



Writing the Future

EMILY LEPROUST, PH.D., CEO and CO-FOUNDER



Legal Disclaimers



This presentation contains forward-looking statements. In particular, statements regarding future economic performance, finances, and expectations and objectives of management constitute forward-looking statements. Forward-looking statements can be identified by the fact that they do not relate strictly to historical facts and generally contain words such as "believes," "expects," "may," "will," "should," "seeks," "approximately," "intends," "plans," "estimates," "anticipates," and other expressions that are predictions of or indicate future events and trends and that do not relate to historical matters. Although the forward-looking statements contained in this presentation are based upon information available at the time the statements are made and reflect management's good faith beliefs, forward-looking statements inherently involve known and unknown risks, uncertainties and other factors, which may cause the actual results, performance or achievements to differ materially from anticipated future results. Important factors that could cause actual results to differ materially from expectations include, among others: our estimates of the size of our market opportunity; our expectations regarding our ability to increase gene production, reduce turnaround times and drive cost reductions for our customers; and our ability to enter new markets. You should not place undue reliance on these forward-looking statements, which speak only as of the date hereof. We do not undertake to update or revise any forward-looking statements after they are made, whether as a result of new information, future events, or otherwise, except as required by applicable law.

This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. Neither we nor any other person makes any representation as to the accuracy or completeness of such data or undertakes any obligation to update such data after the date of this presentation. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

By attending or receiving this presentation you acknowledge that you will be solely responsible for your own assessment of the market and our market position and that you will conduct your own analysis and be solely responsible for forming your own view of the potential future performance of our business.



