
THE COMMUNITY GUIDE FOR PUTTING NATURE BACK INTO HUMAN NATURE



BIOMIMICRY
INSTITUTE

Learn more at biomimicry.org

Calling all nature-inspired advocates!



The best way to make global change happen is to start with a local approach. This guide serves as a way to bring biomimicry into your community so you can feel empowered to spread hope and action.

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A 101 Guide to Sharing Biomimicry

By applying nature's design lessons, we can create solutions that help support a healthy planet. Introducing biomimicry doesn't need to be complicated. It's simply about offering a lens to see the world: we are humans, a member of the animal kingdom here on planet Earth. In order to survive, we must relearn our place in the natural world. That's where biomimicry comes in.

Whether you are gathering a group of people in-person or virtually, there are some basic takeaways for practicing biomimicry. We've designed this guide to help you introduce the primary lessons to any age or discipline that is not yet familiar with the concept. In the following pages, you can adapt this lesson plan to the audiences you choose. For deeper learning and opportunities to practice, we invite you to explore the [Biomimicry Toolbox](#) and [Learn Biomimicry](#) online course offering.

THE OPPORTUNITY

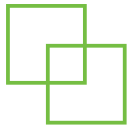
Asking nature for guidance for solving problems is not new. For millennia, humans have modeled the creative wisdom of natural solutions in all kinds of design—from cultivating food sources to storing water to building homes. It is only in the last few hundred years that some humans lost their way and designed for competition over collaboration, for scarcity over abundance, and for destruction over preservation. In this wake, we have faced instability in our once-balanced ecosystems. The rapid acceleration of climate change threatens the safety of our species and the others with which we share this planet. The good news is that we have solutions available to us now, and when we choose to employ our creativity and ingenuity in a way that restores our connection to the natural world, we will find that our decisions can positively impact the functioning of these ecosystems we so intricately rely on.



Regardless of one's age, many of us want to play an active role in creating positive change. Whether seeking to solve grand issues related to climate change or local challenges related to safe drinking water, education, or fair housing, biomimicry offers a platform for introducing new solutions that are resilient and interconnected.

The 3 Essential Elements

When translating nature's strategies into design, the science of the practice involves three essential elements: Emulate, Ethos, and (Re)Connect. These three components are infused in every aspect of biomimicry and represent the core values at its essence.



EMULATE

The scientific, research-based practice of learning from and then replicating nature's forms, processes, and ecosystems to create more regenerative designs.



ETHOS

The philosophy of understanding how life works and creating designs that continuously support and create conditions conducive to life.



(RE)CONNECT

The concept that we are nature and find value in connecting to our place on Earth as part of life's interconnected systems.

Key Concepts to Share

BIO = THE STUDY OF LIFE | MIMIC = IMITATION

Biomimicry is a way to view and value nature.

We go beyond learning *about* nature, like through natural history studies, to take it a step further and learn *from* nature in order to behave in ways that support the balance of systems where we live.

Why model life? Other organisms and ecosystems face the same challenges that we humans do, but they have adapted solutions to meet those challenges in ways that do not threaten their future survival. Using this perspective, we can transform all aspects of how we live—from the way we design our personal lives, like the clothes we buy or food production we support, to the ways our communities work together, how we design our education systems, make products, and build cities. The long-term vision is to create products, processes, organizations, and policies—new ways of living—that are well-adapted to life on earth.

Context: Welcome to Planet Earth

The organisms on Earth today have adapted within Earth's limits and boundaries over millions of years; and in the process, they have operated in concert to create abundant and diverse biological communities. While competition and predation between species may exist on an individual level, from a systems perspective, life allows other life to flourish.

When introducing biomimicry to your community, you'll want to ground them in the context that must be respected. On the biggest scale, we're talking about Earth's planetary boundaries. The characteristics that define Earth's Operating System are:

Earth has a limited amount of freshwater.

Earth has a limited atmosphere.

Earth has limited sunlight, from which all energy ultimately is derived.

Earth has gravity.

Earth has cycles (think weather and migratory patterns that live in concert).

Earth exists in a state of change and strives for equilibrium: it maintains an ecological and chemical balance, despite being in a constant state of change, much as our bodies maintain homeostasis despite being in a constant state of flux.



