

A MESSAGE FROM THE ALABAMA STATE BOARD OF EDUCATION

The word "theory" has many meanings. Theories are defined as systematically organized knowledge, abstract reasoning, a speculative idea or plan, or a systematic statement of principles. Scientific theories are based on both observations of the natural world and assumptions about the natural world. They are always subject to change in view of new and confirmed observations.

Many scientific theories have been developed over time. The value of scientific work is not only the development of theories but also what is learned from the development process. The *Alabama Course of Study: Science* includes many theories and studies of scientists' work. The work of Copernicus, Newton, and Einstein, to name a few, has provided a basis of our knowledge of the world today.

The theory of evolution by natural selection is a controversial theory that is included in this textbook. It is controversial because it states that natural selection provides the basis for the modern scientific explanation for the diversity of living things. Since natural selection has been observed to play a role in influencing small changes in a population, it is assumed that it produces large changes, even though this has not been directly observed. Because of its importance and implications, students should understand the nature of evolutionary theories. They should learn to make distinctions between the multiple meanings of evolution, to distinguish between observations and assumptions used to draw conclusions, and to wrestle with the unanswered questions and unresolved problems still faced by evolutionary theory.

There are many unanswered questions about the origin of life. With the explosion of new scientific knowledge in biochemical and molecular biology and exciting new fossil discoveries, Alabama students may be among those who use their understanding and skills to contribute to knowledge and to answer many unanswered questions. Instructional material associated with controversy should be approached with an open mind, studied carefully, and critically considered.