GINKGO BIOWORKS

Grow with Ginkgo
Q4 and FY 2023 Update & Business Review

February 29, 2024



Disclaimer

Forward-Looking Statements

This presentation, the conference call and webcast contain certain forward-looking statements within the meaning of the federal securities laws, including statements regarding our plans, strategies, including with respect to our balance sheet and cash runway, acquisitions, current expectations, operations and anticipated results of operations, both business and financial, including opportunities for increased operational efficiency, our manufacturing capabilities, potential customer success, including successful application of our offerings by our customers, the capabilities and potential operational and financial success of our acquisitions, partnerships and collaborations, and expected timing thereof, expectations with regard to revenue, the nature of such revenue and any related downstream value share associated with such revenue, funding that is contingent upon Ginkgo's achievement of milestones, expenses, including our stock-based compensation expenses, our full year 2024 outlook, the future security and commercial applications of the BIOINT industry, the expansion, timing and potential capabilities of our bioradar network and the national biodefense strategy, plans to develop and deploy AI tools for biology and biosecurity for both internal use and external release, including the expected timing thereof, and the market environment, all of which are subject to known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements, market trends, or industry results to differ materially from those expressed or implied by such forward-looking statements. These forward-looking statements generally are identified by the words "believe," "can," "project," "potential," "expect," "anticipate," "estimate," "intend," "strategy," "future," "opportunity," "plan," "may," "should," "will," "would," "will be," "will continue," "will likely result," and similar expressions. Forward-looking statements are predictions, projections and other statements about future events that are based on current expectations and assumptions and, as a result, are subject to risks and uncertainties. Many factors could cause actual future events to differ materially from the forward-looking statements in this presentation, including but not limited to: (i) volatility in the price of Ginkgo's securities due to a variety of factors, including changes in the competitive and highly regulated industries in which Ginkgo operates and plans to operate, variations in performance across competitors, and changes in laws and regulations affecting Ginkgo's business, (ii) the ability to implement business plans, forecasts, and other expectations, and to identify and realize additional business opportunities, (iii) the risk of downturns in demand for products using synthetic biology, (iv) the uncertainty regarding the demand for passive monitoring programs and biosecurity services, (v) changes to the biosecurity industry, including due to advancements in technology, emerging competition and evolution in industry demands, standards and regulations, (vi) the outcome of any pending or potential legal proceedings against Ginkgo, (vii) our ability to realize the expected benefits from and the success of our Foundry platform programs, (viii) our ability to successfully develop engineered cells, bioprocesses, data packages or other deliverables, and (ix) the product development or commercialization success of our customers. The foregoing list of factors is not exhaustive. You should carefully consider the foregoing factors and the other risks and uncertainties described in the "Risk Factors" section of Ginkgo's most recent quarterly report on Form 10-Q filed with the U.S. Securities and Exchange Commission (the "SEC"), and other documents filed by Ginkgo from time to time with the SEC. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Forward-looking statements speak only as of the date they are made. Readers are cautioned not to put undue reliance on forward-looking statements, and Ginkgo assumes no obligation and does not intend to update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise. Ginkgo does not give any assurance that it will achieve its expectations.

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Agenda

Introduction
Jason Kelly, Co-Founder and CEO

Q4 and FY 2023 Financial Update
Mark Dmytruk, CFO

Strategic Review
Jason Kelly, Co-Founder and CEO

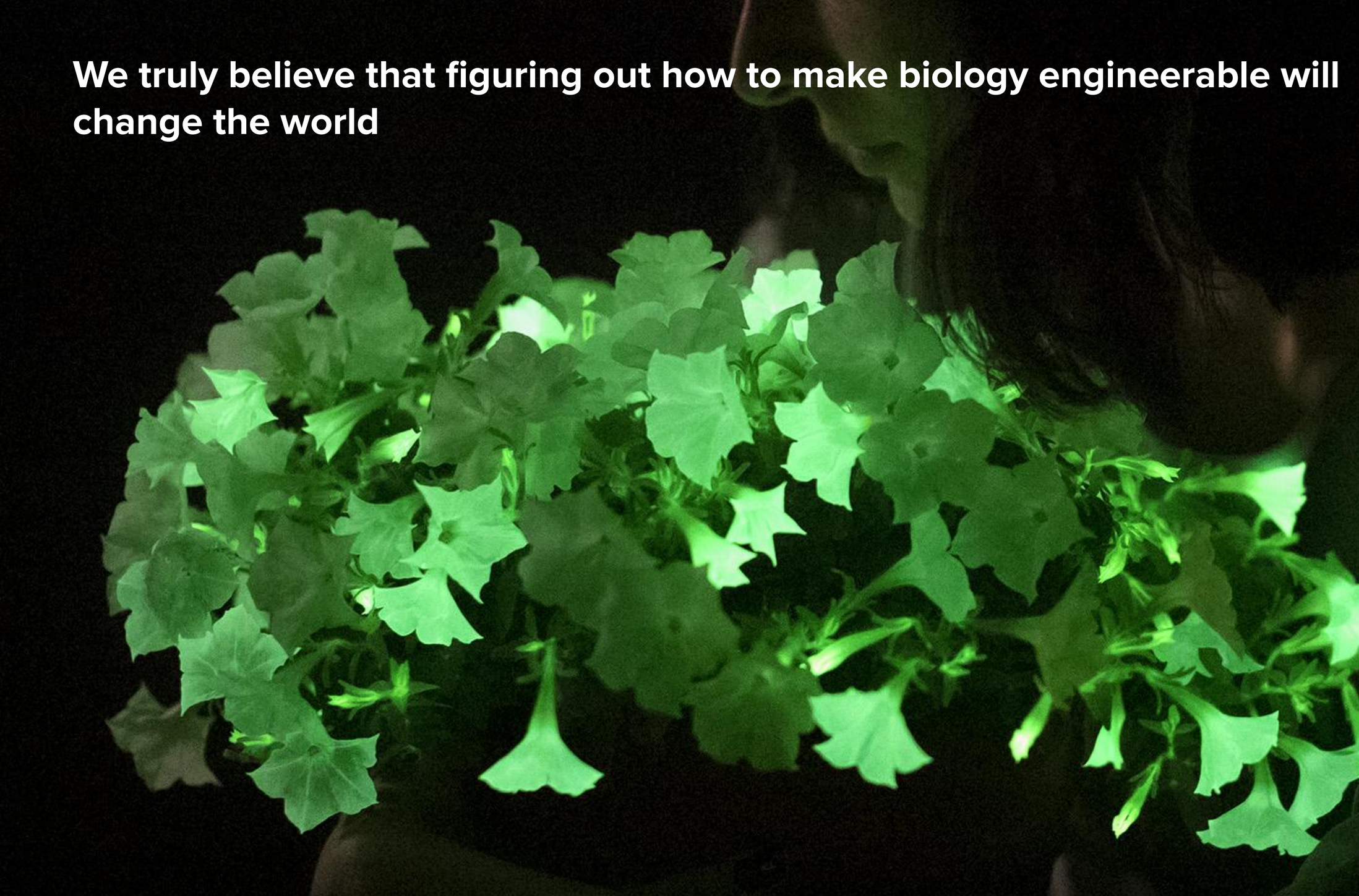
Q&A Session
Moderated by Megan LeDuc, Manager of Investor Relations

OUR MISSION

Make biology easier to engineer



We truly believe that figuring out how to make biology engineerable will change the world



2023 saw continued growth, with many new programs across industries



With our advancements in AI, we plan to build on our growth in biopharma in 2024

LEARN MORE

Pfizer hooks up with Ginkgo for $331M biobucks deal on unspecified targets.

FIERCE BIOTECH — Sep. 27, 2023

LEARN MORE

Busy dealmakers Ginkgo, Boehringer Ingelheim sign one together with $406M for undruggable targets.

FIERCE BIOTECH — May 8, 2023

LEARN MORE

Merck, Ginkgo Bioworks strike deal worth up to $490M to 'optimize' biologics manufacturing.

FIERCE BIOTECH — Aug. 7, 2023

LEARN MORE

Successful completion of Biogen collaboration focused on enhancing productivity of AAV production platform.

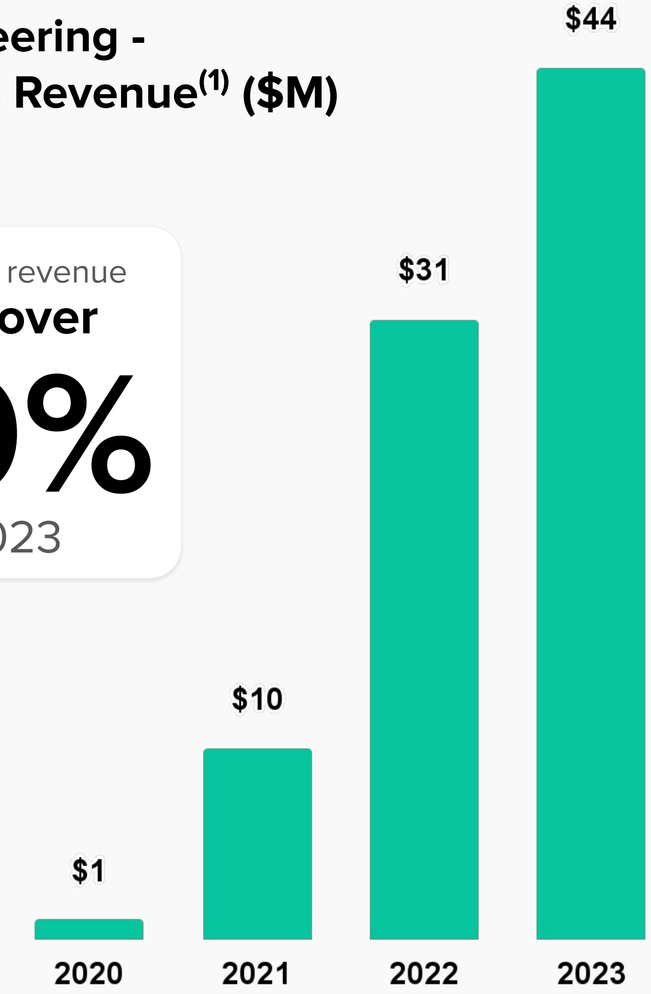
GINKGO NEWS — Jan. 4, 2024

Cell Engineering - Biopharma Revenue[1] ($M)

Biopharma revenue **grew over**

40%

in 2023



(1) Biopharma (i.e. Pharma & Biotech) revenue correlates to the portion of Ginkgo cell engineering revenue that is attributable to biopharma customers inclusive of DVS.

As a horizontal platform, we seek to provide our customers with a seamless and integrated R&D experience

BUILD: FOUNDRY & CODEBASE



BUY: PATCH, PROOF, REVERIE

Patch Biosciences

Reverie Labs

proof™ Diagnostics

PARTNER: GINKGO'S TECHNOLOGY NETWORK

Our Customers

GINKGO BIOWORKS

bit.bio · Cradle · turbine · WHITELAB · Synplogen

menten.AI · FORM BIO · BioMap · FabricNano · EVOLV

310.AI · CATENABIO · LEVERAGEN · PHASE GENOMICS · CERES NANO

ProteoNic Biosciences · NeuImmune NI · BioSymetrics · RESILIENCE · ADVANCED MEDICINE PARTNERS

MEDIPHAGE · JUMPCODE · culture BIOSCIENCES · Cube Biotech · Medium Biosciences

AVECRIS · Mana

...and many more to come!

