

INTELLIGENT MOVEMENT : SCIENCE vs
THE INTELLIGENCES DESIGN MOVEMENT
ED. JOHN BROCKMAN
NY: VINTAGE, 2006

Appendix

Excerpt from the Memorandum Opinion
of The United States District Court
for the Middle District of Pennsylvania,
December 20, 2005¹

Tammy Kitzmiller, et al. Case No. 04cv2688
Plaintiffs Judge John E. Jones III
v.
Dover Area School District, et al.
Defendants

4. WHETHER ID IS SCIENCE

After a searching review of the record and applicable case law, we find that while ID [intelligent design] arguments may be true, a proposition on which the Court takes no position, ID is not science. We find that ID fails on three different levels, any one of which is sufficient to preclude a determination that ID is science. They are: (1) ID violates the centuries-old ground rules of science by invoking and permitting supernatural causation; (2) the argument of irreducible complexity, central to ID, employs the same flawed

¹ Editor's Note: Judge Jones' case and trial-transcript citations have been omitted, for readability.

and illogical contrived dualism that doomed creation science in the 1980s; and (3) ID's negative attacks on evolution have been refuted by the scientific community. As we will discuss in more detail below, it is additionally important to note that ID has failed to gain acceptance in the scientific community; it has not generated peer-reviewed publications, nor has it been the subject of testing and research.

Expert testimony reveals that since the scientific revolution of the 16th and 17th centuries, science has been limited to the search for natural causes to explain natural phenomena. This revolution entailed the rejection of the appeal to authority, and by extension, revelation, in favor of empirical evidence. Since that time period, science has been a discipline in which testability, rather than any ecclesiastical authority or philosophical coherence, has been the measure of a scientific idea's worth. In deliberately omitting theological or "ultimate" explanations for the existence or characteristics of the natural world, science does not consider issues of "meaning" and "purpose" in the world. While supernatural explanations may be important and have merit, they are not part of science. This self-imposed convention of science, which limits inquiry to testable, natural explanations about the natural world, is referred to by philosophers as "methodological naturalism" and is sometimes known as the scientific method. Methodological naturalism is a "ground rule" of science today which requires scientists to seek explanations in the world around us based upon what we can observe, test, replicate, and verify.

As the National Academy of Sciences (hereinafter "NAS") was recognized by experts for both parties as the "most prestigious" scientific association in this country, we will accordingly cite its opinion where appropriate. NAS is in agreement that science is limited to empirical, observable, and ultimately testable data:

Science is a particular way of knowing about the world. In science, explanations are restricted to those that can be inferred from the confirmable data—the results obtained through observations and experiments that can be substantiated by other scientists. Anything that can be observed or measured is amenable to scientific investigation. Explanations that cannot be based upon empirical evidence are not part of science.

This rigorous attachment to "natural" explanations is an essential attribute to science by definition and by convention. We are in agreement with Plaintiffs' lead expert Dr. [Kenneth R.] Miller, that from a practical perspective, attributing unsolved problems about nature to causes and forces that lie outside the natural world is a "science stopper." As Dr. Miller explained, once you attribute a cause to an untestable supernatural force, a proposition that cannot be disproven, there is no reason to continue seeking natural explanations, as we have our answer.

ID is predicated on supernatural causation, as we previously explained and as various expert testimony revealed. ID takes a natural phenomenon and, instead of accepting or seeking a natural explanation, argues that the explanation is supernatural.

Further support for the conclusion that ID is predicated on supernatural causation is found in the ID reference book to which ninth-grade biology students are directed [*Of Pandas and People*]. *Pandas* states, in pertinent part, as follows:

Darwinists object to the view of intelligent design because *it does not give a natural cause explanation* of how the various forms of life started in the first place. Intelligent design means that various forms of life began abruptly, through an intelligent agency, with their distinctive features already

intact—fish with fins and scales, birds with feathers, beaks, and wings, etc. (emphasis added).

Stated another way, ID posits that animals did not evolve naturally through evolutionary means but were created abruptly by a non-natural, or supernatural, designer. Defendants' own expert witnesses acknowledged this point.

