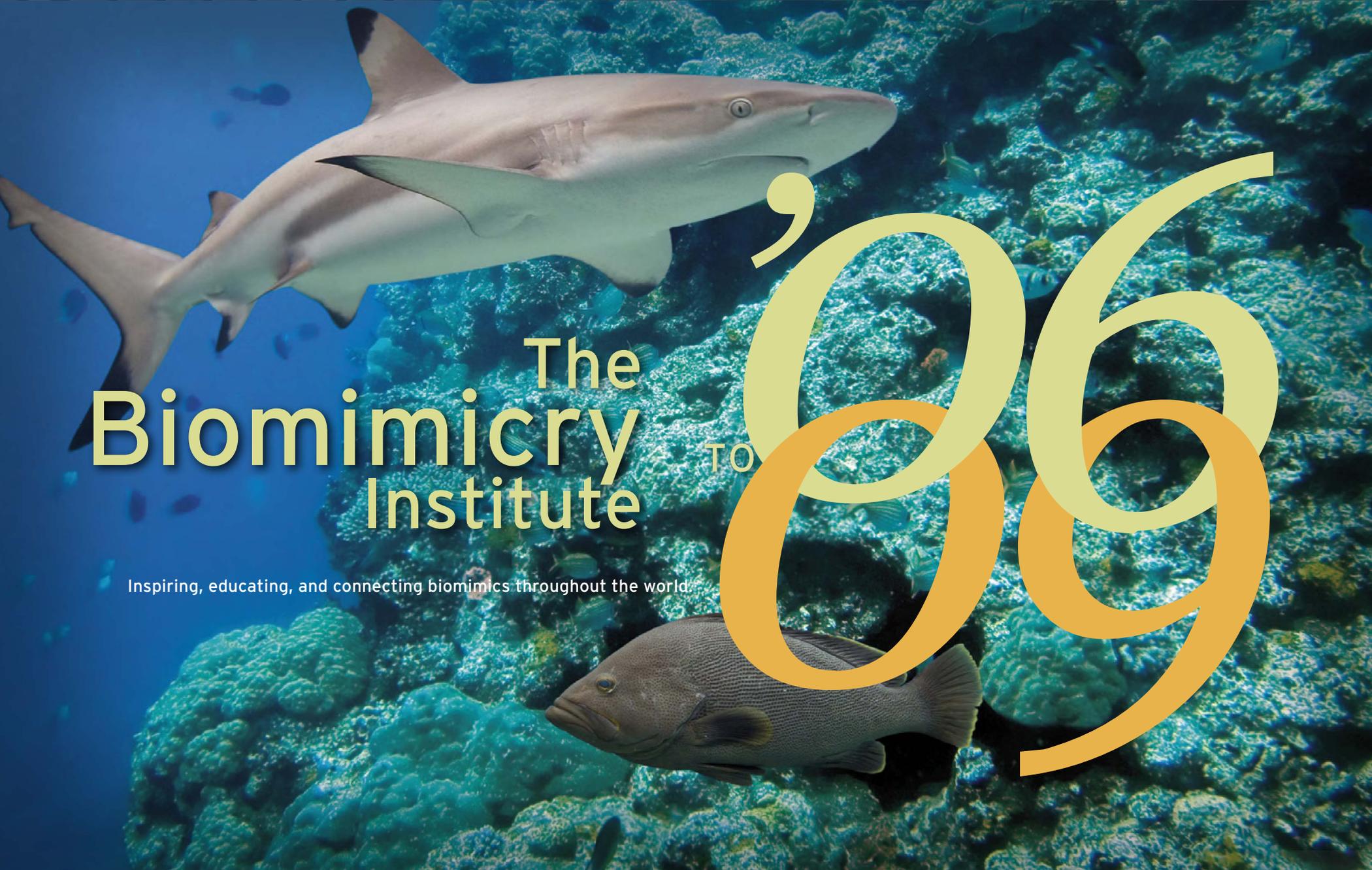
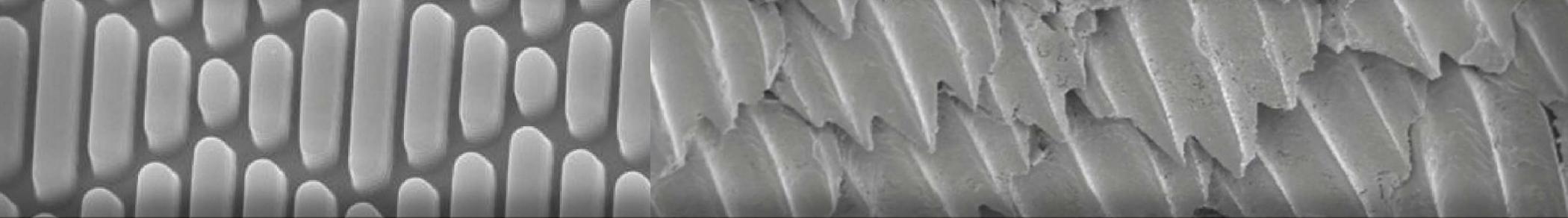


The Biomimicry Institute

TO



Inspiring, educating, and connecting biomimics throughout the world.



The Biomimicry Institute

TO

006

Inspiring, educating, and connecting biomimics throughout the world.

On the cover: Sharks have inspired an anti-bacterial surface that could reduce the need for harsh sterilization chemicals in hospitals.



Biomimics have designed panels to collect water from the air like the Namib desert beetle.

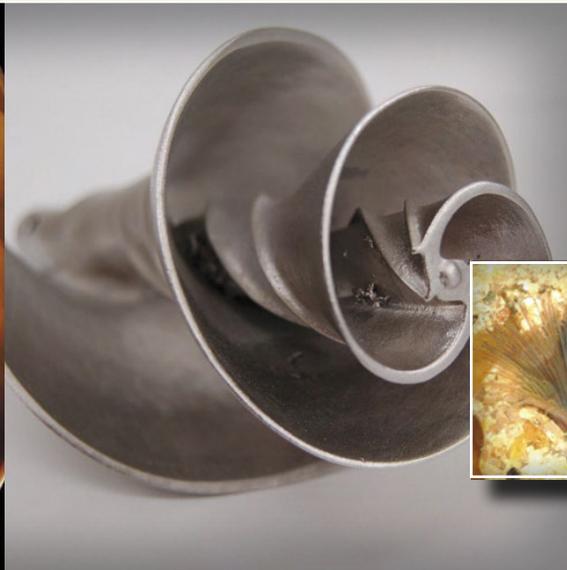
Wind turbines that mimic the flipper of the humpback whale work at lower wind speeds than conventional turbines.



BIOMIMICRY Institute

The Biomimicry Institute inspires, educates, and connects biomimics throughout the world.

Biomimicry is the science and practice of emulating nature's best biological ideas to solve human problems. Here are some examples of biomimicry in action.



Impellers inspired by the efficient shape of spirals in nature save energy.



Auto designers are mimicking locusts' flight patterns to develop crash-avoidance systems.



Medical researchers are developing a way to heal bones without pins by mimicking the strong bonds used by sandcastle worms.

3,800,000,000

Our teacher is 3.8 billion years old

And our students are reinventing our world right now



Whenever I pull up to The Biomimicry Institute's headquarters, I can't help but smile. These unassuming downtown offices in Missoula, Montana, contain the first stirring of an evolutionary discipline that is reimagining the way we innovate and rewriting what it means to study biology. They also are giving birth to a long-held dream of mine. When I first began collecting examples of biomimicry

in 1990, nature-inspired innovation was an unnamed endeavor, practiced by individuals who had no common affiliation, and who published in small, specialized journals. Serendipity alone brought biologists in contact with engineers, architects, and designers. An engineer who happened to work down the hall from a botanist became the creator of the leaf-inspired solar cell; a hearing-aid manufacturer who queried an entomologist wound up developing a device based on the keen ears of *Ormia ochracea*, a small parasitic fly.

Serendipity makes a good story, but it's too chancy for the level of redesign that we need to ensure the future of the planet. I envisioned a global network of innovators who would collaborate with biologists to solve worthy challenges. I imagined that architects, engineers, and designers would one day take a biology course organized by function, and that throughout their careers, they would automatically ask: How Would Nature Solve This? I hoped their kids would come home from school with biomimicry designs of their own. If these things could happen, I believed, it would lead to a deeper appreciation of the natural world, and a renewed commitment to preserving it.

“When history of technology scholars look back, they will recall that this was the time when innovators of all cultures began to learn from their elders.”

Thanks to The Biomimicry Institute, all of this and more has been realized. We're seeing the formalization of this way of innovating, and the gathering of a global community of practice. When history of technology scholars look back, they will recall that this was the time when innovators of all cultures began to learn from their elders.

The timing couldn't be better. We have, perhaps, just enough time to make a difference in our planet's future, and for this unprecedented push, the world is looking past old ideas and towards new ones, even if the ideas come from a rhinoceros instead of a Rhodes scholar!

I write this message fresh from a Biomimicry Institute workshop held near Kruger National Park in South Africa. One morning, we traveled to a cliff face covered with ancient rock art depicting elephants, impalas, giraffes, and

wildebeests—magnificent life forms that early peoples admired, respected, and were grateful for. With the help of these and all the other extraordinary organisms on this planet, we're determined to leave a world that will continue to stir the souls of future generations.

So please join us—visit AskNature, explore our website, or come by our offices and get to know us. Inside, you'll find our incredible staff working at a bursting, springtime pace. We have a sense that the people of the world are waking up to biomimicry all at once, and as they do, we want to create enough opportunities for everyone, including you, to play a part.