DNA is Changing the World

Synthetic DNA Is the Future



Chemicals

Sustainability



Food

Food Security



Therapeutics

Health



Diagnostics

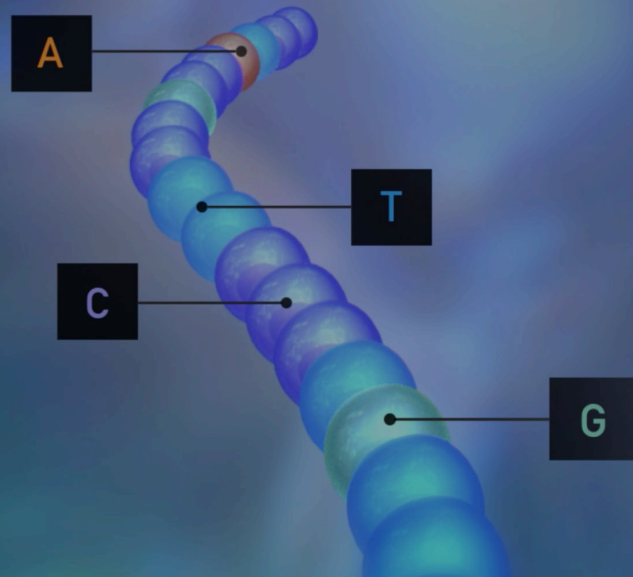
Precision Medicine



Data Storage

Preserving Heritage





TWIST

BIOSCIENCE

DNA WRITING ON SILICON

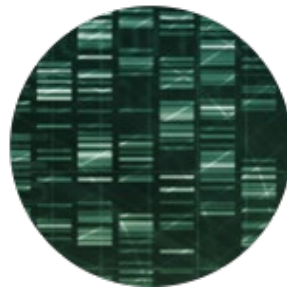
Writing the Future

Our silicon-based
DNA synthesis platform is fueling a
world of applications



Miniaturization

10^{3-6} less volume of
required reagents



Throughput

20M oligos/month
capacity



Low cost

Driving adoption



We are Building a Diverse Portfolio of Businesses



Drug
Discovery

Data
Storage

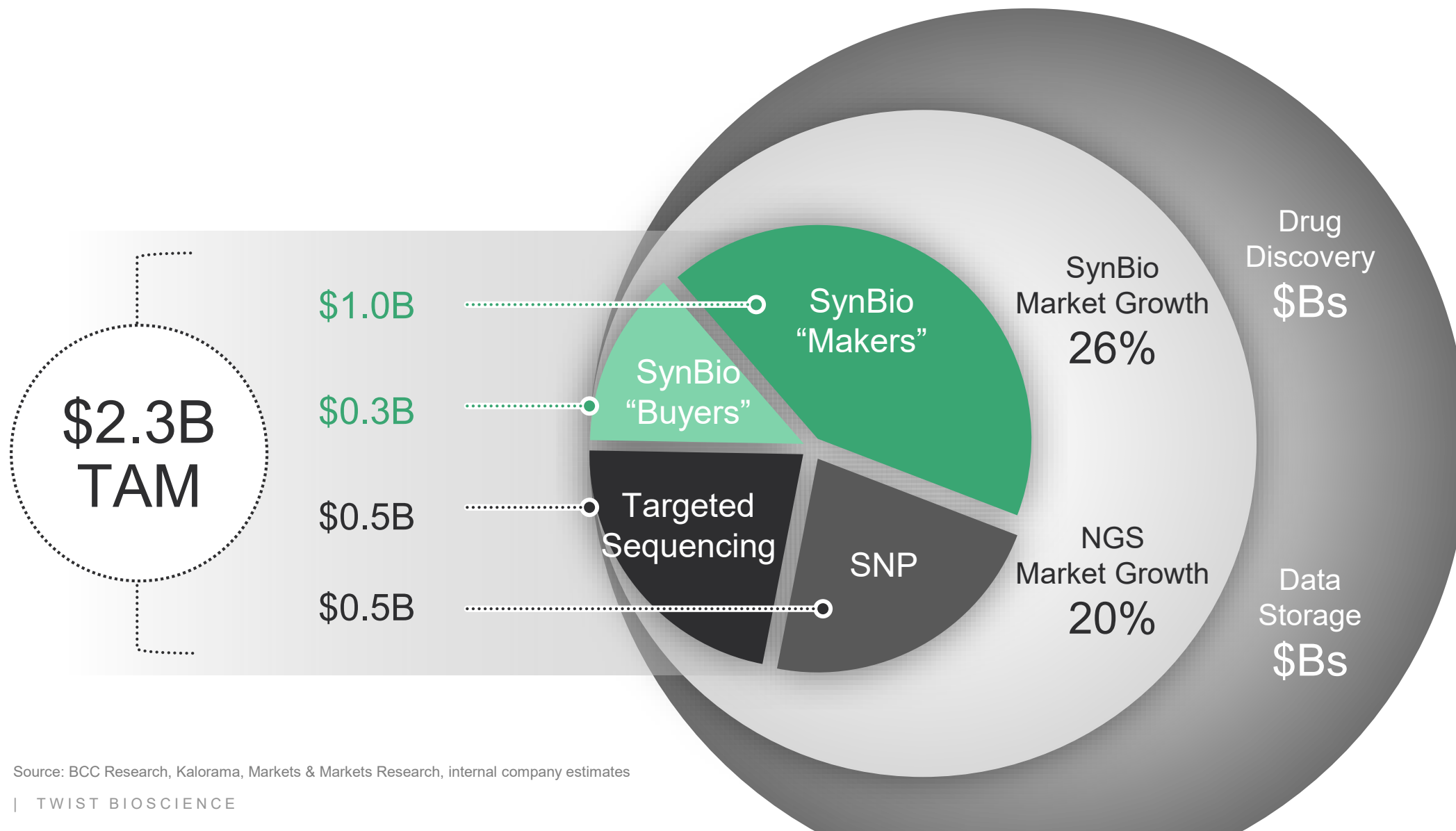
**High-value
solutions**
Future upside

Tools
High-growth
revenue today

Synthetic
Biology

Next-Gen
Sequencing

Large and Expanding Addressable Market



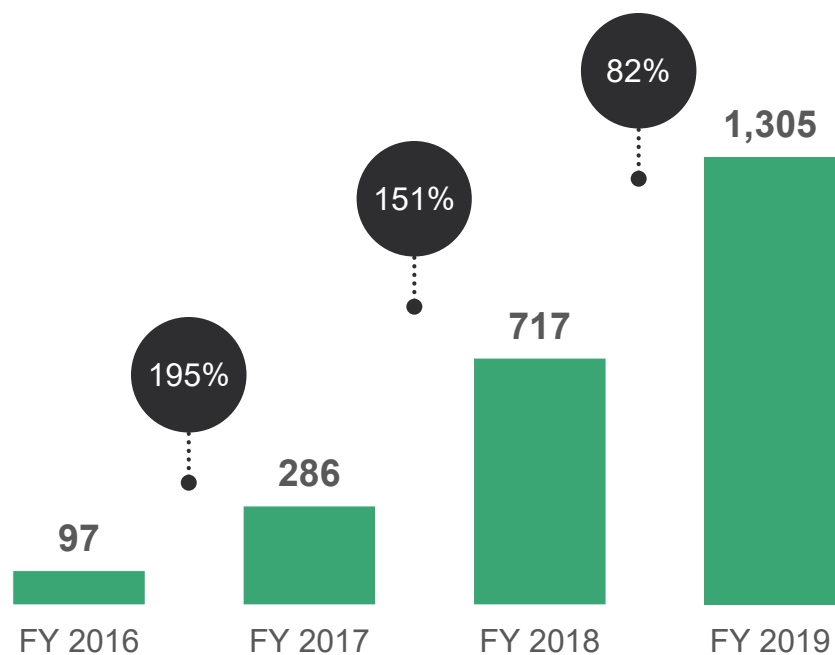
Source: BCC Research, Kalorama, Markets & Markets Research, internal company estimates

Strong Customer and Order Growth



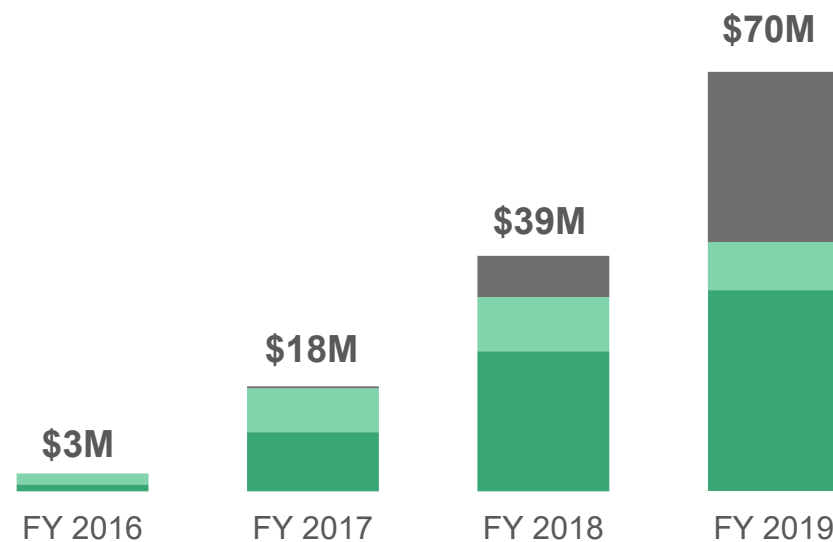
Customers

● YoY growth %



Orders

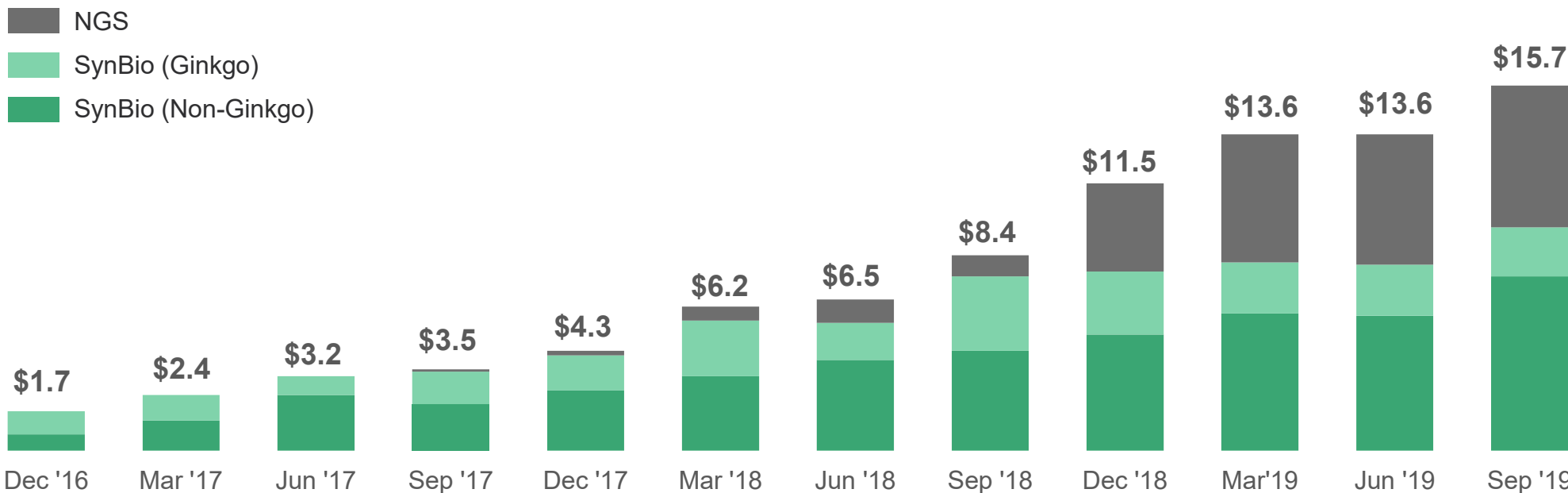
■ NGS
■ SynBio (Ginkgo)
■ SynBio (Non-Ginkgo)



