.org/a/7501
- "Intelligent Design and Creationism Just Aren't the Same," by John G. West, *Research News and Opportunities in Science and Theology* (December, 2002) — www.discovery.org/a/1329

Objection #7: Intelligent Design is Religiously-Motivated

The Short Rebuttal: Even if this happened to be true, *so what?* In science, motives don't matter—only the evidence matters. Some religiously motivated scientists (such as Johannes Kepler and Isaac Newton) turned out to be right. The fact that they were religiously motivated did not harm their science. Moreover, many leading evolutionists have expressed anti-religious motives. If ID critics claim that the religious motives of ID-proponents make ID unscientific, then to be consistent they must accept that the anti-religious motives of leading evolutionists make Darwinism unscientific. Harping upon the alleged religious motives of ID-proponents also offends the principles behind the First Amendment, which promise that all persons—whether religious or not—have equal freedom to make their case to the public square.

The Long Rebuttal: Pro-ID scholars have published over a decade of scholarship in reputable academic books and journals about the empirical evidence supporting design. Critics often avoid rebutting this scholarship by instead trotting out quotes from ID proponents discussing their own personal religious beliefs, motives, and affiliations, or discussing the larger philosophical implications they draw from ID, to allege that ID is not science, but religion. These common attacks against ID are both logically fallacious and hypocritical for at least three reasons:

First, such arguments offend the First Amendment's protections on religious freedom: Scientists have freedom of religion, and their scientific views should not be disqualified due to their alleged religious motives or beliefs. Religious beliefs and motives of a scientist are irrelevant to whether they are scientifically correct.

Second, in science, the motives or personal religious beliefs of scientists don't matter; only the evidence matters. For example, the great scientists Johannes Kepler and Isaac Newton were inspired to their scientific work by their religious convictions that God would create an orderly, rational universe with comprehensible physical laws that governed the motion of the planets. They turned out to be right—not because of their religious beliefs but because the scientific evidence validated their hypotheses. (At least, Newton was thought to be right until Einstein came along!) Their personal religious beliefs, motives, or affiliations did nothing to change the fact that their scientific theories had inestimable scientific merit that helped lay the foundation for modern science.

Third, evolutionists who raise objections to ID based upon the alleged religious motives of ID proponents make a highly hypocritical argument, for many leading evolutionists have expressed blatantly anti-religious motives. This fact does ***not*** disqualify evolution from being scientific, but it shows that the religious or anti-religious motives and beliefs of scientists do not make a theory unscientific. Leading proponents of Darwinian evolution frequently express anti-religious motives or raise the cultural and metaphysical implications of the theory in their writings. For example:

- ***Eugenie Scott*** is Executive Director of the National Center for Science Education (NCSE) and was called by the scientific journal *Nature* "perhaps the nation's most high-profile Darwinist."[31] But Scott is also a public signer of the Third Humanist Manifesto, an aggressive statement of the humanist agenda to create a world with "without supernaturalism" based upon the view that "[h]umans are … the result of unguided evolutionary change" and the universe is "self-existing."[32]
- ***Barbara Forrest***, another prominent pro-evolution activist believes that "philosophical naturalism" is "the only reasonable metaphysical conclusion."[33] Dr. Forrest also sits on the Board of Directors of the New Orleans Secular Humanist Association,[34] an associate member of the American Humanist Association, which publishes the Humanist Manifesto III.[35] Forrest is also on the board of the NCSE.[36]
- ***Richard Dawkins*** is Oxford University's Charles Simonyi Professor for the Public Understanding of Science and is probably the most famous evolutionist in the world. Dawkins argues that belief in God is a "delusion"[37] and that "Darwin made it possible to become an intellectually fulfilled atheist."[38] Dawkins has stated his goal is "to kill religion,"[39] and when he received an award from the American Humanist

Association, he declared that "faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate."[40]

