TWIST BIOSCIENCE

Powering the Synthetic Biology and Genomics Revolutions

39th Annual Cowen Healthcare Conference • March 2019

@TwistBioscience #WeMakeDNA

Safe Harbor Statement

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.

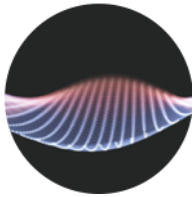
This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. 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.

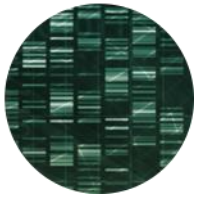
Writing Synthetic DNA on Silicon Platform

Fueling the Industrialization of Synthetic Biology

KEY ADVANTAGES OF WRITING DNA ON SILICON



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



THROUGHPUT
20M oligos/month

LOW COST
Driving adoption and new applications

VERSATILE PLATFORM
Broad applications

Our Versatile DNA Synthesis Platform Has Broad Applications

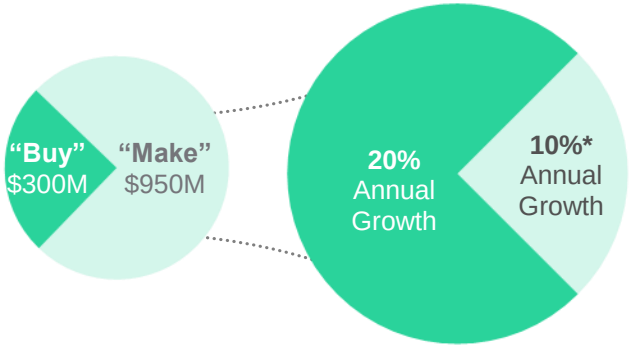
Twist's versatile DNA synthesis platform has broad application across many enabling synthetic biology products, and we are just beginning…

Our Strategy

SYNTHETIC BIOLOGY: GENE SYNTHESIS → **GENOMICS: TARGETED NGS** → **OPEN NEW MARKETS**

Near-term strategic priorities

- Lead the Buyer market
- Convert Makers into Buyers



*Source: Markets and Market Molecular Biology (2014) / BCC Research (2017)

Twist's advantages in…

Exome

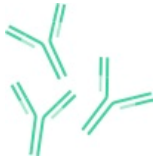
- Performance
- Customization
- Full kit

Custom

- Turnaround time
- Affordable pilot and scaling
- NGS QC on all probes

Long-term initiatives

- Augment our product offering to meet the growing needs of our existing and potential new customers
- Expand into adjacent addressable markets
- Leverage our platform and industry partnerships to create new market opportunities for our products



DRUG DISCOVERY

DATA STORAGE

Twist Bioscience Pipeline

MARKET OPPORTUNITIES	EXPLORATION	PROOF OF CONCEPT	BETA	COMMERCIAL	NEXT STEPS
Synthetic Biology: Synthetic Genes, DNA Libraries and Oligo Pools[1]					• Continue to drive growth, add market share • NPI roadmap
Genomics: Targeted NGS[2]					• Convert NGS pilot accounts to production • Launch NGS e-commerce platform • Backend in China
Biological Drug Discovery and Development[3]					• POC GPCR library and Ab optimization solution • Establish partnerships
Digital Data Storage in DNA					• Continue to develop partnerships to explore digital data storage in DNA

[1] Products addressing this market include clonal, non-clonal genes (gene fragments), oligo pools and DNA libraries
[2] Products addressing this market include NGS exome capture and NGS custom capture
[3] Products addressing this market include custom DNA libraries, our proprietary GPCR-targeting antibody library and our antibody optimization solution

Multiple Large Market Opportunities

TWIST'S PLATFROM TECHNOLOGY ADDRESSES

$1.3B
SYNTHETIC BIOLOGY

- Competitive Turnaround Time
- Lower Cost
- High Throughput
- High Quality

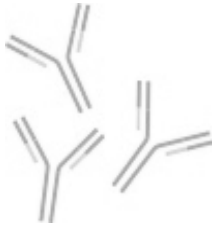
$0.5B
GENOMICS: TARGETED NGS

- Fast Customization
- Performance
- Full Kit
- High Quality

SHORT TERM GOAL
Grow Revenue

Source: BCC Report (2017), Markets and Markets (2014) DeciBio (2015)