Quarterly Revenue Growth



Revenue (\$M)

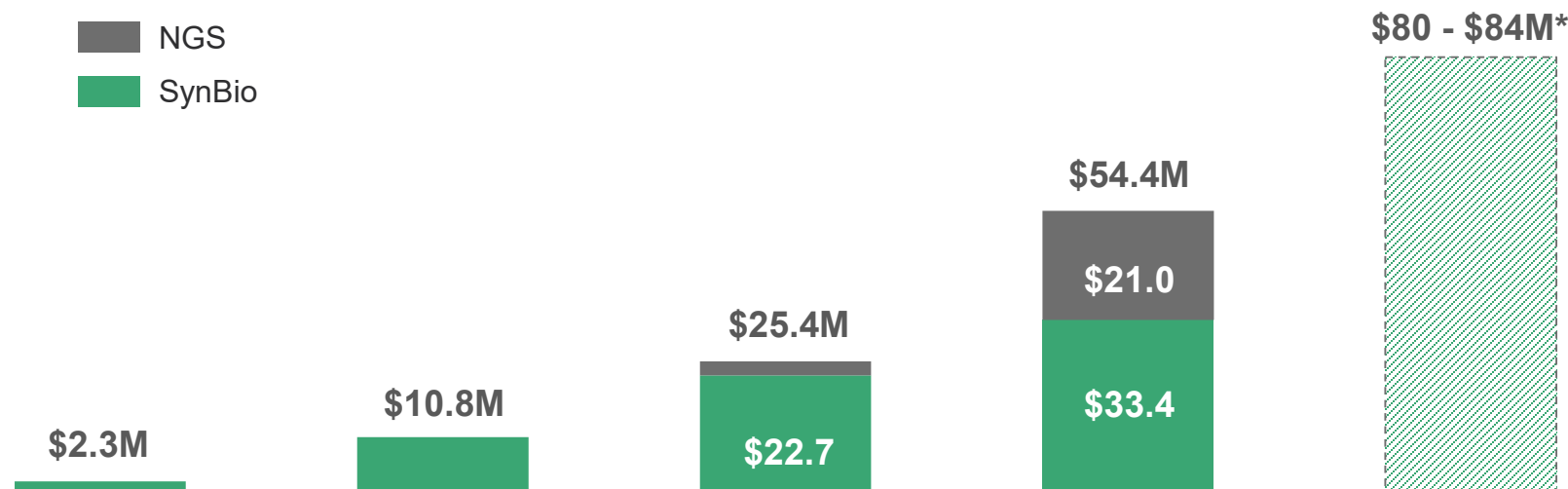


	FY 2017				FY 2018				FY 2019			
QoQ Growth	--	44%	31%	9%	24%	43%	6%	27%	37%	18%	0%	15%
YoY Growth	--	--	--	--	153%	106%	106%	139%	167%	120%	109%	87%

Strong Revenue Growth and Increasing Gross Margin



Revenue



	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020E*
Gross Profit (\$M)	(\$7.2)	(\$13.3)	(\$6.8)	\$7.0	—
Gross Margin %	(300%)	(123%)	(27%)	13%	32%
Net Operating Loss (\$M)	(\$43.7)	(\$58.5)	(\$70.6)	(\$107.7)	(\$103) - (\$106)

* Guidance provided on December 10, 2019.



We are Building a Diverse Portfolio of Businesses



Drug
Discovery

Data
Storage

Synthetic
Biology

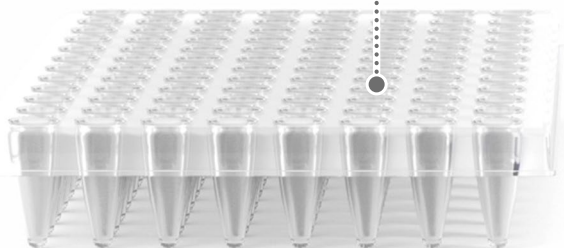
Next-Gen
Sequencing

High-value
solutions
Future upside

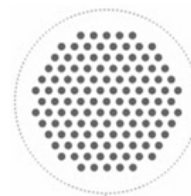
Tools
High-growth
revenue today

Everyone else

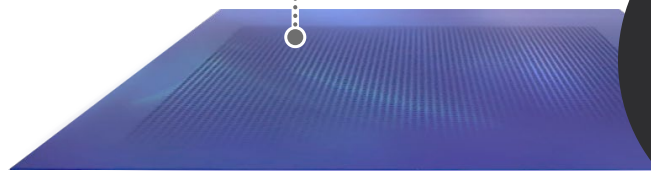
1 oligo per well



96 Well Plate
makes 1 gene



1M oligos per chip



TWIST Silicon Platform
can make 9,600 genes

Up to
10,000x
more scale &
throughput



State of the art commercial infrastructure

- Proprietary software
- Robotics
- Integrated ecommerce
platform with
order tracking
- Manufacturing
execution system

Synthetic Bio: Largest Selection of DNA Offered



Today



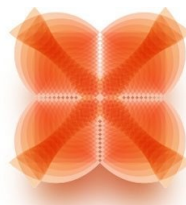
Genes

Clonal
Non-clonal
Fragments



Oligo Pools

sgRNA



Variant Libraries

Site saturation
Combinatorial

Roadmap

DNA preps

IgG

Cloning-ready
gene fragments

Innovative Online Ordering



T

M

CLONAL GENES

My Genes Project

OVERVIEW > GENE IMPORT > PRICING & SCORE

Change Vector ▾

+ Flanks

Optimize

+ Genes

+ Custom Vector

Q

#	<input type="checkbox"/>	NAME ▾	SEQUENCE	BP	VECTOR	SCORE ⓘ	PRICE
1	<input type="checkbox"/>	gene-001	ACTCGACTGACTAGC...	1264	Select Vector ▾	●	\$113.76
2	<input type="checkbox"/>	gene-002	ACTCGACTGACTAGC...	1014	Select Vector ▾	●	\$91.26
3	<input type="checkbox"/>	gene-003	ACTCGACTGACTAGC...	978	Select Vector ▾	●	\$88.02
4	<input type="checkbox"/>	gene-004	ACTCGACTGACTAGC...	848	Select Vector ▾	●	Fix it
5	<input type="checkbox"/>	gene-005	ACTCGACTGACTAGC...	1200	Select Vector ▾	●	\$108.00
6	<input type="checkbox"/>	gene-006	ACTCGACTGACTAGC...	1124	Select Vector ▾	●	\$101.16
7	<input type="checkbox"/>	gene-007	ACTCGACTGACTAGC...	1200	Select Vector ▾	●	Fix it
8	<input type="checkbox"/>	gene-008	ACTCGACTGACTAGC...	1087	Select Vector ▾	●	\$97.83
9	<input type="checkbox"/>	gene-009	ACTCGACTGACTAGC...	1200	Select Vector ▾	●	\$108.00