- ***Douglas Futuyma*** has declared in a popular college-level textbook that "[b]y coupling undirected, purposeless variation to the blind, uncaring process of natural selection, Darwin made theological or spiritual explanations of the life processes superfluous."[41]
- ***Stephen Jay Gould***, a leading paleontologist before his death in 2003, discussed the "radical philosophical content of Darwin's message" and its denial of purpose in the universe: "First, Darwin argues that evolution has no purpose. . . . Second, Darwin maintained that evolution has no direction. . . . Third, Darwin applied a consistent philosophy of materialism to his interpretation of nature. Matter is the ground of all existence; mind, spirit, and God as well, are just words that express the wondrous results of neuronal complexity."[42]
- ***William Provine***, an evolutionary biologist at Cornell University, has similarly stated that "belief in modern evolution makes atheists of people" and that "[o]ne can have a religious view that is compatible with evolution only if the religious view is indistinguishable from atheism."[43]
- ***Steven Weinberg***, a Nobel Laureate in physics and public advocate one-sided pro-Darwin-only dogmatic evolution education,[44] says that his scientific career is motivated by a desire to disprove religion: "I personally feel that the teaching of modern science is corrosive of religious belief, and I'm all for that! One of the things that in fact has driven me in my life, is the feeling that this is one of the great social functions of science—to free people from superstition."[45] Weinberg elaborates on what he means by "superstition," as he hopes that "this progression of priests and ministers and rabbis and ulamas and imams and bonzes and bodhisattvas will come to an end, that we'll see no more of them. I hope that this is something to which science can contribute and if it is, then I think it may be the most important contribution that we can make."[46]
- ***In November, 2006 the New York Times*** covered a conference held at the scientific research hub The Salk Institute. The story reported a striking agenda on the part of leading scientists present at the conference to stifle religious belief in order to promote Darwinism to the public: "one speaker after another called on their colleagues to be less timid in challenging teachings about nature based only on scripture and belief." The scientists were worried that scientific theories like evolution by natural selection and other views are "losing out in the intellectual marketplace," and one scientist sarcastically said the viewpoints expressed at the conference "have run the gamut from A to B. *Should we bash religion with a crowbar or only with a baseball bat*?"[47]

These examples are not given to argue that evolution is not science, or that one cannot accept evolution and religion. In science, the personal religious (or anti-religious) motives of scientists don't matter; only the evidence matters. Neither ID nor neo-Darwinian evolution should be disqualified from being scientific simply because of the religious (or anti-religious) motives of their proponents.

More Information:

- *Darwin Day in America: How Politics and Culture have been Dehumanized in the Name of Science* by John G. West (ISI Books, 2007) — www.darwindayinamerica.com
- *Darwin's God: Evolution and the Problem of Evil* by Cornelius G. Hunter (Brazos Press, 2001).
- "Any larger philosophical implications of intelligent design, or any religious motives, beliefs, and affiliations of ID proponents, do not disqualify ID from having scientific merit," by Casey Luskin — www.discovery.org/a/7081

Objection #8: ID Proponents Don't Conduct or Publish Scientific Research

The Short Rebuttal: This claim is flatly false. ID proponents do conduct scientific research and do publish in mainstream scientific venues. Research supporting ID concepts and arguments has been published and discussed in *Journal of Molecular Biology*, Cambridge University Press, *Protein Science*, *Chaos, Solitons and Fractals*, *Proceedings of the Biological Society of Washington, PLOS Biology*, and *Annual Review of Genetics*.

The Long Rebuttal: Criticss often claim that intelligent design proponents do not publish peer-reviewed scientific papers or that they do not do scientific research. Both of these claims are demonstrably false.