On the local scale, consider the environment in which you live. What is the climate like? How is your community structured? Come prepared to talk about some of the aspects that make your community unique and present an opportunity for the people you bring together to add their thoughts on context in which affects your daily lives or work.

Learning From, Not Just About Nature

What would nature do? That's the question we start with. In biomimicry, we are looking to mimic functional strategies adapted from biological models.

A **function**, by definition, is the purpose of something. In the context of biomimicry, function refers to the role played by an organism's adaptations or behaviors that enable it to survive. Importantly, function can also refer to something you need your design solution to do. Organisms meet functional needs through biological strategies. A biological **strategy** is a characteristic or process that performs a function for an organism. Basically it's how the organism performs a function. It's an adaptation the organism has in order to survive, and it's the lessons here that offer us better understanding for solving similar challenges.

NATURE AS MODEL, MEASURE, MENTOR

There are three ways that biomimicry values nature. **Model**—applying, imitating, or taking inspiration from nature's designs and processes in order to solve human problems; **Measure**—using an ecological standard to judge the "rightness" of our innovations; and **Mentor**—valuing nature for what we can learn and not what we can extract.

EMULATING NATURE'S FORM, PROCESS, OR SYSTEM

There are three levels that mimicking nature can occur. We can study natural **forms** (shapes, textures, patterns) that demonstrate effective ways to achieve certain functions (such as how shark skin uses patterns to ward off bacteria from growing).



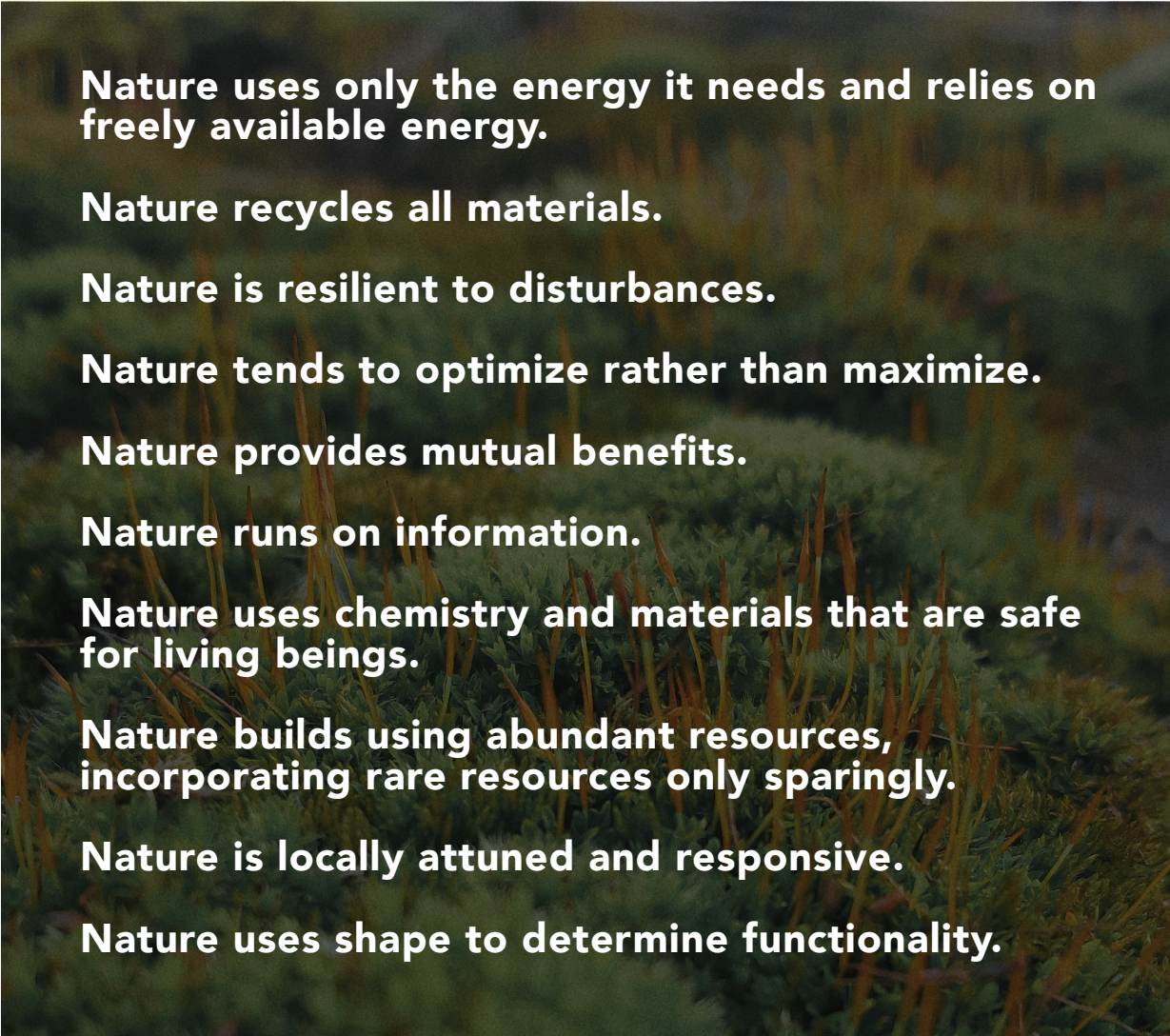
When we study the interactions between organisms or the physical and chemical **processes** that have adapted over millennia, we can create better results for our designs (such as how solar panels can optimize energy capture from the sun like leaves do), ways of collaborating with each other, and overall development of positive behaviors.

