

**Testimony of Jerry W. Elwood, PhD before the Montana  
House Education Committee on House Bill No. 183**

January 25, 2013

I strongly oppose House Bill No. 183 for several reasons. First, the bill is completely unnecessary because it doesn't address either an existing problem or a need in science education in our public schools that isn't already being met. There are no provisions in the bill that go beyond what is already required in Montana's existing K-12 Science Content Standards in terms of emphasizing critical thinking in science education. Those standards specifically cite the importance of students acquiring and applying critical thinking skills. They also specify how those skills are to be achieved through the process of scientific inquiry. They neither prevent nor discourage administrators and teachers in Montana's public school systems from encouraging and fostering critical thinking about and discussions of alternative, evidence-based scientific theories. They include the goal of helping students recognize the difference between personal opinion or viewpoints and knowledge gained through scientific investigation. There are no provisions in the proposed bill that will improve the teaching of science beyond what is already called for and required in Montana's existing K-12 Science Content Standards. Further, teachers and school administrators should have no need for protection if they follow those standards. Thus, the bill is completely unnecessary.

Secondly, the bill's legislative findings and the provisions are scientifically incorrect and pedagogically irresponsible. The provisions in the bill would have an adverse effect on science education in Montana's public schools. The findings and provisions in the bill disguise its real intent, which is to insert the creationism concept of intelligent design into biology and science curricula in Montana's public schools without actually saying so. This is evident by the fact that biological evolution, the chemical origin of life, random mutation, natural selection, DNA, and fossil discoveries are the only cited subject areas that supposedly "can cause controversy" in teaching science and where unspecified alternative theories and viewpoints should be presented and discussed to encourage critical thinking.

The bill supposes that some teachers may be unsure of the expectations concerning how they present information on the cited subject areas in the bill. However, there are no legislative findings in the bill that support this supposition and there are no provisions about what those expectations ought to be. Further,

the bill wrongly implies that biological evolution is a controversial theory in the scientific domain and that alternate scientific theories or viewpoints other than evolution exist that explain the origin of life on earth. The fact that scientists refer to the “theory of evolution” does not mean that the fact of biological evolution and the natural processes that drive it, such as random mutations and natural selection, are in question or are controversial.

While evolution is controversial to some religions, it is not a controversial theory in the scientific domain, and it should not be presented as such in any science or biology class in public schools. Biological evolution is an established scientific theory, which means it is a comprehensive explanation of important features of nature and the natural history of earth that is supported by many facts gathered over time from observations and experiments. The theory explains these well-established scientific facts. It has been repeatedly tested and confirmed. Implying that it is controversial in the scientific domain, as the bill does, is a complete misrepresentation of its status as an accepted scientific theory.

Additionally, the provision in the bill that all theories and viewpoints must be allowed if “true critical thinking is to be encouraged” falsely implies that alternative theories or viewpoints exist that explain the origin and diversity of life on this planet other than evolution. In fact, evolution is the only scientific theory that explains the complexity and diversity of life on earth. While proponents of the intelligent design viewpoint like to contend that it is an alternative theory to evolution, the fact is that intelligent design is not a scientific theory at all because it can never be tested. It is nothing more than a pseudoscientific, theistic-based belief that has no potential to ever be falsified or confirmed by the scientific method, an essential requirement of any theory. The scientific method has not and cannot ever be brought to bear on it. Intelligent design no more belongs in a biology or science curriculum than alchemy belongs in a chemistry curriculum.

Presenting pseudoscientific viewpoints and personal beliefs for discussion in science classes is pedagogically irresponsible. While our society is based on the right to express opinions and beliefs to all sides of debate, science classes are not a place for discussing and giving equal weight to everyone’s opinions, religious

beliefs, and personal viewpoints. Science is a process in which ideas are debated and accepted or discarded based on rigorous set of rules and tests using empirical evidence derived from application of the scientific method. Alternative testable theories that are legitimate subjects of scientific investigation are appropriate for discussion in science and biology classes. But that does not mean presenting pseudoscientific beliefs, including religious beliefs and personal viewpoints for discussion along with or in place of scientific theories under a pretense that such beliefs and viewpoints are alternative scientific theories.

Another reason why I opposed the bill is the provision that teaching of scientific information may not be construed to promote any religious or nonreligious doctrine. That provision would neither limit or prevent the teaching of religious doctrines or personal beliefs in science classes if they are presented under a false pretense of having a scientific basis. The bill would, in effect, give administrators and teachers in public schools a license to encourage and facilitate the discussion of nonscientific ideas, personal beliefs, and religious doctrines in all areas of science under a guise of encouraging critical thinking. This would only confuse students about what science is and is not.

Federal courts have barred the teaching of "intelligent design" in public schools for good reason. The bases for those court decisions are that this concept is not science, it's creationism in disguise, and the insertion of it into the science curriculum in public schools violates the constitutional separation of church and state. It does not belong in any science or biology curriculum in public schools, including those in Montana.

As the U.S. National Academy of Science and Institute of Medicine said in their 2008 report entitled "Science, Creationism, and Evolution", *"Given the importance of science in all aspects of modern life, the science curriculum should not be undermined with nonscientific material. Teaching creationist ideas in science classes confuses what constitutes science and what does not. It compromises the objectives of public education and the goal of high quality science education."*

In summary, I oppose this bill because it is unnecessary, it would be harmful to science education in our public schools, and it would very likely be found

unconstitutional if challenged in court. Thus, I strongly encourage members of the Education Committee to vote against House Bill No. 183.

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