Regarding research conducted by the intelligent design movement, a research lab called the Biologic Institute conducts scientific research into intelligent design. A summary of its research and list of selected research publications produced by affiliates of the lab may be found on its website (listed below). Some of this research was also discussed in response to the Objection 4: "Intelligent Design is Just Politics."Regarding peer-reviewed scientific research, scientists and theorists who support the theory of intelligent design have published their work in a variety of appropriate technical venues, including peer-reviewed scientific journals, peer-reviewed scientific books (some published by university presses), peer-edited scientific anthologies, peer-edited scientific conference proceedings, and other mainstream scientific sources. Some examples include:

- ***Journal of Molecular Biology:*** Douglas A. Axe, "Estimating the Prevalence of Protein Sequences Adopting Functional Enzyme Folds," *Journal of Molecular Biology,* Vol. 341: 1295-1315 (2004); Douglas A. Axe, "Extreme Functional Sensitivity to Conservative Amino Acid Changes on Enzyme Exteriors," *Journal of Molecular Biology,* Vol. 301: 585-595 (2000). These articles report the results of the author's mutational sensitivity experiments on proteins that demonstrate that there are high levels of complex and specified information within proteins. According to the author, these findings "call into question the adequacy of chance, and that certainly adds to the case for intelligent design."[48]
- ***Proceedings of the Biological Society of Washington:*** Stephen Meyer, "The Origin of Biological Information and the Higher Taxonomic Categories," *Proceedings of the Biological Society of Washington*, Vol. 117: 213-239 (2004). This article reviews research in the fields of information theory, paleontology, and biochemistry and concludes, "An experience-based analysis of the causal powers of various explanatory hypotheses suggests purposive or intelligent design as a causally adequate--and perhaps the most causally adequate--explanation for the origin of the complex specified information required to build the Cambrian animals and the novel forms they represent."
- ***Protein Science:*** Michael .J. Behe and David W. Snoke, "Simulating Evolution by Gene Duplication of Protein Features That Require Multiple Amino Acid Residues," *Protein Science*, Vol. 13: 2651-2664 (2004). This article reports the authors' research into computer simulations of evolution that show that various protein-protein interactions could not evolve within normal population sizes.
- ***Proceedings of the Second International Conference on Design & Nature:*** Scott Minnich and Stephen C. Meyer, "Genetic Analysis of Coordinate Flagellar and Type III Regulatory Circuits," *Proceedings of the Second International Conference on Design & Nature*, Rhodes Greece, edited by M.W. Collins and C.A. Brebbia (WIT Press, 2004). This article underwent conference peer review and reports experimental research that refutes key claims in evolutionist attempts to explain how the flagellum evolved.
- ***Dynamical Genetics:*** W.-E. Lönnig, "Dynamic genomes, morphological stasis and the origin of irreducible complexity," in *Dynamical Genetics*, Pp. 101-119. This peer-reviewed book contribution to a scientific anthology outlines much of the scientific research supporting irreducible complexity, specified complexity, and intelligent design and describes research programs that are being inspired by the theory of ID.

More Information:

- Peer-Reviewed & Peer-Edited Scientific Publications Supporting the Theory of Intelligent Design (Annotated) — www.discovery.org/a/2640
- "The Origin of Biological Information and the Higher Taxonomic Categories," by Stephen Meyer, in *Proceedings of the Biological Society of Washington*, Vol. 117: 213-239 (2004) — www.discovery.org/a/2177

Objection #9: Intelligent Design Has Been Refuted by the Overwhelming Evidence for Neo-Darwinian Evolution

The Short Rebuttal: The evidence for neo-Darwinian evolution is not "overwhelming." While it remains the dominant view within biology, a growing minority of scientists dissent from Darwin. Over 800 doctoral scientists have signed a public statement proclaiming, "We are skeptical of claims for the ability of random mutation and natural selection to account for the complexity of life."[49] Signers of the list include members of the national academies of science in the United States, Russia, Poland, the Czech Republic, and India (Hindustan), as well as faculty and researchers from a wide range of universities and colleges, including Princeton, MIT, Dartmouth, Ohio State, Tulane, and the University of Michigan. Biological and chemical evolution lack supporting evidence in fields such as genetics, biochemistry, taxonomy and systematics, paleontology, and the chemical origins of life.

