

## **SUMMARY OF KEY PROPOSALS TO CHANGE STANDARDS**

### **SUBMITTED BY EIGHT MEMBERS OF THE SCIENCE WRITING COMMITTEE**

#### **1. Change the mission of science education to add the word “informed:”**

“Kansas science education contributes to the preparation of **all** students as lifelong learners who can use science to make *informed and* reasoned decisions that contribute to their local, state, national and international communities.”

**Explanation:** Proponents say this change reflects their core concern. A “reasoned” decision can be a bad decision if it is not adequately “informed.” This is important because scientific explanations have a significant impact on many important decisions, including those about religion, government and ethics.

#### **2. Expand information about the theory of evolution.**

**Explanation:** Proponents claim that their changes to the evolution section seek to more adequately inform students about the theory of evolution and the assumptions upon which it is predicated. The list on the back explains some of the additional information that students would understand.

#### **3. Change the definition of science.**

**Current definition:** “Science is the human activity of seeking natural explanations for what we observe in the world around us.”

**Proposed change:** "Science is a systematic method of continuing investigation that uses observation, hypothesis testing, measurement, experimentation, logical argument and theory-building to lead to more adequate explanations of natural phenomena."

**Explanation:** Proponents argue the current definition limits scientific inquiry while promoting a philosophy of Naturalism (or Materialism), because it only allows “*natural*” explanations. Naturalism allows only natural or material causes to explain the nature and origin of natural phenomena. They view this as a science stopper, given the many non-material aspects of the natural world such as biological “information” and consciousness. When applied to the history of life, this definition eliminates the possibility that some form of intelligence may have played a role, enshrines naturalistic evolution as a dogma, and doesn’t allow students to “follow the evidence wherever it leads.” They argue the proposed definition, recently adopted in Ohio, opens scientific inquiry while being religiously neutral.

#### **4. Make it clear that evolution is a theory, not an established fact.**

**Explanation:** Proponents believe this change is important because many fundamental questions remain unanswered regarding the adequacy of evolutionary mechanisms, and because evolution is a subjective, historical science that offers an answer to a question fundamental to theistic and non-theistic religion: “Where did we come from?”

#### **5. Require students to understand how historical and experimental sciences differ.**

**Explanation.** Proponents believe students should understand 1) how geologists, anthropologists, evolutionary biologists and other historical scientists test their hypotheses, and 2) that explanations of unobserved events occurring in the remote past are necessarily more tentative than those for phenomena that can be observed and tested in real-time under controlled conditions.

**6. Ensure that students are aware of any bias that may affect explanation, including institutional bias.**

**Explanation:** Scientists always operate under assumptions that are sometimes unstated. Students should be taught to identify such assumptions and to decide if they are based on evidence or religion or philosophy.

**7. With regard to DNA and the genetic code, teach students that the order of the chemical “letters” that constitute genetic messages is not dictated by any known natural law.**

**Explanation:** According to Proponents, this biochemical fact constitutes one of the strongest challenges to the naturalistic hypothesis.

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**The following are examples of how the Proposals would teach more about Darwinian Evolution:**

**TOPIC 1: Darwin's Tree of Life**

**CURRENT STANDARDS:** The "descent with modification of different lineages of organisms from common ancestors... [is] documented in the fossil record."

**ADDED IN PROPOSED STANDARDS:** "The view that living things... are modified descendants of a common ancestor (described in the pattern of a branching tree) has been challenged in recent years by .. (a) discrepancies in the molecular evidence previously thought to support that view; (b) a fossil record that shows sudden bursts of increased complexity (the Cambrian Explosion), long periods of stasis and the absence of transitional forms rather than steady gradual increases in complexity, and (c) studies that show animals follow different rather than identical early stages of embryological development."

**TOPIC 2: Microevolution and Macroevolution**

**CURRENT STANDARDS:** "Biologists use evolutionary theory to explain Earth's present day biodiversity... [and] recognize that the primary mechanisms of evolution are natural selection and genetic drift."

**ADDED IN PROPOSED STANDARDS:** "Natural selection and other processes can cause populations to change from one generation to the next, a process called 'microevolution'... Whether microevolution can be extrapolated to explain macroevolutionary changes (such as new complex organs or body plans...) is not clear. These kinds of macroevolutionary explanations generally are not based on direct observations and are historical narratives based on inferences from indirect or circumstantial evidence."

**TOPIC 3: The Origin of Life**

**CURRENT STANDARDS:** [Topic is not included.]

**ADDED IN PROPOSED STANDARDS:** "Students will be able to explain proposed scientific explanations of the origin of life as well as scientific criticisms of those explanations."