On a grand scale, we can mimic the way **systems** function. Systems in nature include networks, nutrient cycles, ecosystems, and more. These systems have evolved over billions of years to create conditions where humans have been able to adapt and survive, as well as the many other ecosystems that have offered a home for other fascinating organisms, like dolphins or slime molds. Learning from nature's systems offers insight into designing more innovative and sustainable systems like energy grids, city designs, water management, companies, information systems, and more. Designing with biomimicry at the systems level is where we can make significant changes to the way our world is designed.

Nature's Unifying Patterns

What are we striving for? Nature's Unifying Patterns is our attempt to identify the 10 most essential lessons from the natural world that should be considered as part of a design process and the goals we wish to achieve as stewards of planet Earth. We call them "nature's unifying patterns", because examples of the patterns can be found broadly across the majority of life on Earth. This is not a definitive and exhaustive list. It's a work in progress that will continue to be informed and enhanced by our growing community.

Consider introducing these patterns as a way to ground us in ways we want to adapt our behaviors and designs to support all Life.



Nature uses only the energy it needs and relies on freely available energy.

Nature recycles all materials.

Nature is resilient to disturbances.

Nature tends to optimize rather than maximize.

Nature provides mutual benefits.

Nature runs on information.

Nature uses chemistry and materials that are safe for living beings.

Nature builds using abundant resources, incorporating rare resources only sparingly.

Nature is locally attuned and responsive.

Nature uses shape to determine functionality.

