

## Biomimicry Definitions and Key Terms

**Abstract** - The process of carefully studying the essential features or mechanisms that make the biological strategies successful and then translating the concepts using plain language (i.e. replacing all biological terms for use in design) to write down the understanding of how the features work; sketches are often used to ensure accurate comprehension; alternative term is Abstracted Design Principle, which also relays how the biological strategy works without relying on biological terms. This makes cross-disciplinary collaboration easier, because a design strategy focuses on function and mechanism without the baggage of potentially unfamiliar biological terms.

**Biological Model** - A biological model is any organism or ecosystem, along with its associated strategies and traits, that a biomimicry designer seeks to mimic/emulate.

**Biological strategy** - The way an organism performs a function. It's an adaptation the organism has in order to survive; "how" a function is accomplished

**Biologize [a question]** - (The 2nd step in the Biomimicry Design Spiral). Analyzing and describing the function and context of an issue in biologically-relevant terms by asking, "How does nature...?" questions; To take a human need or function and rephrase it so that an answer may be found in biology, e.g., "How can I make the fabric red?" becomes, "How does nature create color?"

**Biology** - A branch of science that deals with living organisms and their vital processes. (britannica.com)

**Biomimic** - Someone who builds their career and lives around nature-inspired design

**Biomimicry** - The conscious emulation of life's genius. Learning from and then emulating biological forms, processes, and ecosystems to create more sustainable designs

**Biomimicry Taxonomy** - A classification system used to organize information about the different ways that organisms and natural systems meet functional challenges into groups of related functions. Use the taxonomy diagram to help you or your students navigate Ask Nature or as a tool to support "thinking functionally" and identifying questions to "ask" nature when beginning a design challenge.

**(Design) Brief** - A design brief is a document used by professional designers and their clients to communicate the context, goals, and requirements of a creative project

**Climate** - The composite or generally prevailing weather conditions of a region, as temperature, air pressure, humidity, precipitation, sunshine, cloudiness, and winds, throughout the year, averaged over a series of years (dictionary.com)

**Climate Change** - Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed effects that are synonymous with the term (nasa.gov)

**Constraints** - Potential barriers or limitations that a design concept might face (e.g. technology, cost, materials, regulations, culture) and how the solution could be deployed in the real world (e.g. market strategy).

**Criteria** - The ideals or requirements on which a judgment, evaluation, or selection is based. (dictionary.com)

**Design (noun)** - The way something has been made; the way the parts of something are formed and arranged for a particular use, effect, etc.

**Design (verb)** - To plan and make decisions about (something that is being built or created); to create the plans, drawings, etc., that show how (something) will be made.  
*Note: The word "design" implies intent and forethought in both its noun and verb uses. For this reason the Institute refrains from using "design" to refer to nature and to biological strategies, except in poetic usage. Biological strategies are not "designed," rather they are a result of evolutionary processes.*

**Designer** - A broad term used to refer to anyone responsible for conceiving of, creating, and/or implementing ideas that affect human cultural, social, technological, scientific, or financial systems at any scale.

**Ecological** - Of or relating to the environments of living things or to the relationships between living things and their environments. (merriam-webster.com)

**Empathy Interviews** - Usually one-on-one conversations that ask open-ended questions to gather information about specific experiences that help to reveal deep, unacknowledged needs. (learningforward.org)

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

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

**Function** - The outcome or role of a characteristic, mechanism, or process; what an adaptation does for an organism or what a design does for its users. (e.g., collecting water, accommodating growth, managing disturbance)

**Human impact** - The ways that humans and their developments affect their physical environment. (nationalgeographic.org)

**Innovation** - A new idea, method, or device (merriam-webster.com)

**Iterate** - To do (something) over again or repeatedly

**Mechanism** - The specific way an organism performs a strategy, i.e. the details of how that function is performed for a cohesive version of how to emulate in design

**Organism** - Refers to a living thing that has an organized structure, can react to stimuli, reproduce, grow, adapt, and maintain homeostasis. An organism would, therefore, be any animal, plant, fungus, protist, bacterium, or archaeon on earth. (biologyonline.com)

**Portal** - A website serving as a guide or point of entry to the World Wide Web and usually including a search engine or a collection of links to other sites arranged especially by topic (merriam-webster.com)

**Portfolio** - A selection of a student's work (such as papers and tests) compiled over a period of time and used for assessing performance or progress (merriam-webster.com)

**(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. (Re)Connect as a practice encourages us to observe and spend time in nature to understand how life works so that we may have a better ethos to emulate biological strategies in our designs.

**References** - Something (such as a sign or indication) that refers a reader or consulter to another source of information (such as a book or passage)consultation of sources of information (merriam-webster.com)

**Rubric** - A guide listing specific criteria for grading or scoring academic papers, projects, or tests (merriam-webster.com)

**Scientific observations** - Scientists use observation to collect and record data, which enables them to develop and then test hypotheses and theories. (sciencelearn.org)

**Strategy** - A characteristic, mechanism, or process; “how” a function is accomplished.

**Submission** - The act or condition of submitting something for consideration, approval, treatment, or action (dictionary.com)

**Sustainability** - Creating and maintaining the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations. Sustainability is based on the principle that everything we need for our survival and well-being depends, either directly or indirectly, on the natural environment.

**Trait** - A specific characteristic of an organism which can be determined by one’s genes, the environment, or interactions between both. (genome.gov)

**United Nations** - An international organization founded in 1945 that is the one place on Earth where all the world’s nations can gather together, discuss common problems, and find shared solutions that benefit all of humanity. It comprises 193 Member States. (un.org)

**Video Pitch** - A concise video presentation created to persuade viewers that an idea has merit. Some tips on making a video pitch include keeping it short and sweet, making it compelling for the audience, and checking permissions for material used as well as crediting sources.

*Unless otherwise stated, definitions were found at [The Biomimicry Toolbox](#)*