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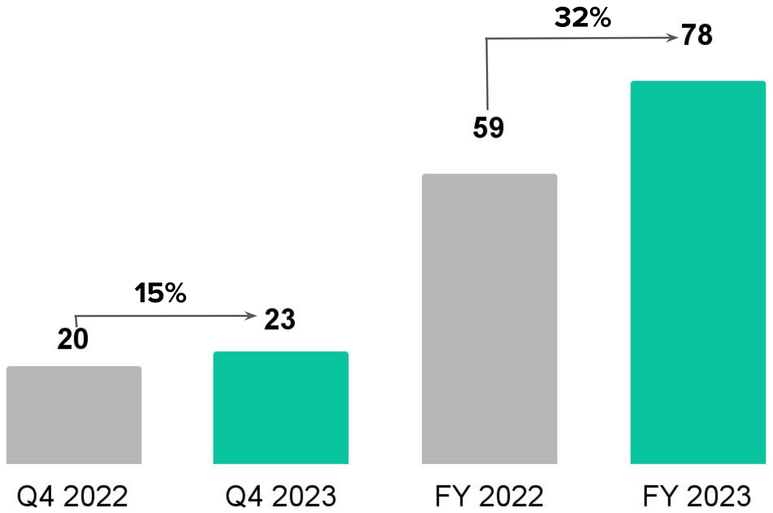
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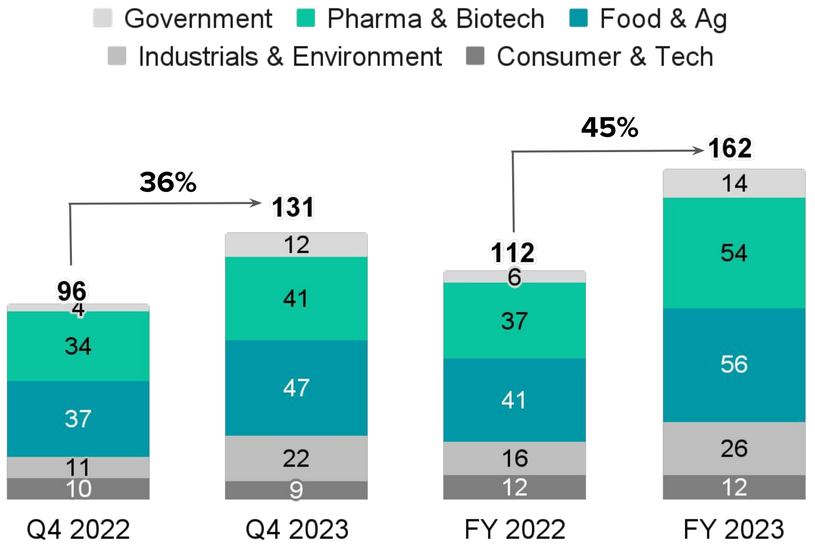
Q&A Session
Moderated by Megan LeDuc, Manager of Investor Relations

Cell Engineering Highlights

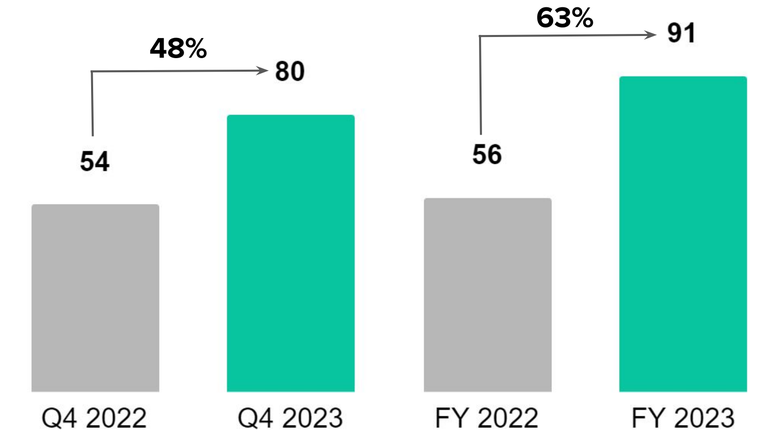
New Programs



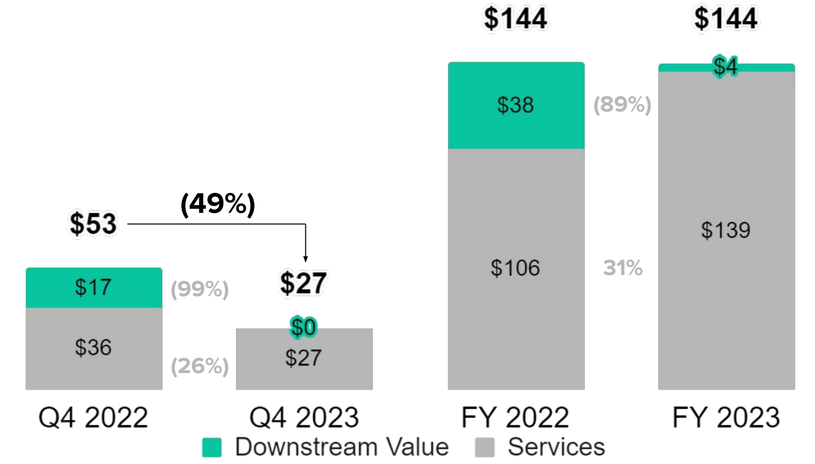
Current Active Programs



Total Active Customers

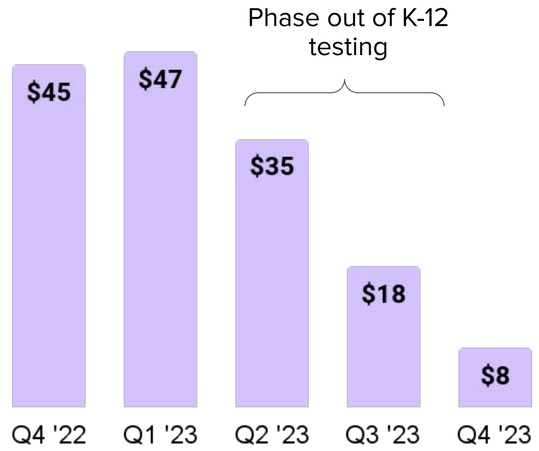


Cell Engineering Revenue ($M) by Type

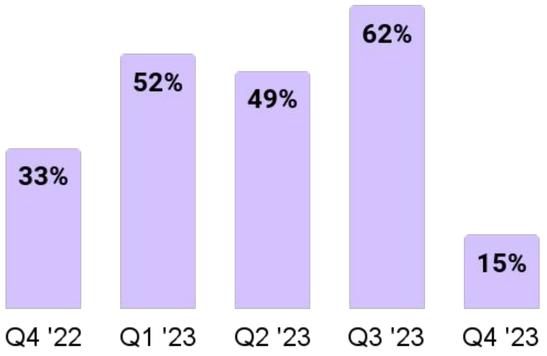


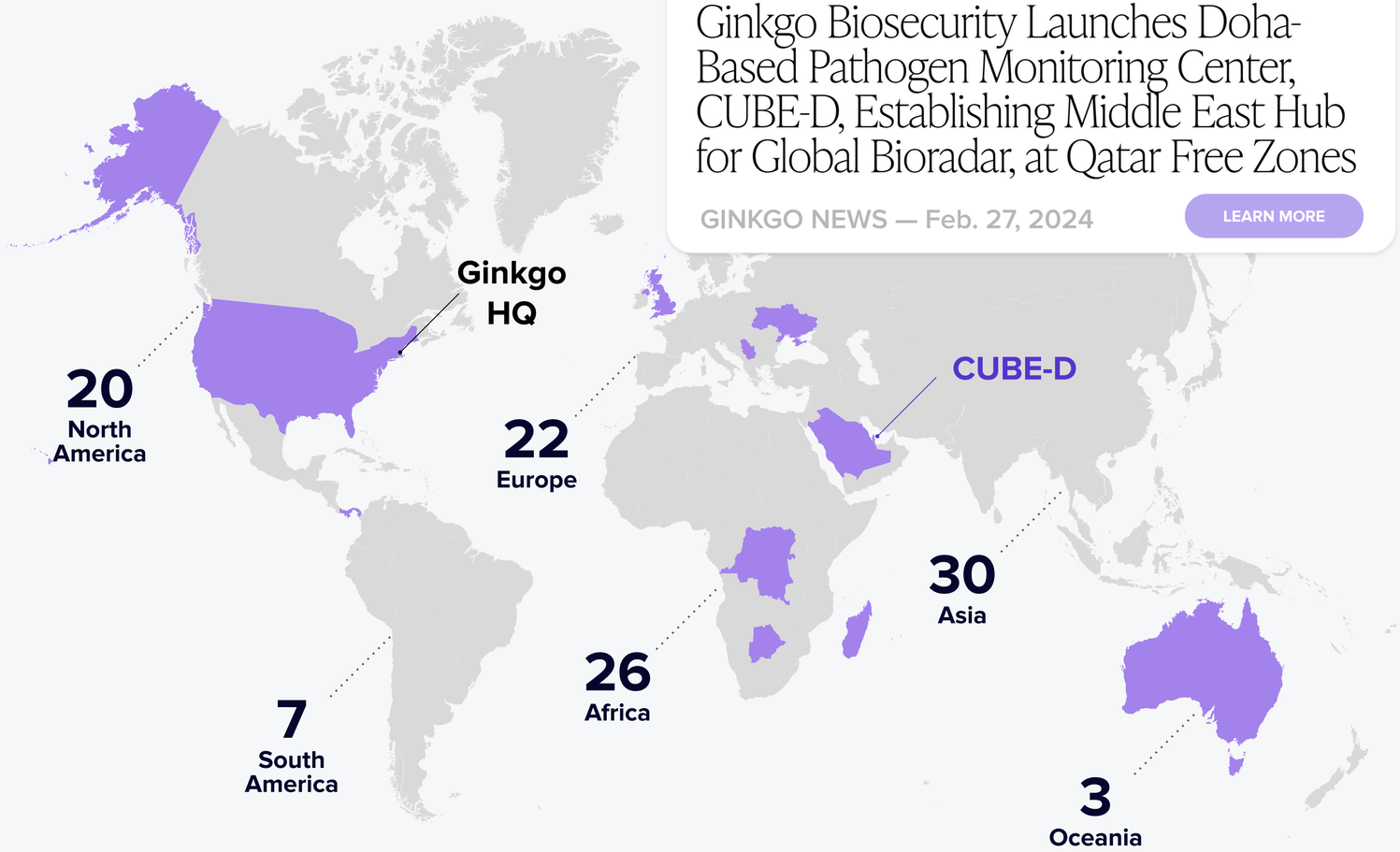
Biosecurity Highlights

Biosecurity Revenue ($M)



Biosecurity Gross Profit Margin





Ginkgo Biosecurity Launches Doha-Based Pathogen Monitoring Center, CUBE-D, Establishing Middle East Hub for Global Bioradar, at Qatar Free Zones

GINKGO NEWS — Feb. 27, 2024

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Countries in which Ginkgo has active programs, pilots, or MoUs

\# Countries of origin of flights sampled by Ginkgo, by continent
(as defined by Dept. of Homeland Security)

KEY METRICS

13.6M+	77,000+	13,000+	10	14	108
Samples to date	Samples sequenced to date	Pathogen genomes sequenced to date	Key international airports (incl. 2 outside US)	Countries with active programs, pilots, or MoUs	Countries of origin of flights sampled

*Map is not exhaustive; some partnerships remain confidential.

