The Dream: Automating Biology and Medicine Across All Scales

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Innovation happens when we **automate** what once seemed **un-automatable.**

From **gene-editing one cell** to **orchestrating millions of experiments.**

From **sequencing one piece of DNA** to **parallelized computation**

Today’ s Gaps

Despite the Amazing Technologies Out There

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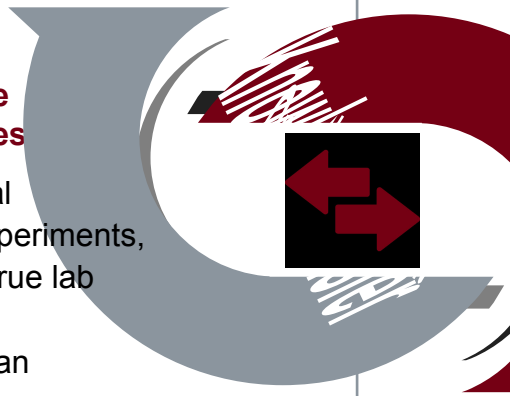
We are building **a unified human/robotics-AI collaborative intelligence platform** to conquer these challenges.

Pain Points to Achieve Superintellegence in Labs

Knowledge Incompletenes

- Without multimodal recordings of liveexperiments, models can't refinetrue lab workflows.
- Unstructured human expertise(techniques improvisations) isn't digitized.



stem Silos

- Instruments, LIMS, robotics, andanalysis tools don't interoperate

Now:
We Believe the Cambrian Moment for Biomedical Superintelligence Is Coming

Human-AI Co-Evolvement Towards End-to-End Solution

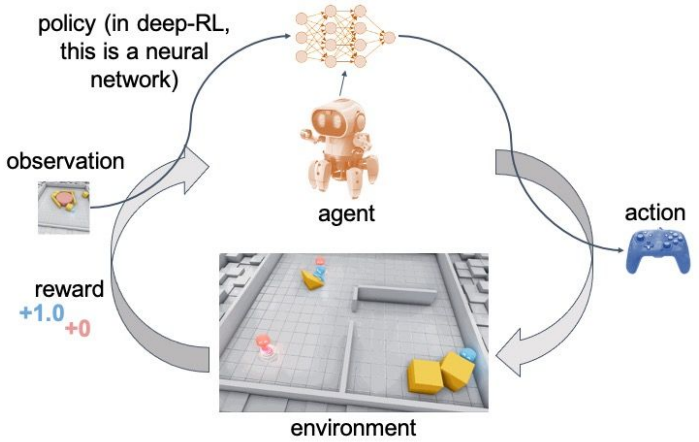
It's for for both scientists and clinicians — capturing human expertise (routines and surprises), standardizing execution, and enabling scaling across teams, sites, and institutions!

"Vision didn't just add a feature—it changed everything."

Andrew Parker's "Light Switch Theory": 550M years ago, the evolution of eyes triggered the Cambrian explosion—the most dramatic flourishing of life in Earth's history.

Parallel: Self-evolving AI + XR vision could trigger a similar explosion in scientific discovery. Not incremental improvement—revolutionary capability.

Turn open-ended biomedical labs/procedures to
a quantifiable, engineerable setting with feedback loop



- Close the gap between **agent evaluation** and **real lab discovery/operation**, make true lab-proven, clinical-proven AI
- Turn every biomedical physical setting to an **AI/RL environment**

Team



We Have Laid a Solid Foundation for Our Vision

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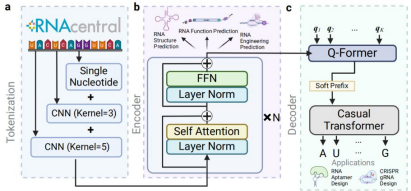
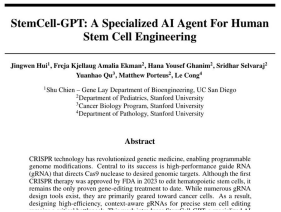
From Micro-Scale of Perception/ Engineering/ Tracking
e.g.crispr, single cell omics, RNAgenesis foundation model

