FAUNA
SYSTEMS

Enabling a new era of engineering with agential materials

Company Overview · 3Q26

SECTION ONE

Programmable Biobots and the Dawn of Agential Engineering

How the first computationally designed organisms were made, and why a living substrate changes what engineering can be.

ORIGIN

Consider the Sheepdog

Humans don't control every step a sheepdog takes. They give direction, and the dog autonomously navigates a messy real-world environment to do useful work.

Fauna is building biological systems that work the same way at microscopic scales: directed by people, autonomous in environments too dynamic, delicate, or complex for existing tools.



Embodied Intelligence

Sensing, movement, and response in one package.



Directed, not micromanaged

Set the objective; the organism finds the path.



Naturally Safe

Living, self-powered, and biodegradable after use.

ORIGIN

The First Computer-Designed Living Organism

In January 2020, Fauna co-founders **Michael Levin** (Tufts) and **Joshua Bongard** (UVM), with Sam Kriegman and Douglas Blackiston, published a scalable pipeline that designs an organism in silico, then builds it from living cells.



Michael Levin
Tufts University

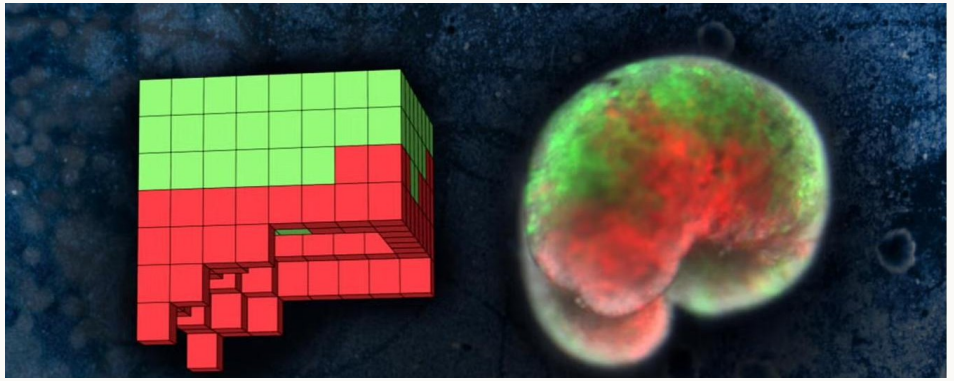


Joshua Bongard
University of Vermont

THE NEW YORK TIMES · SCIENCE

Meet the Xenobots, Virtual Creatures Brought to Life

By Joshua Sokol · April 3, 2020



"a new class of living robotics that challenge the boundary between digital and biological"

Kriegman, Blackiston, Levin & Bongard, PNAS 117(4):1853–1859 (2020). Headline and quotation: J. Sokol, The New York Times, 3 Apr 2020, under attribution; layout is Fauna's own.

ORIGIN

Fauna Systems: Commercializing an Emerging Field

Fauna Systems marshals the novel capabilities of biological robots to address fundamental challenges in human health, environmental remediation, and bioengineering — problems where conventional approaches are technically insufficient or economically infeasible.

Fauna designs and manufactures function-specific biobots for integration into customers' own application environments, monetized through a Bots-as-a-Service model.

Exclusive IP

Seven foundational patent families, licensed.

Fundamental and Applied R&D

Sponsored research at the Levin and Bongard labs.

A category, not a product

The first company built on agential engineering.

ORIGIN

Agential Engineering

Conventional engineering specifies mechanism: every component, every interaction, and every response enumerated by a designer in advance. Agential engineering specifies outcome, and lets the substrate supply the mechanism.

Living cells arrive with capabilities “out of the box”: they sense, metabolize, migrate, adhere selectively, repair damage, and hold homeostatic goals of their own. The designer’s work is to state a target behavior precisely, search computationally across the morphologies that might produce it, and measure what they actually do. The functionality is teased out rather than authored.

The result is a discipline closer to directed evolution than to mechanical design — and one that is productive in exactly the messy, variable environments where enumerated systems fail.

AGENTIAL MATERIALS ARE INHERENTLY

- Autonomous and adaptively intelligent
- Self-healing and biodegradable
- Internally energized or harvesting-capable
- Functionally robust across diverse environments
- Top-down designed and mass-producible

ORIGIN

Agential Materials

Living materials have “goals” of their own. The engineering question changes from "how do I build the mechanism?" to "how do I set an objective the material will evolve toward?"

