LIFE'S PRINCIPLES

Biomimicry DesignLens

Life's Principles are design lessons from nature. Based on the recognition that Life on Earth is interconnected and interdependent, and subject to the same set of operating conditions, Life has evolved a set of strategies that have sustained over 3.8 billion years. Life's Principles represent these overarching patterns found amongst the species surviving and thriving on Earth. Life integrates and optimizes these strategies to create conditions conducive to life. By learning from these deep design lessons, we can model innovative strategies, measure our designs against these sustainable benchmarks, and allow ourselves to be mentored by nature's genius using Life's Principles as our aspirational ideals.

BIOMIMICRY 3.8

EVOLVE TO SURVIVE

Continually incorporate and embody information to ensure enduring performance.

Replicate Strategies that Work
Repeat successful approaches.

Integrate the Unexpected
Incorporate mistakes in ways that can lead to new forms and functions.

Reshuffle Information
Exchange and alter information to create new options.

ADAPT TO CHANGING CONDITIONS

Appropriately respond to dynamic contexts.

Incorporate Diversity
Include multiple forms, processes, or systems to meet a functional need.

Maintain Integrity through Self-Renewal
Persist by constantly adding energy and matter to heal and improve the system.

Embody Resilience through Variation, Redundancy, and Decentralization
Maintain function following disturbance by incorporating a variety of duplicate forms, processes, or systems that are not located exclusively together.

BE LOCALLY ATTUNED AND RESPONSIVE

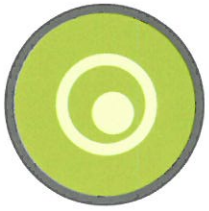
Fit into and integrate with the surrounding environment.

Leverage Cyclic Processes
Take advantage of phenomena that repeat themselves.

Use Readily Available Materials and Energy
Build with abundant, accessible materials while harnessing freely available energy.

Use Feedback Loops
Engage in cyclic information flows to modify a reaction appropriately.

Cultivate Cooperative Relationships
Find value through win-win interactions.



INTEGRATE DEVELOPMENT WITH GROWTH

Invest optimally in strategies that promote both development and growth.

Self-Organize
Create conditions to allow components to interact in concert to move toward an enriched system.

Build from the Bottom Up
Assemble components one unit at a time.

Combine Modular and Nested Components
Fit multiple units within each other progressively from simple to complex.

BE RESOURCE EFFICIENT (MATERIAL AND ENERGY)

Skillfully and conservatively take advantage of resources and opportunities.

Use Low Energy Processes
Minimize energy consumption by reducing requisite temperatures, pressures, and/or time for reactions.

Use Multi-Functional Design
Meet multiple needs with one elegant solution.

Recycle All Materials
Keep all materials in a closed loop.

Fit Form to Function
Select for shape or pattern based on need.

USE LIFE-FRIENDLY CHEMISTRY

Use chemistry that supports life processes.

Break Down Products into Benign Constituents
Use chemistry in which decomposition results in no harmful by-products.

Build Selectively with a Small Subset of Elements
Assemble relatively few elements in elegant ways.

Do Chemistry in Water
Use water as solvent.