It is notable that defense experts' own mission, which mirrors that of the IDM [intelligent design movement] itself, is to change the ground rules of science to allow supernatural causation of the natural world, which the Supreme Court in *Edwards v. Arkansas*,¹ and the court in *McLean v. McLean v. Arkansas Board of Education* correctly recognized as an inherently religious concept. First, defense expert Professor [Steve W.] Fuller agreed that ID aspires to “change the ground rules” of science and lead defense expert Professor [Michael] Behe admitted that his broadened definition of science, which encompasses ID, would also embrace astrology. Moreover, defense expert Professor [Scott] Minnich acknowledged that for ID to be considered science, the ground rules of science have to be broadened to allow consideration of supernatural forces.

Prominent IDM leaders are in agreement with the opinions expressed by defense expert witnesses that the ground rules of science must be changed for ID to take hold and prosper. William Dembski, for instance, an IDM leader, proclaims that science is ruled by methodological naturalism and argues that this rule must be overturned if ID is to prosper.

The Discovery Institute, the think tank promoting ID whose CRSC [Center for the Renewal of Science and Culture] developed the Wedge Document, acknowledges as “Governing Goals” to “defeat scientific materialism and its

destructive moral, cultural and political legacies” and “replace materialistic explanations with the theistic understanding that nature and human beings are created by God.” In addition, and as previously noted, the Wedge Document states in its “Five Year Strategic Plan Summary” that the IDM’s goal is to replace science as currently practiced with “theistic and Christian science.” The IDM accordingly seeks nothing less than a complete scientific revolution in which ID will supplant evolutionary theory.² Notably, every major scientific association that has taken a position on the issue of whether ID is science has concluded that ID is not, and cannot be considered as such.

Initially, we note that NAS, the “most prestigious” scientific association in this country, views ID as follows:

² Further support for this proposition is found in the Wedge Strategy, which is composed of three phases: Phase I is scientific research, writing and publicity; Phase II is publicity and opinion-making; and Phase III is cultural confrontation and renewal. In the “Five Year Strategic Plan Summary,” the Wedge Document explains that the social consequences of materialism have been “devastating” and that it is necessary to broaden the wedge with a positive scientific alternative to materialistic scientific theories, which has come to be called the theory of ID. “Design theory promises to reverse the stifling dominance of the materialist worldview, and to replace it with a science consonant with Christian and theistic convictions.” Phase I of the Wedge Strategy is an essential component and directly references “scientific revolutions.” Phase II explains that alongside a focus on influential opinion-makers, “we also seek to build up a popular base of support among our natural constituency, namely, Christians. We will do this primarily through apologetics seminars. We intend these to encourage and equip believers with new scientific evidence that support the faith, as well as to ‘popularize’ our ideas in the broader culture.” Finally, Phase III includes pursuing possible legal assistance “in response to resistance to the integration of design theory into public school science curricula.”

Creationism, intelligent design, and other claims of supernatural intervention in the origin of life or of species are not science because they are not testable by the methods of science. These claims subordinate observed data to statements based on authority, revelation, or religious belief. Documentation offered in support of these claims is typically limited to the special publications of their advocates. These publications do not offer hypotheses subject to change in light of new data, new interpretations, or demonstration of error. This contrasts with science, where any hypothesis or theory always remains subject to the possibility of rejection or modification in the light of new knowledge.

Additionally, the American Association for the Advancement of Science (hereinafter "AAAS"), the largest organization of scientists in this country, has taken a similar position on ID, namely, that it "has not proposed a scientific means of testing its claims" and that "the lack of scientific warrant for so-called 'intelligent design theory' makes it improper to include as part of science education. . . ." Not a single expert witness over the course of the six-week trial identified one major scientific association, society, or organization that endorsed ID as science. What is more, defense experts concede that ID is not a theory as that term is defined by the NAS and admit that ID is at best "fringe science" which has achieved no acceptance in the scientific community.