Data updated 2/01/24

Revenue growth is complemented by operating efficiency

Strong Balance Sheet

Ended 2023 with nearly

$950M

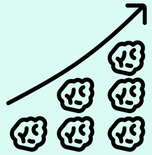
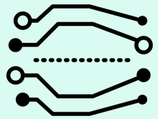
in cash and cash equivalents

Coupled With Improving Efficiency

Reduced quarterly OpEx (R&D + G&A excl SBC) by approximately

$25M

from Q4 ‘22 to Q4 ‘23

	Achievement of M&A-related cost synergies
	G&A reductions through lower professional services and consulting spend
	Operational improvements, specifically on our microbial platform, driving capex and opex efficiencies
	Cost savings partially offset by targeted investments to support growth: e.g., biopharma BD, AI, mammalian platform

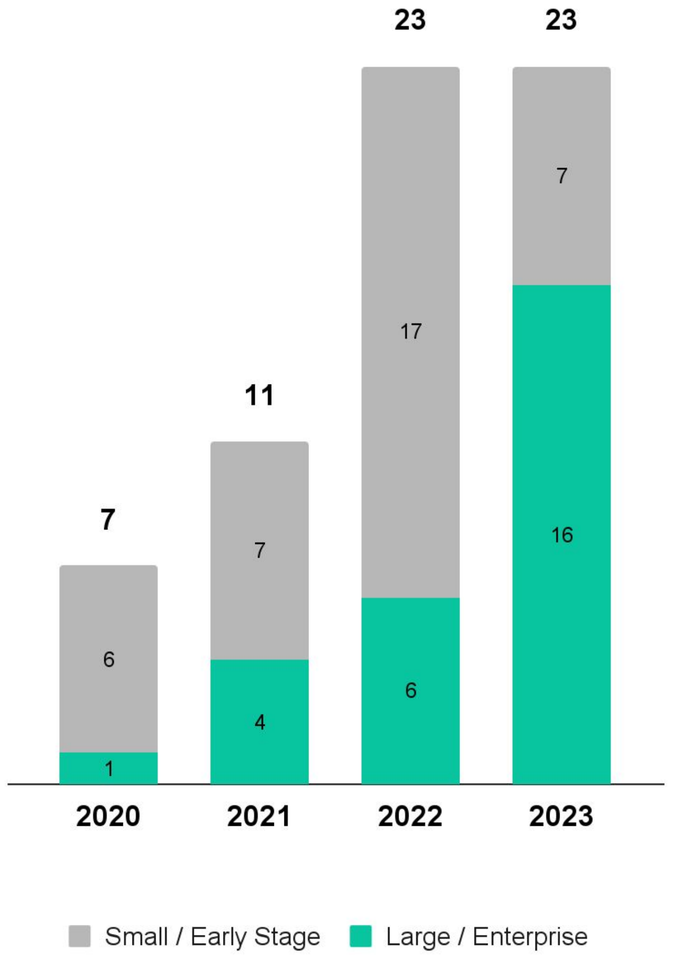
2023 Financial Summary

In millions of USD	Three Months Ended December 31,			Twelve Months Ended December 31,		
except new programs and % YoY	**2023**	**2022**	**% YoY**	**2023**	**2022**	**% YoY**
Revenue:						
Cell Engineering	$ 27	$ 53	(49%)	$ 144	$ 144	(0%)
Biosecurity	8	45	(83%)	108	334	(68%)
Total revenue	**35**	**98**	**(65%)**	**251**	**478**	**(47%)**
Biosecurity cost of sales	7	30	(78%)	54	204	(74%)
Research and development (excl. SBC)	90	109	(18%)	432	314	38%
General and administrative (excl. SBC)	72	78	(8%)	299	228	31%
Non-cash impairment of Zymergen lease assets [(1)]	0	0	NM	96	0	NM
Total operating expenses (excl. SBC)	**169**	**218**	**(22%)**	**881**	**746**	**18%**
Stock-based compensation [(2)]	44	111	(61%)	235	1,941	(88%)
Loss from operations	**(178)**	**(231)**	**23%**	**(864)**	**(2,209)**	**61%**
Net loss	**(212)**	**(173)**	**(22%)**	**(893)**	**(2,106)**	**58%**
Adjusted EBITDA [(3)]	**(96)**	**(76)**	**(27%)**	**(355)**	**(173)**	**(106%)**
Capital expenditures	**3**	**26**	**(87%)**	**41**	**52**	**(22%)**

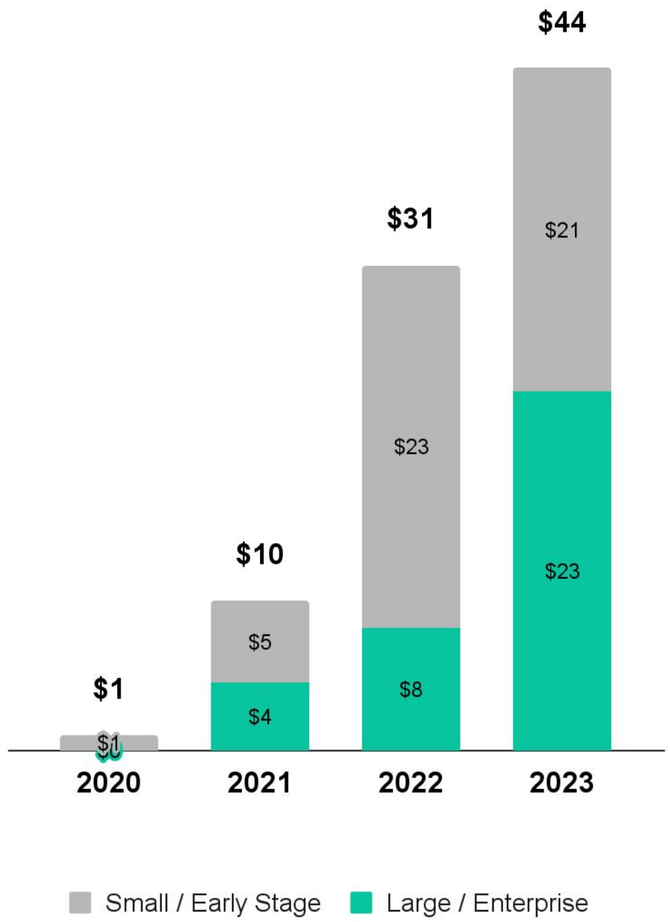
(1) We deconsolidated Zymergen's financial position as of October 2, 2023, which included removing the associated lease liabilities.
(2) For the three months and twelve months ended December 31, 2023, amounts include $0.7M and $5.0M, respectively, of employer payroll taxes related to stock-based compensation. For the three months and twelve months ended December 31, 2022, amounts include $3.1M and $10.3M, respectively, of employer payroll taxes related to stock-based compensation. For more information, see the Appendix at the end of this presentation.
(3) For a reconciliation of Adjusted EBITDA to the closest GAAP measure see the Appendix.

Ginkgo's business is shifting towards higher revenue opportunities with large biopharma

New Biopharma Programs



Cell Engineering - Biopharma Revenue [1] ($M)



Top 10 Biopharma R&D Budgets ($B)

	2023 R&D Spend ($B)
MERCK	$18.3
Roche	$16.1
Johnson&Johnson	$15.1
Pfizer	$10.7
AstraZeneca	$10.3
Lilly	$9.3
Bristol Myers Squibb	$9.1
NOVARTIS	$9.0
sanofi	$7.4
novo nordisk	$4.6

...and we're just getting started

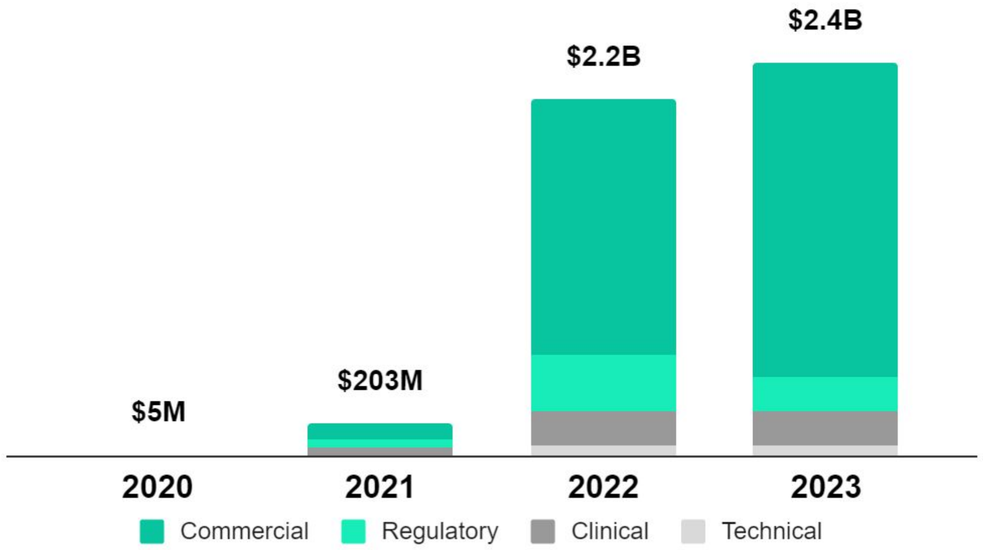
(1) Biopharma (i.e. Pharma & Biotech) revenue correlates to the portion of Ginkgo cell engineering revenue that is attributable to biopharma customers inclusive of DVS.