Janine Benyus, Board President

3,500,000,000

Nature provides the inspiration The Biomimicry Institute provides the tools for innovation

Dear Friends of The Biomimicry Institute,

The world is entering a critical period in our collective history, one in which the consequences of insufficient action on issues such as climate change could

*“Our philosophy: Think Big.
We cannot afford to do anything less.”*

dwarf, and even exacerbate, the problems from the current economic recession. At The Biomimicry Institute, we remain optimistic about the future, because we hear daily from people who are inspired by biomimicry and, like us, see it as a solution.

The Biomimicry Institute was founded to answer a need. Co-founder and board president Janine Benyus’s book *Biomimicry: Innovation Inspired by Nature* galvanized an entire movement. She soon realized that she alone could not respond to all the inquiries that came flooding in, and that she needed an organization to build and support the worldwide network of biomimics. So she and Dayna Baumeister, her business partner at the Biomimicry Guild, asked me to help establish The Biomimicry Institute, the first and only non-profit dedicated to providing the tools that students, professionals, and educators need to join the burgeoning biomimicry movement.

The need has grown and so have our educational programs, services, and tools. In just three years, from the time we opened our doors in 2006 (thanks

to a \$25,000 seed grant from David Fox) we’ve grown from a staff of one (me) to a staff of 10, and increased our annual budget to \$1.3 million.

We are proud to be at the forefront of a hopeful, energetic movement that is gaining new momentum each day. From developing K-12 curricula to establishing university biomimicry programs across the globe, from launching the world’s first on-line biomimicry design portal to sponsoring workshops as far away as South Africa, our team has been spreading the seeds of a global design revolution.

Our philosophy: Think Big. We cannot afford to do anything less. I invite you to read about our successes to date and our ambitious plans for the future. My heartfelt thanks to all of you who have supported us on this remarkable journey.



Warm regards,

Bryony Schwan, Executive Director

- 1997 *Janine Benyus wrote Biomimicry: Innovation Inspired by Nature*
- 2005 *Dayna Baumeister, Janine Benyus, and Bryony Schwan formed The Biomimicry Institute*
- 2006 *Bryony Schwan hired as first director*
- 2007 *Four more staff hired for educational programs*
- 2008 *AskNature.org launched, 2-year biomimicry certificate program launched, Ask the Planet CD released*
- 2009 *Ten employees, a \$1.3 million budget, and too many projects to list here.*

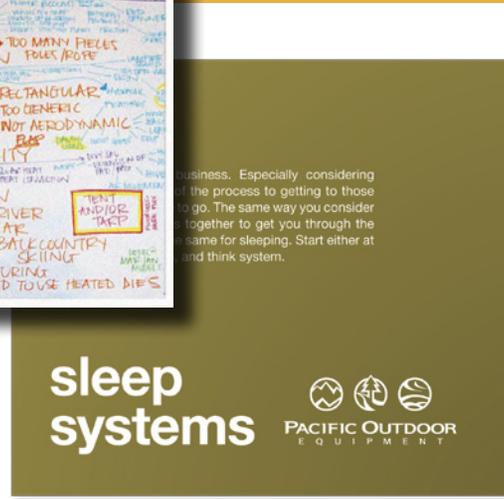
Inspiring Innovation

OUR FIRST STUDENT DESIGN CHALLENGE

A small and well-known outdoor gear manufacturer, Pacific Outdoor Equipment (POE), sponsored a real-life design challenge: to use biomimicry tools and principles to design a specialized backpacking tent. The Biomimicry Institute created the interdisciplinary and collaborative design team of university students and faculty, and facilitated the design process throughout the semester-long project, from idea to prototype. (The product is presently sold by POE). The second student biomimicry design challenge will start in the spring of 2010.



business. Especially considering the process to getting to those to go. The same way you consider together to get you through the same for sleeping. Start either at and think system.



OUR NEXT DESIGN CHALLENGE

The Biomimicry Institute is sponsoring a series of design challenges for innovators who want to try out a new way of solving the world's greatest sustainability problems by asking "How would nature solve this." The first challenge is focused on climate change. We're asking innovative architects, builders, materials scientists, and engaged citizens to propose biomimicry solutions to address the energy deficit that buildings worldwide represent. Buildings in the United States consume 39% of America's energy and generate 38% of our carbon dioxide emissions.



the system

All the best Pack a system. Q: Making that will be one of the best...
Q: ...
Q: ...
Q: ...

Ground Tarps

These have general purpose protection from the ground and are made of 1.5 oz. polyethylene...
Q: ...
Q: ...
Q: ...

Shelter Tarps

Lightweight 600D polyester fabric keeps you dry in the most...
Q: ...
Q: ...
Q: ...

improvise.

Tarps are a lot like your muscles: they're all about...
Q: ...
Q: ...
Q: ...

1,300,000,000

Attention

The Biomimicry Institute in the news

It's been just 12 years since The Biomimicry Institute co-founder Janine Benyus coined the term "biomimicry." But Google "biomimicry" today, and you'll get about 320,000 results. Biomimicry has been the subject of a two-part PBS television special, and the subject of hundreds if not thousands of articles, news programs, radio talk shows, conferences, blogs, and tweets. Many of them include material provided by The Biomimicry Institute, which has become the "go-to" organization for information about biomimicry.

We are well on our way to making biomimicry not only a household word but an accepted best practice.

"I believe that biomimicry is one of a small handful of very important ideas that will change the way business is done. And it seems to be catching on."

—ANDREW WINSTON, HarvardBusiness.org

"Biomimicry blends the best of the old with the best of the new to produce highly efficient technology that works with the grain of Nature rather than against it."

—PRINCE OF WALES, 2009 Dimpleby Lecture on the Environment

FORTUNE

Condé Nast
Portfolio

Readers
Digest

ENVIRONMENTAL MAGAZINE OF THE YEAR
ECOLOGIST

BusinessWeek



NATIONAL GEOGRAPHIC

Ideas worth spreading



TED

"This will change your life. It has already changed mine. And it may save the world."

—AMORY B. LOVINS, chairman and chief scientist of Rocky Mountain Institute, Time Magazine

TIME

The Economist

nature



In June of 2009 Janine Benyus, President of The Biomimicry Institute, received the United Nations Environment Programme Champion of the Earth Award.



Janine Benyus and E.O. Wilson at Greenbuild '08 after delivering the closing plenary.

600,000,000



NOURIEL ROUBINI
Professor of Economics at the University of California, Berkeley, and former chief economist of the Federal Reserve.

ASK A CEO TO NAME A BUSINESS GAME, and you're likely to hear the name: chess. That's because chess is a game that has been played for centuries and is still popular today.



Janine Benyus
Taking her inspiration from nature's ingenuity, she helped launch a design revolution. BY ANDY B. LEVINS



Japan Times



BBC Focus Magazine



Domus Architecture



YEARS OF INSECTS

434,000,000

Youth Program



Growing the next generation of biomimics

The planet's future depends on our children. So it's up to us to give them the tools to make that future a sustainable one. With downloadable curricula available free of charge from our website. The Biomimicry Institute has become the K-12 community's principal provider of biomimicry-related educational materials.

Left: Working together, the Montana Natural History Center and The Biomimicry Institute developed curricula about biomimicry so that students now not only learn *about* nature, but are introduced to the idea of learning *from* nature, such as how nature creates color using surface structure rather than pigment.

“As a mother of three young girls, a trained architect, and Montessori teacher long interested in the concept of biomimicry, I am THRILLED by this [biomimicry curriculum] resource. Thank you very much.” –SHERRY HAYES, Warrenton, Virginia

Innovative Partnerships

The goal of The Biomimicry Institute’s youth program is to help formal and non-formal educators successfully adopt the new content of biomimicry into their teaching venues by providing them with a comprehensive set of mutually reinforcing resources, including teaching materials, on-line professional development, collaborative enterprises, contest opportunities, and more. In addition to many classroom teachers, organizations such as The Cooper-Hewitt National Design Museum, North Cascades Institute, U.S. Forest Service, and Crissy Field Center have used our curricula to introduce biomimicry.

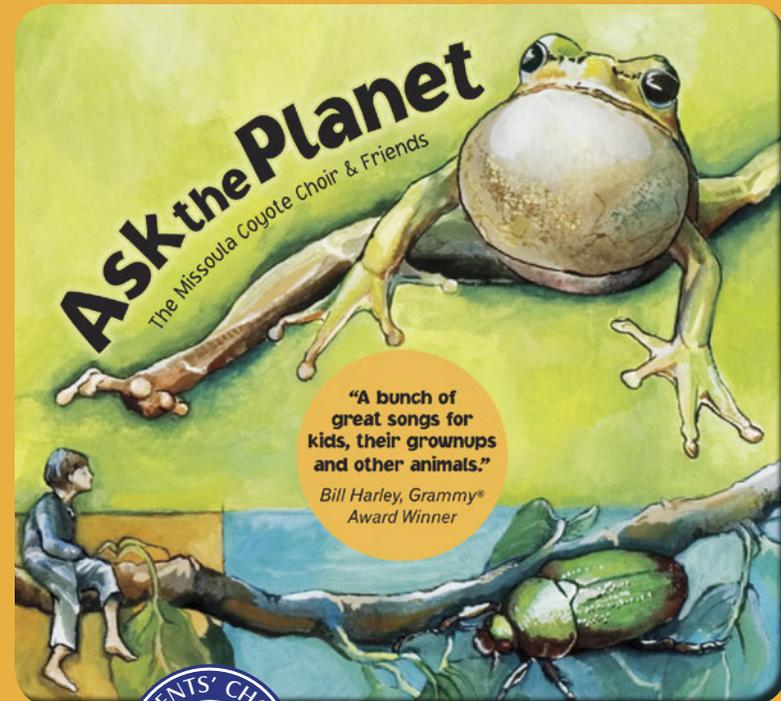
Thanks to a partnership with the Montana Natural History Center, nearly a thousand fourth- and fifth-grade students from Missoula, Montana, and surrounding communities have been introduced to biomimicry. The project is expected to serve as a model for other organizations interested in teaching biomimicry to young students.

