

## Science and Engineering Unlimited by Borders

Author: Collins, James P.

Source: BioScience, 61(1) : 3

Published By: American Institute of Biological Sciences

URL: <https://doi.org/10.1525/bio.2011.61.1.1>

---

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

**PUBLISHER**  
Richard T. O'Grady

**EDITOR IN CHIEF**  
Timothy M. Beardsley

**MANAGING EDITOR**  
Laura C. Sullivan

**BOOK REVIEW EDITOR**  
**PEER REVIEW / PRODUCTION COORDINATION**  
Jennifer A. Williams

**EDITOR**  
James Verdier

**Editors:** Eye on Education: Cathy Lundmark (educationoffice@aibs.org); Feature articles: Cathy Lundmark (features@aibs.org); Washington Watch: Robert E. Gropp (publicpolicy@aibs.org).

**Editorial Board:** Agriculture: Sonny Ramaswamy; Animal Behavior: Janice Moore; Animal Development: Paula Mabey; Botany: Kathleen Donohue; Cell Biology: Randy Wayne; Ecology: Scott Collins; Daniel Simberloff; Ecotoxicology: Judith S. Weis; Education: Charlene D'Avanzo; Environmental Microbiology: Rita R. Colwell; Environmental Policy: Gordon Brown, J. Michael Scott; Evolutionary Biology: James Mallet; Genetics and Evolution: Martin Tracey; History and Philosophy: Richard M. Burian; Human Biology: David L. Evans; Invertebrate Biology: Kirk Fitzhugh; Landscape Ecology: Monica Turner; Mammalogy: David M. Leslie Jr.; Microbiology: Edna S. Kaneshiro; Molecular Biology: David Hillis; Molecular Evolution and Genomics: David Rand; Neurobiology: Cole Gilbert; Plant Development: Cynthia S. Jones; Policy Forum: Eric A. Fischer; Population Biology: Ben Pierce; Professional Biologist: Jean Wyld; Remote Sensing and Computation: Geoffrey M. Henebery; Statistics: Kent E. Holsinger; Vertebrate Biology: Harvey B. Lillywhite.

**BioScience** (ISSN 0006-3568; e-ISSN 1525-3244) is published 12 times a year by the American Institute of Biological Sciences, 1900 Campus Commons Dr., Suite 200, Reston, VA 20191, in collaboration with the University of California Press. Periodicals postage paid at Berkeley, CA, and additional mailing offices. **POSTMASTER:** Send address changes to *BioScience*, University of California Press, Journals and Digital Publishing, 2000 Center Street, Suite 303, Berkeley, CA 94704-1223, or e-mail customerservice@ucpressjournals.com.

**Membership and subscription:** Individual members, go to [www.aibs.org/aibs-membership/index.html](http://www.aibs.org/aibs-membership/index.html) for benefits and services, membership rates, and back issue claims. Subscription renewal month is shown in the four-digit year-month code in the upper right corner of the mailing label. Institutional subscribers, go to [www.ucpressjournals.com](http://www.ucpressjournals.com) or e-mail customerservice@ucpressjournals.com. Out-of-print issues and volumes are available from Periodicals Service Company, 11 Main Street, Germantown, NY 12526-5635; telephone: 518-537-4700; fax: 518-537-5899; Web site: [www.periodicals.com](http://www.periodicals.com).

**Advertising:** For information about display and online advertisements and deadlines, e-mail [adsales@ucpressjournals.com](mailto:adsales@ucpressjournals.com). For information about classified placements and deadlines, contact Jennifer A. Williams, AIBS ([jwilliams@aibs.org](mailto:jwilliams@aibs.org)).

**Copying and permissions notice:** Authorization to copy article content beyond fair use (as specified in sections 107 and 108 of the US Copyright Law) for internal or personal use, or the internal or personal use of specific clients, is granted by the Regents of the University of California on behalf of AIBS for libraries and other users, provided that they are registered with and pay the specified fee through the Copyright Clearance Center (CCC), [www.copyright.com](http://www.copyright.com). To reach the CCC's Customer Service Department, call 1-978-750-8400 or e-mail [info@copyright.com](mailto:info@copyright.com). For permission to distribute electronically, republish, resell, or repurpose material, and to purchase article offprints, use the CCC's Rightslink service on Caliber at <http://caliber.ucpress.net>. Submit all other permissions and licensing inquiries through the University of California Press's Rights and Permissions Web site, [www.ucpressjournals.com/reprintinfo.asp](http://www.ucpressjournals.com/reprintinfo.asp), or e-mail [journalspermissions@ucpress.edu](mailto:journalspermissions@ucpress.edu).

**Abstracting and indexing:** For complete abstracting and indexing information, please visit [www.ucpressjournals.com](http://www.ucpressjournals.com).

© 2011 American Institute of Biological Sciences. All rights reserved. Printed at Allen Press, Inc.

# BioScience®

**Organisms from Molecules to the Environment**  
American Institute of Biological Sciences

## Science and Engineering Unlimited by Borders

**D**iscoveries in the life sciences, along with biology's integration into engineering and the physical and social sciences, make it clear that the 21st century is and will continue to be the "century of biology."

Any institution's welfare and effectiveness depend on its values, and four in particular should characterize AIBS: (1) integration of research and education; (2) broadening participation in our discipline and science in general; (3) fostering science as an international activity; and (4) since AIBS is already the center of a network of member organizations, we should value integrating with the agendas of other societies in the sciences, engineering, and humanities to the benefit of all.

Rather than an emphasis on the parts of biology—our respective subdisciplines, the organisms we study, the systems we strive to understand—biology's future will be enriched by highlighting a common vision that emphasizes questions, concepts, and theories central to a science of life.

Biology research and education today differ from how they were done 10 or even 5 years ago. Today's frontiers are often at disciplinary edges filling the white spaces between our traditional disciplines, at the intersection of biology and computer and information sciences, engineering, geosciences, mathematics, physical sciences, and social sciences. An article in this issue of *BioScience* by James H. Brown and colleagues (p. 19) is a sign of the times: The authors use physics, ecology, and economics to explore their thesis that energy use imposes fundamental constraints on economic growth and development.

These intellectual advances bring the challenge of training students to be open to new ideas and capable of thinking broadly as they develop the depth of knowledge we expect of our best thinkers. The new 21st century biologists increasingly will be what some have called "T-thinkers": students capable of great breadth while also achieving a deep understanding of selected areas.

AIBS is a singular forum for integrating the life sciences. During this year my goal as president is to help us lead a conversation about biology in particular and science in general. The conversation must embrace new ideas in research and education. Individuals and networks of scientists must answer the basic research questions of the century of biology, and embrace a future in which biology and society are ever more entwined. Scientists have an important role to play in clarifying a present that is constantly changing while contributing to sustaining Earth's future.

Biology emerged as a discipline through the synthesis of diverse areas in the life sciences, including anatomy, physiology, and natural history. The "discipline" of biology emerged through the integration of diverse areas with a focus on discoveries for understanding life; today we might describe such an outcome as interdisciplinary or even transdisciplinary. Biology's origins are worth remembering at a moment when the life sciences are in such an exciting time of change, much of which is powered by interactions with other areas of study.

JAMES P. COLLINS  
President, AIBS

doi:10.1525/bio.2011.61.1.1