It is therefore readily apparent to the Court that ID fails to meet the essential ground rules that limit science to testable, natural explanations. Science cannot be defined differently for Dover students than it is defined in the scientific community as an affirmative action program, as

advocated by Professor Fuller, for a view that has been unable to gain a foothold within the scientific establishment. Although ID's failure to meet the ground rules of science is sufficient for the Court to conclude that it is not science, out of an abundance of caution and in the exercise of completeness, we will analyze additional arguments advanced regarding the concepts of ID and science.

ID is at bottom premised upon a false dichotomy, namely, that to the extent evolutionary theory is discredited, ID is confirmed. This argument is not brought to this Court anew, and in fact, the same argument, termed "contrived dualism" in *McLean*, was employed by creationists in the 1980s to support "creation science." The court in *McLean* noted the "fallacious pedagogy of the two-model approach" and that "[i]n efforts to establish 'evidence' in support of creation science, the defendants relied upon the same false premise as the two-model approach. . . . all evidence which criticized evolutionary theory was proof in support of creation science." We do not find this false dichotomy any more availing to justify ID today than it was to justify creation science two decades ago.

ID proponents primarily argue for design through negative arguments against evolution, as illustrated by Professor Behe's argument that "irreducibly complex" systems cannot be produced through Darwinian, or any natural, mechanisms. However, we believe that arguments against evolution are not arguments for design. Expert testimony revealed that just because scientists cannot explain today how biological systems evolved does not mean that they cannot, and will not, be able to explain them tomorrow.

As Dr. [Kevin] Padian aptly noted, "absence of evidence is not evidence of absence." To that end, expert testimony from Drs. Miller and Padian provided multiple examples

where *Pandas* asserted that no natural explanations exist, and in some cases that none could exist, and yet natural explanations have been identified in the intervening years. It also bears mentioning that as Dr. Miller stated, just because scientists cannot explain every evolutionary detail does not undermine its validity as a scientific theory as no theory in science is fully understood.

As referenced, the concept of irreducible complexity is ID's alleged scientific centerpiece. Irreducible complexity is a negative argument against evolution, not proof of design, a point conceded by defense expert Professor Minnich. Irreducible complexity additionally fails to make a positive scientific case for ID, as will be elaborated upon below.

We initially note that irreducible complexity as defined by Professor Behe in his book *Darwin's Black Box* and subsequently modified in his 2001 article entitled "Reply to My Critics," appears as follows:

By irreducibly complex I mean a single system which is composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning. An irreducibly complex system cannot be produced directly by slight, successive modifications of a precursor system, because any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional. . . . Since natural selection can only choose systems that are already working, then if a biological system cannot be produced gradually it would have to arise as an integrated unit, in one fell swoop, for natural selection to have anything to act on.

Professor Behe admitted in "Reply to My Critics" that there was a defect in his view of irreducible complexity

because, while it purports to be a challenge to natural selection, it does not actually address "the task facing natural selection." Professor Behe specifically explained that "[t]he current definition puts the focus on removing a part from an already functioning system," but "[t]he difficult task facing Darwinian evolution, however, would not be to remove parts from sophisticated pre-existing systems; it would be to bring together components to make a new system in the first place." In that article, Professor Behe wrote that he hoped to "repair this defect in future work", however, he has failed to do so even four years after elucidating his defect.

In addition to Professor Behe's admitted failure to properly address the very phenomenon that irreducible complexity purports to place at issue, natural selection, Drs. Miller and Padian testified that Professor Behe's concept of irreducible complexity depends on ignoring ways in which evolution is known to occur. Although Professor Behe is adamant in his definition of irreducible complexity when he says a precursor "missing a part is by definition non-functional," what he obviously means is that it will not function in the same way the system functions when all the parts are present. For example, in the case of the bacterial flagellum, removal of a part may prevent it from acting as a rotary motor. However, Professor Behe excludes, by definition, the possibility that a precursor to the bacterial flagellum functioned not as a rotary motor but in some other way, for example as a secretory system.