32 GENES • 26,400 BP

All (240)

● Easy (24)

● Difficult (4)

● Error (2)

● Not Possible (2)

PRICING SUMMARY ⓘ

NAME	QTY	COST
Easy Genes	24	\$2,376.00
Cloning Fee	24	\$1,300.00

DELIVERY FORMAT

☒ Plate: 96 Well, Horizontal

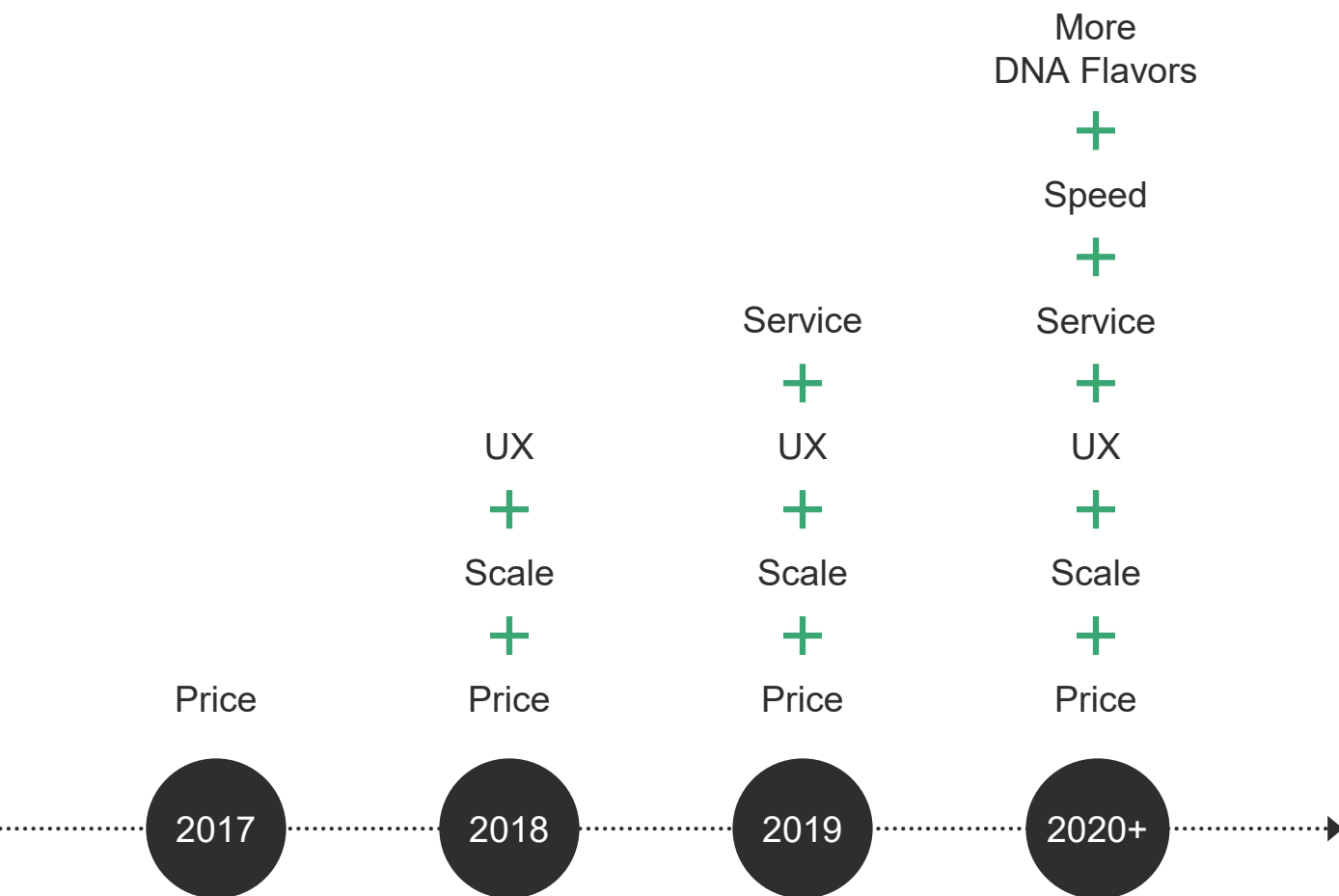
☐ Tube [Edit](#)

Total

\$3,676

Checkout

Synthetic Bio: Why We Win



We Deliver

- High quality DNA
- Competitive turnaround
- Affordability
- Fast throughput
- Unique customer experience
- Innovation

1000+
Customers

8B
Bases shipped

288K
Genes shipped

98%
Orders via ecommerce



VANDERBILT
UNIVERSITY
MEDICAL
CENTER

Case Study

P3 PANDEMIC PREVENTION PLATFORM

Rapid response to help medical workers
fight viral diseases in the field



Twist delivered hundreds of genes in 9 business days for first DARPA sprint

“

Twist's very high-throughput platform allowed us to quickly and efficiently examine thousands of possible antibodies in order to select the best results faster than ever before. – Robert Carnahan

”