Source: Capital IQ; 2023 R&D spend

Penetrating large biopharma accounts is also generating significantly higher potential DVS opportunities

Milestone Pool Opportunity as of Year End

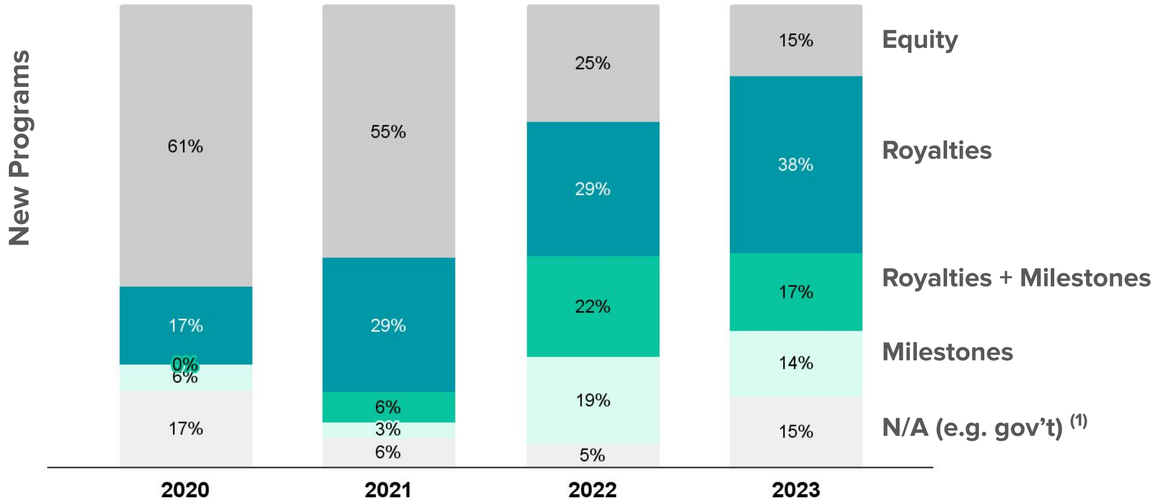
As of the end of 2023, there was over **$2 billion** in aggregate potential future cash revenue in the downstream milestone pool



Key events in 2023

- Nearly $1.5 billion in potential milestones added to pool in 2023, largely driven by growth in biopharma
- Just over $1 billion in milestones removed from pool over the prior year due to certain program cancellations

Downstream Value Shifting Towards Milestones & Royalties



2023 New Programs Detail

(excludes 10 new government cell programs)

DVS Type by Vertical	Industrial Biotech	Agriculture	Biopharma	Total
Equity	10	0	2	12
Royalties	22	4	4	30
Royalties + Milestones	4	0	9	13
Milestones	3	2	6	11
N/A	0	0	2	2
Total	**39**	**6**	**23**	**68**

(1) Programs for which there is no associated downstream value share.

2024 Full Year Outlook

In millions of USD except new programs	Historical			Outlook	Guidance Commentary
	FY2021	FY2022	FY2023	FY2024	
New programs	**31**	**59**	**78**	**100-120**	Expect to see continued mix shift towards larger enterprise accounts in biopharma
Revenue					
Cell Engineering	**$113**	**$144**	**$144**	**$165-185**	Biopharma and government expected to drive growth; macroeconomic conditions continue to pressure industrial biotech
Services	$86	$106	$139	$165-185	
Downstream Value [1]	$27	$38	$4	Not provided	
Biosecurity	**$201**	**$334**	**$108**	**$50+**	Biosecurity guidance represents contracted backlog; pursuing additional opportunities in pipeline
Total revenue	**$314**	**$478**	**$251**	**$215-235+**	

(1) Downstream value is the potential value to Ginkgo from its Cell Engineering customers and includes potential royalties, milestone payments, and equity interests.

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We believe...

1

Ginkgo's lab automation provides a unique back-end to generate the large amounts of data needed to power infrastructure services in biotech

Ginkgo is not focused on making products or drugs, but is focused on creating and retaining data while also building an infrastructure that can benefit all of our customers

2

Ginkgo wants to make it easy for R&D leaders to buy new product development tools and for tool developers to build good businesses making those tools

Ginkgo has always worked to make biology easier to engineer. Through the recently announced Ginkgo Technology Network, we seek to eliminate the false choices faced in biotech R&D

3

We're forming an integrated global network for biosecurity

We continue to build out adaptive coalitions with industry giants and national governments to further advance global biosecurity goals

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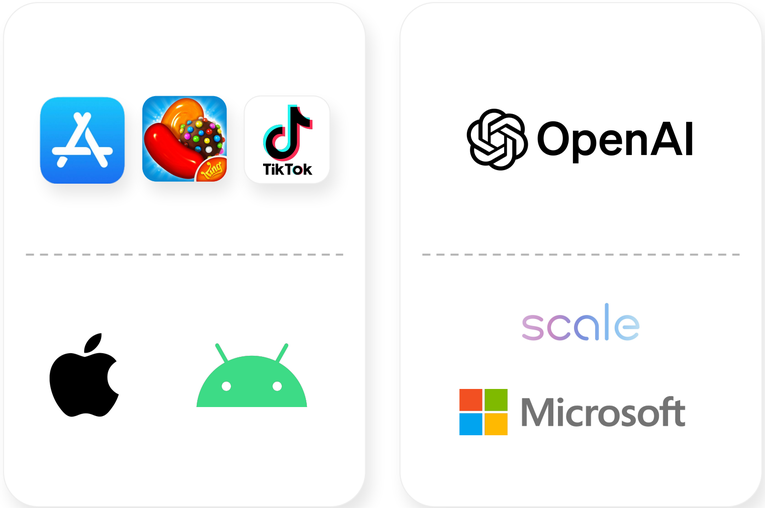
3

We're forming an integrated global network for biosecurity

Infrastructure services are why we see trillion dollar tech companies – we need them to enable trillion dollar biotech companies

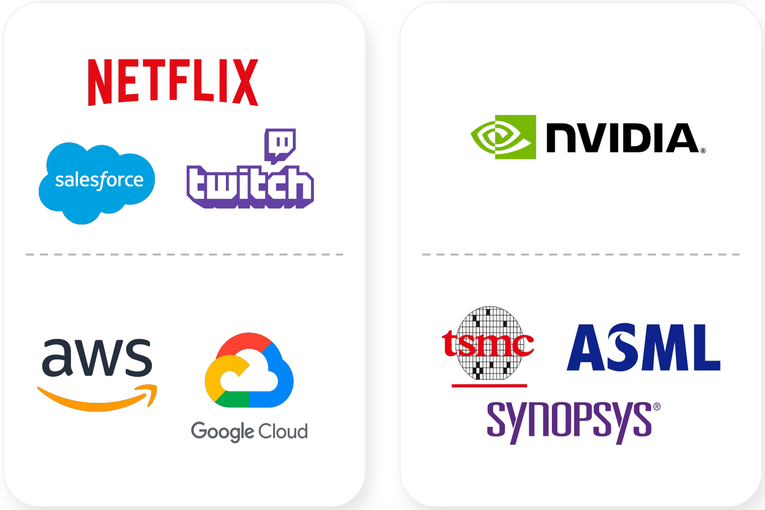
Enabled Tech

Foundation



Enabled Tech

Foundation



Ginkgo Customers



Ginkgo & Partners



The commonality of DNA and lab work means it is possible, the industry just needs to evolve

The conventional wisdom in biotech is that you must vertically integrate into products

Mastering the Value Chain: An Interview with Mark Levin of Millennium Pharmaceuticals

But we've become increasingly aware that **we cannot afford to remain a research company** because the value in our industry is shifting again... Value has started to migrate downstream...At Millennium, we've anticipated this shift by expanding into downstream activities across several major product categories. **Our ultimate goal is to develop capabilities and a strong presence in every stage of the industry's value chain—from gene to patient**.

Harvard Business Review — June 2001

LEARN MORE

moderna
Translate BIO
Genentech
RELAY THERAPEUTICS
Immunomedics
INOVIO
Alnylam® PHARMACEUTICALS
BIONTECH

1,200+ employees



GINKGO BIOWORKS

We believe we have reached the critical mass as a large service platform

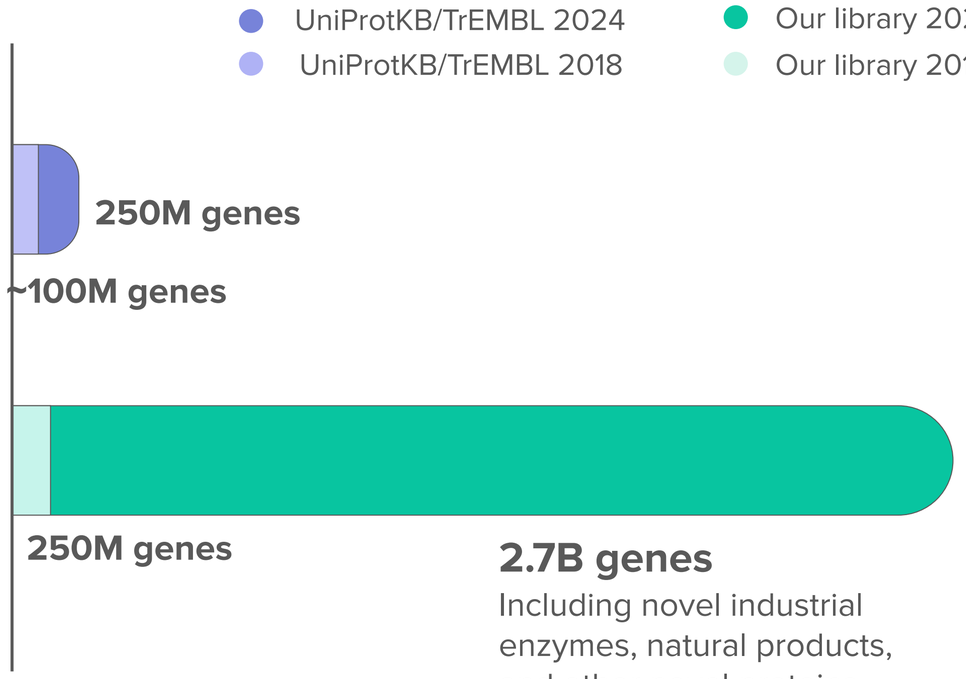
~$950M in cash



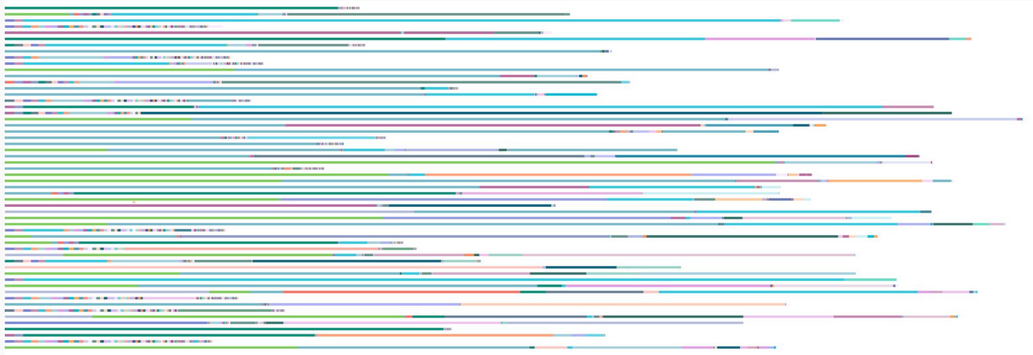
Lab automation is needed to generate large biological datasets economically

Proprietary database for parts mining

- Database encompasses over 2.7 billion unique proteins and their associated sequences
- State-of-the-art, proprietary workflows for sequence mining
- Advanced computational tools to discover and optimize proteins, pathways, and cells



Foundry-scale data generation capabilities in diverse systems enable discovery, product development, and AI model training



Arrayed experimental sample tests of enzyme function, color coded by program

>200
unique customer programs with enzyme campaigns

>20M
total arrayed experimental assay tests

>100M
total multiplexed experimental assay tests

>450
unique enzyme improvement campaigns

The ability to generate “labeled” biological data at scale unlocks AI applications in biotech

Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data
Project-based data

Pre-existing codebase

Data as a service: Bottlenecked by the quantity and quality / specificity of public data, large biopharma companies and AI companies are increasingly asking about our ability to generate data that they can use to train models

10+ AI partners in Ginkgo’s Technology Network

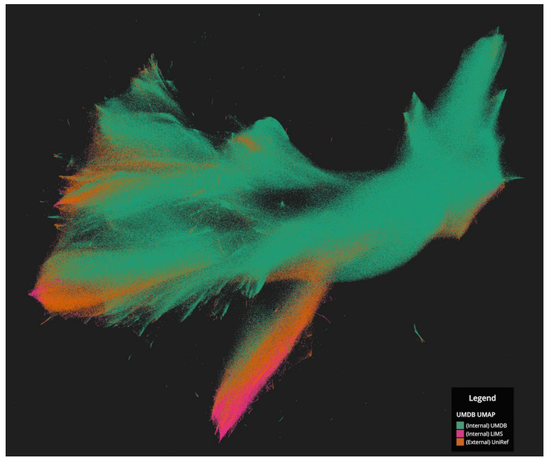
Model fine tuning: We believe that having a “lab in the loop” delivers better results on customer programs AND we can use the lab to generate the type of data critical for fine-tuning task-specific models

Supervised learning is a key component of programs today and several task-specific models are being developed

Foundation models: Our accumulated data is a valuable proprietary data asset which can be used to train foundation models

Ginkgo’s first protein foundation model is in deployment on customer programs and outperforms ESM-2 in key areas

Ginkgo’s **proprietary protein data** provides significant scale and diversity over publicly available datasets



Ginkgo Proprietary Data

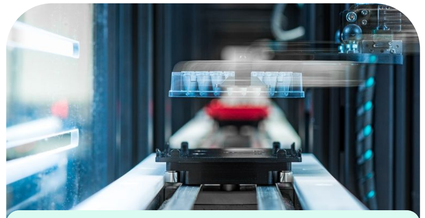
Public Data

Our acquisition of Zymergen brought in an unprecedented level of scale and automation to generate data

Ginkgo Completes Acquisition of Zymergen

LEARN MORE

Q4 22



Q3 23

First RACs deployed in Boston



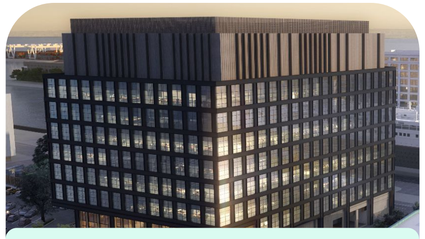
Q4 23

Bioworks 5 RAC expansion



Q2 24

RAC Gen 3 deployment



2025

Biofab1 opens

Note: RAC stands for Reconfigurable Automation Cart



New generation of RACs enables

5x

manufacturing capacity with no growth in hardware team

Planning to increase RAC deployments in Boston by

3x

in 2024 compared to 2023

And we continue to build out our data generating infrastructure with Biofab1 expected to open in 2025

"We built the Foundry - and are building Biofab1 - ***to create more opportunities for our partners to innovate*** *in health, agriculture, food, and across industries. Essentially,* ***our facilities are factories that produce the biological data that powers the AI-enabled bioeconomy."***

Jason Kelly
Co-founder & CEO, Ginkgo Bioworks





We believe...

1

Ginkgo's lab automation provides a unique back-end to generate the large amounts of data needed to power infrastructure services in biotech

2

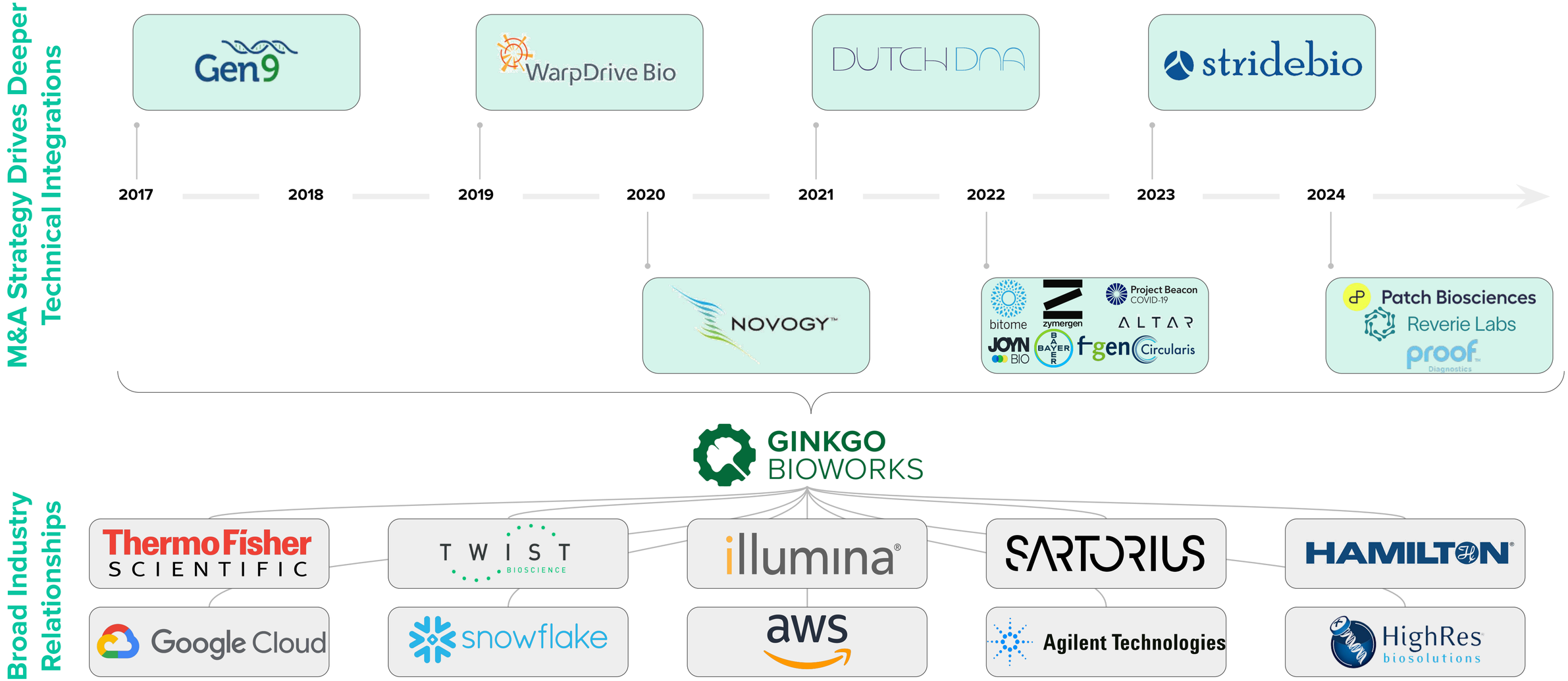
Ginkgo wants to make it easy for R&D leaders to buy new product development tools and for tool developers to build good businesses making those tools

Ginkgo has always worked to make biology easier to engineer. Through the recently announced Ginkgo Technology Network, we seek to eliminate the false choices faced in biotech R&D

3

We're forming an integrated global network for biosecurity

Ginkgo has a history of integrating technology onto its platform through vendor partnerships and acquisitions

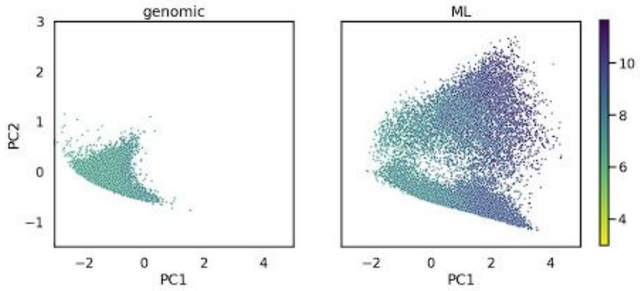


Our recent acquisitions add specialized AI and biopharma capabilities

Patch Biosciences

- Developed AI for sequence design models for engineering gene therapies and RNA therapeutics
- Expanded mammalian codebase with Patch's extensive library of validated muscle promoters and RNA UTRs (untranslated region)

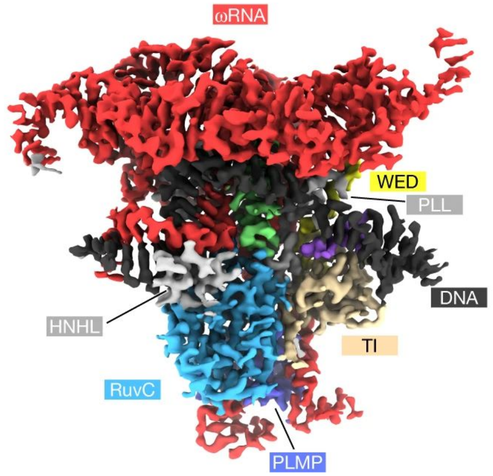
Natural & Synthetic Codebase and Turnkey Models & Assays



Large datasets, ready-to-deploy AI models, and downstream assays for promoter and RNA stability and expression

proof Diagnostics

- IP and libraries around OMEGA (Obligate Mobile Element Guided Activity) RNA programmable nucleases/nickases
- OMEGAs are smaller and their diversity offers a new tool for next-generation gene editing

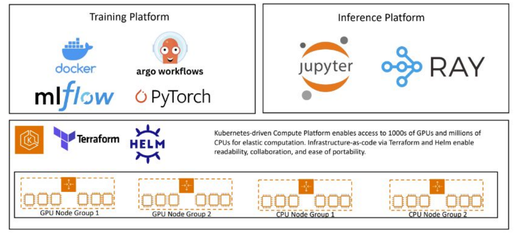


Example Cryo-EM-density map of an OMEGA nickase

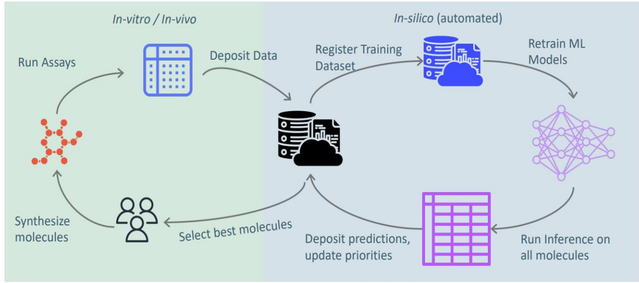
Reverie Labs

- Focused on building infra/automation for training large-scale ML models, and applying them to small molecule therapeutic programs
- Integrating Reverie's AI/ML infrastructure to accelerate our own model building efforts