PASSIVE MATERIALS

Designed bottom-up for a single purpose

Build, use until failure, replace

Brittle outside designed conditions

Capital-intensive, environmentally costly

Every condition and response enumerated

AGENTIAL MATERIALS

Designed around objectives, not mechanisms

Build, self-repair, functionally upgrade

Robust across diverse, dynamic environments

Capital-efficient and biodegradable

The system discovers its own path

ORIGIN

Grown, not Assembled

Robots sense, reason, and act on their physical environment. Traditional robots are built from unintelligent parts and are easily overwhelmed by complex or dynamic surroundings.

INGREDIENTS FOR A TRADITIONAL ROBOT

Steel · silicon · rare earth metals · motors · servos · hydraulic, pneumatic, and electric actuators · cameras · microphones · position and orientation sensors · force and torque sensors · inertial measurement units · end effectors · power supply · batteries



INGREDIENTS FOR A BIOBOT

Water · carbon dioxide · amino acids · growth hormone · carbohydrates

Autonomous. Self-healing. Biodegradable. Internally energized.

The combinations of cell types and the precise ways they are put together are chosen for specific capabilities.

ORIGIN

Programmable on Three Levels

A biobot is not merely a bunch of cells. Body plan and population behavior produce function that no constituent cell possesses — the capabilities are designed and emergent.

CELL FUNCTION

What the cells do

Skin and cardiac cells arrive with sensing, contractility, and metabolism already built in. Synthetic biology circuitry extends them further.

BODY FUNCTION

How they are arranged

Conformation determines locomotion, gradient-following, and object handling. The same cells in a different body plan do a different job.

SWARM FUNCTION

What populations do together

Signal amplification, aggregation, and pile-making. One bot detects; the population makes the detection visible.

The whole is designed to exceed the sum of its cells.

SECTION TWO

Biobot Capabilities

A biobot senses, decides, moves, and acts on its surroundings in a single sub-millimeter package — a combination available neither to passive materials nor to the living cells it is built from. Where those capabilities meet problems current tools cannot solve technically or economically, the value created is non-incremental.

CAPABILITY SET

Sensing, Thinking, and Action … for Unparalleled Versatility

Most tools for working at very small scales are mechanical, chemical, or engineered biology optimized for one narrow function. Biobots combine embodiment, sensing, movement, and response.

Sensing

Detect gradients, targets, and conditions in situ — living cells arrive with a sensing array built in.

Navigation

Move through fluid and other complex surroundings, following pH, thermal, chemical, and light gradients.

Signal amplification

Turn a small local signal into a large detectable one; each bot tells two friends.

Payload delivery

Carry and release useful material precisely where a target is found.

Sequestration

Capture, concentrate, and transport unwanted material for later removal.

Transformation

Act chemically on a target — the difficult step conventional methods can't reach.

CAPABILITY SET

Matching Capabilities with Market Needs

Commercial discussion partners are identifying a consistent set of core functions they want biobots to perform.

Detection & Identification

Binary detection is less useful. Robust identification, classification, and quantification carry the value.

Transformation

Rather than eliminate a contaminant entirely, effect a change — PFAS is the canonical case.

Absorption

Absorb contaminants in situ; collect the bots later for destruction.

Sequestration

Concentrate diffuse contaminants into a designated area for removal and destruction.

Destruction

The ultimate goal for any remediation or removal context.

DIAGNOSTICS

FUNCTIONS THAT ACT ON THE PHYSICAL ENVIRONMENT

Detection is table stakes. The functions that act on the environment are where partners see non-incremental value.

Core functions as raised by prospective partners in Fauna commercial discovery conversations, 2026. Views paraphrased; not commitments.

SYSTEMATICALLY DISCOVERING MARKETS

Potential Application Areas

Fauna is conducting R&D-driven customer discovery with commercial partners in domains of interest.

Environmental remediation

Detection, sequestration, and partial transformation of contaminants in water and soil — including PFAS at parts-per-trillion thresholds.

Human health diagnostics

Ex-vivo interrogation of biological samples for signals conventional assays cannot resolve.

Precision agriculture

Telemetry on crop and ecosystem health; targeted biological control in place of broad-spectrum chemistry.

Synthetic biology and bioprocess

Deeper telemetry on the internal state of host cells and fermentation systems.

R&D-DRIVEN CUSTOMER DISCOVERY

Finding Value in Diverse Markets

Fauna is in structured conversations with technical decision-makers, testing where biobot capabilities address a problem their current tools cannot solve.