Synthetic Bio: Investing in Growth

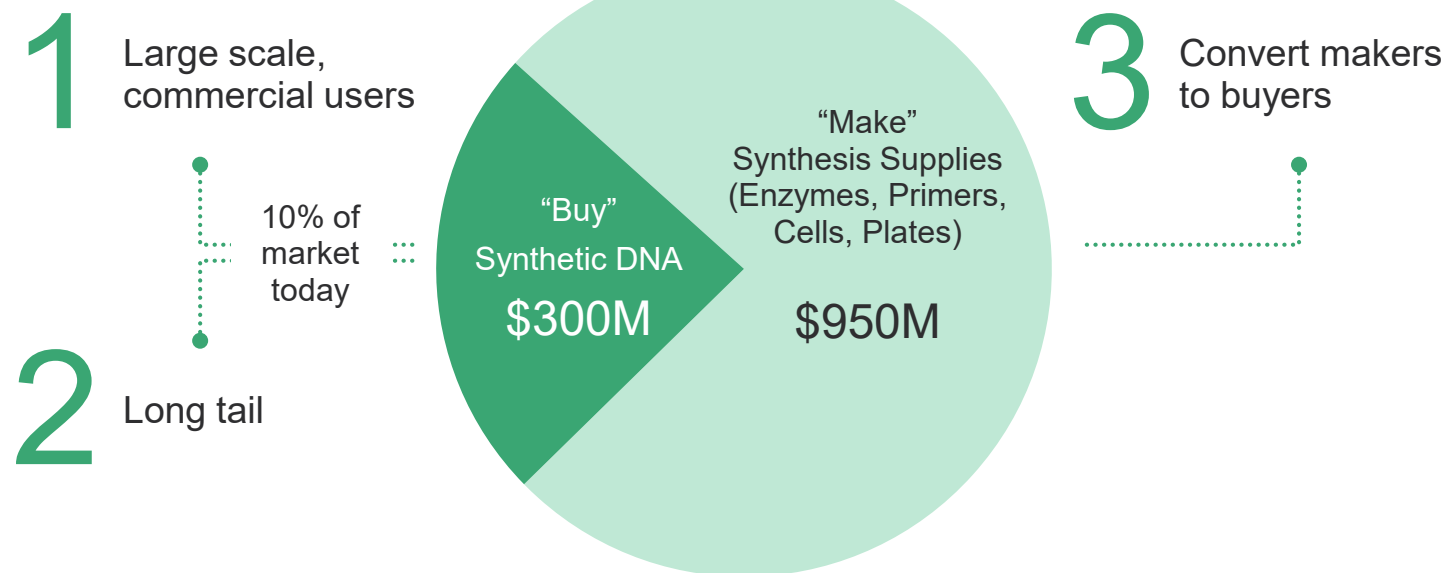


Ecommerce-centric Velocity Sales GTM

- Growing sales team
- Expanding digital marketing
- Leveraging new product offerings