Ready-built Cloud Infrastructure for AI



Lab-in-the-Loop Automatic Training for Generative Models



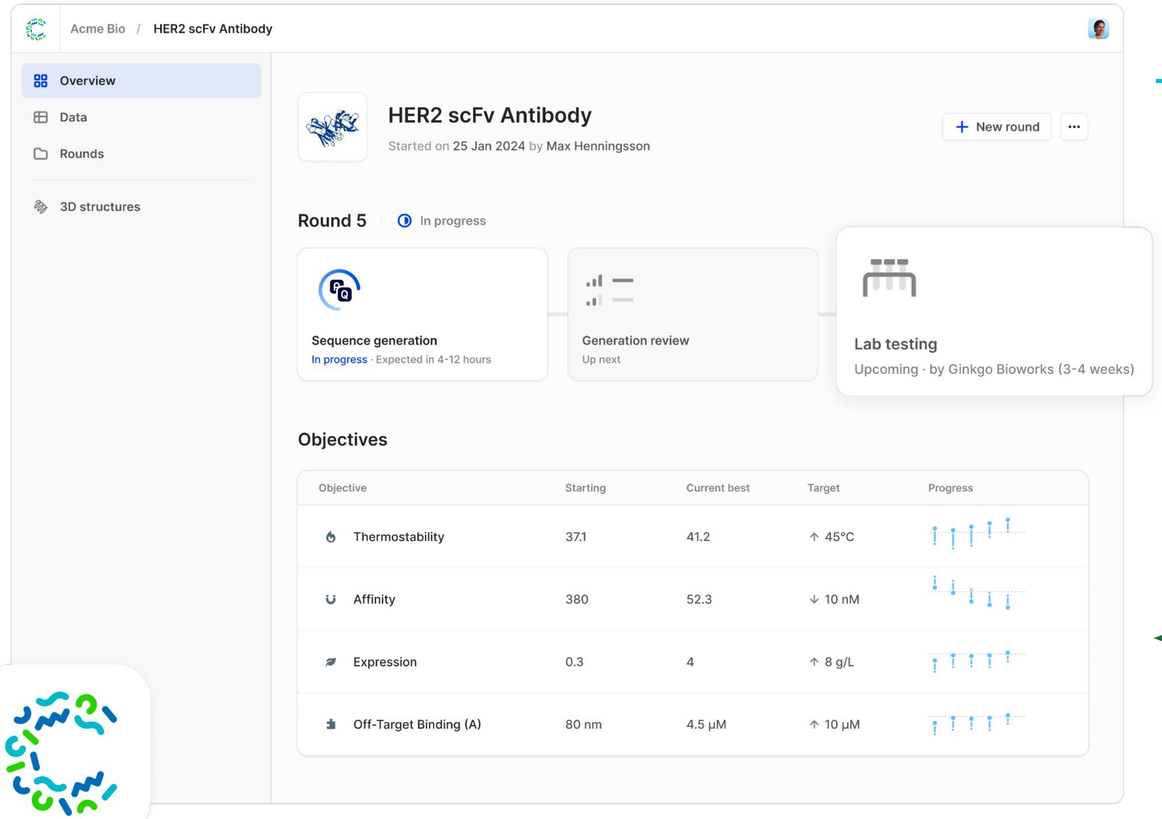
Now we're taking this integration to the next level with the launch of the Technology Network - making the broader ecosystem available to customers



...and many more to come!

Case Study: Driving results with Cradle's genAI-powered protein engineering studio integrated with Ginkgo's flexible and scalable experimental platform

ILLUSTRATIVE



Iterative libraries of protein designs generated from Cradle's platform

GINKGO BIOWORKS

Seed sequence(s) & target specifications

Assay-labeled data from Ginkgo's automated Foundry used to fine-tune Cradle's model

Cradle's customers can design protein libraries and request experiments directly from Ginkgo, eliminating the need to run in-house experiments

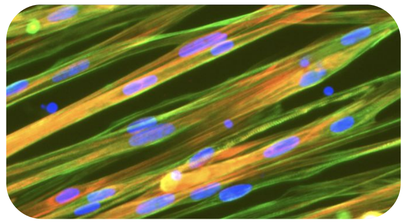
Ginkgo customers are able to seamlessly integrate Cradle's genAI powered protein engineering studio into their programs

Case Study: Integrating bit.bio's ioCells into Ginkgo's drug discovery workflows for customers

ILLUSTRATIVE

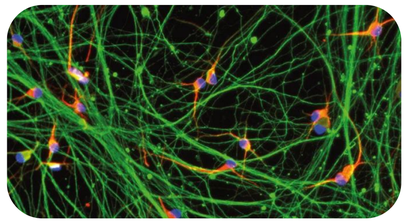
bit.bio provides wild type and disease model ioCells that may be customized for customer programs

bit.bio



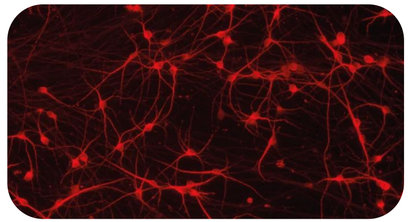
ioWild Type Cells™

ioWild Type Cells are defined, easy-to-use, functional iPSC-derived human cells from a healthy donor background that are ready for fundamental research and drug discovery experimentation within days.



ioDisease Model Cells™

ioDisease Model Cells are ioWild Type Cells engineered to contain disease-relevant mutations. ioDisease Model Cells and ioWild Type Cells form an isogenic pair allowing scientists to make true comparisons.



ioCRISPR-Ready Cells™

ioCRISPR-Ready Cells are human iPSC-derived cells constitutively expressing Cas9 nuclease for rapid gene knockout generation.

GINKGO BIOWORKS

Validated drug candidates to Ginkgo's customer

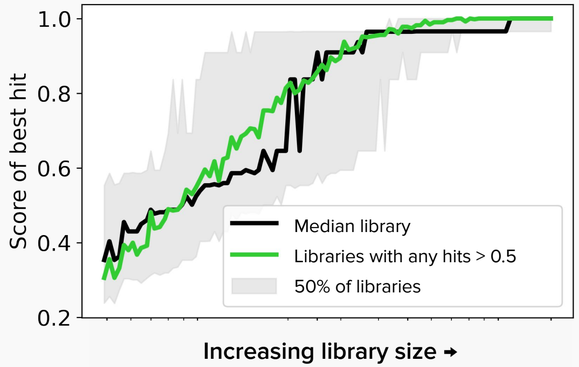
Ginkgo may incorporate ioCells into ultra high throughput workflows to design and screen large libraries of drug candidates, such as:

- *AAV capsids*
- *Promoter libraries*
- *Optimized gene editors*
- *Novel cell therapies (esp. for CNS and muscle)*

The scale and flexibility of Ginkgo's platform can have a direct impact on the three key value drivers for biopharma drug discovery and development

Probability of Success

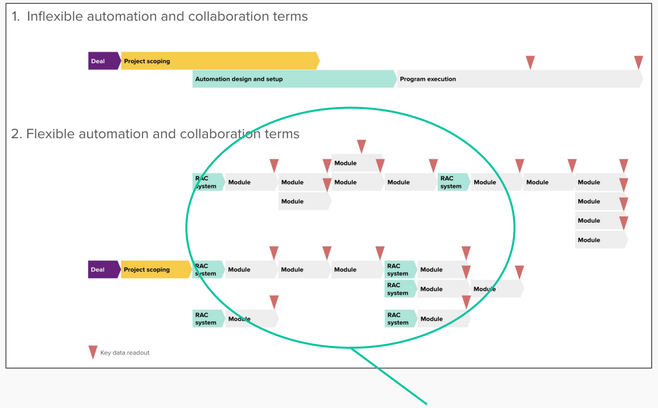
- **Increased throughput can drive a higher probability of success:**
  - More shots on goal enables the ability to test more "long shots" (rare / unexpected outperformers)
- Custom, high-throughput biological experiments enables Ginkgo to find and test rare outliers while not losing sight of the translatability of the research



Simulation of library performance based on 10,000 N-member libraries. *Conclusion: the size of an experiment's library correlates with the quality of that experiment's hit. In other words, the higher your throughput, the more likely you are to have a great hit*

Time to Results

- **Flexible automation creates the opportunity to fail fast, lowering overall risk to pipeline**
  - Each iteration provides more data / learnings, creating earlier opportunities to redirect effort
- Foundry approach gives Ginkgo expertise with parallelized high-throughput biology, available to all customer projects



Many earlier readouts vs traditional approaches

Cost

- **Automation is a powerful tool to lower the cost of drug development**
- **Ginkgo's Foundry aims to improve utilization rates** and lower data generation costs
- **Ginkgo aims to pass cost savings on to customers** (e.g. customers who run larger, more efficient campaigns benefit from savings)

Ginkgo sees a **40-50% average year-over-year decrease in the cost per campaign**, driven by economies of scale

A campaign is defined as a design-build-test-learn cycle for a given biological engineering objective

We believe...

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Ginkgo's lab automation provides a unique back-end to generate the large amounts of data needed to power infrastructure services in biotech

2

Ginkgo wants to make it easy for R&D leaders to buy new product development tools and for tool developers to build good businesses making those tools

3

We're forming an integrated global network for biosecurity

We continue to build out adaptive coalitions with industry giants and national governments to further advance global biosecurity goals

Data and analytics will transform the future biosecurity tech stack

Persistent Global Monitoring
Establishing “continuous custody” of biothreat data

Decision Support
Generating analysis to enable prioritization of interventions

Timely, Targeted Responses
Deploying countermeasures to effect better outcomes

Bioradar & BIOINT are the first frontiers

Property of Ginkgo Bioworks

Our systems integration partnership with Illumina can drive accelerated bioradar network growth and global capacity building

Concentric by Ginkgo and Illumina collaborate to deploy biosurveillance technologies around the world

The companies plan to join forces to set up pathogen monitoring programs utilizing Illumina technology across Concentric's global network

JANUARY 15, 2024

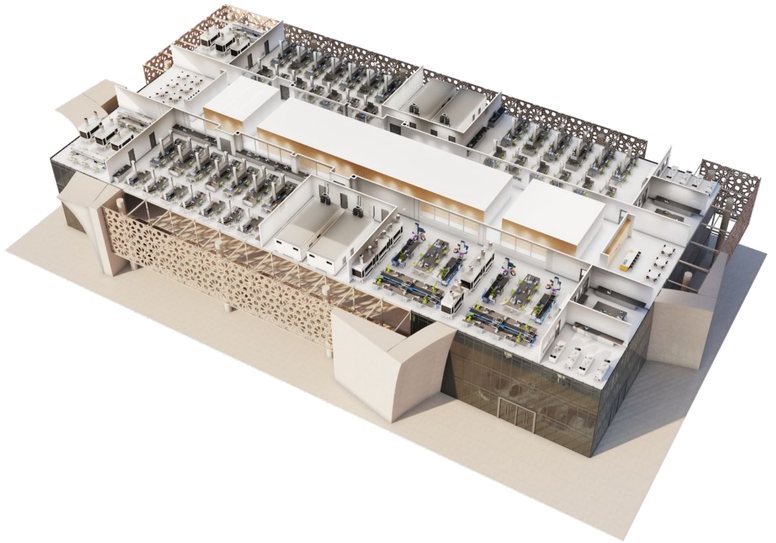
LEARN MORE

Illumina is a global leader in DNA sequencing technologies whose solutions can enable stakeholders to gain a more complete understanding of circulating pathogen threats

We are partnering to market the power of Illumina’s biodetection products and software with Ginkgo’s integrated bioradar service offering

The goal is to increase the scale and scope of pathogen genomic surveillance globally by empowering countries with local capacity and expertise