The Long Rebuttal: Biological and chemical evolution lack supporting evidence in many scientific fields:

Genetics: Mutations Tend to Cause Harm and Do Not Build Complexity. Darwinian evolution relies on random mutations which are selected by natural selection, a blind and unguided process that has no goals. Such a random and undirected process tends to harm organisms. It does not seem capable of improving organisms or building new, complex systems. Many scientists have questioned whether natural selection acting upon random mutation is sufficient to generate new species or new complex biological features. Leading biologist Lynn Margulis criticizes the standard Darwinian mechanism by stating that the "Darwinian claim to explain all of evolution is a popular half-truth whose lack of explicative power is compensated for only by the religious ferocity of its rhetoric."[50] She further observes that "new mutations don't create new species; they create offspring that are impaired."[51]

Stanley Salthe, author of an evolutionary biology textbook, proclaims, "I have become an apostate from Darwinian theory and have described it as part of modernism's origination myth."[52] Philosopher Jerry Fodor recently wrote that "at a time when the theory of natural selection has become an article of pop culture, it is faced with what may be the most serious challenge it has had so far."[53] National Academy of Sciences member Phil Skell also questions the explanatory utility of natural selection, observing that, "Darwinian evolution—whatever its other virtues—does not provide a fruitful heuristic in experimental biology."[54]

Biochemistry: Unguided and Random Processes Cannot Produce Cellular Complexity. Cells contain incredible complexity, similar to machine technology but dwarfing anything produced by humans. Cells use circuits, miniature motors, feedback loops, encoded language, and even error-checking machinery which decodes and repairs our DNA. Past U.S. National Academy of Sciences President Bruce Alberts (who opposes ID) has described this complexity in the journal *Cell* as an elaborate factory: "The entire cell can be viewed as a factory that contains an elaborate network of interlocking assembly lines, each of which is composed of a set of large protein machines."[55] But could such integrated complexity evolve in a stepwise, Darwinian fashion? Michael Behe recalls that in *Origin of Species*, Darwin admitted that if "any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down."[56] According to Behe, "by opening the ultimate black box, the cell," modern science "has pushed Darwin's theory to the limit."[57]

The simplest cell requires hundreds of genes, numerous complex biological machines and biochemical pathways, and a fully functional genetic code in order to survive. Darwinian evolution—blind natural selection acting on random mutations—has failed to provide Darwinian explanations for how basic cellular biochemistry might have evolved. Five years after Behe published *Darwin's Black Box*, biochemist Franklin Harold stated in an Oxford University Press monograph that "there are presently no detailed Darwinian accounts of the evolution of any biochemical or cellular system, only a variety of wishful speculations."[58]

Paleontology: The Fossil Record Lacks Intermediate Fossils. The fossil record's overall pattern is one of abrupt explosions of new biological forms, where possible candidates for evolutionary transitions are the exception, not the rule. For example, in the Cambrian Explosion (530 million years ago), nearly all the major body plans of animals appear in a geological instant without any apparent evolutionary precursors.

In 1979, paleontologist David Raup wrote that "we are now about 120 years after Darwin, and knowledge of the fossil record has been greatly expanded ... ironically, we have even fewer examples of evolutionary transition than we had in Darwin's time."[59] Evolutionists may claim that there are a multitude of transitional forms known from the fossil record, yet a textbook published over 20 years later acknowledges that the fossil record has not given clues to help explain the origin of animal phyla in the Cambrian explosion: "Most of the animal phyla that are represented in the fossil record first appear, 'fully formed,' in the Cambrian some 550 million years ago...The fossil record is therefore of no help with respect to the origin and early diversification of the various animal phyla."[60]

This is not the only such explosion in the fossil record. Paleontologists have observed a fish explosion, a plant explosion, a bird explosion, and even a mammal explosion. Abrupt explosions of mass biological diversity seem to be the rule, not the exception, for the fossil record. Transitions plausibly documented by fossils seem to be the rare exception. As evolutionary biologist, the late Ernst Mayr, wrote in 2001, "When we look at the living biota, whether at the level of the higher taxa or even at that of the species, discontinuities are overwhelmingly frequent. . . . The discontinuities are even more striking in the fossil record. New species usually appear in the fossil record suddenly, not connected with their ancestors by a series of intermediates."[61] This phenomenon exists not only at the species level but also among higher taxa, as one zoology textbook admits: "Many species remain virtually unchanged for millions of years, then suddenly disappear to be replaced by a quite different, but related, form. Moreover, most major groups of animals appear abruptly in the fossil record, fully formed, and with no fossils yet discovered that form a transition from their parent group."[62]