A biomimicry chorus

If you have or teach kids, you know that one of the best ways to engage them is through music. That’s why The Biomimicry Institute produced *Ask the Planet*, a CD about biomimicry sung by and for children. With catchy tunes and clever lyrics, singer-songwriter Amy Martin and the Missoula Coyote Choir created what iParenting calls a “musical celebration of nature’s genius.” Biomimicry activity plans accompany each track of *Ask the Planet* and can be downloaded from our website.

“My favorite album of the year.”

–NEIL HARVEY, host and senior producer, Bioneers Radio Show



“My seven-year-old daughter, Skyler, likes Ask the Planet so much that I haven’t taken it out of my CD player since we got it three months ago.” –HEATHER THUESEN, Missoula, Montana

YEARS OF FISH

400,000,000

AskNature.org

The first on-line database of nature's solutions

Have you ever wondered how nature might solve a particular design challenge? With AskNature, there's an easy way to find out. The Biomimicry Institute's free digital database provides examples of technologies that are based on natural blueprints, as well as opportunities to contact experts and join on-line discussions. Imagine the sustainable technologies and designs that could result!

Thanks to our founding sponsor, Autodesk, and our partnerships with Encyclopedia of Life and the Biomimicry Guild, AskNature.org is free and open to the public. That means anyone—from students to designers, architects to engineers, biologists to

teachers—can access nature's best ideas, as well as each other. It's one more way that The Biomimicry Institute is building a worldwide, collaborative community of biomimics.

Autodesk



“AskNature.org provides numerous examples of how mimicking nature can solve various problems more simply and easily, and with a lot less effort, expense, and environmental harm... Some of the answers are truly amazing.”

—BARRY KATZ, Greenworks Consulting

11

months after launch

2,429

registered users on AskNature

196

countries with AskNature users

“We now need to say only two words to start beginning designers on the road to research—Ask Nature.”

—TOM MCKEAG, University of California, Berkeley



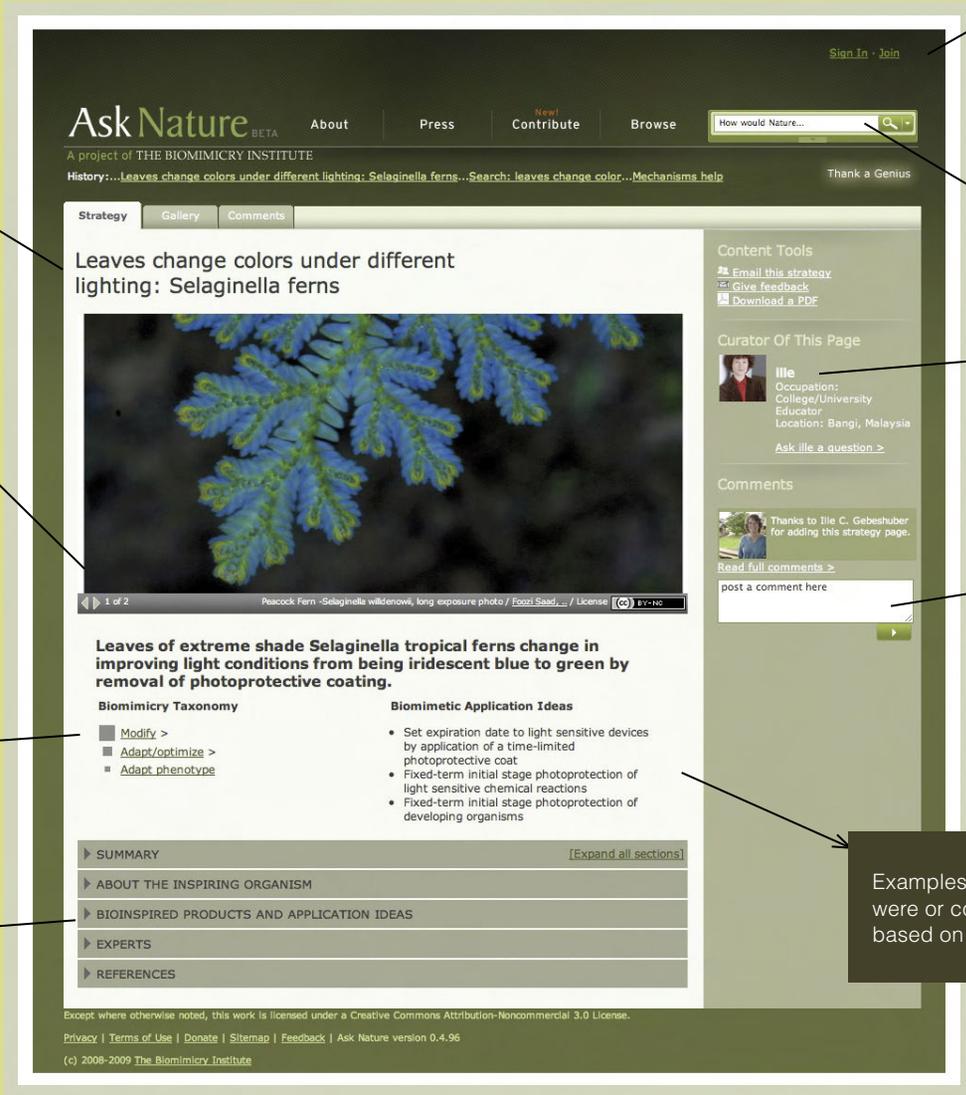
“Now that nature has its own website, we can no longer choose to be negligent.” –RORY NUGENT, greensearch.com

Organism's unique strategy

Photos of organism and illustrations of the biology

The Biomimicry Taxonomy shows how this strategy fits into an organization of function

References for more information



Registered users can connect with the network of biomimics

Search by function, organism, or key word

Experts in the field can oversee the page content

Users can comment on the strategy and post links to more information

Examples of technologies that were or could be developed based on each natural blueprint

Screen shot of AskNature.org strategy page

YEARS OF AMPHIBIANS

385,000,000

Professional Development

Two-year Certificate Program in biomimicry



What do a South African educator, a Turkish business consultant, and a Denver-based federal environmental engineer have in common? They're among the first 16 participants in The Biomimicry Institute's Two-year Certificate Program, a unique and rigorous course designed for professionals who want to deepen their knowledge of biomimicry and integrate it more fully into their work. Through a combination of online instruction and five week-long intensive sessions attended in person, as well as independent study and group collaborations, The Biomimicry Institute is educating and inspiring an international community of biomimics. They in turn are educating and inspiring their colleagues and their clients.

Known as 2YC, the program is so popular that there's already a waiting list 200 deep for applications to the next class, which will begin in 2010.

Left: David Oakey, lead designer for Interface, Inc., emphasizes to certificate students how he incorporates the concept "nature recycles everything" into his work.

“Design is no longer just about form anymore but is a method of thinking that can let you see around corners. And the high tech breakthroughs that do count today are not about speed and performance but about collaboration, conversation and co-creation.”

–BRUCE NUSSBAUM EDITOR, BusinessWeek’s innovation and design coverage



CLAIRE JANISCH

Co-founder of and educator at Genius Lab, an experiential learning organization; project manager of Cape Town’s “New Mobility” transportation project.
Johannesburg, South Africa

“2YC priceless.”

Janisch is using her biomimicry training to evaluate Cape Town’s extensive environmental education programs using biomimicry principles, and to ensure that the city’s innovative system of hub transportation networks is both sustainable and resilient.

“Biomimicry is not only about the vision for the future, but also a clear methodology for working towards that vision.”



ZEYNEP ARHON

Marketing consultant
Istanbul, Turkey

“2YC is a good example of what education will look like in the future.”

Arhon is using her biomimicry training to advise clients about future trends, including biomimicry, and she writes about biomimicry in national newspapers and magazines.

“The moment I start to talk about biomimicry, clients realize they are hearing something from the future.”



MARIE ZANOWICK

Denver, Colorado
Environmental engineer for the U.S.
Environmental Protection Agency

“The 2YC provides a framework for looking at the whole system rather than the pieces.”

Zanowick is using her 2YC training to incorporate biomimicry into both the Environmental Protection Agency’s review of sustainability plans and its biofuels production system.

“Biomimicry is a breath of fresh air.”

280,000,000

University Program

Teaching the teachers

Biomimicry's sensible, eco-friendly approach to design has tremendous appeal for both educators and students. Over the past three years, thousands have downloaded our curricula and attended our workshops, lectures, and courses. But biomimicry is not just another "green" fad. As the concept gains popularity, it's imperative that we ensure it is taught and practiced as a rigorous science and methodology.

Our university program focuses on supporting educators as they introduce this new field to their campuses and classrooms. Our goal is to deepen and broaden their knowledge of biomimicry fundamentals, facilitating the integration of these concepts into their curricula and fostering their growth as effective teachers of biomimicry.

“Innovation doesn't happen through textbooks, and humanity's greatest challenges cannot be solved in isolation. Sustainable design solutions will be the result of effective, creative, and interdisciplinary collaborations.”