We’re launching a first-in-kind biosecurity analytics center in Doha as a hub in our global network



*The Center for Unified Biosecurity Excellence in Doha (CUBE-D) “represents **the next generation of biosecurity infrastructure**”*

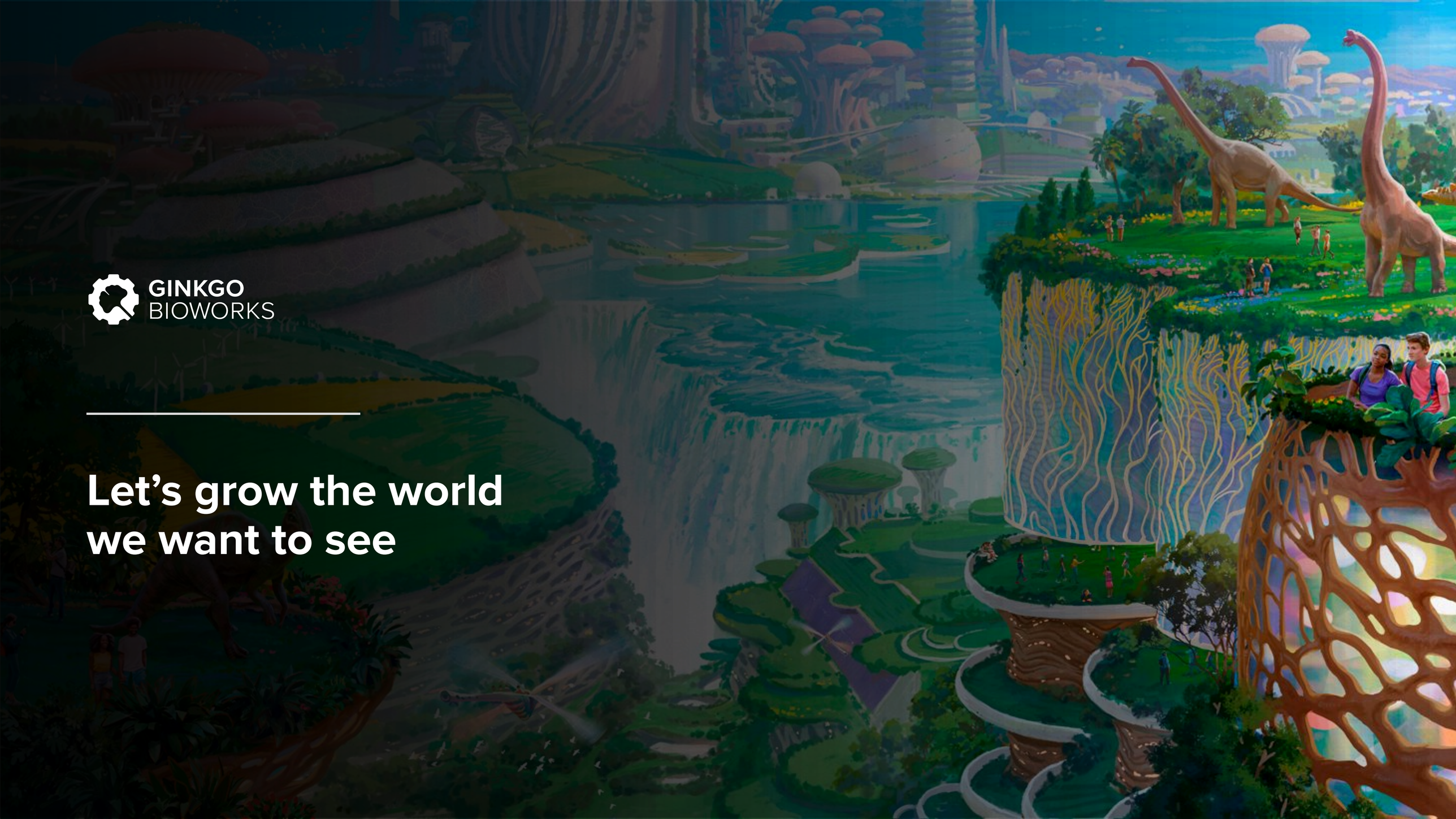
GINKGO BIOWORKS

Matt McKnight
General Manager, Biosecurity





Renderings are illustrative and do not necessarily reflect the final facility.


GINKGO
BIOWORKS
Let’s grow the world
we want to see

Agenda

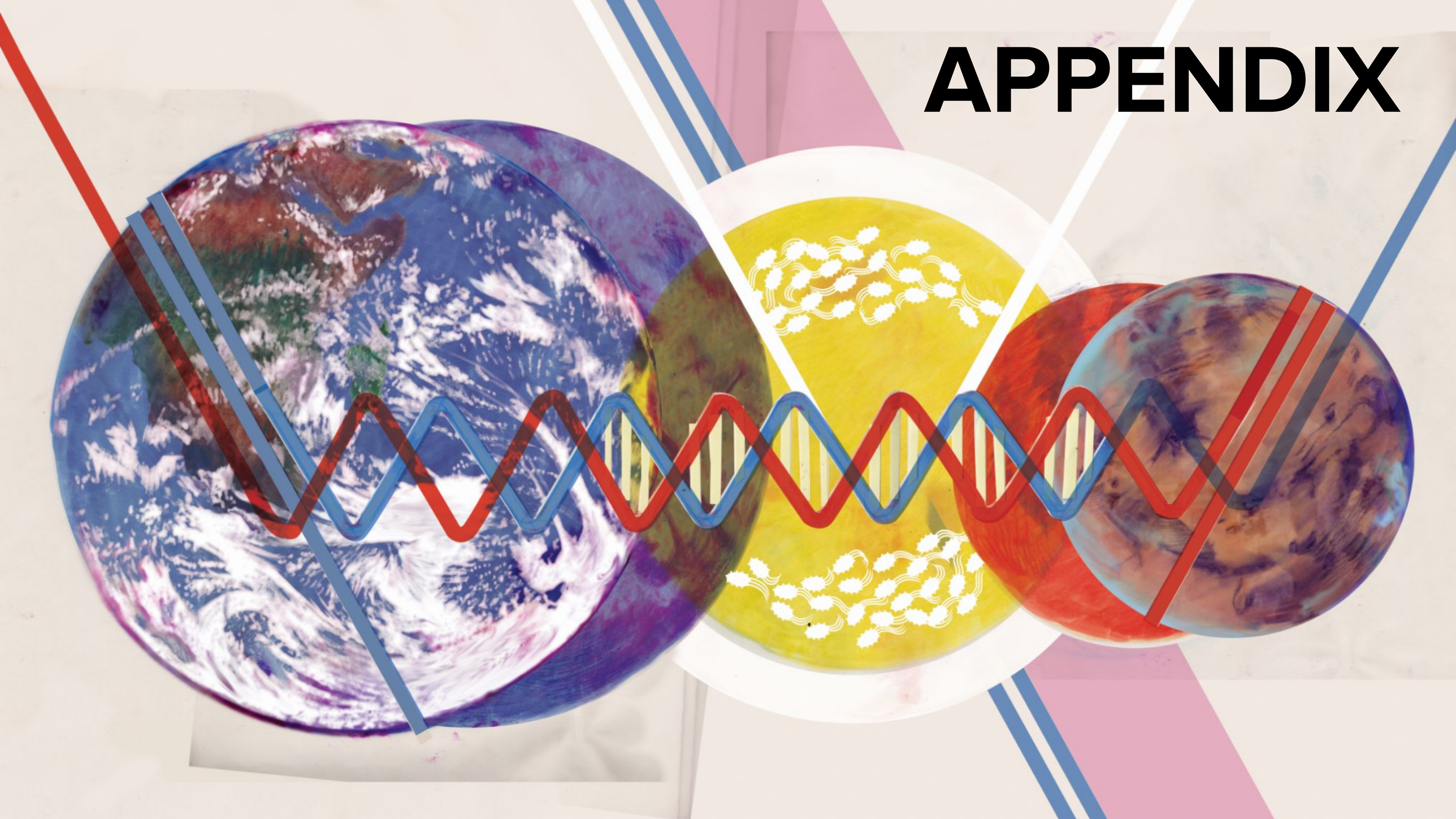
Introduction
Jason Kelly, Co-Founder and CEO

Q4 and FY 2023 Financial Update
Mark Dmytruk, CFO

Strategic Review
Jason Kelly, Co-Founder and CEO

Q&A Session
Moderated by Megan LeDuc, Manager of Investor Relations

APPENDIX



Cell Program Counts

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2023	**2022**	**2023**	**2022**
New Programs	23	20	78	59
Current Active Programs	131	96	162	112
Cumulative Programs	242	164	242	164

New Programs: New Programs represent the number of unique programs commenced within the reporting period based on a technical development plan or objective. We generally exclude proof-of-concept projects and other exploratory work undertaken on a customer's behalf from the program count. As new programs typically have multi-year durations, we view this metric as an indication of future Cell Engineering revenue growth.

Current Active Programs: Current Active Programs represent the number of unique programs for which we performed R&D services in the reporting period. We view this metric as an indication of current period and future Cell Engineering revenue.

Cumulative Programs: Cumulative Programs represent the cumulative number of unique programs Ginkgo has commenced. We view this metric as an indication of our competitive advantage and as a leading indicator of the mid- to long-term potential economic value derived from downstream value share arrangements. The cumulative number of programs also contributes to Codebase, which accumulates with each additional program we conduct over time, drives better experimental direction and improves the odds of technical success in current and future programs.

Adjusted EBITDA Reconciliation

In millions of USD	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2023	2022	2023	2022
Net loss attributable to Ginkgo Bioworks Holdings, Inc. stockholders	**$ (211.7)**	**$ (175.5)**	**$ (892.9)**	**$ (2,104.9)**
Interest income	(13.2)	(11.4)	(57.2)	(20.3)
Interest expense	0.0	0.1	0.1	0.1
Income tax expense (benefit)	(0.2)	(14.8)	(0.1)	(15.0)
Depreciation and amortization	12.8	15.7	70.5	42.6
EBITDA	**$ (212.3)**	**$ (185.9)**	**$ (879.6)**	**$ (2,097.6)**
Stock-based compensation [(1)]	43.6	111.2	234.9	1,940.9
Impairment on long-lived assets [(2)]	0.0	0.0	121.4	0.0
Merger and acquisition related expenses [(3)]	23.7	26.0	70.8	46.2
Loss on investments	10.0	13.4	54.8	53.3
Loss (gain) on deconsolidation of subsidiaries	42.5	0.0	42.5	(31.9)
Loss on equity method investments [(4)]	1.1	(7.6)	2.6	45.3
Change in fair value of warrant liabilities	(6.6)	(28.9)	(5.2)	(125.0)
Change in fair value of notes receivable	2.2	(3.9)	2.3	(4.2)
Adjusted EBITDA	**$ (95.8)**	**$ (75.7)**	**$ (355.4)**	**$ (172.8)**

(1) Includes $0.7 million and $3.1 million in employer payroll taxes for the three months ended December 31, 2023 and 2022, respectively, and $5.0 million and $10.3 million in employer payroll taxes for the twelve months ended December 31, 2023 and 2022, respectively.