Taxonomy and Systematics: Biologists Have Failed to Construct Darwin's Tree of Life. Biologists hoped that DNA evidence would reveal a grand tree of life where all organisms are clearly related. Yet trees describing the alleged ancestral relationships between organisms based upon one gene or biological characteristic commonly conflict with trees based upon a different gene or characteristic. This implies a challenge to universal common descent, the hypothesis that all organisms share a single common ancestor.

Evolutionists commonly assert that shared amino acids in genes common to many types of organisms indicate that all life shares a common ancestor. This circular argument rests upon the assumption that shared genetic similarities must be the result of common descent. Intelligent design is not necessarily incompatible with common ancestry, but it must be noted that intelligent agents commonly re-use parts that work in different designs. Thus, similarities in genetic sequences may also be generated as a result of functional requirements and common design rather than by common descent.

Darwin's tree of life—the notion that all living organisms share a universal common ancestor—has faced increasing difficulties in the past few decades. Phylogenetic trees based upon one fundamental gene or protein often conflict with trees based upon another gene or protein. In fact, this problem is particularly acute when one studies the "ancient" genes at the base of the tree of life, which many evolutionists wrongly claim demonstrate universal common ancestry. As W. Ford Doolittle explains, "Molecular phylogenists will have failed to find the 'true tree,' not because their methods are inadequate or because they have chosen the wrong genes, but because the history of life cannot properly be represented as a tree."[63] Doolittle attributes his observations to gene-swapping among microorganisms at the base of the tree. But Carl Woese, the father of evolutionary molecular systematics, finds that such problems exist beyond the base of the tree: "Phylogenetic incongruities [conflicts] can be seen everywhere in the universal tree, from its root to the major branchings within and among the various taxa to the makeup of the primary groupings themselves."[64]

Evolutionists will commonly cite the congruence of the Cytochrome C tree with standard evolutionary trees as confirming theories of common descent. They rarely discuss the Cytochrome B tree, which has severe conflicts

with the standard phylogeny of animal groups.[65] Cherry-picking data does not inspire confidence in the methods used to construct phylogenetic trees and advocate for common descent.

Looking higher up the tree, a recent study conducted by Darwinian scientists tried to construct a phylogeny of animal relationships but concluded that "[d]espite the amount of data and breadth of taxa analyzed, relationships among most [animal] phyla remained unresolved."[66] The basic problem is that phylogenetic trees based upon one gene or other characteristic will commonly conflict with trees based upon another gene or macro-characteristic. As a review article in *New Scientist* recounted, even among higher organisms "[t]he problem was that different genes told contradictory evolutionary stories," leading one scientist to say that "We've just annihilated the tree of life."[67] Indeed, the Cambrian explosion, where nearly all of the major living animal phyla (or basic body plans) appeared over 500 million years ago in a geological instant, also raise a serious challenge to Darwinian explanations of common descent.

Chemical Evolution: The Chemical Origin of Life Remains an Unsolved Mystery. The mystery of the origin of life is unsolved, and all existing theories of chemical evolution face major problems. Basic deficiencies in chemical evolution include a lack of explanation for how a primordial soup could arise on the early earth's hostile environment, or how the information required for life could be generated by blind chemical reactions. Leading evolutionary biologist Massimo Pigliucci has admitted that "we really don't have a clue how life originated on Earth by natural means,"[68] and leading origin of life researcher David Deamer asserts that "genetic information more or less came out of nowhere by chance assemblages of short polymers."[69]