—CINDY GILBERT, Director of University Education, The Biomimicry Institute



Biomimicry Education Summit participants from left to right: Tom McKeag, University of California, Berkeley; Doug Paige, Cleveland Institute of Art; and Marjan Eggermont, University of Calgary

BIOMIMICRY EDUCATORS' NETWORK

The Biomimicry Educators' Network allows educators to collaborate with each other and other professionals on *AskNature.org*, The Biomimicry Institute's online inspiration source for the biomimicry community. In the near future, we hope to create a collaborative design space on the site, where educators can share their best ideas and curricula, and where students enrolled in a range of programs can work together to solve design challenges. Our goal is to shatter the proprietary approach typically seen in academia and form a new cooperative paradigm with this global community of biomimicry teachers and students.

BIOMIMICRY EDUCATION SUMMIT

The annual Biomimicry Education Summit has drawn professors and instructors from as far away as China, Belgium, and Mexico, as well as from Canada and throughout the United States. A four-day interactive conference, the summit provides a select group of highly experienced biomimicry educators the opportunity to share the challenges and solutions they've discovered in their classrooms.



“The education summits have been outstanding and have allowed for the sharing and cross pollination of ideas between participants and institutions.”

—BRUCE HINDS, architect and chair of Environmental Design at the Ontario College of Art & Design

Establishing a new field in education

This past year, 36 design, business, and engineering students enrolled in ASU's InnovationSpace, a two-semester product development course, where they learned to use biomimicry as a sustainable design strategy. Plans call for embedding the biomimicry methodology into the InnovationSpace curriculum, making it a fundamental approach to teaching sustainable product innovation.



“Arizona State University faculty are exploring a wide range of possible applications for biomimicry. We have active research in biomimicry that could impact such fields as renewable energy, new materials, and bioengineering. We also are working to integrate biomimicry into our curriculum offerings to our students, with the goal of educating future generations of students in this important technological field.” —MICHAEL CROW, President, Arizona State University

BIOMIMICRY AFFILIATE PROGRAM

The Biomimicry Institute is working closely with three academic institutions—Arizona State University in Tempe; Iberoamericana University in Mexico City; and the Ontario College of Art & Design in Toronto—as they prepare to offer their students the opportunity to graduate with an emphasis in biomimicry. These institutions will become models for the dozens of others that have contacted us. Our goal is to establish formal, high-quality biomimicry programs in at least three additional institutions annually.

Exhibits, Lectures, and Workshops

Making biomimicry a household word

There's a huge audience eager for the kind of sustainable solutions that biomimicry offers and we're reaching out to them. We have collaborated on a variety of non-formal educational initiatives about biomimicry, including exhibits at the Harvard Graduate School of Design, the Green Living Show in Toronto, the Natural History Museum of the Adirondacks, and Exploratorium Works in Helena, Montana.

In collaboration with the city of Missoula, Montana, and the Montana Natural History Center, we have developed a biomimicry nature trail that extends along the Clark Fork River. Funded by the Montana Department of Fish, Wildlife and Parks, the trail features five interpretive panels and is expected to become a prototype for other trail systems.

RETHINKING PUBLIC HEALTH

How can a water bear teach us to improve vaccines?

THE INSPIRATION: A virtually indestructible water bear
Not far from your feet, lumbering through a patch of moss or lichen, is an amazing microscopic creature—a water bear. When dry, the water bear can remain lifeless for decades until...

THE CHALLENGE: Vaccines break down in heat
Most vaccines needed to prevent diseases can't handle changes in temperature. Over 50% of shipped vaccines spoil due to lack of refrigeration. As a result, many people in the...



RETHINKING CAR DESIGN

How can cottonwoods and bones teach us to improve car design?

THE CHALLENGE: Humans often rebuild things
As we often use more material, doesn't always save energy and resources.



RETHINKING COLOR

How can a butterfly teach us to improve cell phones?

THE CHALLENGE: A cell phone screen uses a lot of energy
Did you know that colors on your cell phone screens are made by...

THE INSPIRATION: Scales make color on butterflies
Shallowtail butterflies along this trail have brilliant blue scales made with no...

THE CHALLENGE: Humans often rebuild things
As we often use more material, doesn't always save energy and resources.

THE INSPIRATION: Scales make color on butterflies
Shallowtail butterflies along this trail have brilliant blue scales made with no...




RETHINKING ENERGY

How can a bull trout teach us to design wind turbines?

THE CHALLENGE: Wind can be an unreliable energy source
Most wind turbines require steady, strong winds to capture energy.

THE INSPIRATION: Bull trout use the energy in stream eddies



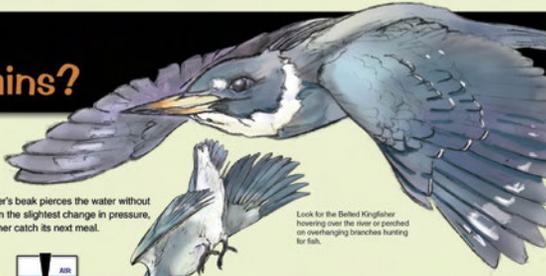
RETHINKING TRANSPORTATION

How can a kingfisher teach us to design more efficient trains?

THE CHALLENGE: Fast trains wake up the neighbors
A 200 mph train can cause a problem—a thunderous noise when it exits a tunnel. The sound comes from air, pushed by the train, booming as it bursts into the open.

THE INSPIRATION: Kingfishers dive without a splash
Like an Olympic diver, the kingfisher's beak pierces the water without a splash. Since fish can sense even the slightest change in pressure, this smooth entry helps the kingfisher catch its next meal.

THE SOLUTION: A train nose shaped like a kingfisher's beak is quieter and more efficient
Shaped like the beak of a kingfisher, the Japanese Shinkansen Train doesn't make a loud splash of noise when it exits a tunnel. It is quieter, speeds along 10% faster and uses 15% less electricity!




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What else could the kingfisher teach us?







What else could trout teach us?



Interpretive panels for the first biomimicry nature trail.

WORKSHOPS & LECTURES

Staff at The Biomimicry Institute have given hundreds of lectures and dozens of workshops—including weeklong workshops in Costa Rica, Mexico, Peru and South Africa—and reached tens of thousands of people across the globe.

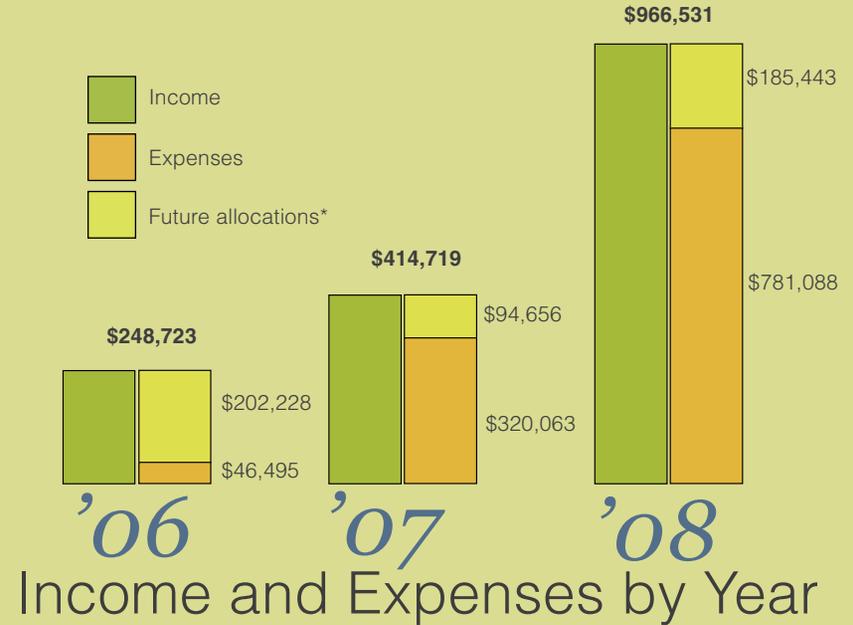
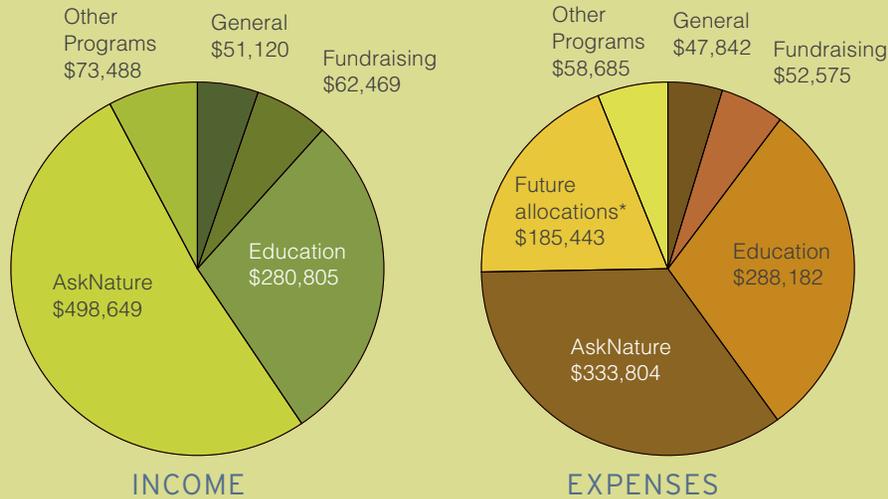
130,000,000



Participants of the South Africa Biomimicry and Design Workshop discuss the importance of natural light to human health and ways to incorporate it into the built environment.