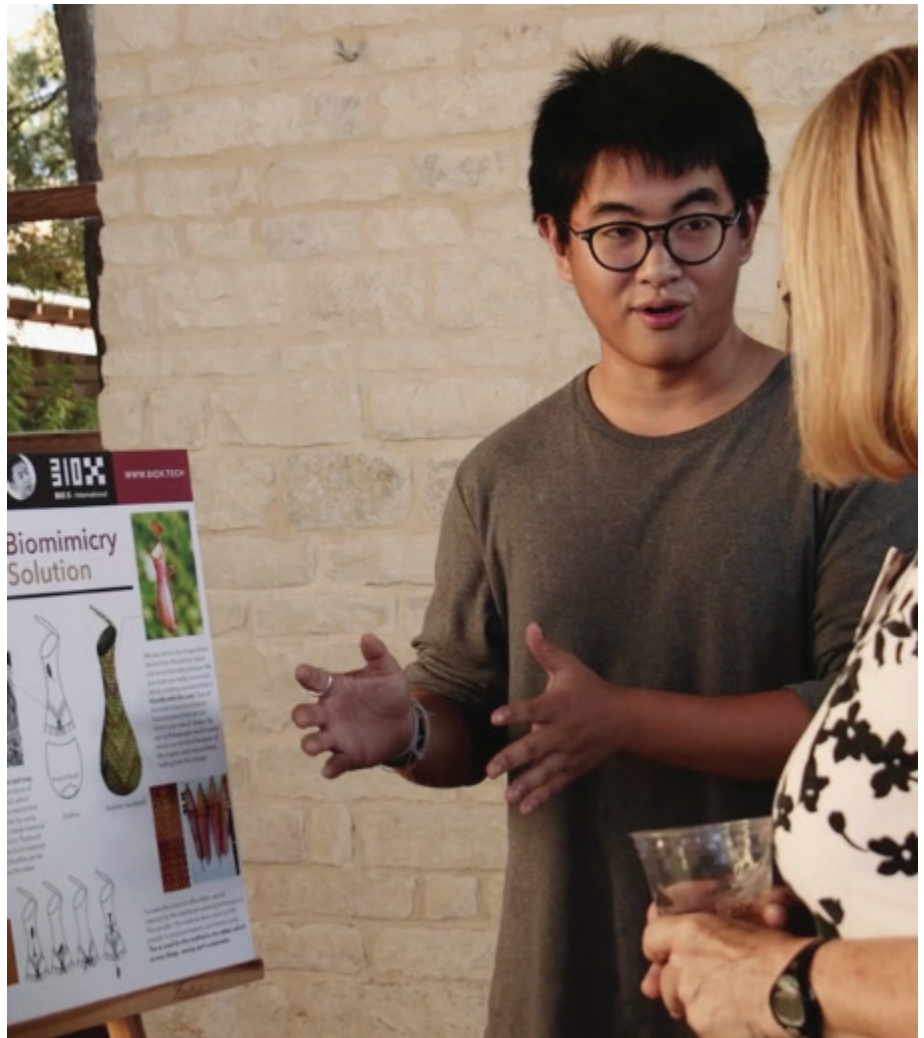
[Learn more about Nature's Unifying Patterns and examples in design here.](#)

Get Started

PLANNING AND RECRUITMENT

Whether you're planning on your own, with your group from the Biomimicry Global Network, or with a friend, first get clear on what kind of event you want to organize and who you would want to invite. Is this a community gathering? After-school activity for kids? Group of adults furthering their education?

Pick a date with enough time to plan and recruit. At least one month in advance is usually safe. Then decide how you want to promote it. [Canva](#) is a free tool for creating flyers, social media, and other digital tools to help you spread the word. Include the location, date/time, what you'll be doing, and how to contact you if there are any questions. We recommend making events 1-3 hours in length depending on what goals you're trying to achieve. Start small to get comfortable with facilitating.



Next you're ready to invite people! Share on social media when the event is announced and continue promoting up until the day of the event to get more people sharing and talking about it. You can host it on sites like [EventBrite](#), [Meetup](#), or [Nextdoor](#) as well to reach more community members. We encourage you to also visit local businesses, community centers, organizations, or make personal invites to neighbors to help encourage participation.

As you're preparing for the event itself, consider incorporating some of the activities on the following pages and find ways to learn from local organisms and ecosystems.

On the Day of the Event

This is where you can get creative and tailor the gathering in a way that excites you or that would be helpful for the people in your community. Here are some things to consider as you're putting together your agenda.

GREETING THIS MOMENT WITH MINDFULNESS

Welcome your participants to the natural environment you have chosen. Have them sit quietly and engage their senses, releasing the day as it was, and becoming fully present. Observe the environment you've chosen (or tell a visual story if you're hosting virtually): What organisms live there? When you're quiet and still, you can watch how they behave.

INTRODUCE THE CONTEXT

This is where we are, here on planet Earth. Decide how deep you'll be bringing the local context into the conversation.

INTRODUCE THE ACTIVITY, PROBLEM SOLVING WORKSHOP, OR EDUCATION MATERIAL

Are you looking at a local problem? Are you wanting to just introduce a new way of thinking and perceiving? Are you introducing the concept of hope? Come prepared by either researching aspects of the problem you seek to solve (i.e. there has been lead found in the water. We want to talk about how to solve this problem).

If it's introducing a new way of perceiving through the lens of biomimicry, then you can follow the 101 guide above as a lens to see the world (we are nature, interconnected, and we can design our lives with this understanding). If you are trying to introduce hope, you can touch on how there are problems that exist all around us, but the good news is nature has solved for many of them. We're here to introduce the concept of looking to nature so we are more empowered and more hopeful in tackling problems in our day-to-day lives knowing that there's a guide to find solutions and measure them against how they fit into existing ecosystems (What would nature do? What wouldn't nature do?).