Binary detection isn't enough

Every operator already knows something is there. They need identification, classification, and quantification — which specific compound, which pathogen, at what concentration.

Detection is the wedge, not the business

Diagnostics establish the platform. The higher-margin work is acting on what was found: transform, absorb, sequester, destroy.

Bio wins where bio is uniquely capable

Adaptability, specificity, self-assembly, and gentle interaction justify the development cost. Where chemistry is adequate and cheap, it will win.

Partial is often sufficient

Biobots need not complete a transformation — only the step conventional methods can't reach economically.

The market is not asking for a better sensor. It is asking for something that senses, thinks or follows complex rules, and then acts.

Fauna commercial discovery, structured technical conversations across four verticals, Feb–Jun 2026. Views are those of the technical leads engaged, paraphrased; not commitments.

THE ECOSYSTEM



ICDO The Institute for Computationally Designed Organisms

Fauna's scientific founders originated ICDO to build the research ecosystem around agential materials. Institute and company advance each other — creating a virtuous cycle where industry drives new research, and research opens up new commercial opportunity.

ICDO WIDENS THE SCIENCE

- Attracts new principal investigators into agential biology
- Convenes them, and sets shared standards and protocols
- Opens research areas no single lab would fund alone
- Accrues to Fauna and to every other commercializer

THE VIRTUOUS CYCLE

COMPANIES RETURN MARKET SIGNAL

- Continuous dialogue with industrial operators
- Surfaces where economic value actually sits
- Defines the requirements a real deployment imposes
- Feeds both into fundamental and applied research

SECTION THREE

Fauna Systems, Inc.

Building a broad commercial platform.



Progress to Date

Fauna is pre-product and pre-revenue, at the earliest stage of commercial development for a platform technology with large potential. The foundation is in place.

$1.9M

SEED ROUND

Investors include: Draper Associates, Meach Cove Capital, Sparta Group.

7

PATENT FAMILIES

Exclusive worldwide license to the foundational estate, effective 1 June 2026.

$8M

DEPARTMENT OF DEFENSE GRANT

Awarded to prototype the Anatomical Compiler — the system for designing and producing biobots at scale.

5

RESEARCH TRACKS

Running under the Sponsored Research Agreement at the Levin and Bongard labs — characterizing biobot capabilities and supporting customer discovery.

Seed proceeds per Fauna Financial Plan, 22 May 2026 (Q0 equity investment of $1,985,000, shown rounded). License per Exclusive License Agreement, Tufts University – Fauna Systems, Inc., effective 1 June 2026.

Designing a Biobot

A closed loop between simulation and the wet lab. Each cycle narrows millions of candidate configurations toward a behavior that meets the requirement.

1

AI-driven design

A specialized model hypothesizes millions of configurations and generates a digital twin of each, with its predicted behavior.

2

Prototype assembly

The most promising body plans are assembled in the wet lab from living cells.

3

Fitness evaluation

Each configuration is tested against the original functional requirement.

4

Error correction

Promising models are refined; weak configurations are discarded.

5

Iteration

The loop repeats until the target capability is achieved — then it scales.

ITERATE

The loop itself is the asset. In MomBot, Fauna owns the means of discovery and the means of production.

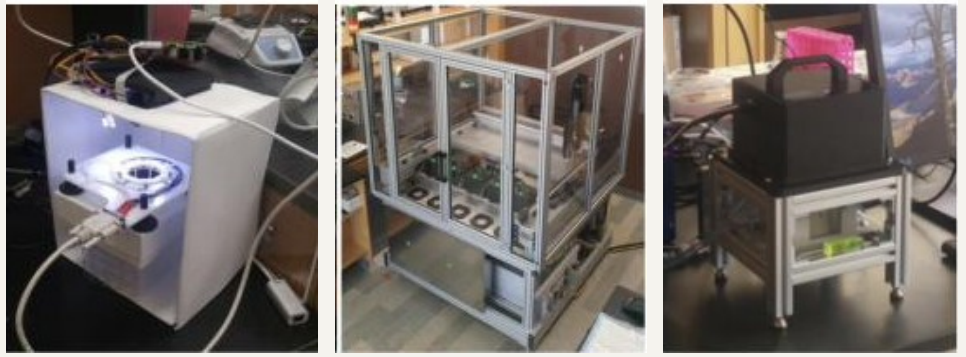
Method as published in Kriegman et al., PNAS 117(4):1853–1859 (2020); evolutionary search over candidate configurations described in SI Appendix §S2.