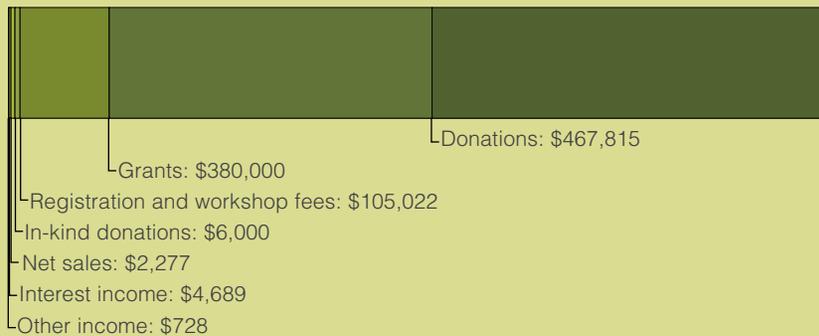
Financials

2008 Income and Expenses

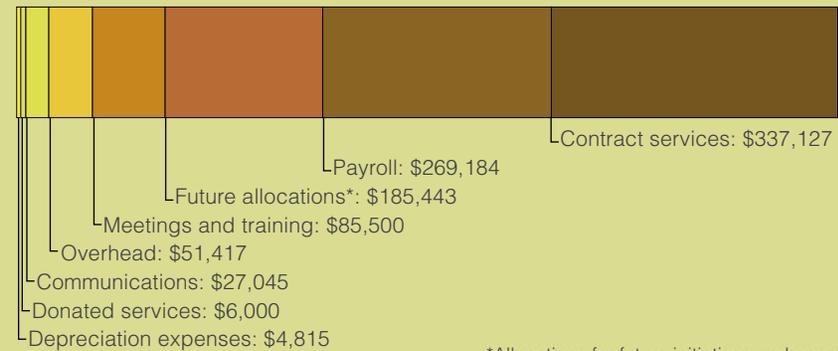


2008 Statement of Financial Activities

INCOME



EXPENSES



*Allocations for future initiatives and operations

Footnotes: 1. Unaudited financial statements compiled by a CPA. 2. TBI uses accrual method accounting practices. 3. The Biomimicry Institute is a not-for-profit 501(c)3 organization – Federal Tax ID: 86-1153859

Thank you

Your financial and moral support make The Biomimicry Institute's work possible, meaningful and joyful.

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100 – 999

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50 – 99

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Amy Coffman and David
Phillips
Suzanne Csejty
Nicolas de Cordes
Greg Donoghue
Anita Doyle
Marjan Eggermont
Sandra Epstein
Gerry A. Faubert
Kelly Fehr
Phil Fung
Lydia Garvey
Demetria Giannisis
Jessical Hagan
Brad Hash
Michael Heffernan
Cynthia Hester
Timothy Hoffman
Sharifah Norhaidah Syed
Idros
George Israel
Ravi Komatireddy
Sue Lebeck
Jane Lynn
Ana MacArthur
Miriam Marx
Andrea Marzullo
Carston Maxted
Tim McGee
Clark Nexsen
Patrik Norinder
O'Brien & Company
Todd Ofenloch

Miriam Pye
Farhan Rehman
Sharon Ritter
Nelle Rose
Marni Rosen
Sally Rosen
Jocelyne Roy
Barbara Rubino
Mark Rusitzky
Lisa and Steve Schmidtke
Dorna Schroeter
Megan Schuknecht
Sarah Smith
Luciana Spinola
Debbie Spresser
Tim Steele
Peter Swart
Linda Booth Sweeney
Lawrence Targett
Lainey Taylor
Patrick Taylor
Mariah Titlow Tinger
Shanon Tocchini
Murthy Vanka
Karen Verbeek
Graeme Ward
Sean Williams
Aaron R. Wilson

Gifts

(commemorative)

Marjorie Barlow to honor
David Oakey
Jennifer Biddick to honor
Michael R. Biddick
Rachel Davis to honor
Audrey Trautwein and
John Thomas
Loring Day to honor
Amanda Day
Margaret Fitzgerald
to honor the Melly
Family
Kerry French to honor
Adam
Tim Steele to honor Adam

Harvey Stone to honor
Sarah and Tom
Huckins
Patrick Taylor to honor
Devin Taylor
Polly Wingfield to honor
Bryony Schwan

Matching Gifts

Google Matching Gifts
Microsoft Giving
Campaign

In-Kind

Dr. Jim Driver
Scott Edgerton
Lucy France
Dr. Bill Granath
Norbert Hoeller
Joel Makower & Randy
Rosenburg
The Montana Natural
History Center
Morrison & Foerster LLP
Susan MacCormac
Cara Ann Marr
Tessa Schwartz
Rosemary Tarlton
Roy & Susan O'Connor
Pacific Outdoor
Equipment
Aaron Silverstein
Spark Creative: Chris
Johnson, Danika
Sandoz
Toyota Lexus (South
Africa)
Wim Van Passel
Chris Vomvolakis
Dr. Peter Vukusic
John Webb

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David Oakey
Principal, David Oakey Designs

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University of Montana
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Institute

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P.O. Box 9216
Missoula, Montana USA 59807
Phone: 406-728-4134

What else could nature teach us?

The mission of
The Biomimicry
Institute is to nurture
and grow a global
community of people
who are learning
from, emulating,
and conserving life's
genius to create
a healthier, more
sustainable planet.

Specialized glands in penguins that remove
salt from sea water are being studied for new
desalination technology.



On the cover: Sharks have inspired an anti-bacterial surface that could reduce the need for harsh sterilization chemicals in hospitals.



Biomimics have designed panels to collect water from the air like the Namib desert beetle.

Wind turbines that mimic the flipper of the humpback whale work at lower wind speeds than conventional turbines.



BIOMIMICRY Institute

The Biomimicry Institute inspires, educates, and connects biomimics throughout the world.

Biomimicry is the science and practice of emulating nature's best biological ideas to solve human problems. Here are some examples of biomimicry in action.



Impellers inspired by the efficient shape of spirals in nature save energy.



Auto designers are mimicking locusts' flight patterns to develop crash-avoidance systems.



Medical researchers are developing a way to heal bones without pins by mimicking the strong bonds used by sandcastle worms.

3,800,000,000

Our teacher is 3.8 billion years old

And our students are reinventing our world right now



Whenever I pull up to The Biomimicry Institute's headquarters, I can't help but smile. These unassuming downtown offices in Missoula, Montana, contain the first stirring of an evolutionary discipline that is reimagining the way we innovate and rewriting what it means to study biology. They also are giving birth to a long-held dream of mine. When I first began collecting examples of biomimicry

in 1990, nature-inspired innovation was an unnamed endeavor, practiced by individuals who had no common affiliation, and who published in small, specialized journals. Serendipity alone brought biologists in contact with engineers, architects, and designers. An engineer who happened to work down the hall from a botanist became the creator of the leaf-inspired solar cell; a hearing-aid manufacturer who queried an entomologist wound up developing a device based on the keen ears of *Ormia ochracea*, a small parasitic fly.

Serendipity makes a good story, but it's too chancy for the level of redesign that we need to ensure the future of the planet. I envisioned a global network of innovators who would collaborate with biologists to solve worthy challenges. I imagined that architects, engineers, and designers would one day take a biology course organized by function, and that throughout their careers, they would automatically ask: How Would Nature Solve This? I hoped their kids would come home from school with biomimicry designs of their own. If these things could happen, I believed, it would lead to a deeper appreciation of the natural world, and a renewed commitment to preserving it.

“When history of technology scholars look back, they will recall that this was the time when innovators of all cultures began to learn from their elders.”

Thanks to The Biomimicry Institute, all of this and more has been realized. We're seeing the formalization of this way of innovating, and the gathering of a global community of practice. When history of technology scholars look back, they will recall that this was the time when innovators of all cultures began to learn from their elders.

The timing couldn't be better. We have, perhaps, just enough time to make a difference in our planet's future, and for this unprecedented push, the world is looking past old ideas and towards new ones, even if the ideas come from a rhinoceros instead of a Rhodes scholar!

I write this message fresh from a Biomimicry Institute workshop held near Kruger National Park in South Africa. One morning, we traveled to a cliff face covered with ancient rock art depicting elephants, impalas, giraffes, and

wildebeests—magnificent life forms that early peoples admired, respected, and were grateful for. With the help of these and all the other extraordinary organisms on this planet, we're determined to leave a world that will continue to stir the souls of future generations.

So please join us—visit AskNature, explore our website, or come by our offices and get to know us. Inside, you'll find our incredible staff working at a bursting, springtime pace. We have a sense that the people of the world are waking up to biomimicry all at once, and as they do, we want to create enough opportunities for everyone, including you, to play a part.

Janine Benyus, Board President

3,500,000,000

Nature provides the inspiration

The Biomimicry Institute provides the tools for innovation

Dear Friends of The Biomimicry Institute,

The world is entering a critical period in our collective history,

one in which the consequences of insufficient action on issues such as climate change could dwarf, and even exacerbate, the problems from the current economic recession. At The Biomimicry Institute, we remain optimistic about the future, because we hear daily from people who are inspired by biomimicry and, like us, see it as a solution.

The Biomimicry Institute was founded to answer a need. Co-founder and board president Janine Benyus's book *Biomimicry: Innovation Inspired by Nature* galvanized an entire movement. She soon realized that she alone could not respond to all the inquiries that came flooding in, and that she needed an organization to build and support the worldwide network of biomimics. So she and Dayna Baumeister, her business partner at the Biomimicry Guild, asked me to help establish The Biomimicry Institute, the first and only non-profit dedicated to providing the tools that students, professionals, and educators need to join the burgeoning biomimicry movement.