To Macro-Scale for Perception and Operation

Our 1st Product
LabOS

Generative RNA Foundation Model	Stem-Cell GPT	CRISPR-GPT	Agent4Genomics	Biomni



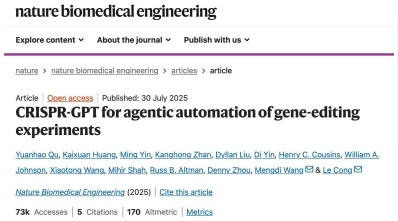

StemCell-GPT: A Specialized AI Agent For Human Stem Cell Engineering

Jingwen Hui[1], Frejа Kjellang Amalia Ekman[2], Hana Yousef Ghanim[2], Sridhar Selvaraj[2], Yuanhao Qu[2], Matthew Porteus[2], Le Cong[1]

[1]Shu Chien – Gene Lay Department of Bioengineering, UC San Diego
[2]Department of Pediatrics, Stanford University
[3]Cancer Biology Program, Stanford University
[4]Department of Pathology, Stanford University

Abstract

CRISPR technology has revolutionized genetic medicine, enabling programmable genome modifications. Central to its success is high-performance guide RNA (gRNA) that directs Cas9 nuclease to desired genomic targets. Although the first CRISPR therapy was approved by FDA in 2023 to edit hematopoietic stem cells, it remains the only proven gene-editing treatment to date. While numerous gRNA design tools exist, they are primarily geared toward cancer cells. As a result, designing high-efficiency, context-aware gRNAs for precise stem cell editing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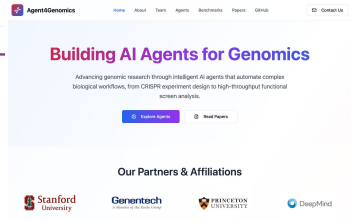
Article | Open access | Published: 30 July 2025

CRISPR-GPT for agentic automation of gene-editing experiments

Yuanhao Qu, Kaixuan Huang, Ming Yin, Kanghong Zhan, Dyllan Liu, Di Yin, Henry C. Cousins, William A. Johnson, Xiaotong Wang, Mihir Shah, Russ B. Altman, Denny Zhou, Mengdi Wang & Le Cong

Nature Biomedical Engineering (2025) | Cite this article

73k Accesses | 5 Citations | 170 Altmetric | Metrics

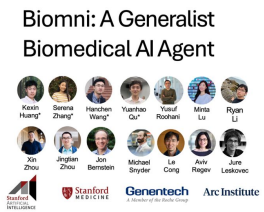

Agent4Genomics

Building AI Agents for Genomics

Advancing genomic research through intelligent AI agents that automate complex biological workflows, from CRISPR-experiment design to high-throughput functional screen analysis.

Our Partners & Affiliations

Stanford University · Genentech · Princeton University · DeepMind


Biomni: A Generalist Biomedical AI Agent

Kexin Huang*, Serena Zhang*, Hanchen Wang*, Yuanhao Qu*, Yusuf Roohani, Minta Lu, Ryan Li, Xin Zhou, Jingtian Zhou, Jon Bernstein, Michael Snyder, Le Cong, Aviv Regev, Jure Leskovec

Stanford Artificial Intelligence Laboratory · Stanford Medicine · Genentech · Arc Institute

ZOOM IN: LAB-OS v.0

AI now equipped with new ‘EYES’ and ‘HANDS,’ LabOS takes human-lab collaboration to the next level

LabOS Smart Glasses Concept Demo

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The AI agent can understand human action and control robotics to collaborate with human.
This enable human to go to a different room for parallel task, while robot complete the bench task.

▲ This video is a demo of how scientists **work with XR glass** to interact with **AI agent.**