As expert testimony revealed, the qualification on what is meant by "irreducible complexity" renders it meaningless as a criticism of evolution. In fact, the theory of evolution proffers exaptation as a well-recognized, well-documented explanation for how systems with multiple parts could have evolved through natural means. Exaptation means

that some precursor of the subject system had a different, selectable function before experiencing the change or addition that resulted in the subject system with its present function. For instance, Dr. Padian identified the evolution of the mammalian middle-ear bones from what had been jawbones as an example of this process. By defining irreducible complexity in the way that he has, Professor Behe attempts to exclude the phenomenon of exaptation by definitional fiat, ignoring, as he does so, abundant evidence which refutes his argument.

Notably, the NAS has rejected Professor Behe's claim for irreducible complexity by using the following cogent reasoning:

[S]tructures and processes that are claimed to be "irreducibly" complex typically are not on closer inspection. For example, it is incorrect to assume that a complex structure or biochemical process can function only if all its components are present and functioning as we see them today. Complex biochemical systems can be built up from simpler systems through natural selection. Thus, the "history" of a protein can be traced through simpler organisms. . . . The evolution of complex molecular systems can occur in several ways. Natural selection can bring together parts of a system for one function at one time and then, at a later time, recombine those parts with other systems of components to produce a system that has a different function. Genes can be duplicated, altered, and then amplified through natural selection. The complex biochemical cascade resulting in blood clotting has been explained in this fashion.

As irreducible complexity is only a negative argument against evolution, it is refutable and accordingly testable,

unlike ID, by showing that there are intermediate structures with selectable functions that could have evolved into the allegedly irreducibly complex systems. Importantly, however, the fact that the negative argument of irreducible complexity is testable does not make testable the argument for ID. Professor Behe has applied the concept of irreducible complexity to only a few select systems: (1) the bacterial flagellum; (2) the blood-clotting cascade; and (3) the immune system. Contrary to Professor Behe's assertions with respect to these few biochemical systems among the myriad existing in nature, however, Dr. Miller presented evidence, based upon peer-reviewed studies, that they are not in fact irreducibly complex.

First, with regard to the bacterial flagellum, Dr. Miller pointed to peer-reviewed studies that identified a possible precursor to the bacterial flagellum, a subsystem that was fully functional, namely the Type-III secretory system. Moreover, defense expert Professor Minnich admitted that there is serious scientific research on the question of whether the bacterial flagellum evolved into the Type-III secretory system, the Type-III secretory system into the bacterial flagellum, or whether they both evolved from a common ancestor. None of this research or thinking involves ID. In fact, Professor Minnich testified about his research as follows: "[W]e're looking at the function of these systems and how they could have been derived one from the other. And it's a legitimate scientific inquiry."

Second, with regard to the blood-clotting cascade, Dr. Miller demonstrated that the alleged irreducible complexity of the blood-clotting cascade has been disproven by peer-reviewed studies dating back to 1969, which show that dolphins' and whales' blood clots despite missing a part of the cascade, a study that was confirmed by molecu-

lar testing in 1998. Additionally and more recently, scientists published studies showing that in puffer fish, blood clots despite the cascade missing not only one but three parts. Accordingly, scientists in peer-reviewed publications have refuted Professor Behe's predication about the alleged irreducible complexity of the blood-clotting cascade. Moreover, cross-examination revealed that Professor Behe's redefinition of the blood-clotting system was likely designed to avoid peer-reviewed scientific evidence that falsifies his argument, as it was not a scientifically warranted redefinition.

The immune system is the third system to which Professor Behe has applied the definition of irreducible complexity. Although in *Darwin's Black Box*, Professor Behe wrote that not only were there no natural explanations for the immune system at the time but that natural explanations were impossible regarding its origin. However, Dr. Miller presented peer-reviewed studies refuting Professor Behe's claim that the immune system was irreducibly complex. Between 1996 and 2002, various studies confirmed each element of the evolutionary hypothesis explaining the origin of the immune system. In fact, on cross-examination, Professor Behe was questioned concerning his 1996 claim that science would never find an evolutionary explanation for the immune system. He was presented with fifty-eight peer-reviewed publications, nine books, and several immunology textbook chapters about the evolution of the immune system; however, he simply insisted that this was still not sufficient evidence of evolution, and that it was not "good enough."