LARGE MARKET OPPORTUNITIES



LARGE MARKET
DRUG DISCOVERY/ DEVELOPMENT

- High Quality Diversity Hits / Leads
- Shorter Time and Cost from Target to IND

MID TERM GOAL
Develop novel therapeutics

$35B+
DATA STORAGE

- Permanence
- Density
- Ease of Copying
- Universal Format

LONG TERM GOAL
Enter technology market

Source: LDC Market Analysis, LTO Program Technology Provider Companies

Synthetic Biology is a Rapidly Growing $4B Opportunity

NEEDS	NEW APPLICATIONS FOR SYNTHETIC DNA
Healthcare • Better drug development tools to lessen time and lower costs • More effective diagnostic tools for DNA extraction to lower costs (i.e. NGS)	• Antibodies / TCR • Vaccines • Immuno and Cancer Therapies • Small Molecule Drug Manufacture
Industrial • Increased population growth impacting the sustainability of finite resources • Industrial production to address the needs of civilization	• Specialty Chemicals • Advanced Property Materials
Agriculture • Global population growing with decrease in per capita arable land • Food security and increased nutrition	• Self-fertilizing crops • Oil-Free Fertilizers • Drought Solutions • New Disease Protection

We need a new type of DNA supplier to meet demand

Source: BCC Research

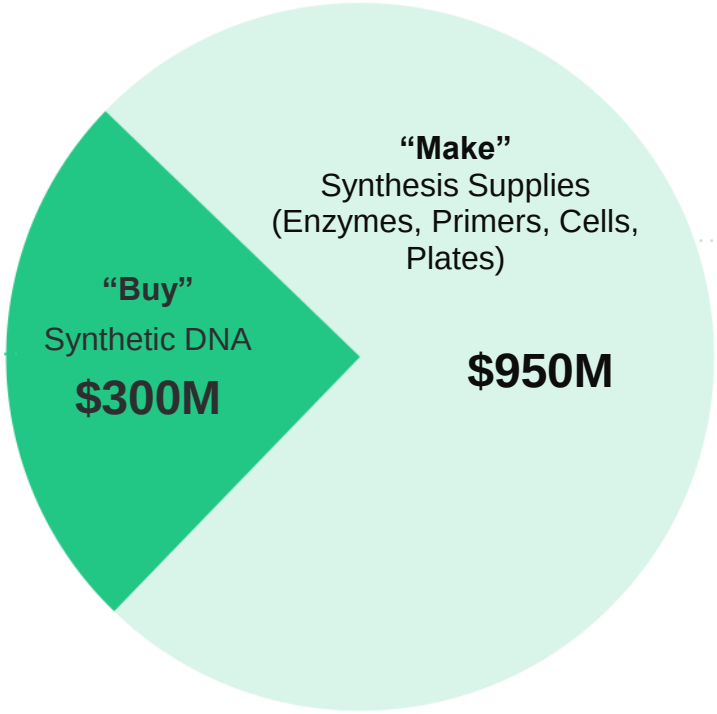
Gene Synthesis Market: Buyers and Makers

$1.3B / Year

Large Scale, Commercial Users

Value: Speed, Throughput and Quality

“Can’t get what I need”