If you're conducting an activity, we've included examples to choose from and there are more available on [AskNature.org](https://www.asknature.org), [the Biomimicry Toolbox](#), and [30 Days of Reconnection](#) series.

ASK HOW IT WENT

Bring everyone together at the end of the activity and ask how it went. What did they learn? What did they find inspiring? How has this affected their perspective? Celebrate the gathering and the connections made—you've done something amazing by showing up.

FOLLOW UP

If you enjoyed hosting, keep your community engaged! You can create a local channel on the [Biomimicry Global Network](#) Slack group. Be realistic and keep goals to stay connected monthly or once a season—whatever can keep you and your community inspired.

Activities

We all know the best way to engage with nature is to go outside. There is no replacing the feeling of the human body's sensory experience of being in a natural environment. This is where we start when it comes to community engagement. By organizing a gathering at a local park (or even someone's backyard!), you can help introduce others to concepts of biomimicry with some of the activities below. We encourage you to get creative, share your enthusiasm for having fun, and introduce these concepts in a way that offers hope and connection.

The Five Senses

Your five senses (sight, hearing, taste, smell, and touch), along with the brain and nervous system, all work together to collect information about the world around us. These senses give us humans a way to interact within our surroundings.

Identify a spot that grabs your interest and get comfortable. Take a moment to channel your senses. Have participants settle into a comfortable position, and spend 15-20 minutes just observing the environment. Make observation notes and/or sketches. Ask them: What do you see around you? What sounds do you hear near and far? What do you feel with your touch or what is touching you? What smells are in the air? Is there a particular taste in your mouth? Try to diagram the sounds around you, what you see, and how close or far they feel from you. What would these sounds look like as a shape?

You can opt to go to another location and prompt participants with additional questions: What are your senses telling you now in your new environment? What organisms do you see? How are they interacting with their surroundings?

AskNature Bingo

Share a Bingo card with everyone and have them work in pairs or solo in searching through the local area to find the functions on the card. Be sure to explain what each means. On the card, they'll identify which organism demonstrated that function and the first to get a diagonal or straight row completed wins! Share stories at the end of what participants observed. *Note:* the free space in the middle is for them to offer a unique function they see! [Download the Bingo card here.](#)

Biome Exploration

Identify your community's ecological place and research which biome you live in to learn about the climate. Learn about what makes this ecosystem unique and apply this tailored information to your 101 introduction to biomimicry. What are the main challenges of surviving and thriving in your ecosystem? Have your group look up organisms that are native to the area and discuss together how humans can learn from these organisms and how they have adapted to these challenges.

Make Believe

Visit a natural area. Have participants imagine being one of the organisms that they observe. What do they need to survive? What are they made of? What and who do they depend on to survive? Who depends on them to survive? What roles do they play in the ecosystem throughout their lives? What is their special niche? Which adaptations make them fit best in that niche? Come together and share stories about what they discover.

Activities

Sound Map

Have participants bring a journal or piece of paper and mark an “X” at the center of the page to represent themselves. Then invite them to close their eyes and listen. Guide them through creating a symbol on their page to represent each sound that they hear. Have them make a map of the sounds heard all around, in all directions and whether human caused or not. Are the sounds related or responsive to each other? *This is also an interesting exercise to do at night, when some organisms become more active!*

Bringing Biomimicry into Local Schools

What better way to pay it forward and help the next generation in your community than visiting your local school? We humans have lost some elements of our connection to our elders, because of our transient culture and changes in values over the years. Whether you yourself are a young person wanting to support your peers or the little ones coming up behind you, or you are an adult who wants to create opportunities for introducing creative critical thinking and an interconnected way of seeing the world with growing humans that wouldn't have otherwise found this kind of thinking, here are some steps you can take to volunteer with a local school.

Step 1: Research schools near you.