We find that such evidence demonstrates that the ID argument is dependent upon setting a scientifically unreasonable burden of proof for the theory of evolution. As a further example, the test for ID proposed by both Profes-

sors Behe and Minnich is to grow the bacterial flagellum in the laboratory; however, no one inside or outside of the IDM, including those who propose the test, has conducted it. Professor Behe conceded that the proposed test could not approximate real-world conditions, and even if it could, Professor Minnich admitted that it would merely be a test of evolution, not design.

We therefore find that Professor Behe's claim for irreducible complexity has been refuted in peer-reviewed research papers and has been rejected by the scientific community at large. Additionally, even if irreducible complexity had not been rejected, it still does not support ID, as it is merely a test for evolution, not design.

We will now consider the purportedly "positive argument" for design encompassed in the phrase used numerous times by Professors Behe and Minnich throughout their expert testimony, which is the "purposeful arrangement of parts." Professor Behe summarized the argument as follows: We infer design when we see parts that appear to be arranged for a purpose. The strength of the inference is quantitative; the more parts that are arranged, the more intricately they interact, the stronger is our confidence in design. The appearance of design in aspects of biology is overwhelming. Since nothing other than an intelligent cause has been demonstrated to be able to yield such a strong appearance of design, Darwinian claims notwithstanding, the conclusion that the design seen in life is real design is rationally justified. As previously indicated, this argument is merely a restatement of the Reverend William Paley's argument applied at the cell level. Minnich, Behe, and Paley reach the same conclusion, that complex organisms must have been designed using the same reasoning, except that Professors Behe and Minnich refuse to identify

the designer, whereas Paley inferred from the presence of design that it was God. Expert testimony revealed that this inductive argument is not scientific and as admitted by Professor Behe, can never be ruled out.

Indeed, the assertion that design of biological systems can be inferred from the "purposeful arrangement of parts" is based upon an analogy to human design. Because we are able to recognize design of artifacts and objects, according to Professor Behe, that same reasoning can be employed to determine biological design. Professor Behe testified that the strength of the analogy depends upon the degree of similarity entailed in the two propositions; however, if this is the test, ID completely fails.

Unlike biological systems, human artifacts do not live and reproduce over time. They are non-replicable, they do not undergo genetic recombination, and they are not driven by natural selection. For human artifacts, we know the designer's identity, human, and the mechanism of design, as we have experience based upon empirical evidence that humans can make such things, as well as many other attributes including the designer's abilities, needs, and desires. With ID, proponents assert that they refuse to propose hypotheses on the designer's identity, do not propose a mechanism, and the designer, he/she/it/they, has never been seen. In that vein, defense expert Professor Minnich agreed that in the case of human artifacts and objects, we know the identity and capacities of the human designer but we do not know any of those attributes for the designer of biological life. In addition, Professor Behe agreed that for the design of human artifacts, we know the designer and its attributes and we have a baseline for human design that does not exist for design of biological systems. Professor Behe's only response to these seemingly

insurmountable points of disanalogy was that the inference still works in science fiction movies.

It is readily apparent to the Court that the only attribute of design that biological systems appear to share with human artifacts is their complex appearance, i.e. if it looks complex or designed, it must have been designed. This inference to design based upon the appearance of a "purposeful arrangement of parts" is a completely subjective proposition, determined in the eye of each beholder and his/her viewpoint concerning the complexity of a system. Although both Professors Behe and Minnich assert that there is a quantitative aspect to the inference, on cross-examination they admitted that there is no quantitative criteria for determining the degree of complexity or number of parts that bespeak design, rather than a natural process. As Plaintiffs aptly submit to the Court, throughout the entire trial only one piece of evidence generated by Defendants addressed the strength of the ID inference: The argument is less plausible to those for whom God's existence is in question and is much less plausible for those who deny God's existence.

Accordingly, the purported positive argument for ID does not satisfy the ground rules of science which require testable hypotheses based upon natural explanations. ID is reliant upon forces acting outside of the natural world, forces that we cannot see, replicate, control, or test, which have produced changes in this world. While we take no position on whether such forces exist, they are simply not testable by scientific means and therefore cannot qualify as part of the scientific process or as a scientific theory.