Our NorthStar: A world Model For Biotechnology and Clinical Use Cases

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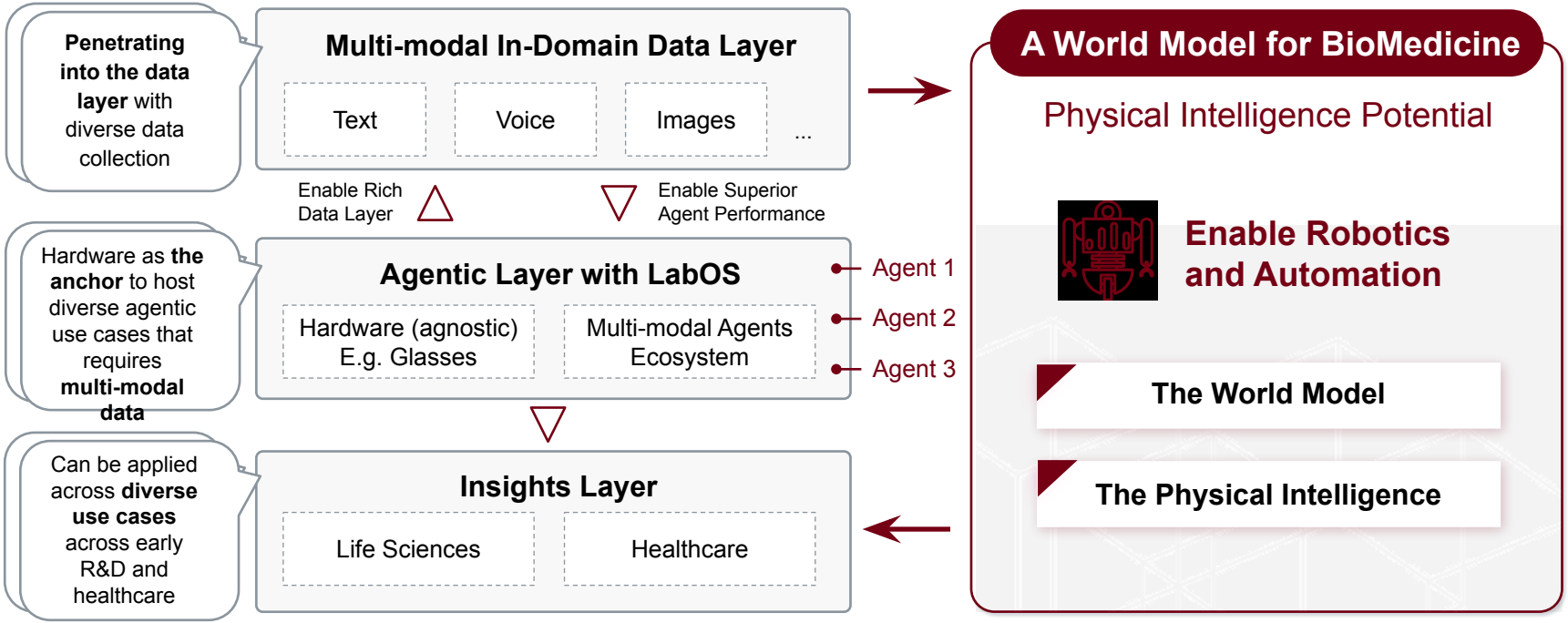

First Set of Use Cases in Discussion with Partners
CONDENSE 31+ 32 and make it beautiful

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Confidential

Pharma / Biotech

01 **High-Value Workflows** that is low reproducibility

e.g. Organoids / Stem cell

02 **Data Capture** of experimental process

From Top Pharma Research Informatics Head:

"The use case like Organoids culture caen great benefit from this. It's complex procedure, error-prone and something like LabOS would be extremely helpful."

From top 10 pharma VP of IT :

"If you can help scientists collect data without manually writing/inputting it, it's very useful bc scientists will only need to care science and less burdened by recording of data. "

CONDENSE WITH PREVIOUS

Clinical / Hospital

01 **Pathology Labs**
High-repetitive and error-prone workflows

02 **General Clinical Lab Documentation** (Lot/Inventory/Record management), AI-guided Training, enhanced Productivity & Reproducibility, tracking all errors/outcomes

03 Future use case in discussi
Surgical, Hospital Operati
(for nurses)

Pathology Lab head (Chandler Ho):

"We are excited to use LabOS for inventory/lot-tracking, operation doc and smart training of new operators"

Pathology Genomics Unit Head (Stuart Scott, Fei Dong)

"We are working with Le Cong lab on agent-design clinical sequencing workflows, facilitate assay selection and decision-making, and data analysis for variant interpretations.

