

Dear Ricky,

Thank you for your patience in waiting for our response to your attached letter expressing concerns on the end-of-course exam content for biology. We wanted to give you a thorough and accurate response, and it took some time for research to be completed by our legal and curriculum staffs. I am copying the members of the Kentucky Board of Education on the response, since they also were e-mailed a copy of your letter.

In science, a theory is a statement of general ideas that explains many observations by natural means. To a scientist, the word “theory” is a very precise term to identify a concept that has great utility in explaining phenomena in the natural world. Ideas only rise to the level of a theory in science if they have withstood much scrutiny and are exceptionally useful in explaining a wide variety of independent observations. Any theory can be altered or replaced if new observations or new scientific evidence cannot be adequately explained by it. In science, facts never become theories. Rather, theories *explain* facts. No theory is immune to revision or replacement should new evidence surface. There is a substantial difference between the "everyday" meaning of the word "theory" and the scientific meaning of the word. An idea is often labeled a theory for the purpose of painting it as little more than a guess. This use of “theory” demonstrates a lack of understanding of the scientific meaning of the term. Referring to biological evolution as a theory for the purpose of contesting it would be counterproductive, since scientists only grant the status of theory to well-tested ideas.

Additionally, science is not a system of belief. To ask if a scientist ‘believes’ in the theory of evolution is an improper question because the term ‘belief’ implies a position or opinion based on faith. A biologist would properly say he/she understands and acknowledges the evidence supporting the theory of evolution. Belief is an act of faith and is not necessarily concerned with the availability of supporting evidence. For this reason, beliefs are not considered to be within the realm of science. Moreover, the federal courts have ruled that creation science, a religious concept or belief, is not science at all. [See *Kitzmiller v. Dover Area School District*, 400 F.Supp.2d 707, 764 (E.D.Pa. 2005); *McLean v. Ark. Bd. of Educ.*, 529 F.Supp. 1255, 1259 (E.D.Ark.1982) (dismissing “creation science” as “simply not a science”).] Therefore, it is not considered relevant content for a purely *science* classroom.

Since college and career readiness is our goal for all students, we would be doing them a disservice by denying them the opportunity to learn science concepts required to obtain that goal. Evolutionary theory is one of the foundational components of modern biology, and it most certainly plays a significant part in college biology coursework. The ACT

QualityCore® biology end-of-course objectives are designed to reflect research-based college- and career-ready standards as well as promote more rigor and depth in traditional courses.

Finally, Kentucky's Core Academic Standards for Science and Core Content for Science Assessment, version 4.1, outline the *minimum* required content that all students should have the opportunity to learn in order to graduate. The QualityCore® end-of-course test for biology does expand from our current *minimum* standards. The Kentucky Core Academic Standards and Core Content for Assessment 4.1 contain two (of seven) Big Ideas that are reported under the category Life Science. Those Big Ideas are Unity & Diversity (UD) and Biological Change (BC). The Big Idea of Biological Change contains only content standards related to biological evolution. The concept of evolution already exists within these standards and has been assessed in the Commonwealth since those standards were adopted in 2006.

I appreciate your viewpoint and hope this information assists you in understanding KDE's position. Thank you for all that you do to positively impact the lives of the students in your school district.

Sincerely,

Terry Holliday