Strategy for Large Market

\$1.3B / year



Source: BCC Research, Markets and Markets Report, internal company estimates



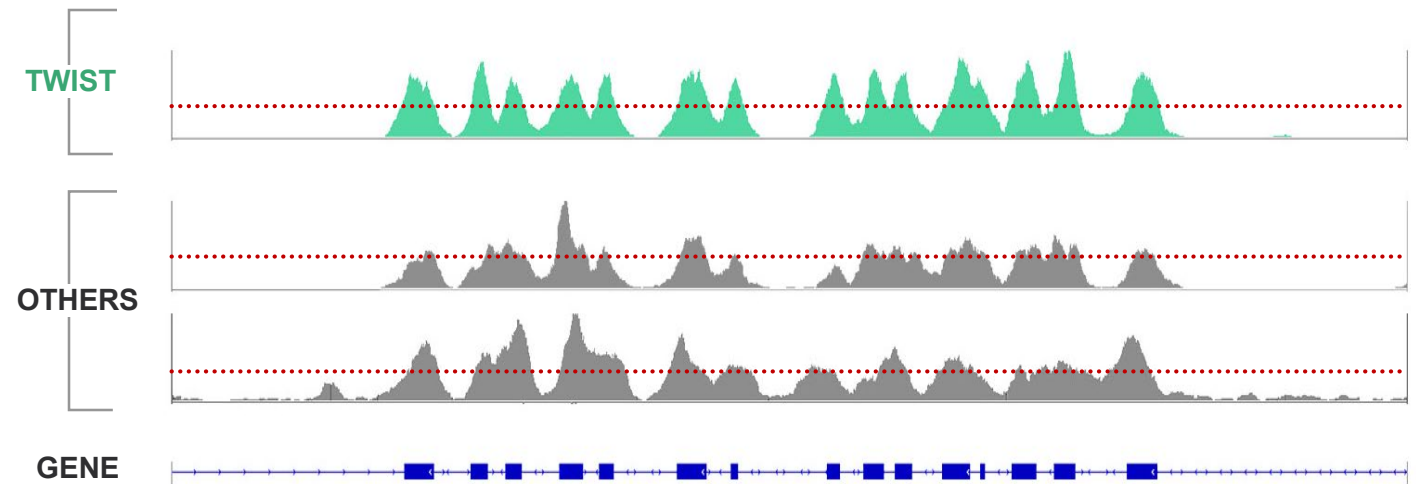
Targeted Sequencing

is Powering New Applications

- Liquid biopsy
- Rare disease
- Oncology
- Population genetics

Twist NGS Delivers Superior Uniformity in Double-Stranded DNA

EXON COVERAGE: GENE REGIONS OF INTEREST



NGS: Broad Offering with Expanding Capabilities



Today

Human Core Exome Kit

Library Prep Kits

Custom Panels

Fixed Panels
Human RefSeq
Pan-Viral
Mouse Exome

Fast Hyb & Wash Kit

Universal Adapters

Roadmap

Oncology

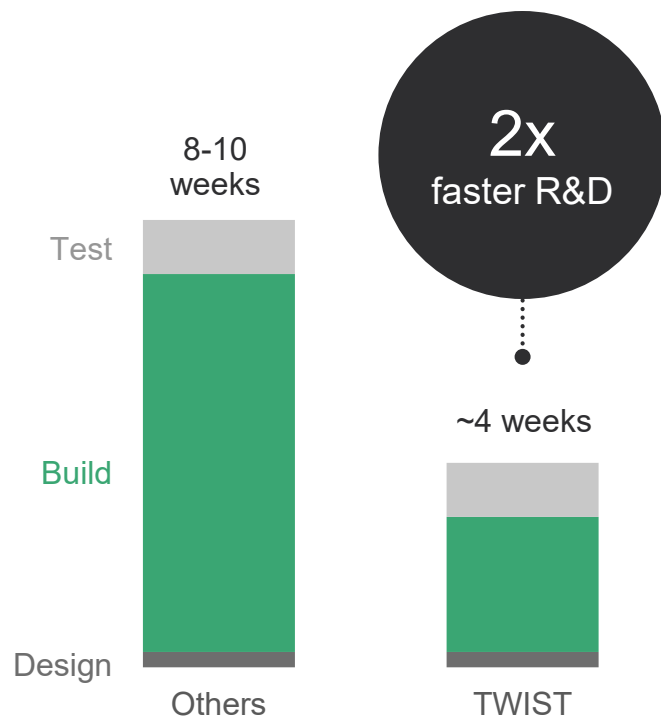
Methylation

SNP Microarray
conversion to NGS

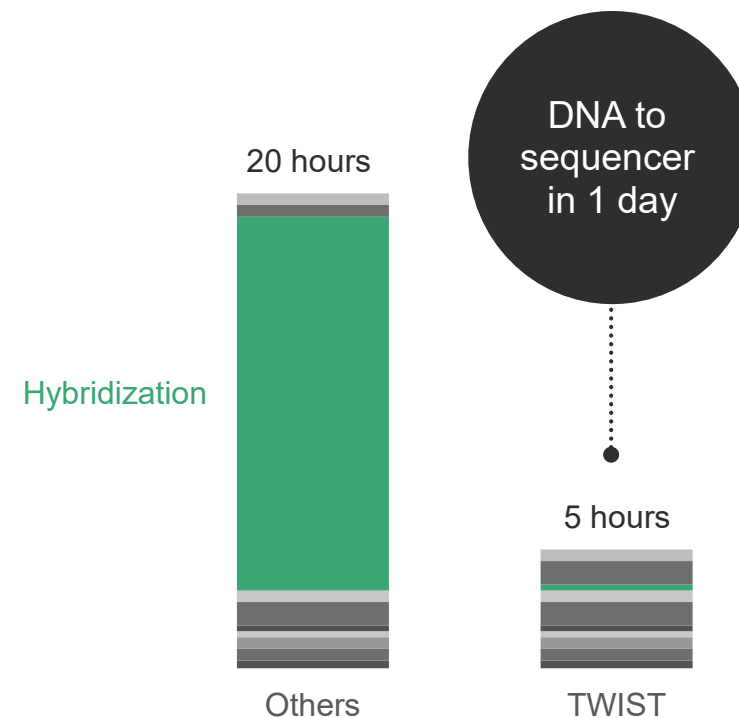
Low Cost per Sample



Rapid Customization



Fast Throughput*



Illustrative models.

* Includes pooling 1 & 2, pre-hybridization, hybridization, binding, wash steps, amplification, purification, target environment QC, and NGS prep