On operation lab side, we are working on XR guided documentation, error detection/correction, and XR-guidanc for fine procedure in biopsy and slide management, on training scientists when we onboarding new assays and instruments"

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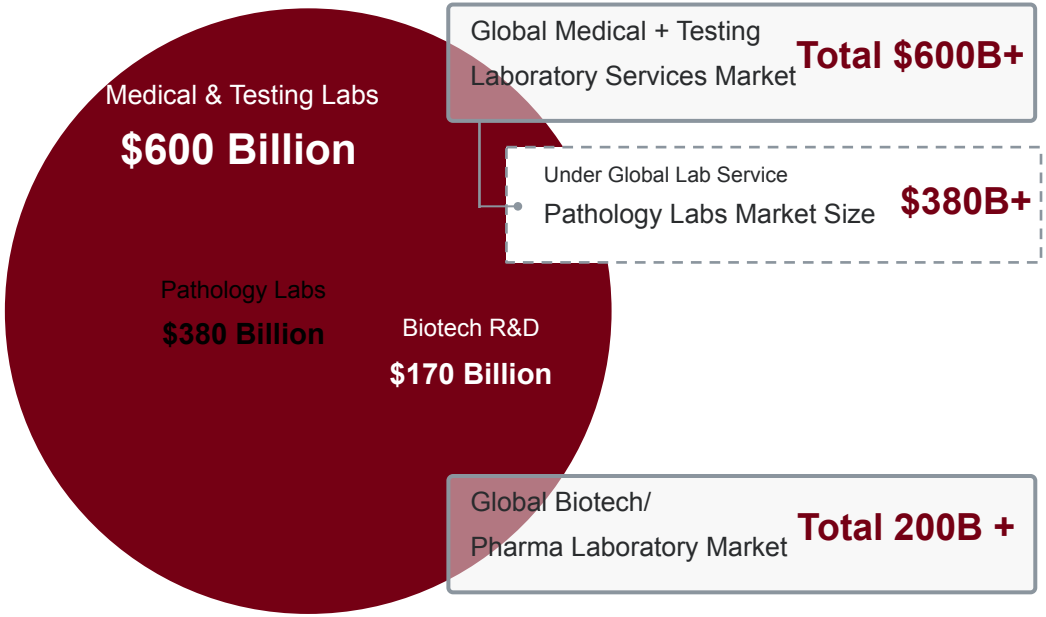
Huge Market for Biomedical Superintelligence Starting with Pharma & Pathology Labs, Then Expanding



Global Medical + Testing Laboratory Services Market — **Total $600B+**

Under Global Lab Service
Pathology Labs Market Size — **$380B+**

Global Biotech/ Pharma Laboratory Market — **Total 200B +**

	LabOS Short-Term TAM	Physical Intelligence Longer-Term TAM
Global Medical + Testing Laboratory Services Market — Total $600B+	Operating costs (assume ~80% of total): **$480 B** Assuming 5% cost reduction: **$24 B+**	Labor share (assume ~45% of operating costs): $480 B × 45% = **$216 B** Assume 30% labor changed to automation → 216 B × 30% = **$64.8 B+**
Global Biotech/ Pharma Laboratory Market — Total 200B +	Operating costs (assume ~80% of total): **$160 B** Assuming 5% cost reduction: **$8 B+**	Labor share (assume ~45% of operating costs): $160 B × 45% = **$72 B** Assume 30% labor changed to automation → 72 B × 30% = **$21.6B +**

Business Model (Short-Term)

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LabOS

Low-Hanging Fruit

Data

Physical Intelligence

LabOS Subscription	LabOS Co-Dev	Agent Ecosystem
Platform deployment, **Subscription & Usage-based** model	Platform **Co-Dev** and **Milestone Payments**	Platform to enable other agents in workflows, be the **"Agent Store"**
Targeting Customers: Biotech / Pharma / Hospital	Targeting Customers: Pharma / Hospital	Targeting Partners: Other agent companies in ecosystem, scientists/doctors that want to build and deploy their own agents

Business Potential (Medium/Long-Term)

