# From the President

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## Evolution as Part of the Bigger Picture

In October 2011, the National Academy of Sciences (NAS) and the National Research Council gathered secondary and postsecondary faculty, representatives of private and governmental funding agencies, and leaders of academic societies for a convocation entitled *Thinking Evolutionarily: Evolution across the Life Sciences*. Jackie Reeves-Pepin and I attended the one-and-a-half-day event, the goal of which was to begin a broad discussion on developing strategies to weave evolution into the fabric of life science education at all levels. In the near future, a report stemming from the discussions will be produced by NAS that better reflects the breadth and depth of the discussions. Here, I can only relay to you the impressions with which I left the convocation and my thoughts on how NABT has promoted, and can continue to promote, the teaching of evolution.

I am proud to say that early in the sessions, Dobzhansky's (1973) famous statement that "Nothing in biology makes sense except in the light of evolution" was displayed, reminding all of the history that NABT has in promoting evolution education. But does the way in which we teach evolution reflect Dobzhansky's statement? It's the first core concept in *Vision and Change* and "Big Idea #1" in the AP BIOLOGY Curriculum Framework 2012–2013, but do we biology educators emphasize evolution in our teaching as the process that underlies and explains the relationships among organisms, between organisms and the environment, or between structure and function from the molecular to the organismal levels and beyond? Do we dwell only on the proximate aspects of biological processes (such as photosynthesis, cellular respiration, action potentials, macromolecule synthesis) or do we address the ultimate ones? Do students leave understanding that development is shaped and constrained by evolution, that evolution explains diseases, and that thinking evolutionarily enhances our abilities to predict and find solutions to both natural and anthropogenic challenges that humans face? Or do students think that evolution is a course or chapter or set of days that are to be survived or avoided? Do we teach evolution as exemplary science that lets us explain and predict, thus providing students with insight into the nature of science, or do we accidently lead students to believe that all the research that is done is focused on trying to find descriptive evidence to support?

In 2007, Cheesman et al., pursuing research prompted by the Four-Year College and University section, published the results of a survey of college biology programs and found that evolution was a required college course for majors in less than 20% of responding institutions. The authors speculated that this could reflect the practice of teaching evolution as part of many or all courses, as respondents' comments supported, which might reduce the need for a specific course. If that speculation was correct, postsecondary institutions may be headed in the direction that convocation attendees suggested, but this needs verification. It was pointed out at the convocation that research is needed in many areas of evolution education, including controlled studies of effective pedagogy and development of assessment tools.

What is NABT doing to promote sound evolution education for all? As a society, NABT's role is to disseminate information, provide professional development, advocate, and evaluate – and we do so. While articles about teaching evolution and the nature of science appear regularly in *ABT*, producing an issue with the theme of evolution has become an annual event. In this year's issue we span the needs of our readers from research to practice, for AP, for general high school, and for college, and from the hands-on to the technological approaches. Our last conference program was filled with presentations about evolution from equally diverse perspectives and included a "red carpet" showing of Howard Hughes Medical Institute's video "The Making of the Fittest," hosted by Sean Caroll; Eugenie Scott's presentation about opponents of evolution and climate warming; NESCent's symposium; and Neil Schubin's BELS banquet address, along with many other members' presentations and workshops. We are already working to include a Human Evolution theme for this year. But as a society, we need to support evolution education just like it needs to be taught – every day. Last year, the Board approved a revised statement on the teaching of evolution (http://www.nabt.org/websites/institution/index.php?p=92), designed to be clear and succinct, to aid teachers in explaining why and how they must teach evolution to provide superior education for their students. We are working on expanding our online presence with a new digital system for providing resources and sharing members' comments. Last year the Board also approved the formation of an evolution-education task force charged with identifying activities NABT could undertake, resources it could produce or provide, or partnerships it might form to enhance the abilities of biology educators at all educational levels to help their students gain a proper and age-appropriate level of understanding of evolutionary theory and its applications and implications and to help educators respond to inquiries about the teaching of evolution in an effective and knowledgeable manner. This leads to the next question: What should you do as part of NABT?

First, provide suggestions for the task force – what would help biology educators at all levels teach evolution as it should be taught? Feel free to e-mail me (dfrench@okstate.edu), and I will pass them along. Next consider your role as a teacher of evolution – how would you answer the questions posed above? Take advantage of NABT's resources to help you provide the best answers. Then consider yourself an advocate for evolution. We need to support each other and all other science educators at all levels. Whether you teach at the postsecondary, secondary, or elementary level, you should be reaching

out to other teachers who need or can provide help. NABT members are members of a community, but we are also members of local communities. Point out NABT's, our partners', or others' resources. Offer to explain how evolution works in informal settings to community groups or leaders. Don't wait for the call if you are a college faculty member – offer to lend your expertise in explaining evolutionary concepts, debunking myths, and providing new examples. Form partnerships that result in grade-level content and lessons. Finally, think about each student this way: when people seek answers, they go to someone they consider an expert who is approachable. That might be a physician, dentist, veterinarian, pharmacist, chemistry teacher, biology teacher, or third-grade teacher. It might be an engineer, a physical therapist, or just a friend. NABT members teach upwards of a million students a year and we are members of communities that encompass many more. We need to be sure that each person we influence properly represents evolution to all those they might influence. We need to be sure our students leave us with the ability to explain evolution in a clear and accurate fashion to those who will ask them about it. Maybe that should be the final assessment for our students. Ultimately, what NABT does to support evolution education is up to you – you are NABT.

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## References


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