The need has grown and so have our educational programs, services, and tools. In just three years, from the time we opened our doors in 2006 (thanks

to a \$25,000 seed grant from David Fox) we've grown from a staff of one (me) to a staff of 10, and increased our annual budget to \$1.3 million.

*“Our philosophy: Think Big.
We cannot afford to do anything less.”*

We are proud to be at the forefront of a hopeful, energetic movement that is gaining new momentum each day. From developing K-12 curricula to establishing university biomimicry programs across the globe, from launching the world's first on-line biomimicry design portal to sponsoring workshops as far away as South Africa, our team has been spreading the seeds of a global design revolution.

Our philosophy: Think Big. We cannot afford to do anything less. I invite you to read about our successes to date and our ambitious plans for the future. My heartfelt thanks to all of you who have supported us on this remarkable journey.



Warm regards,

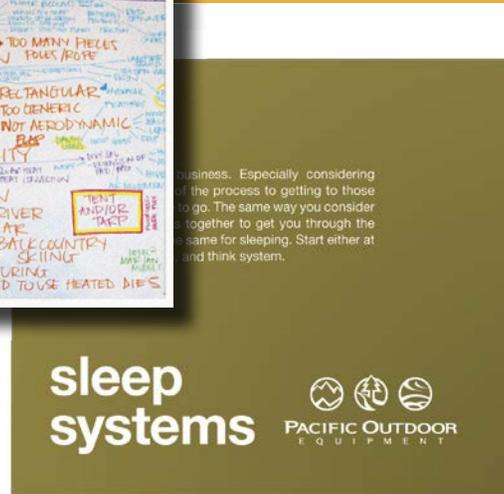
Bryony Schwan, Executive Director

- 1997 *Janine Benyus wrote Biomimicry: Innovation Inspired by Nature*
- 2005 *Dayna Baumeister, Janine Benyus, and Bryony Schwan formed The Biomimicry Institute*
- 2006 *Bryony Schwan hired as first director*
- 2007 *Four more staff hired for educational programs*
- 2008 *AskNature.org launched, 2-year biomimicry certificate program launched, Ask the Planet CD released*
- 2009 *Ten employees, a \$1.3 million budget, and too many projects to list here.*

Inspiring Innovation

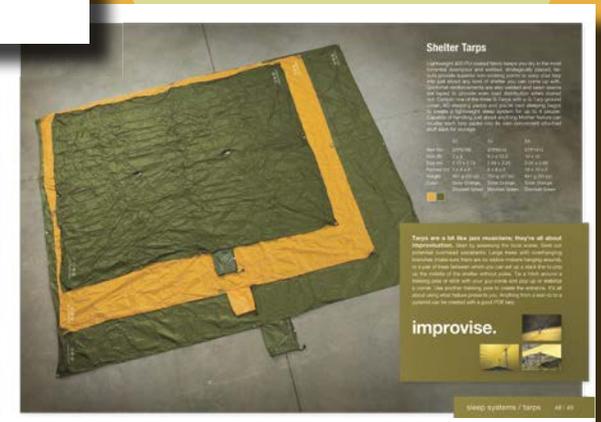
OUR FIRST STUDENT DESIGN CHALLENGE

A small and well-known outdoor gear manufacturer, Pacific Outdoor Equipment (POE), sponsored a real-life design challenge: to use biomimicry tools and principles to design a specialized backpacking tent. The Biomimicry Institute created the interdisciplinary and collaborative design team of university students and faculty, and facilitated the design process throughout the semester-long project, from idea to prototype. (The product is presently sold by POE). The second student biomimicry design challenge will start in the spring of 2010.



OUR NEXT DESIGN CHALLENGE

The Biomimicry Institute is sponsoring a series of design challenges for innovators who want to try out a new way of solving the world's greatest sustainability problems by asking "How would nature solve this." The first challenge is focused on climate change. We're asking innovative architects, builders, materials scientists, and engaged citizens to propose biomimicry solutions to address the energy deficit that buildings worldwide represent. Buildings in the United States consume 39% of America's energy and generate 38% of our carbon dioxide emissions.



1,300,000,000

Attention

The Biomimicry Institute in the news

It's been just 12 years since The Biomimicry Institute co-founder Janine Benyus coined the term "biomimicry." But Google "biomimicry" today, and you'll get about 320,000 results. Biomimicry has been the subject of a two-part PBS television special, and the subject of hundreds if not thousands of articles, news programs, radio talk shows, conferences, blogs, and tweets. Many of them include material provided by The Biomimicry Institute, which has become the "go-to" organization for information about biomimicry.

We are well on our way to making biomimicry not only a household word but an accepted best practice.

"I believe that biomimicry is one of a small handful of very important ideas that will change the way business is done. And it seems to be catching on."

—ANDREW WINSTON, HarvardBusiness.org

"Biomimicry blends the best of the old with the best of the new to produce highly efficient technology that works with the grain of Nature rather than against it."

—PRINCE OF WALES, 2009 Dimpleby Lecture on the Environment

FORTUNE

Condé Nast
Portfolio

Readers
Digest

ENVIRONMENTAL MAGAZINE OF THE YEAR
ECOLOGIST

BusinessWeek



NATIONAL GEOGRAPHIC

Ideas worth spreading



TED

"This will change your life. It has already changed mine. And it may save the world."

—AMORY B. LOVINS, chairman and chief scientist of Rocky Mountain Institute, Time Magazine

TIME

The Economist

nature

CNN



In June of 2009 Janine Benyus, President of The Biomimicry Institute, received the United Nations Environment Programme Champion of the Earth Award.



Janine Benyus and E.O. Wilson at Greenbuild '08 after delivering the closing plenary.

600,000,000



NOURIEL ROBINSON
Professor of Business at the School of Business, Boston College
...you, but I did."

ASK A CEO TO NAME A BUSINESS GAME, and you're likely to hear the name: "The Nature Game." It's a simple but powerful idea...



Janine Benyus
Taking her inspiration from nature's ingenuity, she helped launch a design revolution



Japan Times



BBC Focus Magazine



YEARS OF INSECTS

434,000,000

Youth Program



Growing the next generation of biomimics

The planet's future depends on our children. So it's up to us to give them the tools to make that future a sustainable one. With downloadable curricula available free of charge from our website. The Biomimicry Institute has become the K-12 community's principal provider of biomimicry-related educational materials.

Left: Working together, the Montana Natural History Center and The Biomimicry Institute developed curricula about biomimicry so that students now not only learn *about* nature, but are introduced to the idea of learning *from* nature, such as how nature creates color using surface structure rather than pigment.

“As a mother of three young girls, a trained architect, and Montessori teacher long interested in the concept of biomimicry, I am THRILLED by this [biomimicry curriculum] resource. Thank you very much.” –SHERRY HAYES, Warrenton, Virginia

Innovative Partnerships

The goal of The Biomimicry Institute’s youth program is to help formal and non-formal educators successfully adopt the new content of biomimicry into their teaching venues by providing them with a comprehensive set of mutually reinforcing resources, including teaching materials, on-line professional development, collaborative enterprises, contest opportunities, and more. In addition to many classroom teachers, organizations such as The Cooper-Hewitt National Design Museum, North Cascades Institute, U.S. Forest Service, and Crissy Field Center have used our curricula to introduce biomimicry.

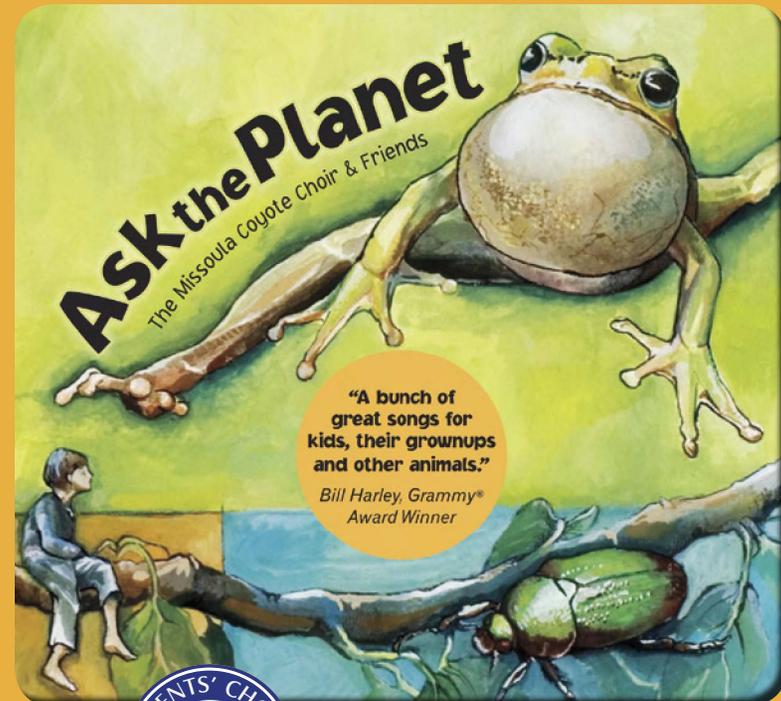
Thanks to a partnership with the Montana Natural History Center, nearly a thousand fourth- and fifth-grade students from Missoula, Montana, and surrounding communities have been introduced to biomimicry. The project is expected to serve as a model for other organizations interested in teaching biomimicry to young students.

A biomimicry chorus

If you have or teach kids, you know that one of the best ways to engage them is through music. That’s why The Biomimicry Institute produced *Ask the Planet*, a CD about biomimicry sung by and for children. With catchy tunes and clever lyrics, singer-songwriter Amy Martin and the Missoula Coyote Choir created what iParenting calls a “musical celebration of nature’s genius.” Biomimicry activity plans accompany each track of *Ask the Planet* and can be downloaded from our website.

