



BSR Conference 2010  
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## Biomimicry: Nature's Solutions to Human Problems

Breakout Session Summary  
Thursday, November 4, 2010 | 10:15-11:15 a.m.

### Speakers

- » **Chris Allen**, Manager, Biomimicry Design Portal Project, Biomimicry Guild and Institute
- » **Laura Ediger**, Environmental Manager, BSR (moderator)

### Highlights

- » Biomimicry is a different way to approach product design and sustainability.
- » Biomimicry defines what it means to be a well-adapted species on Earth.
- » There is an incredible amount of knowledge in the 3.8 billion-year history of nature from which humans can learn.

### Memorable Quotes

*"Biomimicry is the next level of thinking in sustainability."*—Chris Allen, Biomimicry Guild and Institute

*"Biomimicry reconnects with nature and reconceives what it is to be human."*—Chris Allen, Biomimicry Guild and Institute

*"We have just begun to learn what nature has to offer us."*—Chris Allen, Biomimicry Guild and Institute

### Overview

Allen stated that a lot of things that have been built are out of context with nature, and biomimicry is a way to design products in the context of nature's systems. He said biomimicry uses what has been successful in nature for the past 3.8 billion years. For example, biomimicry studies "champion adaptors," which are organisms that adapt to extreme environments over time, such as deserts, and brings those concepts to product design. Allen also said that traditionally we have extracted from nature, and biomimicry helps us to change our thinking to view nature as a mentor.

Another part of biomimicry is to look to nature for metrics. Nature has specific metrics to manage air, soil, and water; if we understand this process, we can design products in the context of nature.

Allen also stated that biomimicry is helping humans move from being a maladapted to a well-adapted species for the planet. As an example, he cited Japan's high-speed bullet trains that produced loud sounds, like thunderclaps, when exiting a tunnel. The front of the train was redesigned to mimic the beak of a Kingfisher bird, which eliminated the problem. Another example comes from engineers who learned that turbines that mimic the tail of a fish can better harness the wave energy in oceans. Finally, Allen said Nissan is studying how schools of fish swim to optimize robotic car systems.



Allen went on to describe how biomimicry tries to determine the common denominators in nature to create life-friendly materials. In addition, he said that as we progress to a post-industrial future, we will need to biologize design. Then he described a few key insights for how companies can use biomimicry for product design, including: treating organizations, communities, and economies as living machines; taking a systems approach to innovation; and learning from nature's innovations over the last 3.8 billion years.

In the Q&A period, Allen described how companies can use biomimicry to their advantage. For example, he helps companies find a set of analogs in biology to inspire new solutions to any given problem. Allen usually involves different departments with different sets of knowledge in a company to provide a variety of perspectives.

Participants were also interested in learning more about the Biomimicry Guild and Institute's project in India, called Lavasa—a new city being built on the principles of biomimicry. The main challenge for this project was figuring out how to reinvent architecture in a way that works with nature. For example, the buildings were designed to create more energy than it uses.

Allen next discussed his work with Shell, through which he tried to help the company think of themselves as an energy company rather than as an oil company. By changing the way the company viewed itself, they started thinking about different ways to harness energy that mimics nature's systems.

Allen closed the session by discussing his work with Google. He helped the company learn about nanoscale biological systems, and how the company can apply that thinking to find new ways to power massive data storage systems.

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