Origin of life theorists have struggled simply to account for the origin of pre-biological organic chemicals on the early earth, with little success. For example, it is now known that the gasses used in the famous Miller-Urey experiments were not present on the early earth. But this is only the beginning of the problem. When trying to "make" the first life-form, scientists cannot rely upon Darwinian processes. Darwinian evolution requires replication, and prior to the origin of life there was no replication. Origin of life theorist Robert Shapiro explains that an explanation for the first self-replicating molecule "has not yet been described in detail or demonstrated" but "is taken for granted in the philosophy of dialectical materialism."[70] Accounting for the origin of a self-replicating molecule would still not explain how modern cells arose. Our DNA code requires an irreducibly complex system requiring the information in DNA, the enzymes that assist DNA's replication and protection, a protective cell membrane, and a complex system of machinery used to transcribe and translate language of DNA into protein. Faced with the complexity of this system, biologist Frank Salisbury lamented in 1971 that "the entire system must come into being as one unit, or it is worthless. There may well be ways out of this dilemma, but I don't see them at the moment."[71]In 1995, leading biologists John Maynard Smith and Eors Szathmary explained that accounting for the origin of this system remains "perhaps the most perplexing problem in evolutionary biology" because "the existing translational machinery is at the same time so complex, so universal and so essential that it is hard to see how it could have come into existence or how life could have existed without it."[72]

Scientists may one day create life in the lab, but they will have done so using intelligent design. The theory that life could have originated via blind natural chemical processes and sheer dumb luck remains unexplained.

More Information:

- *Explore Evolution: The Arguments For and Against Neo-Darwinism* by Stephen C. Meyer, Scott Minnich, Paul Nelson, Jonathan Moneymaker, Ralph Seelke (Hill House, 2007) — www.exploreevolution.com
- *Darwin on Trial* by Phillip Johnson (InterVarsity Press 1991).
- *The Mystery of Life's Origin: Reassessing Current Theories*, by Charles B. Thaxton, Walter Bradley, and Roger Olsen (Philosophical Library, 1984).
- *Icons of Evolution: Why Much of What We Teach about Evolution is Wrong*, by Jonathan Wells (Regnery, 2000) — www.iconsofevolution.com
- "Survival of the Fakest," by Jonathan Wells, *American Spectator* (January, 2001) — www.discovery.org/a/1209

Part III: Information About the Discovery Institute's Summer Seminars on Intelligent Design

Each summer the Center for Science and Culture at Discovery Institute hosts an extraordinary opportunity for college students in the natural sciences, social sciences, and humanities to participate in an intensive nine-day seminar program that will prepare them to make research contributions advancing the growing science of intelligent design. Two seminars are available:

- **Intelligent Design in the Natural Sciences** is designed for college-level juniors, seniors, and first-year graduate students who intend to pursue graduate studies in the natural sciences or the philosophy of science.
- **Intelligent Design in the Social Sciences and Humanities** is designed for college-level juniors, seniors, and first-year graduate students who intend to pursue graduate studies in the social sciences (including law) or the humanities.

Both seminars run concurrently and explore cutting-edge ID work in molecular biology, biochemistry, embryology, developmental biology, zoology, paleontology, computational biology, ID-theoretic mathematics, cosmology, physics, philosophy of science, philosophy of mind, evolutionary ethics, bioethics, criminology, law, education, and economics. Each seminar also includes frank treatment of the academic realities that ID researchers confront in graduate school and beyond, and strategies for dealing with them.

The seminar focusing on ID in the natural sciences will explore the scientific issues in greater technical detail and include a visit to a laboratory where molecular biological research is pursued from an ID perspective. The seminar on ID in the social sciences and humanities will give more in-depth attention to the social impact of science, the moral implications of science, and legal issues surrounding the debate between neo-Darwinism and intelligent design. Participants in both seminars will benefit from classroom instruction and interaction with prominent ID researchers and scholars such as Jonathan Wells, Stephen Meyer, Paul Nelson, Douglas Axe, Scott Minnich, Bruce Gordon, John West, and Casey Luskin.

Do you have a commitment to truth and to following the evidence where it leads? Do you have the desire, the vision and the determination necessary to breathe new purpose into the scientific enterprise and influence its self-understanding in ways that will benefit both science and humanity? Apply to become one of a select group of students participating in these exciting workshops.