MomBot: Discovery Today, Production Tomorrow

The Anatomical Compiler closes the in-silico to in-vivo loop automatically — the single piece of apparatus that turns a research method into an industrial process.

STATUS

v1 built and installed	The prototype is operating on site.
$8M DoD grant	Funding the prototype programme.
Imaging under test	Recent work extends the compiler's ability to observe what it builds.
Roadmap owned by the next CEO	Throughput requirements follow from which commercial functions matter most.



MomBot Gen1, installed in the Levin lab · compiler subsystem · Babybot

Discovery and production at scale. When an optimal form is found, biobots are produced in the millions — the basis of the Bots-as-a-Service model.

Designer_Bot (MomBot) patent family: Levin & Bongard, filed 23 May 2022 — in-silico to in-vivo automated feedback loop and handling system. Grant award and prototype status per Fauna Systems Update, EOY 2025.

Key Intellectual Property

Effective June 1, 2026, Fauna holds an exclusive, worldwide license to the foundational patent estate. Tufts administers the interests of Tufts, UVM, and Harvard and acts as exclusive licensing agent for all three — seven case families in one instrument.

PATENT FAMILY	INVENTORS	FILED	PRINCIPAL CLAIMS
Xenobots Type 1	Levin, Bongard, Kriegman, Blackiston	Jun 2020	Composition of matter and cell types; body shapes; sensing; movement; self-assembly; self-repair; object handling; in-silico modeling and optimization
Xenobots Type 2	Levin, Blackiston	Jan 2021	Composition and cell types; body shapes; state reporting via fluorescence; collective behavior; preparation
Self-Replicating Type 2	Levin, Bongard, Kriegman, Blackiston	Sep 2021	Kinematic self-replication from cell aggregates
Designer Bot (MomBot)	Levin, Bongard	May 2022	In-silico to in-vivo automated feedback loop and handling system for biobot design

Underpinned by peer-reviewed work in PNAS, Science Robotics, Cell, Nature Reviews Molecular Cell Biology, and Frontiers in Ecology and Evolution.

Patent families, inventors, and priority dates per Exclusive License Agreement, Tufts University – Fauna Systems, Inc., effective 1 June 2026, Appendix A (Tufts cases T002412, T002414, T002528, T002597, T002644, T002877, T002982).

Establishing Viability in Target Environments

Before any application, biobots must demonstrate survivability and motility in the media our partners actually work in. These experiments gate everything downstream.

AQUACULTURE

Seawater

Cold tolerance below 60°F for deep-water salmon; sustained function above 80°F for tropical shrimp.

DIAGNOSTICS

Blood

Viability at human body temperature and viscosity — the gate for sepsis and other human-health work.

AGRICULTURE

Hydroponic freshwater

Mid-60s to high-70s°F is well tolerated; the open question is pH 5.5–6.5 from nutrient solutions.

REMEDIATION

Wet soil

How wet must agricultural topsoil be to support biobots — and can we bring the contaminant to water instead?

Open questions we are asking partners: which other environments are table stakes, and does proving one core function de-risk another?

Temperature and pH ranges are Fauna internal experimental targets derived from partner operating conditions, not published results. Xenopus laevis somatic-cell viability envelope per Blackiston et al., Sci. Robot. 6(52):eabf1571 (2021).

R&D-Driven Customer Discovery — Acceleration Plan

Pro forma quarterly expense and cash view. A $3M bridge in Q3-26 funds the build-out of the team, the laboratory, and partner programs through the Series A window.

	Q3-26 A/F	Q4-26 F	Q1-27 F	Q2-27 F	Q3-27 F	Q4-27 F	Q1-28 F	Q2-28 F	Q3-28 F
Research and Development									
Direct Labor	0	0	133,500	133,500	133,500	133,500	133,500	133,500	133,500
Consulting	11,250	16,875	16,875	16,875	16,875	16,875	16,875	16,875	16,875
Sponsored Research	50,000	37,500	130,000	120,000	120,000	82,500	0	0	0
Lab, Equipment and Supplies	0	105,000	122,500	115,750	109,675	104,207	99,287	94,858	90,872
Business and Operations									
Direct Labor and Contractors	73,500	112,500	135,000	135,000	135,000	135,000	135,000	135,000	135,000
Professional Fees and IP	141,530	76,885	3,601	23,651	3,701	23,751	3,801	23,851	3,901
Marketing, Travel, Interest and Other	5,000	22,500	7,500	22,500	7,500	22,500	7,500	22,500	7,500
Total Expenses	**281,280**	**371,260**	**548,976**	**567,276**	**526,251**	**518,334**	**395,963**	**426,584**	**387,648**
Equity Investment	3,000,000	0	0	0	0	0	0	0	0
Net Cash Flow	(332,598)	(371,260)	(548,976)	(567,276)	(526,251)	(518,334)	(395,963)	(426,584)	(387,648)
Ending Cash	**3,870,987**	**3,499,727**	**2,950,751**	**2,383,475**	**1,857,224**	**1,338,891**	**942,928**	**516,344**	**128,696**