It is appropriate at this juncture to address ID's claims against evolution. ID proponents support their assertion that evolutionary theory cannot account for life's com-

plexity by pointing to real gaps in scientific knowledge, which indisputably exist in all scientific theories, but also by misrepresenting well-established scientific propositions.

Before discussing Defendants' claims about evolution, we initially note that an overwhelming number of scientists, as reflected by every scientific association that has spoken on the matter, have rejected the ID proponents' challenge to evolution. Moreover, Plaintiffs' expert in biology, Dr. Miller, a widely recognized biology professor at Brown University who has written university-level and high school biology textbooks used prominently throughout the nation, provided unrebutted testimony that evolution, including common descent and natural selection, is "overwhelmingly accepted" by the scientific community and that every major scientific association agrees. As the court in *Sehman [Sehman et al. v. Cobb County School District and Board of Education]* explained, "evolution is more than a *theory* of origin in the context of science. To the contrary, evolution is the dominant *scientific* theory of origin accepted by the majority of scientists" (emphasis in original). Despite the scientific community's overwhelming support for evolution, Defendants and ID proponents insist that evolution is unsupported by empirical evidence. Plaintiffs' science experts, Drs. Miller and Padian, clearly explained how ID proponents generally and *Pandas* specifically distort and misrepresent scientific knowledge in making their anti-evolution argument.

In analyzing such distortion, we turn again to *Pandas*, the book to which students are expressly referred in the disclaimer. Defendants hold out *Pandas* as representative of ID and Plaintiffs' experts agree in that regard. A series of arguments against evolutionary theory found in *Pandas* involve paleontology, which studies the life of the past and

the fossil record. Plaintiffs' expert Professor Padian was the only testifying expert witness with any expertise in paleontology.³ His testimony therefore remains unrebutted. Dr. Padian's demonstrative slides, prepared on the basis of peer-reviewing scientific literature, illustrate how *Pandas* systematically distorts and misrepresents established, important evolutionary principles.

We will provide several representative examples of this distortion. First, *Pandas* misrepresents the "dominant form of understanding relationships" between organisms, namely, the tree of life, represented by classification determined via the method of cladistics. Second, *Pandas* misrepresents "homology," the "central concept of comparative biology," that allowed scientists to evaluate comparable parts among organisms for classification purposes for hundreds of years. Third, *Pandas* fails to address the well-established biological concept of exaptation, which involves a structure changing function, such as fish fins evolving fingers and bones to become legs for weight-bearing land animals. Dr. Padian testified that ID proponents fail to address exaptation because they deny that organisms change function, which is a view necessary to support abrupt appearance. Finally, Dr. Padian's unrebutted testimony demonstrates that *Pandas* distorts and misrepresents evidence in the fossil record about pre-Cambrian-era fossils, the evolution of fish to amphibians, the evolution of small carnivorous dinosaurs into birds, the evolution of the mammalian middle ear, and the evolution of whales from land animals.

³ Moreover, the Court has been presented with no evidence that either Defendants' testifying experts or any other ID proponents, including *Pandas*' authors, have such paleontology expertise as we have been presented with no evidence that they have published peer-reviewed literature or presented such information at scientific conferences on paleontology or the fossil record.

In addition to Dr. Padian, Dr. Miller also testified that *Pandás* presents discredited science. Dr. Miller testified that *Pandás'* treatment of biochemical similarities between organisms is "inaccurate and downright false" and explained how *Pandás* misrepresents basic molecular biology concepts to advance design theory through a series of demonstrative slides. Consider, for example, that he testified as to how *Pandás* misinforms readers on the standard evolutionary relationships between different types of animals, a distortion which Professor Behe, a "critical reviewer" of *Pandás* who wrote a section within the book, affirmed.⁴ In addition, Dr. Miller refuted *Pandás'* claim that evolution cannot account for new genetic information and pointed to more than three dozen peer-reviewed scientific publications showing the origin of new genetic information by evolutionary processes. In summary, Dr. Miller testified that *Pandás* misrepresents molecular biology and genetic principles, as well as the current state of scientific knowledge in those areas in order to teach readers that common descent and natural selection are not scientifically sound.

