

October 30, 2009

Dear Board Member,

Please take a moment to review this month's briefing on recent activities and accomplishments in sustainability. On page two, I introduce Professor Bruce Rittmann, a pioneer in the use of microbes to produce renewable energy and clean water.

Highlights of ASU's sustainability activities

- Dr. Elinor Ostrom, research professor and founding director of the Center for the Study of Institutional Diversity in the School of Human Evolution and Social Change won this year's Nobel Memorial Prize in Economic Sciences. She was honored for her work in economic governance, particularly her demonstration that user associations can operate "commons" sustainably. [Read more.](#)
- ASU served as one of five U.S. host locations for World Wide Views on Global Warming, the first-ever global citizen consultation on climate change. The Phoenix metro group, which was organized by ASU's Consortium for Science, Policy and Outcomes, deliberated on 12 questions and suggested several climate policies. Among their top recommendations: remove subsidies and incentives from fossil fuels, tax overconsumption, implement a greenhouse gas cap-and-trade program, and establish a global fund to accelerate the development of renewable technologies. [Read more.](#)
- ASU was named a top college and campus sustainability leader by the Sustainable Endowments Institute's *College Sustainability Report Card 2010*, the only independent evaluation of campus and endowment sustainability activities in the U.S. and Canada. ASU received "straight A's" for its policies and projects in administration, climate change and energy, transportation, green building, and student involvement. Overall, it was one of only 26 schools to earn the highest awarded rating. [Read more.](#)
- The National Science Foundation awarded ASU a grant to develop The Modeling Institute, a project that will enable middle school teachers and students to work on sustainability research directly with ASU scientists from research centers across ASU, including the Central Arizona—Phoenix Long-Term Ecological Research project. The goal is to increase professionally qualified middle school math and science teachers and improve student learning in science and math. [Read more.](#)
- Our Sustainable Cities Network's September meeting attracted more than 85 attendees from a range of city, town, tribal, county, state, and local agencies and organizations. Members shared best sustainability management practices, learned about strategies for communicating sustainability to residents, and discussed the Global Cities Indicators Facility, a World Bank project to establish sustainability baseline data requirements for cities across the globe. [Read more.](#)

You can reach me at rob.melnick@asu.edu or 480-965-5233 with any questions or comments about this briefing. The interview with Dr. Rittmann follows on page two.

Best regards,



Rob Melnick
Executive Dean

cc: Jim Buizer, Teresa Forst

Q&A With Dr. Bruce Rittmann

Looking to microbes for clean energy and water

Dr. Rittmann is Regents' Professor of Civil and Environmental Engineering in the Ira A. Fulton Schools of Engineering, affiliated faculty of the School of Sustainability, and a member of the National Academy of Engineering. As director of the Center for Environmental Biotechnology at the Biodesign Institute, he has pioneered research on microbiological systems that generate usable energy from waste products and remove pollution from contaminated ecosystems.

What event or recognition focused your work on sustainability?

In the mid-1990s, I realized that sustainability is not about "the environment" or "the Earth," but about the ability of human civilization to survive. Earth will fare well, and so will cockroaches, but will human society continue to exist? Should it? Balancing our deplorable record of destruction with our great works of art, music, architecture, and engineering, I decided humanity is worth the effort, so I made sustainability an explicit part of my research.

What is the most important sustainability-related research project you are currently working on?

Our society's addiction to fossil fuels is the root cause of most environmental problems. Intoxicated by hundreds of millions of years of stored-up energy to draw upon, we have built a society that depends on coal, petroleum, and natural gas for up to 86 percent of its energy. This cannot be sustained. Therefore, my most important project studies how to use photosynthetic bacteria to capture sunlight and CO₂ and convert it into a form of renewable biofuel that can replace fossil fuel.

Why do you believe microbes are the key to sustainability solutions?

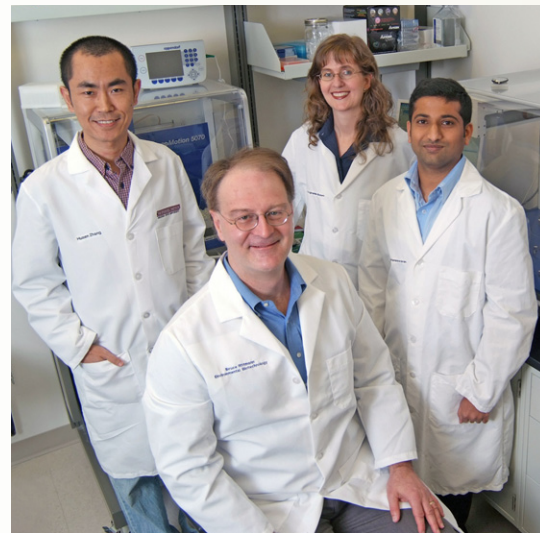
Bacteria can grow 100 times faster than plants and do not compete for arable land or consume and pollute our water resources. With a working large-scale microbe-based system, we could generate enough renewable energy to replace the world's fossil-fuel use in a total area roughly equal to Texas. Microbes can provide other services as well. In our lab we are developing microbe-based systems that can purify contaminated water and increase our usable water supplies.

How do you think your sustainability-related research can affect policy decisions?

Once policymakers realize it is possible to replace fossil fuels without harming our food supply or water resources, we can focus on global cooperation instead of competition over fossil fuels. I expect some push-back from entities with vested interests in fossil fuels, but society has no choice but to move steadily over the next 20 or so years towards an energy supply that is predominantly clean and renewable.

What is the world sustainability challenge that concerns you the most?

Global climate change is the most difficult technical challenge because fossil fuel use permeates every aspect of our society and we are way behind in finding solutions. What worries me most, though, is that war and terrorism may overrun civilization if we cannot find technological solutions fast enough.



Dr. Rittmann with the Environmental Biology team that is studying the role of microorganisms in obesity



Environmental Biology research scientists setting up experiments with a microbial fuel cell



Dr. Rittmann sampling photosynthetic bacteria from the biofuels project "Tubes in the Desert"