“My favorite album of the year.”

–NEIL HARVEY, host and senior producer, Bioneers Radio Show



“A bunch of great songs for kids, their grownups and other animals.”

Bill Harley, Grammy® Award Winner



2009
Creative Child
PREFERRED CHOICE AWARD



“My seven-year-old daughter, Skyler, likes Ask the Planet so much that I haven’t taken it out of my CD player since we got it three months ago.” –HEATHER THUESEN, Missoula, Montana

YEARS OF FISH

400,000,000

AskNature.org

The first on-line database of nature's solutions

Have you ever wondered how nature might solve a particular design challenge? With AskNature, there's an easy way to find out. The Biomimicry Institute's free digital database provides examples of technologies that are based on natural blueprints, as well as opportunities to contact experts and join on-line discussions. Imagine the sustainable technologies and designs that could result!

Thanks to our founding sponsor, Autodesk, and our partnerships with Encyclopedia of Life and the Biomimicry Guild, AskNature.org is free and open to the public. That means anyone—from students to designers, architects to engineers, biologists to

teachers—can access nature's best ideas, as well as each other. It's one more way that The Biomimicry Institute is building a worldwide, collaborative community of biomimics.

Autodesk



“AskNature.org provides numerous examples of how mimicking nature can solve various problems more simply and easily, and with a lot less effort, expense, and environmental harm... Some of the answers are truly amazing.”

—BARRY KATZ, Greenworks Consulting

11

months after launch

2,429

registered users on AskNature

196

countries with AskNature users

“We now need to say only two words to start beginning designers on the road to research—Ask Nature.”

—TOM MCKEAG, University of California, Berkeley



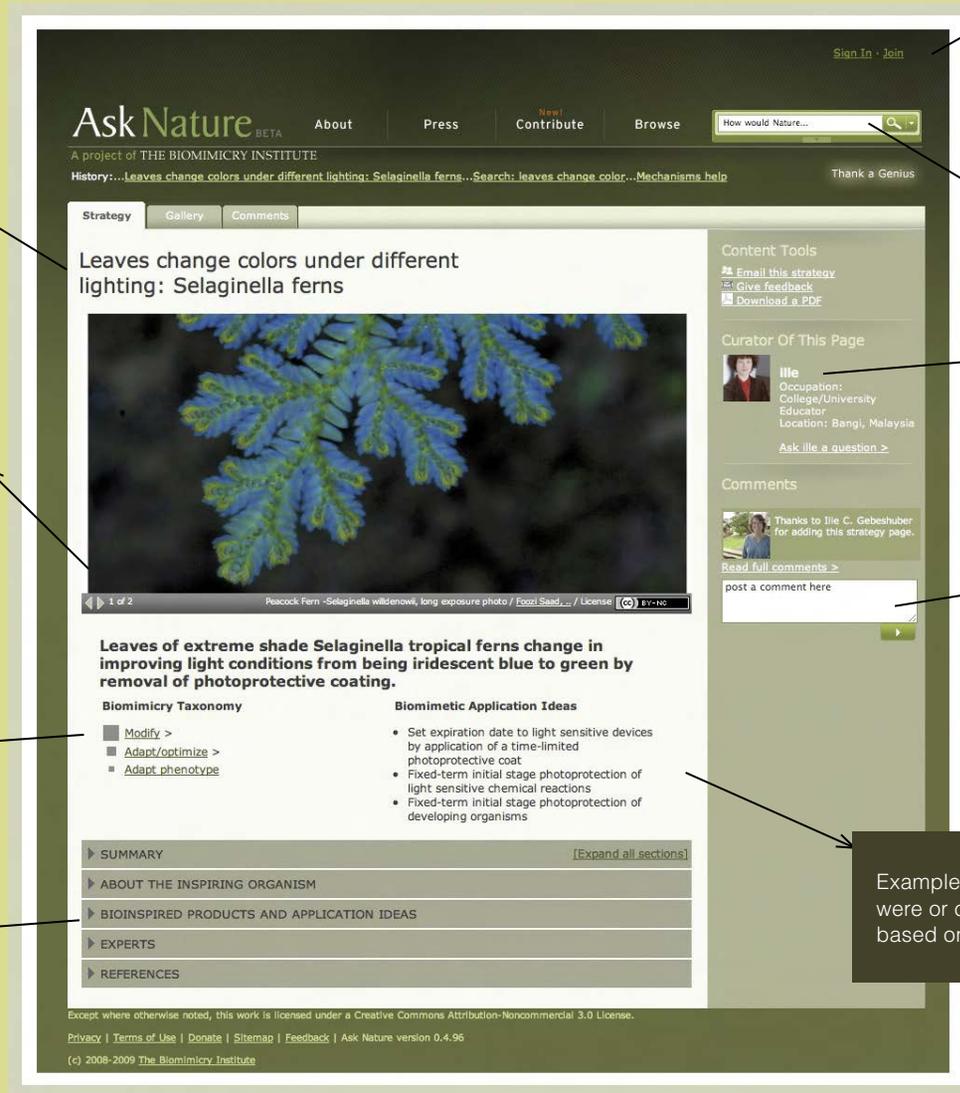
“Now that nature has its own website, we can no longer choose to be negligent.” –RORY NUGENT, greensearch.com

Organism's unique strategy

Photos of organism and illustrations of the biology

The Biomimicry Taxonomy shows how this strategy fits into an organization of function

References for more information



Registered users can connect with the network of biomimics

Search by function, organism, or key word

Experts in the field can oversee the page content

Users can comment on the strategy and post links to more information

Examples of technologies that were or could be developed based on each natural blueprint

Screen shot of AskNature.org strategy page

YEARS OF AMPHIBIANS

385,000,000

Professional Development

Two-year Certificate Program in biomimicry



What do a South African educator, a Turkish business consultant, and a Denver-based federal environmental engineer have in common? They're among the first 16 participants in The Biomimicry Institute's Two-year Certificate Program, a unique and rigorous course designed for professionals who want to deepen their knowledge of biomimicry and integrate it more fully into their work. Through a combination of online instruction and five week-long intensive sessions attended in person, as well as independent study and group collaborations, The Biomimicry Institute is educating and inspiring an international community of biomimics. They in turn are educating and inspiring their colleagues and their clients.

Known as 2YC, the program is so popular that there's already a waiting list 200 deep for applications to the next class, which will begin in 2010.

Left: David Oakey, lead designer for Interface, Inc., emphasizes to certificate students how he incorporates the concept "nature recycles everything" into his work.

“Design is no longer just about form anymore but is a method of thinking that can let you see around corners. And the high tech breakthroughs that do count today are not about speed and performance but about collaboration, conversation and co-creation.”

–BRUCE NUSSBAUM EDITOR, BusinessWeek’s innovation and design coverage



CLAIRE JANISCH

Co-founder of and educator at Genius Lab, an experiential learning organization; project manager of Cape Town’s “New Mobility” transportation project.
Johannesburg, South Africa

“2YC priceless.”

Janisch is using her biomimicry training to evaluate Cape Town’s extensive environmental education programs using biomimicry principles, and to ensure that the city’s innovative system of hub transportation networks is both sustainable and resilient.

“Biomimicry is not only about the vision for the future, but also a clear methodology for working towards that vision.”



ZEYNEP ARHON

Marketing consultant
Istanbul, Turkey

“2YC is a good example of what education will look like in the future.”

Arhon is using her biomimicry training to advise clients about future trends, including biomimicry, and she writes about biomimicry in national newspapers and magazines.

“The moment I start to talk about biomimicry, clients realize they are hearing something from the future.”



MARIE ZANOWICK

Denver, Colorado
Environmental engineer for the U.S.
Environmental Protection Agency

“The 2YC provides a framework for looking at the whole system rather than the pieces.”

Zanolwick is using her 2YC training to incorporate biomimicry into both the Environmental Protection Agency’s review of sustainability plans and its biofuels production system.

“Biomimicry is a breath of fresh air.”

280,000,000

University Program

Teaching the teachers

Biomimicry's sensible, eco-friendly approach to design has tremendous appeal for both educators and students. Over the past three years, thousands have downloaded our curricula and attended our workshops, lectures, and courses. But biomimicry is not just another "green" fad. As the concept gains popularity, it's imperative that we ensure it is taught and practiced as a rigorous science and methodology.

Our university program focuses on supporting educators as they introduce this new field to their campuses and classrooms. Our goal is to deepen and broaden their knowledge of biomimicry fundamentals, facilitating the integration of these concepts into their curricula and fostering their growth as effective teachers of biomimicry.

“Innovation doesn't happen through textbooks, and humanity's greatest challenges cannot be solved in isolation. Sustainable design solutions will be the result of effective, creative, and interdisciplinary collaborations.”

—CINDY GILBERT, Director of University Education, The Biomimicry Institute



Biomimicry Education Summit participants from left to right: Tom McKeag, University of California, Berkeley; Doug Paige, Cleveland Institute of Art; and Marjan Eggermont, University of Calgary

BIOMIMICRY EDUCATORS' NETWORK

The Biomimicry Educators' Network allows educators to collaborate with each other and other professionals on *AskNature.org*, The Biomimicry Institute's online inspiration source for the biomimicry community. In the near future, we hope to create a collaborative design space on the site, where educators can share their best ideas and curricula, and where students enrolled in a range of programs can work together to solve design challenges. Our goal is to shatter the proprietary approach typically seen in academia and form a new cooperative paradigm with this global community of biomimicry teachers and students.