Step 2: Decide what you want to offer and what age group feels appropriate. Here is some sample language that you can finesse:

Hi (name),

I would like to inspire kids in my community to reconnect with the natural world and learn how to respect and value our local environment. I've been learning about biomimicry and wanted to ask if I could lend my time in taking a student class outside or to do a classroom activity where they get to use critical thinking skills and creativity to connect with nature. Perhaps there is a biology or science teacher that needs help during a testing window that would be open to having a guest speaker?

(Insert more information about yourself so that they can get a sense of comfort in bringing an adult into the school; share information about the kind of activity you'd want to bring—or keep it more broad so that you can work with a teacher that may have ideas aligned with their lesson plans.)

Please let me know if this would be possible, and thank you in advance for considering!

*Sincerely,
(name)
(contact information)*

Bringing Biomimicry into Local Schools

Step 3: Contact the administrators either by phone or email. We recommend contacting the Principal and the Vice Principal to make the ask. If you know of a teacher (or perhaps it's the school you went to!), you can also reach out to them directly.

Step 4: Follow up if you haven't heard anything after a week. Teachers are busy so it's understandable they may not have time to respond. Don't give up though! There are more schools and teachers in your community you could reach out to if they don't have availability or interest at that time.

Biomimicry Youth Design Challenge

If you're working with middle or high school educators, we also recommend sharing the [Youth Design Challenge](#). It's a free, hands-on, project-based learning experience that provides classroom and informal educators with an engaging framework to introduce bio-inspired design and an interdisciplinary lens on science, engineering, and environmental literacy. It offers school students a unique STEM experience and empowers them to envision solutions to social and environmental challenges.

The program runs from fall to spring each year, and we provide educators with the curriculum and support to guide students in experiencing:

- A process that weaves nature's ingenious solutions into problem solving
- Fun, outdoor excursions to observe nature and identify the functions and relationships behind biological attributes
- How forms, processes, and systems in nature can inspire innovative sustainable design
- Confidence in making, inventing, creating, and offering solutions to complex problems
- How science and design impact society and the natural world

[Learn more about the Challenge here.](#)



Taking Biomimicry Practice to the Next Level

While this guide serves as an introduction to the basics of biomimicry, if you'd like to add on additional exercises for your group or take your own learning journey to the next level, here are some resources to help.

Biomimicry Toolbox: The toolbox provides a deeper orientation to biomimicry and introduces a set of tools and core concepts that can help problem-solvers from any discipline begin to incorporate insights from nature into their solutions. If you have an audience that is ready to take on a local problem, you can use this free resource to work through the challenge and create a nature-inspired solution.

AskNature.org: The living world holds answers for us to create a more resilient, regenerative, and beautiful world. "How does nature solve this?" is the question we pose. Discover thousands of resources—including biological strategies, innovations inspired by nature, articles, videos, lesson plans, activities for groups, and more—available to folks who want to learn, teach, and practice.

Learn Biomimicry Online Course: **'Learn Biomimicry'** is an online course offering created by **BiomimicrySA** (South Africa) in partnership with the Biomimicry Institute. Gain a comprehensive understanding of the concepts, tools, and terminology of biomimicry, and learn the steps of how to put biomimicry into practice.



Become a Biomimicry Professional: Biomimicry 3.8 and Arizona State University are training the next generation of biomimicry practitioners from all backgrounds - with remote, accredited **Master of Science** and **Graduate Certification** programs. The **Biomimicry Professional Certification Program** combines the MSc with additional, in-person training led by Biomimicry 3.8. [Learn more about becoming a Biomimicry Professional.](#)

Virtual Resource

In today's world we've learned that it's not always safe or accessible to go out into natural environments. Between global pandemics and safe access to public spaces, it won't always be appropriate to gather a group of people outside. There's still ways to engage your community! You can schedule virtual meetups and recruit people through your community to participate.

Inspiration from 30 Days of Reconnection: In the spirit of reconnecting with the natural world around us, our team has put together a 30 day course of our favorite biomimicry activities to share with our wonderful community. Through these activities, we hope to give you a greater sense of our Biomimicry Ethos and to learn how to tap into nature's wisdom.

[Get started with day 1 here.](#)



**Thank you for bringing your community together
and inspiring others to put nature back into human nature.
We're all in this together.**

*We want to hear how it went! Share with us!
Post on social media and tag @biomimicryinstitute
or contact us at info@biomimicry.org
so we can celebrate your community!*