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Biological Sciences for the 21st Century: Meeting the Challenges of Sustainable Development in an Era of Global Change

A symposium exploring exciting developments in biological sciences research and how these developments could be harnessed to address world-wide challenges of promoting sustainable development in an era of global change



Session 1: Overviews of Key Developments in the Biological Sciences

The Biological Sciences and the Challenge of Sustainability
William Clark, Harvard University, USA

Biocomplexity Applications in Addressing Global Issues

Rita Colwell, University of Maryland, USA

Advances and Challenges in Computational Biology
Stephen Emmott, Microsoft Research Cambridge, UK

Advances in Molecular Techniques
Claire Fraser-Liggett, University of Maryland School of Medicine, USA

Advances in Integrating Knowledges
Jan Salick, Missouri Botanical Garden, USA

Advances in Capacity Building
Ismail Serageldin, The Library of Alexandria, Egypt

Session 2: The Challenge of Ecosystem Services

Request a Symposium CD

Request a CD containing speaker presentations and audio/video tracks.

CDs of the materials from the "Biological Sciences for the 21st Century" symposium are being produced. If you would like to request one, kindly send your name, mailing address, and contact information to BISO@nas.edu. Please include the heading "May 2007 IUBS CD Request" in the subject line of your message.



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IIASA 2012 Young Scientists
Summer Program
Deadline: January 16, 2012

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Travel Fellowships to ICTAM
Deadline: January 31, 2012

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34th International Geological
Congress Travel Grant and
Mentoring Program

Deadline: February 17, 2012

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IIASA Postdoctoral Program
Deadline: February 29, 2012

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Session 2: The Challenge of Ecosystem Services



Natural Security: Ecosystems and Human Well-Being
Jane Lubchenco, Oregon State University, USA

Complex Systems and the Challenge of Ecosystem Services
Simon Levin, Princeton University, USA

A Bountiful Harvest: Using What We Already Know and Will Know
James Reichman, University of California – Santa Barbara, USA

The Development of a Predictive Model for the Control of the Desert Locust
Onesmo ole-MoiYoi, International Center of Insect Physiology & Ecology (ICIPE), Kenya

Integrating Local and Scientific Knowledge Surrounding Tropical Ecosystem Goods & Services: Availability, Use and Policies
Lisa Curran, Yale School of Forestry & Environmental Studies, USA

Discussion on Capacity Building
Kamal Bawa, University of Massachusetts- Boston, USA
Onesmo ole-MoiYoi, International Center of Insect Physiology & Ecology (ICIPE), Kenya



Session 3: The Challenge of Food Security

Threats to an Evergreen Revolution in Agriculture
M.S. Swaminathan, M.S. Swaminathan Research Foundation, India

Putting it all Together at the Grass Roots in African Green Revolution
Pedro Sanchez, The Earth Institute at Columbia University, USA

Maize Genome Assembly, Mapping and Biofuels
Patrick Schnable, Iowa State University, USA

Using Livestock Diversity to Understand Genome Biology
Stephen Kemp, International Livestock Research Institute (ILRI), Kenya and University of Liverpool, UK

Knowledge Integration and Problem-solving for Sustainable Agriculture
Calestous Juma, Harvard University, USA

Capacity Building in the Biological Sciences for Food Security
Meryl Williams, Australian Centre for International Agricultural Research, Australia

Session 4: The Challenge of Population Health

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Session 4: The Challenge of Population Health



Population Health: Profile and Prospect in a Clever but Unwise World

Anthony McMichael, The Australian National University, Australia

Analyzing and Predicting the Complex Process of Disease Emergence and Spread

Peter Daszak, Consortium for Conservation Medicine, USA

Large-scale Genome Sequencing and Analysis of the Influenza Virus

Steven Salzberg, University of Maryland, USA

Can Microbial Genomics and Proteomics Contribute to Improve Human Health in the 21st Century?

Yu-Mei Wen, Fudan University, P.R. China

The Promise of an Integrative Approach, Combining Ayurvedic Knowledge with Western Bio-medical Sciences

Darshan Shankar, Foundation for Revitalisation of Local Health Traditions, India

Capacity Building in Biology and Public Health in the 21st Century

Ulisses Confalonieri, National School of Public Health, Brazil



Session 5: The Energy Challenge

Genomics: Key for Ecological Studies, Renewable Fuel Production, and the Stabilization of Atmospheric Carbon

J. Craig Venter, J. Craig Venter Institute, USA

Commentary

Corrado Clini, Ministry for Environment, Land and Sea, Italy

Anna Palmisano, United States Department of Agriculture

Session 6: Transforming Research Into Solutions

Discussion by world leaders in science policy, reflecting the content of the symposium and looking to the future

Education for Sustainability



A half-day symposium featuring strategies for the effective teaching of sustainability science

Introduction by the Symposium Organizer

John R. Jungck, Beloit College, Chairperson, U. S. National Committee to IUBS and Vice President, IUBS Commission on Biology Education

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History of the IUBS Commission on Biology Education

Talal Younes, Executive Director of IUBS, France

Maori and Western World Views Shape a Strong Environmental Ethic in Aotearoa/New Zealand

Charles H. Daugherty, Assistant Vice-Chancellor (Research); Professor of Ecology, Victoria University of Wellington, New Zealand

Co-author: Kristina Ramstad

Data Enriched Sustainability in a Megabiodiverse World - Challenges and Potentials

Vishwas Chavan, Scientist, Information Division, National Chemical Laboratory, Pune, India

Engaging Students in Sustainability Issues: Investigative Cases, Tools and Data

Margaret Waterman, Professor of Biology & Director, Center for Teaching and Learning, Southeast Missouri State University and Associate Director, BioQUEST Curriculum Consortium

Towards a New Generation of Naturalist Citizens: INBio's Bioliteracy Program

Natalia Zamora, Director, National Biodiversity Institute (INBioParque), Costa Rica

Practicing Education for Sustainable Development through Environmental Action Learning: A Case of Eco-schools in Kenya

Dorcas Otieno, Director Kenya Organization for Environmental Education

Teaching and Mediating Sustainability Science

André Giordan, President, IUBS Commission on Biology Education and Founder and Professor, the Laboratoire de Didactique et Epistémologie des Sciences (LDES), University of Geneva, Switzerland

Steering Committee for Biological Sciences for the 21st Century:

Meeting the Challenges of Sustainable Development in an Era of Global Change

William Clark (Chair)
Harvard University

Bruce Alberts
University of California, San Francisco

Rita Colwell
University of Maryland

Tony McMichael
The Australian National University

M.S. Swaminathan
Pugwash Conferences on Science and World Affairs

John C. Wooley
University of California, San Diego

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Academy of Science for the Developing World (TWAS)

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Pugwash Conferences on Science and World Affairs

John C. Wooley
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University of California, Berkeley

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