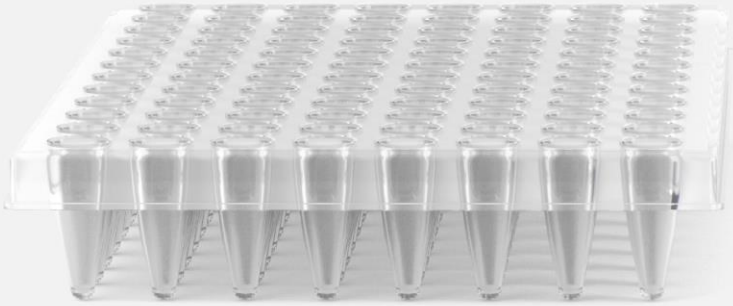
Small Scale, Academic Users

Price-Sensitive

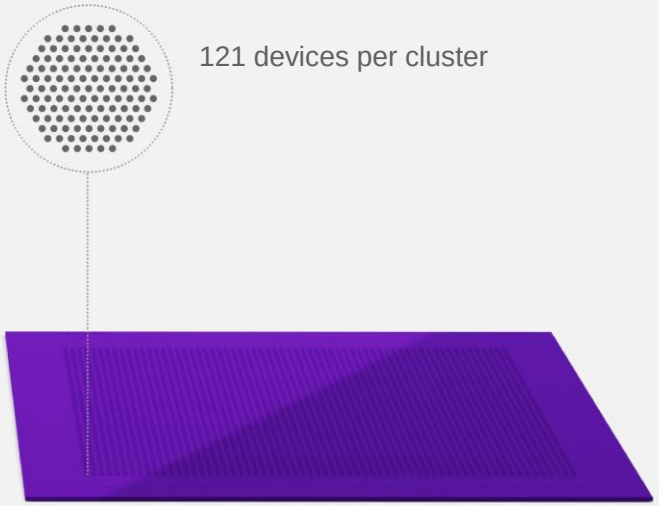
“I Hate Cloning”

Source: BCC Report (2017), Markets and Markets Molecular Biology (2014)