BIOMIMICRY EDUCATION SUMMIT

The annual Biomimicry Education Summit has drawn professors and instructors from as far away as China, Belgium, and Mexico, as well as from Canada and throughout the United States. A four-day interactive conference, the summit provides a select group of highly experienced biomimicry educators the opportunity to share the challenges and solutions they've discovered in their classrooms.



“The education summits have been outstanding and have allowed for the sharing and cross pollination of ideas between participants and institutions.”

–BRUCE HINDS, architect and chair of Environmental Design at the Ontario College of Art & Design

Establishing a new field in education

This past year, 36 design, business, and engineering students enrolled in ASU's InnovationSpace, a two-semester product development course, where they learned to use biomimicry as a sustainable design strategy. Plans call for embedding the biomimicry methodology into the InnovationSpace curriculum, making it a fundamental approach to teaching sustainable product innovation.



“Arizona State University faculty are exploring a wide range of possible applications for biomimicry. We have active research in biomimicry that could impact such fields as renewable energy, new materials, and bioengineering. We also are working to integrate biomimicry into our curriculum offerings to our students, with the goal of educating future generations of students in this important technological field.” –MICHAEL CROW, President, Arizona State University

BIOMIMICRY AFFILIATE PROGRAM

The Biomimicry Institute is working closely with three academic institutions—Arizona State University in Tempe; Iberoamericana University in Mexico City; and the Ontario College of Art & Design in Toronto—as they prepare to offer their students the opportunity to graduate with an emphasis in biomimicry. These institutions will become models for the dozens of others that have contacted us. Our goal is to establish formal, high-quality biomimicry programs in at least three additional institutions annually.

Exhibits, Lectures, and Workshops

Making biomimicry a household word

There's a huge audience eager for the kind of sustainable solutions that biomimicry offers and we're reaching out to them. We have collaborated on a variety of non-formal educational initiatives about biomimicry, including exhibits at the Harvard Graduate School of Design, the Green Living Show in Toronto, the Natural History Museum of the Adirondacks, and Exploratorium Works in Helena, Montana.

In collaboration with the city of Missoula, Montana, and the Montana Natural History Center, we have developed a biomimicry nature trail that extends along the Clark Fork River. Funded by the Montana Department of Fish, Wildlife and Parks, the trail features five interpretive panels and is expected to become a prototype for other trail systems.

RETHINKING PUBLIC HEALTH

How can a water bear teach us to improve vaccines?

THE INSPIRATION: A virtually indestructible water bear
Not far from your feet, lumbering through a patch of moss or lichen, is an amazing microscopic creature—a water bear. When dry, the water bear can remain lifeless for decades until...

THE CHALLENGE: Vaccines break down in heat
Most vaccines needed to prevent diseases can't handle changes in temperature. Over 50% of shipped vaccines spoil due to lack of refrigeration. As a result, many people in the...

RETHINKING CAR DESIGN

How can cottonwoods and bones teach us to improve car design?

THE CHALLENGE: Humans often rebuild things
As we often use more material, doesn't always save energy and resources.

RETHINKING COLOR

How can a butterfly teach us to improve cell phones?

THE CHALLENGE: A cell phone screen uses a lot of energy
Did you know that colors on your cell phone screens are made by...

THE INSPIRATION: Scales make color on butterflies
Scales on butterfly wings along this trail have brilliant blue iridescence made with no...

THE CHALLENGE: Humans often rebuild things
As we often use more material, doesn't always save energy and resources.

RETHINKING ENERGY

How can a bull trout teach us to design wind turbines?

THE CHALLENGE: Wind can be an unreliable energy source
Most wind turbines require steady, strong winds to capture energy.

THE INSPIRATION: Bull trout use the energy in stream eddies

RETHINKING TRANSPORTATION

How can a kingfisher teach us to design more efficient trains?

THE CHALLENGE: Fast trains wake up the neighbors
A 200 mph train can cause a problem—a thunderous noise when it exits a tunnel. The sound comes from air, pushed by the train, booming as it bursts into the open.

THE INSPIRATION: Kingfishers dive without a splash
Like an Olympic diver, the kingfisher's beak pierces the water without a splash. Since fish can sense even the slightest change in pressure, this smooth entry helps the kingfisher catch its next meal.

THE SOLUTION: A train nose shaped like a kingfisher's beak is quieter and more efficient
Shaped like the beak of a kingfisher, the Japanese Shinkansen Train doesn't make a loud splash of noise when it exits a tunnel. It is quieter, speeds along 10% faster and uses 15% less electricity!

What else could trout teach us?

Look for the Belted Kingfisher hovering over the river or perched on overhanging branches hunting for fish.

A blunt beak would push a pressure wave ahead of it and scare away fish.

The kingfisher's wedge-shaped beak slices the water and surprises the fish.

RETHINKING TRANSPORTATION

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WORKSHOPS & LECTURES

Staff at The Biomimicry Institute have given hundreds of lectures and dozens of workshops—including weeklong workshops in Costa Rica, Mexico, Peru and South Africa—and reached tens of thousands of people across the globe.

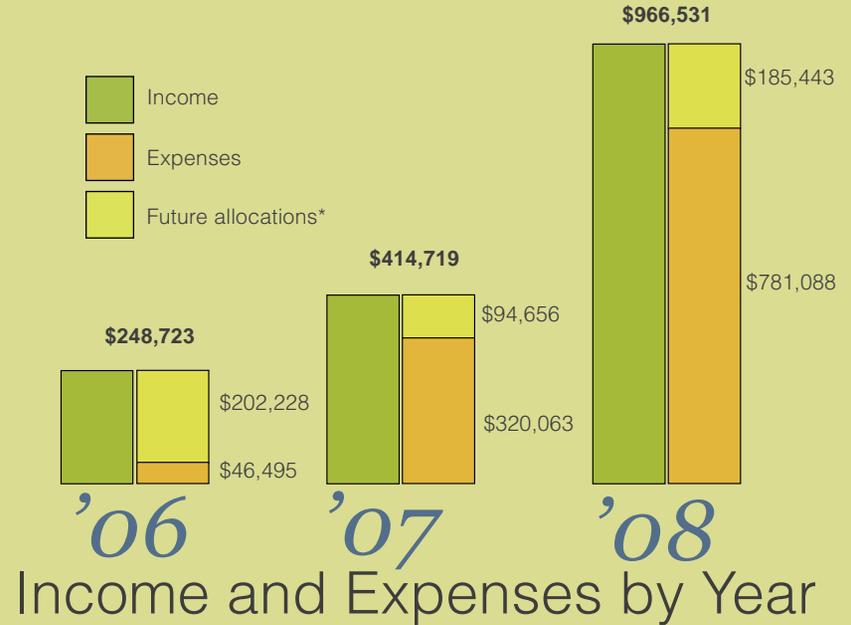
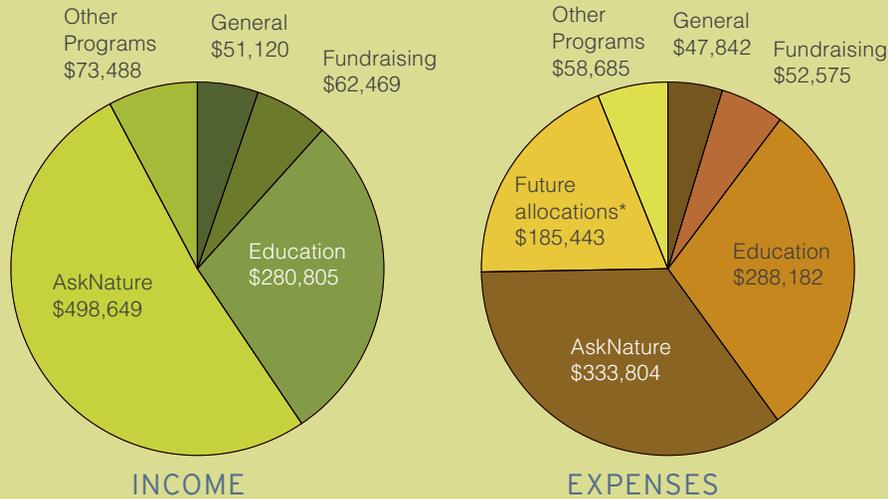
Interpretive panels for the first biomimicry nature trail.



Participants of the South Africa Biomimicry and Design Workshop discuss the importance of natural light to human health and ways to incorporate it into the built environment.

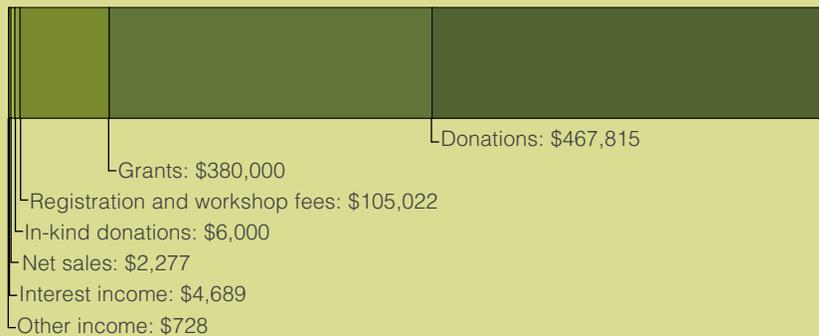
Financials

2008 Income and Expenses



2008 Statement of Financial Activities

INCOME



EXPENSES



*Allocations for future initiatives and operations

Footnotes: 1. Unaudited financial statements compiled by a CPA. 2. TBI uses accrual method accounting practices. 3. The Biomimicry Institute is a not-for-profit 501(c)3 organization – Federal Tax ID: 86-1153859

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Specialized glands in penguins that remove
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