Position Statement of the Science Teachers Association of Texas on TEACHING EVOLUTION

(Adopted 2/06)

The Science Teachers Association of Texas (STAT) recognizes that evolution is the principal unifying concept of the life sciences and that it must occupy a central part of K - 12 science education frameworks and curricula. If evolution is not taught properly, students will not achieve the level of scientific literacy needed for science-related careers and life in a society where understanding of the core concepts of science is critical. A thorough understanding of evolution is essential to scientific literacy, and must therefore be one of the goals of science education in our schools. This position is shared by the National Academies, the American Association for the Advancement of Science, the National Science Teachers Association, the National Association of Biology Teachers, the Texas Association of Biology Teachers, and many other scientific and educational organizations.

Too often, evolution has not been emphasized in science curricula and classrooms in a manner commensurate with its importance because of official policies, intimidation of science teachers, and the general public's misunderstanding of the term "theory." Teachers are also being pressured to introduce nonscientific views, including "creationism," "intelligent design," "initial complexity," and "abrupt appearance," which are not supported by evidence and have no legitimate place in the science curriculum.

Supporting Information

1. **Empirical Evidence:** Science seeks to understand the natural world. It does this by collecting data in the form of observation and experiment. It then attempts to develop natural explanations of these data that can be tested empirically. Explanations that do not meet such tests are discarded, while those that survive rigorous testing over time come to be considered scientifically reliable. Explanations of natural phenomena that cannot be tested in this way are simply not part of science.

2. Theory Defined: In their efforts to understand the natural world, scientists develop explanatory theories that are based upon scientific evidence, are logically consistent with other well-established principles, and have the potential to lead to new knowledge. Theories can be modified or discarded as new observations and data emerge. Theories are formulated and tested on the basis of evidence, internal consistency and their explanatory power. Scientific theories are not hunches or guesses. "A theory is a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, inferences, and tested hypotheses." (National Academy of Science. 1998. Teaching About Evolution and the Nature of Science. Washington, DC: National Academy Press). It should be noted in the Texas Essential Knowledge and Skills (TEKS) document for science, TEKS 3.A, asks students to understand what a theory can explain and what it cannot. It does not allow for a nonscientific claim based on religion, the supernatural or personal beliefs, to be brought into a science class as a legitimate explanation.

3. Unifying Theme: Evolution can be defined as change in the hereditary characteristics of groups of organisms that has taken place through time. There is abundant and consistent evidence from physics, biochemistry, geochronology, geology, biology, anthropology, and other sciences that evolution has taken place. Evolution unifies science disciplines and provides students with powerful ideas to help them understand the natural world. Scientific disciplines cannot be taught with integrity if evolution is not included as a unifying theme.

4. Legal Issues: Several judicial decisions have negated laws that were designed to prohibit the teaching of evolution or permit the teaching of creationism or scientific creationism. These rulings have focused on the precept that governmental agencies can neither prohibit nor promote the practice of religion.

There is no longer a debate among scientists about whether evolution has taken place. Scientific investigation continues to focus on the detailed mechanisms of how evolution has and continues to take place. In science, disagreements are subject to rules of evaluation. Scientific conclusions are tested by experiment and observation, and evaluation as with any aspect of theoretical science, is automatically open to and subject to experimental and observational testing.

The National Science Education Standards note that "explanations of how the natural world changes based on myths, personal beliefs, religious values, mystical inspiration, superstition, or authority may be personally useful and socially relevant, but the are not scientific." "Creationism," "abrupt appearance," "initial complexity," or "intelligent design" - which assert that the diversity and complexity of life are due to an intelligent designer, represent nonscientific views that have no place in the science curriculum. Supporters of these viers tend to seek out supposed anomalies among many existing theories and accepted facts regarding the history of life on Earth and have failed to develop theories with explanatory power and the potential to catalyze new research questions.

Opposition to the teaching of evolution persists for a variety of reasons. Thus, it is important that policy makers, parents, and administrators support teachers as they provide instruction that is aligned with the Texas Essential Knowledge and Skills (TEKS) objectives related to evolution. Omitting evolution, de-emphasizing its teaching or introducing scientifically-discredited "evidence against evolution" will only weaken science education. We must support student understanding of the natural world so that the science literacy of our society is strengthened.