Biolink Operating Plan

Overview

Since inception, life has been governed by an operating system beyond our control.

Sequences of DNA and RNA code proteins that inform how biology operates. To date, there has been little control of this fundamental process.
We want to change this.
Biolink exists to digitally control biology and enhance our abilities.

Our goal is to develop a real-time digital interface for any biological system, programming protein synthesis using computer code to allow us to harness the most advanced engineered life forms to perform the tasks we need them to.

Fundamental to achieving this vision is the ability to continuously monitor biological systems through the development of high-fidelity biosensors to merge technology with biology.

Scientific Background

Current state-of-the-art synthetic biology goes only as far as increasingly more complex nucleic acid-based products, ranging from synthetic nucleotides, plasmids, and oligonucleotides to CRISPR systems and genetic payload for gene therapy vectors. While there has been significant progress in using computer code to synthesize nucleic acid-based products, advances seem to have stalled at protein translation. This is because translation relies heavily on cellular machinery and is a function of multivariate factors. To date, systematic screening and genotyping of bacteria and yeasts has yielded an unprecedented wealth of knowledge on cellular machinery and microorganism flexibility. Precision fermentation is the next logical step through engineering of microorganisms with purpose built cellular machinery for protein translation. Other efforts have focused on repurposing cellular machinery for protein synthesis in vitro, however the replicable characteristic of microorganisms is still desirable for scalability. In both cases, synthetic products must be systematically purified prior to human use. **This is where Biolink steps into synthetic biology, enabling systematic high-throughput purification and fluidic manipulation at the protein scale.**

Scientific Approach

Biolink’s core sensor technology is the first of its kind, combining tunable plasmofluidics with photonics for in situ label-free detection. The combination of plasmofluidics and

photonics enables precision manipulation of complex biomolecules at the micro and nanoscale. The ability to manipulate fluid flow and trap biomolecules based on size is paramount for the advancement of synthetic biology. Our sensor technology enables the informed positioning of molecular functional groups, enabling precision synthesis of nucleic acid-based products, as well as protein and enzyme purification. Furthermore, the capability of our technology for sequential nano and microscale manipulation will enable precision packaging of large genetic payloads into gene therapy vectors for targeted delivery. The versatility of our technology will enable us to rapidly iterate nucleic acid-based synthesis for scalable translation in engineered microorganisms, thus expanding the capabilities of synthetic biology.

Milestone 1
We will create a bench-scale all-in-one sorting separation and purification device for gene therapy vectors (viral, lipid nanoparticles, liposomes, exosomes, etc.) using our core technology.

Milestone 2
Tune our core technology for precision enzyme-guided nucleic acid-based synthesis based on binary code input in a fully automated software to hardware or “computer code” to “genetic code” configuration.

Milestone 3
We will scale up packaging of our custom designed nucleic acid-based payloads into gene therapy vectors. The result will be precision made gene therapy vectors for microorganisms used in synthetic biology or for gene therapies and vaccines used in pre-clinical studies.

Milestone 4
Using our suite of technologies, we will be able to systematically pack genetic payloads into pre-selected microorganisms to guide precision fermentation to create almost anything with further purification being performed by our bench-scale all-in-one purification device.

Milestone 5
Ex Vivo Genetic Engineering (X) will use our core sensor technology to monitor biomolecules in the blood and suggest gene-therapy based solutions to the user. Paired with our other technologies, X will relay instructions to our platform on what gene therapies to synthesize and finally engage the user for topical or systemic delivery.

Applications
Biolink will enable novel biosynthetic capabilities in every realm, ranging from metabolic and cellular repair to the scalable production of new materials. The combination of high-

fidelity monitoring with on-demand bioengineering accelerates the iterative process required to design and synthesize optimized organisms. This rapid iterative process will enable us to direct the evolution of the bioengineered microorganisms in a stepwise progression, optimizing pathways to speed up their metabolic processes, longevity, and scalability. Applications will include:
Complex biomolecules: proteins, enzymes, hormones, extracellular matrix, etc.
Complex biomaterials: bioplastics, biopolymers, biofibers, etc.
Complex nanomaterials: synthesis and deposition of calcium-based nanostructures.
Custom-designed feedstock: to fuel bioengineered microorganisms with the building blocks they need.

Team Structure
Our team pushes the boundaries of science, software, and technology. With interdisciplinary knowledge in the areas of spectroscopy, photonics, plasmofluidics, gene therapy, drug delivery, regenerative medicine, AI, machine learning, biomedical engineering, instrumental integration and automation, our team is one of the few with all the skills and vision to bring science fiction to reality.

Team Culture
Our team believes that we are here to make the most of life, be it in our daily lives, or in our biological abilities. Biolink is an evidence-based company that thrives on first-principles, tenacity, and true social responsibility. At Biolink, we are committed to improving the lives of the generations to come so that we can all achieve our full potential. Our team already lives by these principles, striving to build a better tomorrow by staying true to our vision and mission, being goal-oriented, creative, adaptive, resourceful, and most importantly, responsible.

Company Strategy
Having a multi-decade vision requires pragmatic approaches to ensuring the roadmap is successfully executed. From Biolink's inception, our strategy has been to rapidly deliver saleable products to market that align with and accelerate our progress towards our vision.
The revenue and/or data gathered from our product lines are reinvested in bringing the next iteration of our technology to reality.
At Biolink we create the future by delivering today the tools and technologies that you will need tomorrow.

Funding Strategy
The development of our core sensor technology, and subsequent technologies, not only follows the natural progression of R&D, but also the most immediate saleable applications of each product. For instance, the growing demand for gene therapy and gene-based vaccines predicts a significant revenue stream for our core technology, enabling it to fund

our subsequent technologies.

Roadmap

Biopen - Rapid on the go molecule detection
Bioport - Rapid biomarker detection and interpretation
Stream – AI Metabolic tracking
Bench-scale Core Technology – Sort, separate, purify and analyze elegantly in the lab/fab.
Core Technology for Biosynthesis - program cellular machinery to produce complex biomolecules, biomaterials, nanomaterials, and customized feedstock.
X – Monitor and enhance your cellular and metabolic functions.
Genetic app store – digitally encoded custom mRNA to guide cellular metabolism.
All underpinned by **Biolink AI** aimed to understand and optimize cellular and metabolic function.