Accordingly, the one textbook to which the Dover ID Policy directs students contains outdated concepts and badly flawed science, as recognized by even the defense experts in this case.

A final indicator of how ID has failed to demonstrate scientific warrant is the complete absence of peer-reviewed publications supporting the theory. Expert testimony

⁴ Additionally, testimony provided by Professor Behe revealed an increasing gap between his portrayal of ID theory and how it is presented in *Pandás*. Although he is a "critical reviewer" of the work, he disagrees with language provided in the text, including but not limited to the text's very definition of ID.

revealed that the peer-review process is "exquisitely important" in the scientific process. It is a way for scientists to write up their empirical research and to share the work with fellow experts in the field, opening up the hypotheses to study, testing, and criticism. In fact, defense expert Professor Behe recognizes the importance of the peer-review process and has written that science must "publish or perish." Peer review helps to ensure that research papers are scientifically accurate, meet the standards of the scientific method, and are relevant to other scientists in the field. Moreover, peer review involves scientists submitting a manuscript to a scientific journal in the field, journal editors soliciting critical reviews from other experts in the field and deciding whether the scientist has followed proper research procedures, employed up-to-date methods, considered and cited relevant literature and generally, whether the researcher has employed sound science.

The evidence presented in this case demonstrates that ID is not supported by any peer-reviewed research, data, or publications. Both Drs. Padian and [Barbara] Forrest testified that recent literature reviews of scientific and medical-electronic databases disclosed no studies supporting a biological concept of ID. On cross-examination, Professor Behe admitted that: "There are no peer reviewed articles by anyone advocating for intelligent design supported by pertinent experiments or calculations which provide detailed rigorous accounts of how intelligent design of any biological system occurred." Additionally, Professor Behe conceded that there are no peer-reviewed papers supporting his claims that complex molecular systems, like the bacterial flagellum, the blood-clotting cascade, and the immune system, were intelligently designed. In that regard, there are no peer-reviewed articles supporting Professor Behe's

argument that certain complex molecular structures are "irreducibly complex."⁵ In addition to failing to produce papers in peer-reviewed journals, ID also features no scientific research or testing.

After this searching and careful review of ID as espoused by its proponents, as elaborated upon in submissions to the Court, and as scrutinized over a six-week trial, we find that ID is not science and cannot be adjudged a valid, accepted scientific theory, as it has failed to publish in peer-reviewed journals, engage in research and testing, and gain acceptance in the scientific community. ID, as noted, is grounded in theology, not science. Accepting for the sake of argument its proponents' as well as Defendants' argument that to introduce ID to students will encourage critical thinking, it still has utterly no place in a science curriculum. Moreover, ID's backers have sought to avoid the scientific scrutiny, which we have now determined that it cannot withstand, by advocating that the *controversy* but not ID itself should be taught in science class. This tactic is at best disingenuous, and at worst a canard. The goal of the IDM is not to encourage critical thought but to foment a revolution which would supplant evolutionary theory with ID.

To conclude and reiterate, we express no opinion on the ultimate veracity of ID as a supernatural explanation.

⁵ The one article referenced by both Professors Behe and Minnich as supporting ID is an article written by Behe and Snoko entitled "Simulating evolution by gene duplication of protein features that require multiple amino acid residues." A review of the article indicates that it does not mention either irreducible complexity or ID. In fact, Professor Behe admitted that the study which forms the basis for the article did not rule out many known evolutionary mechanisms and that the research actually might support evolutionary pathways if a biologically realistic population size were used.

However, we commend to the attention of those who are inclined to superficially consider ID to be a true "scientific" alternative to evolution without a true understanding of the concept the foregoing detailed analysis. It is our view that a reasonable, objective observer would, after reviewing both the voluminous record in this case and our narrative, reach the inescapable conclusion that ID is an interesting theological argument but that it is not science.

H. CONCLUSION

The proper application of both the endorsement and Lemon tests⁶ to the facts of this case makes it abundantly clear that the [Dover School] Board's ID Policy violates the Establishment Clause. In making this determination, we have addressed the seminal question of whether ID is science. We have concluded that it is not, and moreover that ID cannot uncouple itself from its creationist, and thus religious, antecedents.