Admission Requirements: You must be currently enrolled in a college or university as a junior, senior, or first-year graduate student. Required application materials include a resume/cv, a copy of your academic transcript, a short statement of your interest in intelligent design and its perceived relationship to your career plans and field of study, and either a letter of recommendation from a professor who knows your work and is friendly toward ID, or a phone interview with Dr. Bruce Gordon, CSC Research Director.

Room, Board, and Travel Costs: Students selected for these seminars will have their travel costs to Seattle fully or partly covered and will be provided with course materials, lodging and most meals.

Application deadline: Students can apply or find out more information by going to **www.discovery.org/summerseminar**. Questions should be directed to Dr. Bruce Gordon, Research Director, Center for Science and Culture at bgordon@discovery.org.

For more information, see www.discovery.org/summerseminar

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[1] Charles Darwin, *The Origin of Species*, ed. J. W. Burrow (London: Penguin Group, 1985), (1859), 66.
[2] Bruce Alberts, "A Wakeup Call for Science Faculty," *Cell*, Vol. 123:739-741 (Dec. 2, 2005).
[3] Bruce Alberts, "A Wakeup Call for Science Faculty," *Cell*, Vol. 123:739-741, (Dec. 2, 2005).
[4] See Casey Luskin, "The Facts about Intelligent Design: A Response to the National Academy of Sciences' Science, Evolution, and Creationism" at http://www.discovery.org/a/4405
[5] Timothy P. White, "Letter to the University of Idaho Faculty, Staff and Students" (October 4, 2005), http://www.president.uidaho.edu/default.aspx?pid=85947
[6] Scott Jaschik, "A Call to Action Against Intelligent Design," *Inside Higher Education* (October 24, 2005) at http://www.insidehighered.com/news/2005/10/24/id
[7] University of California, San Diego Forces All Freshmen To Attend Anti-ID Lecture, http://www.evolutionnews.org/2006/11/university_of_california_san_d.html
[8] See "Leading Biochemistry Textbook Author: Pro-ID undergraduates 'should never have [been] admitted,'" at http://www.evolutionnews.org/2006/11/author_of_leading_biochemistry.html
[9] See "How to Teach Intelligent Design, SMU Style: 'You don't have to teach both sides of a debate if one side is a load of crap,' at http://www.evolutionnews.org/2007/09/how_to_teach_intelligent_desig.html
[10] The plight of Bryan Leonard plight is described in Jonathan Wells, *The Politically Incorrect Guide to Darwinism and Intelligent Design*, pgs. 189-190 (Regnery, 2006).
[11] See "Lying in the Name of Indoctrination," at http://www.evolutionnews.org/2008/08/lying_in_the_name_of_indoctrin.html
[12] See "Intelligent Design torpedoes tenure," at http://www.worldnetdaily.com/news/article.asp?ARTICLE_ID=55774 (May 19, 2007) and "Riled by Intelligent Design," at http://www.nytimes.com/2005/11/06/education/edlife/HedIntelligent.html
[13] Council of Europe, The dangers of creationism in education, September 17, 2007, http://assembly.coe.int/main.asp?Link=/documents/workingdocs/doc07/edoc11375.htm
[14] Stephen C. Meyer, "The origin of biological information and the higher taxonomic categories," *Proceedings of the Biological Society of Washington*, Vol. 117(2):213-239 (2004).
[15] Michael J. Behe, *Molecular Machines: Experimental Support for the Design Inference*, in *Intelligent Design Creationism*, in *Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives*, pg. 247 (Robert T. Pennock ed., MIT Press 2001).
[16] As Darwin wrote in *Origin of Species*, "If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down.")
[17] Scott A. Minnich & Stephen C. Meyer, *Genetic Analysis of Coordinate Flagellar and Type III Regulatory Circuits in Pathogenic Bacteria*, in *Proceedings of the Second International Conference on Design & Nature, Rhodes Greece*, pg. 8, at http://www.discovery.org/scripts/viewDB/filesDB-download.php?id=389
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