Rewriting DNA with the Power of Silicon



96 WELL PLATE
makes 1 gene



TWIST SILICON PLATFORM
can make 9,600 gene

Developing Game-Changing Throughput and Cost through Quality and Speed at Scale

Key Advantages

HIGH QUALITY

UNIQUE CUSTOMER EXPERIENCE

LOWER COST

UNPRECEDENTED THROUGHPUT / SCALE

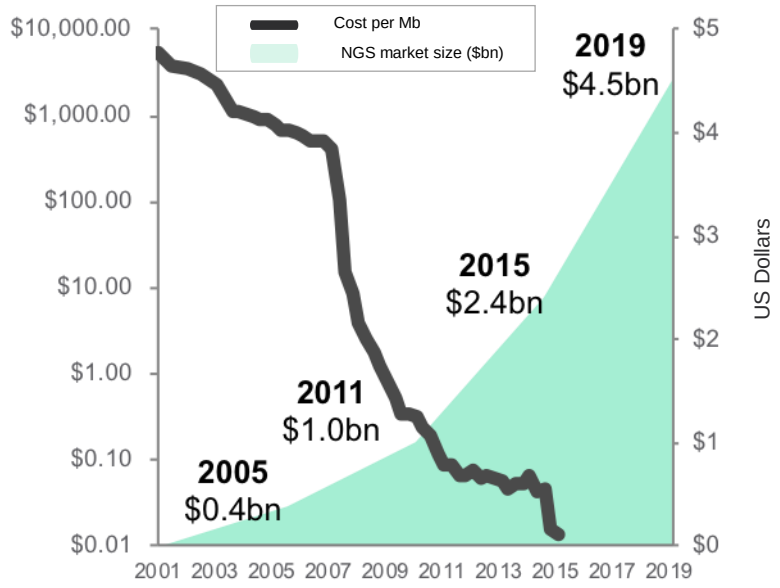
CONSISTENT RELABILITY

COMPETITIVE TURNAROUND TIME

COMPREHENSIVE PRODUCT OFFERING

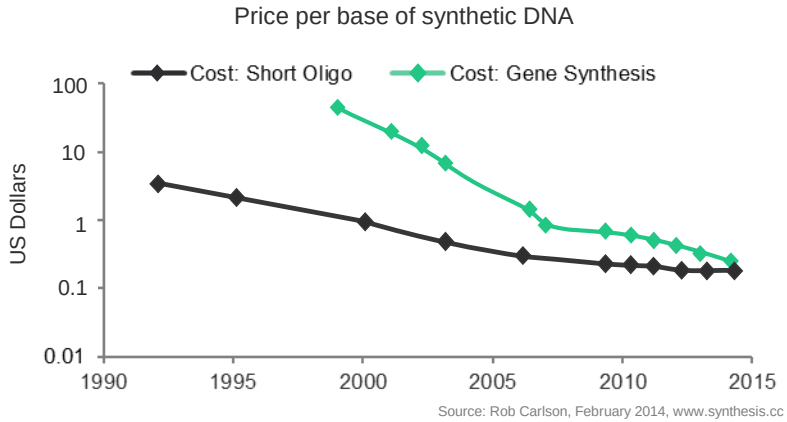
Our Disruptive Technology is Enabling New Markets and Applications

COST PER BASE PAIR VS NGS MARKET SIZE



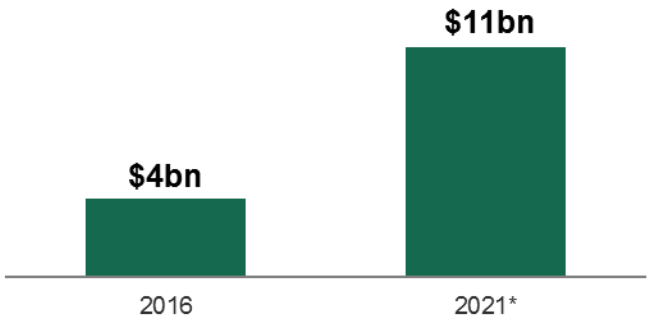
Source: Equity research, company filings Note: NGS market data taken from U.S. DNA Sequencing Technology Markets - 2006 from Cowen and Next generation Sequencing market size, growth and trends (2011–2019) report from DeciBio

SYNTHESIS COST PER GENE VS SYNTHETIC BIOLOGY MARKET



Source: Rob Carlson, February 2014, www.synthesis.cc

GLOBAL VALUE OF SYNTHETIC BIOLOGY MARKET



Source: BCC Research *Expected growth

A Market Leader in Gene Synthesis

Over 700 Customers Served
in FY 2018

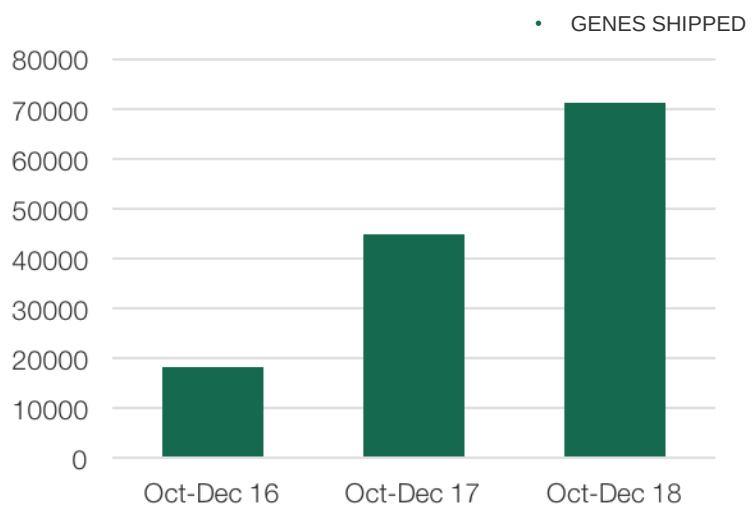
INCLUDING:

- Seven of the top 20 pharma companies by revenue
- Ginkgo Bioworks - Contract for up to 1.3B base pairs over four years
- Three of the largest agricultural biotechnology companies that use synthetic biology
- >100 academic research institutions worldwide
- Microsoft - For use of DNA as a digital data storage medium