Both Defendants and many of the leading proponents of ID make a bedrock assumption which is utterly false. Their presupposition is that evolutionary theory is antithetical to a belief in the existence of a supreme being and to religion in general. Repeatedly in this trial, Plaintiffs' scientific

⁶ Editor's Note: According to the Pew Forum on Religion and Public Life, the Lemon test "is a three-part test . . . frequently used to determine whether a government action violates the Establishment Clause. Under this test, an action must (1) have a bona fide secular purpose; (2) not advance or inhibit religion; and (3) not excessively entangle the government with religion. If the challenged action fails any of the three parts of the Lemon test, it is deemed to have violated the Establishment Clause."

experts testified that the theory of evolution represents good science, is overwhelmingly accepted by the scientific community, and that it in no way conflicts with, nor does it deny, the existence of a divine creator. To be sure, Darwin's theory of evolution is imperfect. However, the fact that a scientific theory cannot yet render an explanation on every point should not be used as a pretext to thrust an untestable alternative hypothesis grounded in religion into the science classroom or to misrepresent well-established scientific propositions.

The citizens of the Dover area were poorly served by the members of the Board who voted for the ID Policy. It is ironic that several of these individuals, who so staunchly and proudly touted their religious convictions in public, would time and again lie to cover their tracks and disguise the real purpose behind the ID Policy.

With that said, we do not question that many of the leading advocates of ID have bona fide and deeply held beliefs which drive their scholarly endeavors. Nor do we controvert that ID should continue to be studied, debated, and discussed. As stated, our conclusion today is that it is unconstitutional to teach ID as an alternative to evolution in a public-school science classroom. Those who disagree with our holding will likely mark it as the product of an activist judge. If so, they will have erred, as this is manifestly not an activist Court. Rather, this case came to us as the result of the activism of an ill-informed faction on a school board, aided by a national public-interest law firm eager to find a constitutional test case on ID, who in combination drove the Board to adopt an imprudent and ultimately unconstitutional policy. The breathtaking inanity of the Board's decision is evident when considered against the factual backdrop which has now been fully revealed through this trial. The

students, parents, and teachers of the Dover Area School District deserved better than to be dragged into this legal maelstrom, with its resulting utter waste of monetary and personal resources. To preserve the separation of church and state mandated by the Establishment Clause of the First Amendment to the United States Constitution, and Art. I, § 3 of the Pennsylvania Constitution, we will enter an order permanently enjoining Defendants from maintaining the ID Policy in any school within the Dover Area School District, from requiring teachers to denigrate or disparage the scientific theory of evolution, and from requiring teachers to refer to a religious, alternative theory known as ID. We will also issue a declaratory judgment that Plaintiffs' rights under the Constitutions of the United States and the Commonwealth of Pennsylvania have been violated by Defendants' actions. Defendants' actions in violation of Plaintiffs' civil rights as guaranteed to them by the Constitution of the United States and 42 U.S.C. § 1983 subject Defendants to liability with respect to injunctive and declaratory relief, but also for nominal damages and the reasonable value of Plaintiffs' attorneys' services and costs incurred in vindicating Plaintiffs' constitutional rights.

NOW, THEREFORE, IT IS ORDERED THAT:

1. A declaratory judgment is hereby issued in favor of Plaintiffs pursuant to 28 U.S.C. §§ 2201, 2202, and 42 U.S.C. § 1983 such that Defendants' ID Policy violates the Establishment Clause of the First Amendment of the Constitution of the United States and Art. I, § 3 of the Constitution of the Commonwealth of Pennsylvania.

2. Pursuant to Fed.R.Civ.P. 65, Defendants are permanently enjoined from maintaining the ID Policy in any school within the Dover Area School District.
3. Because Plaintiffs seek nominal damages, Plaintiffs shall file with the Court and serve on Defendants, their claim for damages and a verified statement of any fees and/or costs to which they claim entitlement. Defendants shall have the right to object to any such fees and costs to the extent provided in the applicable statutes and court rules.

s/ John E. Jones III
United States District Judge