Fauna Consolidated Model v2.7, Summary tab. Actuals through Jul-26; Q3-26 mixes the July actual with the Aug–Sep forecast. Whole dollars. Assumes a $3M bridge close in Q3-26; excludes Series A proceeds.

Pathways to Profitability

PHASE 1 — SEED

Underway

- Exclusive license to foundational IP executed
- Sponsored research at the Levin and Bongard labs
- Characterize sensing, motility, and state readout
- Prove core capabilities with three or more partners
- Chief executive in seat; first technical hires
- Fauna laboratory established

PHASE 2 — SERIES A

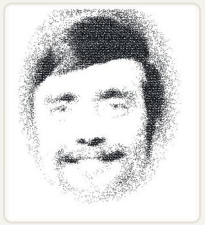
To profitability

- Develop commercial solutions with proof-of-concept partners
- Extend proofs of concept into new verticals
- Anatomical compiler to production grade
- Launch and serve customers under Bots-as-a-Service
- License on-premise compilers where volume requires
- Reach profitability

Near-term focus: a chief executive in seat, three commercially relevant functions characterized, and a first partner program under contract.

Phasing per Fauna internal plan assumptions (Financial Plan, 22 May 2026); not commitments or forecasts.

Founders



Michael Levin

CO-FOUNDER

Vannevar Bush Distinguished Professor, Tufts. Directs the Allen Discovery Center. Co-director, ICDO.



Joshua Bongard

CO-FOUNDER

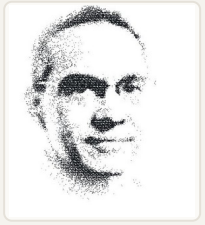
Professor of Computer Science, University of Vermont. PECASE awardee and MIT TR35. Co-director, ICDO.



Naimish Patel

INTERIM CEO & BOARD CHAIR

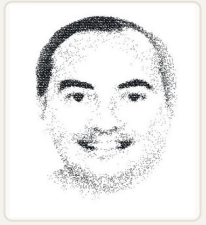
Thirty years building companies in telecom, energy, and hard tech. Took Sycamore Networks to IPO; founded Gridco Systems.



Randy Castleman

CO-FOUNDER, BOARD

Twenty-five years investing in emerging technology. Managing Partner, Carbon Drawdown Collective; former EIR at the Wyss Institute.



Eugene Durenard

CO-FOUNDER, BOARD

Founder and CEO of Hyperbolic Holdings, a Swiss investment holding company in life sciences and healthcare.

Chief Executive

SEARCH UNDERWAY

Retained search in progress for an executive combining software fluency, biological depth, and commercial execution.

Levin and Bongard affiliations per Kriegman et al., PNAS 117(4) (2020). Bongard PECASE (2010), TR35 (2007) per University of Vermont Department of Computer Science faculty profile.

THE BUSINESS

The Next Chapter

A remarkable scientific foundation and a nearly blank commercial canvas. The immediate work is not scaling a proven business — it is finding where the intrinsic capabilities of biobots meet commercially significant needs.

Accelerate discovery

Lead exploratory, substantive conversations across the four verticals. Connect what the market says to the experimental pipeline.

Build the lab and the team

Establish independent laboratory capability and recruit a small, exceptional group of experimentalists and engineers.

Winnow to the killer apps

Distinguish genuine commercial traction from scientific novelty. Concentrate on the few use cases that carry the company.

Raise to profitability

Convert proof into a Series A that funds the path to a self-sustaining business.

The technology is genuinely novel, the applications are emergent, and the right commercial entry points are not yet obvious. Finding them is the work.

FAUNA
SYSTEMS

A future reconceived

Industries will refactor around agential materials across their supply chains. Economies will refactor around capital-efficient growth. Fauna will be the company that makes that engineering practical.

Naimish Patel, Interim CEO & Board Chair

npatel@faunasystems.com