

The *Lotus Live* Guide to **Biomimicry**

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Introduction

- This guide is your source for information about biomimicry, discussing the basic principles of biomimicry, and various biomimetic solutions.
- As Lotus Live's knowledge base increases, and as new resources are created, this guide will be updated. The most recent version of this guide can be found [here](#).

What Is Biomimicry?

A Basic Introduction

- According to world-renowned biomimicry specialist Janine Benyus, "Biomimicry is innovation inspired by nature, looking to nature as a teacher." Biomimicry is the realization that humans are not the only innovators on this planet--other species have been living, surviving, and learning here for 3.8 billion years. Ninety-nine percent of the species that have ever lived on Earth are extinct, because they were not innovative enough. The one percent that is with us now, however, have stood the test of time. And they've done it all without needing a single drop of oil, coal, or uranium. They have sustained themselves, not by destroying their surroundings, but by adapting to them, and even enriching them--fertilizing the soil, cleaning the air and water, producing oxygen.
- Biomimicry is about asking one simple question: What would nature do? Instead of asking what is the least toxic cleaner I can use, we should be asking: How does nature stay clean? Our namesake, the lotus, is nearly impervious to dirt, due to a rough surface that doesn't allow dirt to stick to it, and channels water in such a way as to effectively wash away any dirt that remains. Clever biomimics have managed to recreate this effect in a facade paint called [Lotusan](#).
- The natural innovations are all around us once we begin to look--the hummingbird migrates 600 miles non-stop over water on 2.1 grams of nectar! Spiders and crickets make silk 5 times stronger than steel--naturally, inside their bodies, at room temperature!
- By looking to nature for natural, non-toxic solutions to our problems, we can begin to free ourselves of the quest to be less bad, and put ourselves on the road to becoming good - productive members of the community Earth.

Principles of Biomimicry

Principles of Nature

<i>Nature banks on diversity</i>	<i>Nature runs on sunlight</i>
<i>Nature demands local expertise</i>	<i>Nature fits form to function</i>
<i>Nature curbs excesses from within</i>	<i>Nature uses only the energy it needs</i>
<i>Nature taps the power of limits</i>	<i>Nature rewards cooperation</i>
<i>Nature is beautiful</i>	<i>Nature recycles everything</i>

Qualities of Successful Organisms

<i>Use waste as a resource</i>	<i>Don't foul their nest</i>
<i>Gather and use energy efficiently</i>	<i>Don't deplete their resources</i>
<i>Diversify and cooperate to use habitat</i>	<i>Remain in balance with the biosphere</i>
<i>Optimize rather than maximize</i>	<i>Run on information</i>
<i>Use materials sparingly</i>	<i>Shop locally</i>

Both of these lists are adapted from Janine Benyus' [*Biomimicry*](#).

Biomimicry Database

Your Source for Nature's Solutions

- [The Biomimicry Database](#) is in alpha testing currently, but will allow (and already does to some extent) anyone to search for natural solutions to design problems. For example, search for "Adhesive," and you will get results directing you to scholarly articles about the adhesive properties of gecko feet and mussel byssi.

Natural Wonders

Coming Soon

Examples of Biomimicry

Coming Soon

Biomimicry Media

Books

- [*Biomimicry: Innovation Inspired by Nature*](#) by Janine M. Benyus (1997) is the book that first alerted the public to biomimicry. It gets a bit technical at times in the middle, but conceptually, it is unprecedentedly inspiring.
- [*Wild Solutions: How Biodiversity is Money in the Bank*](#) by Andrew Beattie and Paul R. Ehrlich (2004) is a more recent look at some of the most innovative natural solutions, making the argument that preserving biodiversity is essential to human interests.
- [*Nature's Operating Instructions: The True Biotechnologies*](#) ed. by Kenny Ausubel (2004) is not explicitly about biomimicry, but includes many natural solutions, and ideas for harmonizing our needs with nature's.

Videos

- Janine Benyus gives a talk on "[12 Sustainable Design Ideas from Nature](#)" at TED 2005

About this Guide

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References: [Biomimicry: Innovation Inspired by Nature](#) by Janine M. Benyus (1997)

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If you have any ideas, suggestions, or corrections you would like to contribute to this guide on Biomimicry, please send us an email at [education@lotuslive.org](mailto:education@lotuslive.org).

Feel free to make use of any of the information in this guide for any purpose--we simply ask that you credit us and our predecessors, and link to us.

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