265

Customers shipped

36

in production

2

OEM partners

2

SNP microarray conversion

Exciting Use Cases



Liquid biopsy



Degraded DNA



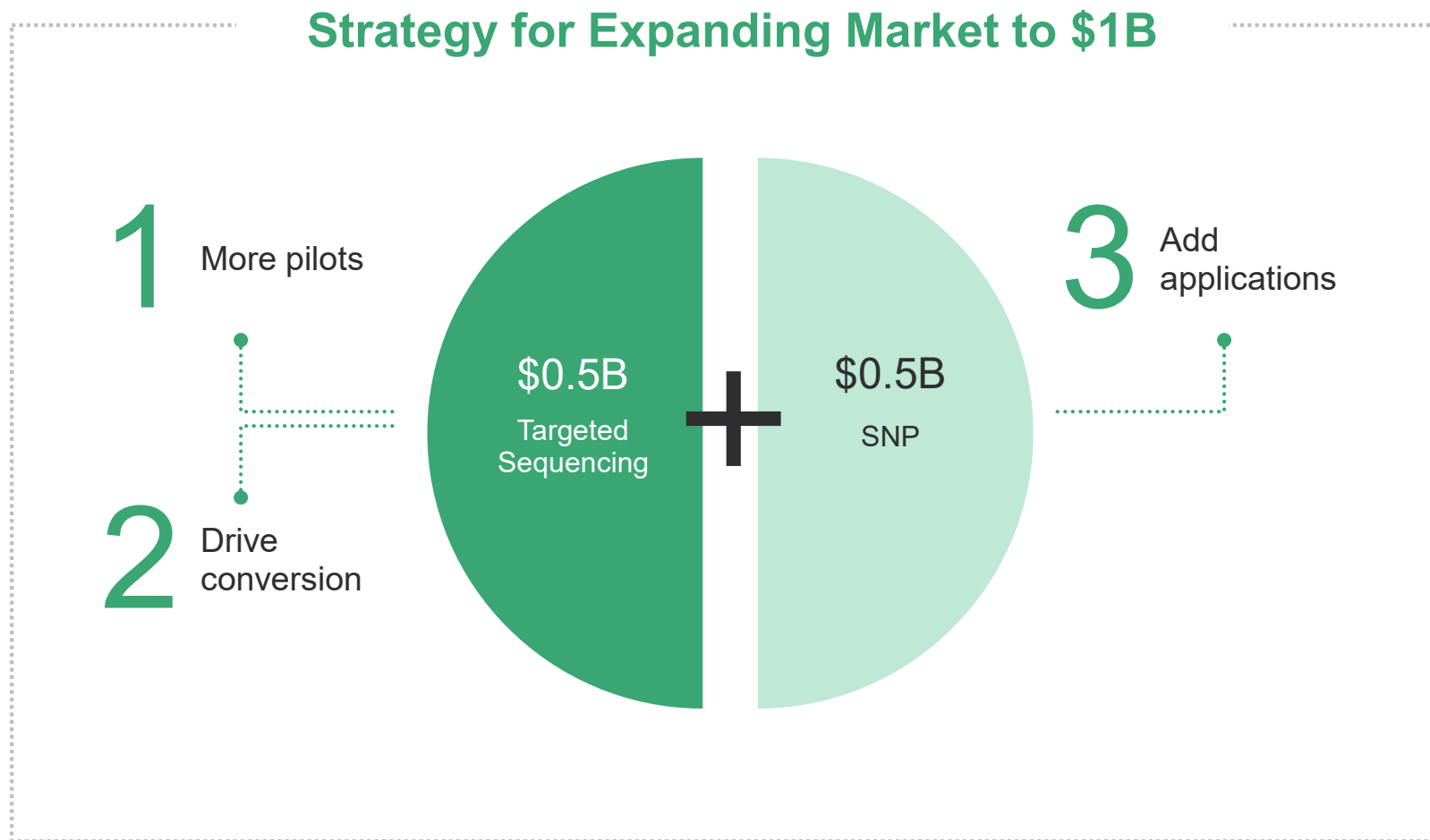
SNP



Rare disease

Solution Selling GTM

- Growing sales team
- Adding OEM partners





We are Building a Diverse Portfolio of Businesses



Drug
Discovery

Data
Storage

**High-value
solutions**
Future upside

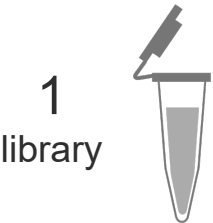
Tools
High-growth
revenue today

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Sequencing



Everyone else



Twist

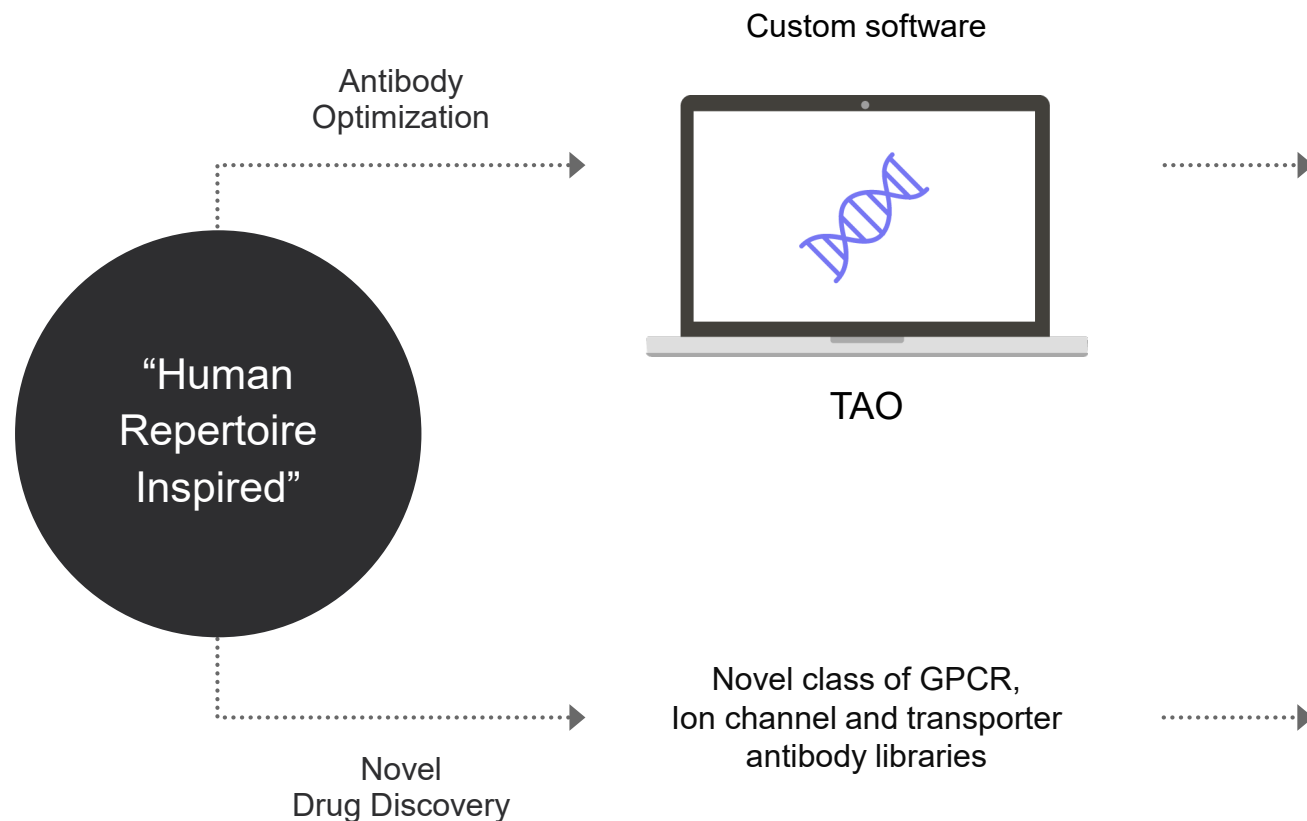
Pan hundreds
of antibody libraries
against every target

LIBRARY
OF
LIBRARIES

Random	DNA	Human repertoire
Low	SCALE	High
Manual	PROCESS	Automatic
100s	STAFF	10

We are monetizing
our investment
by building royalty
and milestone
streams

Discovering Bio-Betters and Hard-to-Drug Targets



Bio-Betters

High Diversity, High Quality Molecules

- Affinity (pM)
- Half-life
- Expression
- Immunogenicity
- Solubility
- Druggability

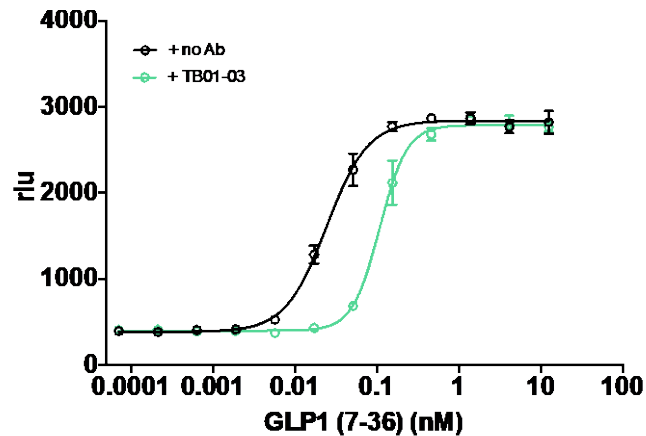
Hard-to-Drug Targets

Leveraging technology to develop novel therapeutics for promising targets

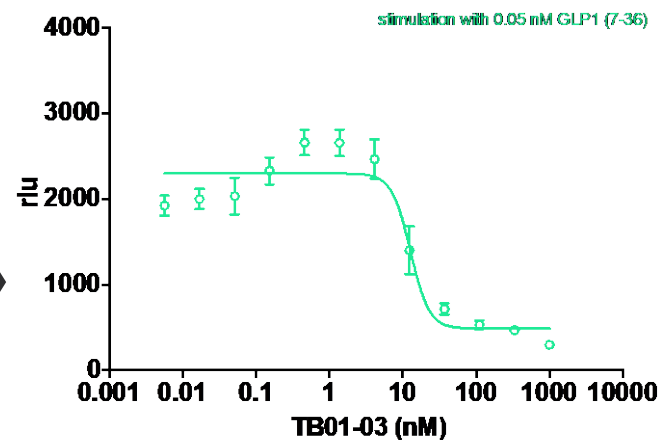
GPCR Development Candidate: TBO1-3 is Potent GLP1R Antagonist