(2) For the twelve months ended December 31, 2023, includes $25.2 million impairment loss on lab equipment and $96.2 million impairment loss on a right-of-use asset and the related leasehold improvements associated with an exited Zymergen leased facility.

(3) Represents transaction and integration costs directly related to mergers and acquisitions including (i) due diligence, legal, consulting and accounting fees associated with acquisitions, (ii) post-acquisition employee retention bonuses and severance payments, (iii) the fair value adjustments to contingent consideration liabilities resulting from acquisitions, (iv) acquired intangible assets expensed as in-process research and development, and (v) costs associated with the Zymergen Bankruptcy, as well as securities litigation costs, net of insurance recovery.

(4) Represents losses on equity method investments under the hypothetical liquidation at book value (HLBV) method, net of losses attributable to non-controlling interests.

Segment Information

In millions of USD, except $ YoY	Three Months Ended December 31,			Twelve Months Ended December 31,		
	2023	**2022**	**% YoY**	**2023**	**2022**	**% YoY**
Revenue:						
Cell Engineering	$ 27	$ 53	(49%)	$ 144	$ 144	(0%)
Biosecurity	8	45	(83%)	108	334	(68%)
Total Revenue	**35**	**98**	**(65%)**	**251**	**478**	**(47%)**
Segment cost of revenue:						
Biosecurity	**7**	**30**	**(78%)**	**54**	**204**	**(74%)**
Segment research and development expense:						
Cell Engineering	78	95	(18%)	353	273	29%
Biosecurity	0	1	(68%)	2	2	(17%)
Total segment research and development expense	**78**	**96**	**(19%)**	**355**	**275**	**29%**
Segment general and administrative expense:						
Cell Engineering	60	64	(6%)	215	169	28%
Biosecurity	13	14	(7%)	56	56	(1%)
Total segment general and administrative expense	**73**	**77**	**(6%)**	**271**	**225**	**20%**
Segment operating income (loss):						
Cell Engineering	(111)	(106)	(5%)	(425)	(298)	(43%)
Biosecurity	(12)	1	NM	(3)	72	(104%)
Total segment operating income (loss) [(1)]	**(123)**	**(105)**	**(17%)**	**(428)**	**(227)**	**(89%)**
Operating expenses not allocated to segments:						
Stock-based compensation [(2)]	44	111	(61%)	235	1,941	(88%)
Impairment of long-lived assets	0	0	NM	121	0	NM
Depreciation and amortization	13	16	(18%)	71	43	66%
Change in fair value of contingent consideration liability	(1)	(1)	NM	9	(1)	NM
Loss from operations	**(178)**	**(231)**	**23%**	**(864)**	**(2,209)**	**61%**

(1) For the three months and twelve months ended December 31, 2023, included in Segment Operating Loss is $23.7 million and $70.8 million, respectively, of merger and acquisition related expenses. For the three months and twelve months ended December 31, 2022, included in Segment Operating Loss is $26.0 million and $46.2 million, respectively, of merger and acquisition related expenses.

(2) Includes $0.7 million and $3.1 million in employer payroll taxes for the three months ended December 31, 2023 and 2022, respectively, and $5.0 million and $10.3 million in employer payroll taxes for the twelve months ended December 31, 2023 and 2022, respectively.

Cell Engineering Revenue

In millions of USD, except % of total	Three Months Ended December 31,				Twelve Months Ended December 31,			
	2023	**% of Total**	**2022**	**% of Total**	**2023**	**% of Total**	**2022**	**% of Total**
Related Parties	$ 2	9%	$ 7	14%	$ 22	15%	$ 39	27%
Third Parties	25	91%	46	86%	122	85%	105	73%
Cell Engineering Revenue	**$ 27**	**100%**	**$ 53**	**100%**	**$ 144**	**100%**	**$ 144**	**100%**
Cash consideration	$ 25	93%	$ 24	46%	$ 95	66%	$ 68	47%
Non-cash consideration	2	7%	29	54%	49	34%	76	53%
Cell Engineering Revenue	**$ 27**	**100%**	**$ 53**	**100%**	**$ 144**	**100%**	**$ 144**	**100%**

Related Parties: Related parties include Platform Ventures and certain Structured Partnerships. See notes to our consolidated financial statements for additional information related to transactions with related parties.

Third Parties: Includes all other customers.

Non-Cash Consideration: Cell Engineering revenue recognized relating to contracts in which the underlying consideration is non-cash based, inclusive of downstream value share milestone payments received in the form of equity securities. See notes to our consolidated financial statements for additional information related to revenue recognition.

Stock-Based Compensation

In millions of USD, except % YoY	Three Months Ended December 31,			Twelve Months Ended December 31,		
	2023	2022	% YoY	2023	2022	% YoY
Total Stock-Based Compensation	**$ 43.6**	**$ 111.2**	**(61%)**	**$ 234.9**	**$ 1,940.9**	**(88%)**
Amount included in Research and Development expenses:	**26.8**	**68.2**	**(61%)**	**148.9**	**738.8**	**(80%)**
Stock-Based Compensation	26.2	67.3	(61%)	145.9	732.0	(80%)
Employer Payroll Taxes Related to Stock-Based Compensation	0.6	0.9	(35%)	3.0	6.8	(56%)
Amount included in General and Administrative expenses:	**16.8**	**43.1**	**(61%)**	**86.0**	**1,202.1**	**(93%)**
Stock-Based Compensation	16.6	40.9	(59%)	84.0	1,198.6	(93%)
Employer Payroll Taxes Related to Stock-Based Compensation	0.2	2.2	(92%)	2.0	3.5	(41%)

Modification of Equity Awards in Connection with Business Combination

Prior to becoming a public company in September 2021, Ginkgo granted restricted stock units ("RSUs") with both a service-based vesting condition and a performance-based vesting condition, defined as a change in control or an initial public offering (both as defined in the underlying award agreement). Ginkgo historically did not recognize any stock-based compensation expense associated with these awards due to the performance-based vesting condition.

As previously disclosed, on November 17, 2021 the board of directors modified the vesting terms of RSUs, such that Ginkgo's business combination with Soaring Eagle Acquisition Corp. was deemed to have met the performance condition for vesting. This was accounted for as a modification and resulted in a catch-up adjustment of approximately $1.5 billion of incremental stock-based compensation expense in the fourth quarter of 2021 (calculated based on the number of RSUs impacted, which had been granted since 2015, at the share price of $13.59 on November 17, 2021). Stock-based compensation expense also increased by $174 million in the fourth quarter of 2021 related to RSU earnout shares ("Earnout RSUs") which were also subject to the same performance condition as the underlying RSUs.

During the fourth quarter of 2023 and 2022, we recognized $17 million and $79 million, respectively, of stock-based compensation expense related to the modified RSUs and Earnout RSUs. As of December 31, 2023, there was $39 million of unrecognized stock-based compensation expense related to those modified RSUs and Earnout RSUs that had not yet fully met the service-based vesting condition as of December 31, 2023. This amount will be recognized over a weighted-average period of 1.3 years.

Stock Based Compensation Expense Supplement

As disclosed in our SEC filings, the vast majority of Ginkgo's stock-based compensation expense since going public relates to the accounting treatment of RSUs granted prior to Ginkgo becoming a publicly traded company, which had already been included in Ginkgo's fully-diluted share count and thus does not reflect new dilution to shareholders after going public

- Prior to going public, following applicable accounting rules, Ginkgo did not book stock-based compensation expense related to RSU grants dating back to 2015
- After Ginkgo went public, GAAP accounting required a one-time catch-up adjustment for those historical RSUs

Per GAAP accounting, the one-time catch-up adjustment was calculated using the Fall 2021 stock price on the applicable date ($13.59) rather than the much lower values of these shares when the historical RSUs were actually granted

Additionally, all "earnout" shares from Ginkgo's negotiated deSPAC transaction were accounted for, even those that have not yet been earned and are subject to forfeiture if Ginkgo's stock price does not exceed specified levels

Stock Based Compensation Summary

($ in millions)	**2021**	**2022**	**2023**
Total GAAP stock-based compensation expense	$1,688	$1,941	$235
(-) "Catch-up" stock-based compensation expense	$1,666	$1,872	$130
Stock based compensation excl. pre-deSPAC grants	**$22**	**$69**	**$105**

Total remaining "catch-up" SBC (estimated):

2024: $36M

2025: $3M

Founder Selling Supplement

Ginkgo's Founders currently own over 20% of the outstanding shares of Ginkgo, the vast majority of which are in Class B shares

- Class B shares are not freely tradable (must be converted to Class A) and are often not shown on automated data services
- As such, these aggregation services (such as Bloomberg or Yahoo) can be unhelpful in determining actual holdings of certain investors, including our Founders, who may hold different classes of shares which may not be included

There have been two drivers of Founder share sales:

- Mandatory sell-to-cover transactions to cover tax obligations - In Q4 2022 and Q1 2023, upon the distribution of certain RSUs, Ginkgo - consistent with its treatment of all employee RSU settlements - sold shares to cover tax obligations on those transactions. These were not discretionary trades by the Founders and are now concluded.
- 10b5-1 plan sales - As is typical for founders / executives, some of our Founders have put in place 10b5-1 plans, which were intentionally structured to trade a small number of shares on a regular basis rather than trading a large volume in a single bolus. These were put into place last year (see Jason Kelly's Schedule 13D filed on 10/5/22) and the total trades under these plans represent a very small portion of the Founders' holdings.

Founder sales through February 16, 2024 relative to total holdings[1]

	Mandatory Sell-to-Cover[2]		10b5-1 plan	
	Shares sold (in millions)	% of holdings	Shares sold (in millions)	% of holdings
Jason (CEO)	12.3	11.3%	10.4	9.6%
Reshma (COO)	12.3	11.4%	1.9	1.7%
Barry (CTO)	12.3	11.2%	1.9	1.7%
Austin	12.3	11.3%	0.7	0.6%

Discretionary sales by Ginkgo's Founders are generally small relative to their total holdings

(1) Represents Founder holdings following the Founder Equity Grant RSU and earnout distributions but before any sell-to-cover or 10b5-1 plan transactions had occurred.
(2) Unchanged since Q1 2023.

Share Supplement

Illustrative Fully-Diluted Share Count

Shares in millions	
Basic Shares [1]	2,000
RSUs [2]	152
Options (Treasury-stock method) [3]	3
Fully-Diluted Shares	**2,155**
Memo: Remaining Earnout Shares Outstanding [4]	*152*
Memo: Shares Underlying Warrants (public and private) [5]	*52*

(1) Common stock outstanding as of 2/22/2024 less outstanding earnout shares as of 12/31/2023 for which the service and/or price (between $15 and $20 per share) vesting conditions have not yet been met.
(2) Unvested RSUs as of 12/31/2023.
(3) Outstanding options as of 12/31/2023. Treasury-stock method based on Ginkgo VWAP during Q4 2023. Excludes earnout options.
(4) Outstanding earnout shares as of 12/31/2023, includes shares for which the service and/or price (between $15 and $20 per share) vesting conditions have not yet been met.
(5) Warrants to purchase Class A common stock outstanding as of 12/31/2023, with an exercise price of $11.50.