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LabOS

Low-Hanging Fruit

- LabOS Subscription
- LabOS Co-dev
- Agent Ecosystem

Short-term

Data

Medium-Term

In-domain Data Engine

Biomedical Reasoning data & Embodied data for co-dev

Targeting Customers
Frontier AI Labs

Physical Intelligence

Medium/Long-Term

Physical Intelligence

Lease or sell In-domain physical intelligence capability, in-domain robotics

Targeting Customers
Biotech / Pharma / Hospital

We are raising $30M to launch our 1st product LabOS and enable Biomedical Super Intelligence

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50% **Product Development:** Hardware, agent, software

40% **Next-gen Technology R&D:** Lab Setup and Robotics Setup

10% **Prove Commercialization Model:** Partnerships

6 months

- **1** major hospital customer deal
- **1st** product into customer field, targeting **1-3** high-value workflow

12 months

- Lauch **10+** co-dev partnerships centered product ecosystem

18 months

- **1** other major hospital customer deal

24 months

- **2nd** generation of product, overing **3+** high-value workflow

Our philosophy: Data trains, vision teaches.

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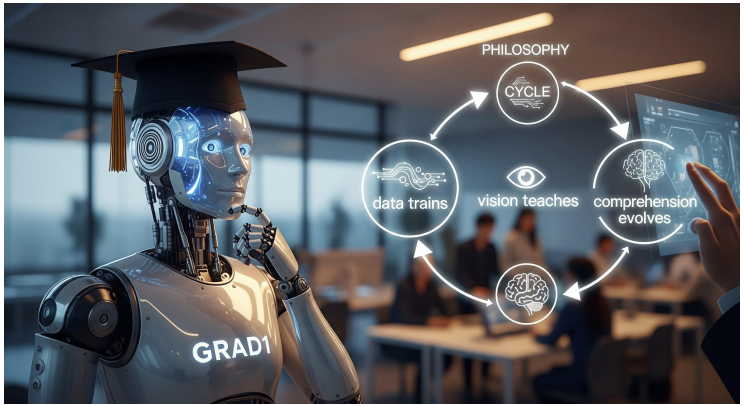
Visual learning is treated like a second class citizen in biology and clinical by our competitors, but we believe that is an accident of history, and the future lies in multimodal collaboration to create higher-efficiency learning with a higher ceiling on performance.



We are a human centric technology company accelerating the next generation of collaborative tools.

Data trains

Vision teaches

Gradient=direction of change

Outline of Ben & Sandy 1: 1

- Goals for Wed 2PM PT
- Needs for the deck
- What is missing?
- Settle on the list of slides, actual topic sentences

[Create deck outline]

Goals for Wed:

1. Get reaction to the [A] vision and [B] storyline.
2. Get feedback on the business model

Needs for the deck:

Clearly explain in order:

a. The vision

Outline of the deck (topic sentences)

1. Our vision is to automate biology and medicine across all scales. [PROBE/TITLE SLIDE]
2. Today it's not possible to do X because there are are a lot of silos of data.
3. We believe that the cambrian moment is coming through human-ai co-evolution.
4. Here is the team that can make this happen.
5. This team has laid a solid foundation for our vision, and we are now at an inflection point with our first product to benefit scientists.
6. For LabOS, v0 equips AI with its eyes and hands, kicking off co-evolution in the domain of biotech. (Demo has AI with eyes and hands)
7. [Continues slide 6]
8. What you see is not purely human-AI collaboration, in the process, we are a building a world model for biotechnology and clinical *use cases*.
9. We have already gotten a lot interest from pharma about how Lab-OS can create value and in we are in active partnership discussions. [Key slide]
10. This solution can also be used in a clinical settings and we are engaged setting up a pilot with Stanford teaching hospital. [Key slide]
11. There is a huge market potential in creating operational efficiency and reducing errors pharma and pathology, that is our starting point and low hanging fruit
12. In the near term, we are creating a subscription and partnership model to gain customers and to create a dataset.
13. In the long-term, our objective is to leverage our vision datasets of high-value tasks and world model which facilitates humans and robots to execute and train a wide variety of high-value tasks.
14. We are fundraising for $30m and this will enable the key milestone of commercialization.
15. Our philosophy: "data trains, vision teaches"; visual learning is treated like a second class citizen in biology and clinical by our competitors, but we