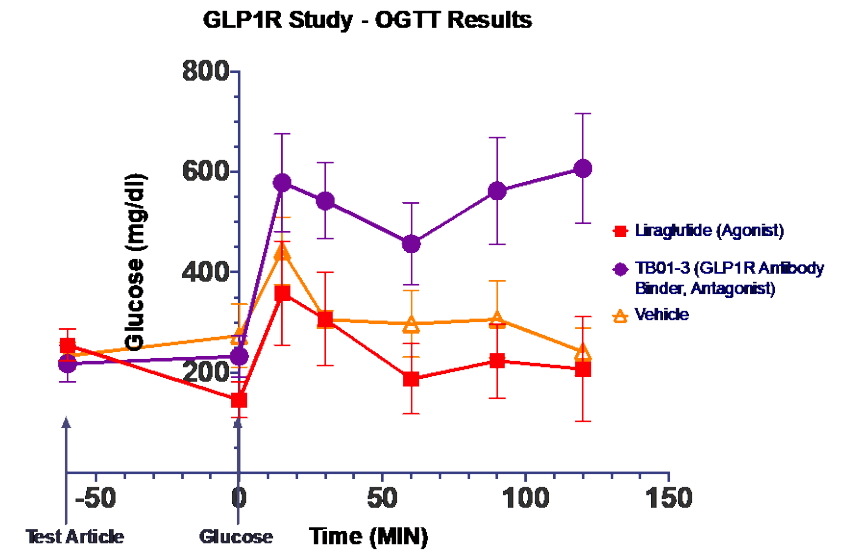
TBO1-3 Inhibits GLP1:GLP1R Signaling



Complete Inhibition at Higher Concentrations



In Vivo Efficacy with Glucose Tolerance Mouse Study



TB01-3 dosed animals maintain sustained high glucose levels after glucose administration, indicating GLP1:GLP1R signal blockade

Potential application for rare diseases such as severe hypoglycemia

Pipeline of Functional Monoclonal Antibodies






GPCR TARGET	INDICATION
ADORA2A	Cancer
CRTH2	Asthma / inflammation
CXCR4	Cancer
CXCR5	Asthma / inflammation
FSHR	Infertility
GLP1R	Diabetes / rare metabolic diseases
V2R	Cancer

We are optimizing these leads and leveraging our platform for partnering discussions

Biopharma Collaborations

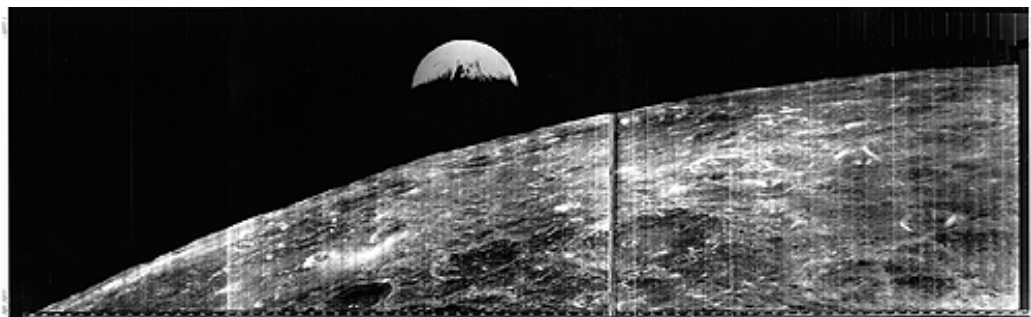


				Undisclosed
Focus	Co-marketing Twist services to their customers	Optimization of bispecific antibodies for autoimmune and inflammatory disease	Technology collaboration	Optimization of therapeutics
Economics	Shared economics	Per project	Collaboration on commercial opportunities	Per project

Twist Data Storage



Recovered from Lunar Orbiter 1 Tapes



**DNA for
Archival Storage of
Digital Information**

Permanence

Density

Random access

Universal format

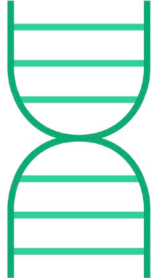
Data Storage in DNA: How It Works



1 Coding

00	→	A
01	→	G
10	→	C
11	→	T


2 Synthesis



3 Storage



4 Retrieval



5 Sequencing



A G T T A C

6 Decoding

A	→	00
G	→	01
C	→	10
T	→	11

DNA Data Storage Non-Dilutive Funding



TWIST SELECTED as DNA SYNTHESIS PROVIDER UNDER THE INTELLIGENCE ADVANCED RESEARCH PROJECT AGENCY (IARPA)

Collaborators



UNIVERSITY of
WASHINGTON



- Twist will receive up to \$9.15M
- Additional \$5.5 million slated to bolster DNA synthesis through new chip design, commercial implementation at Twist
- Significantly reduce the size, weight and power required for archival data storage
- Synthesize enough DNA per day to allow the cost of storing digital data to be as low as \$1/gigabyte
 - Ultimate Twist goal: Drive cost down to \$100/terabyte
- Bolster DNA synthesis through new chip design



I A R P A

NON-DILUTIVE
FINANCING

DNA Data Storage Roadmap



				vs. HARD DRIVE
Commercial Goal	\$1000 / Mb	\$1000 / Gb	\$100 / Tb	\$125 / \$25 / Tb
Engineering Goal	50µm	1µm	50nm	2nm / 3nm



Funding

Non-dilutive IARPA \$2.5M / yr

+

Twist \$2.5M / yr

Delivering on Our Plan



2019

What we said we'd do

- 5Kb gene, Twist API revenue diversification
- ISO certification, ecommerce platform, pilot conversion to full production
- Early POC, 2 collaborations
- Proof-of-concepts, increase density, CMOS chip
- Positive gross margin



SYNBIO

NGS

BIOPHARMA

DATA STORAGE

OPERATIONS

2020

Looking ahead

- Revenue growth and diversification, new products, enhanced ecommerce
- Continued pilot, SNP conversion, products for liquid biopsy, oncology
- Continued POC data packages, results for collaborators, 5-10 new collaborators
- Early access customers
- Increased gross margin, completion of new writer introductions, improved TAT on genes



Writing the Future



Large, growing markets

Platform for writing DNA on silicon

Portfolio of high growth businesses

Differentiated value proposition

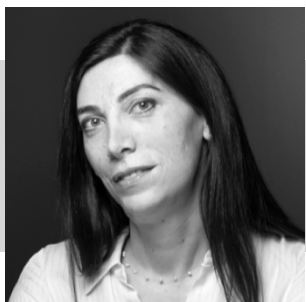
High, consistent revenue growth

Track record of execution and innovation



Appendix

Experienced Management Team



Emily LeProust, PhD

President, CEO
Co-founder



Bill Banyai, PhD

SVP, Advanced Development,
GM Data Storage
Co-founder



Bill Peck, PhD

CTO
Co-founder



Jim Thorburn

CFO



Aaron Sato

CSO
Twist Biopharma



Patrick Finn, PhD

Chief
Commercial Officer



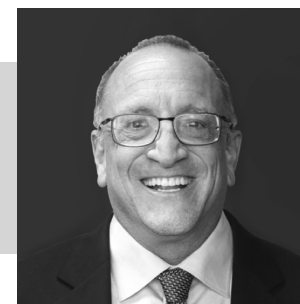
Patrick Weiss

COO



Paula Green

VP
Human Resources



Mark Daniels

Chief Legal Officer,
Chief Ethics and Compliance Officer,
SVP and Secretary



Martin Kunz

SVP
Operations