GINKGO BIOWORKS™ THE ORGANISM COMPANY

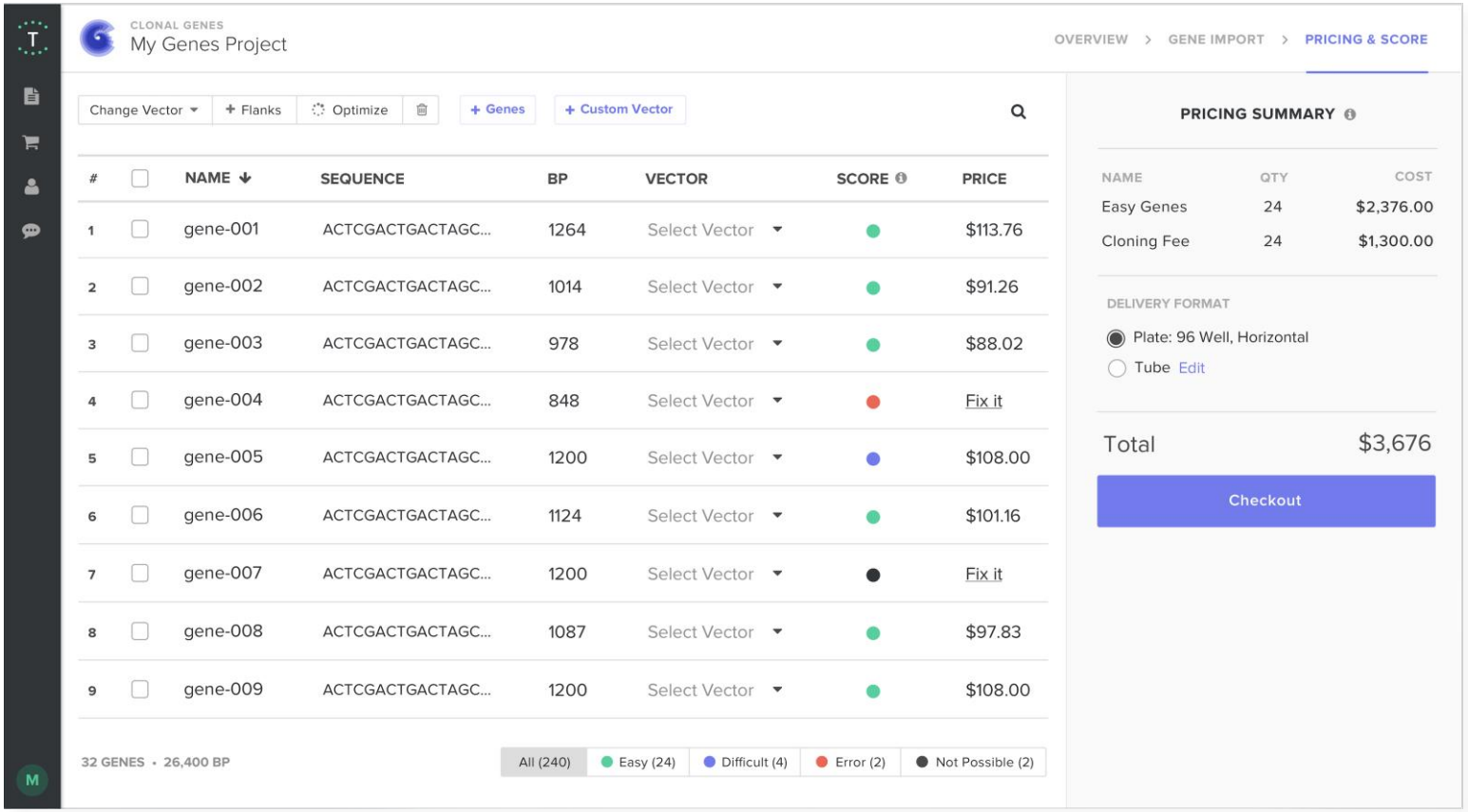
Microsoft

>240,000 genes shipped in FY 2018



MONTHLY AVERAGE IN	
2016 Oct-Dec	6,070 genes shipped
2017 Oct-Dec	14,928 genes shipped
2018 Oct-Dec	23,748 genes shipped

A Unique Way to Order your DNA Online …



E-Commerce is Enabling Capture of Long Tail

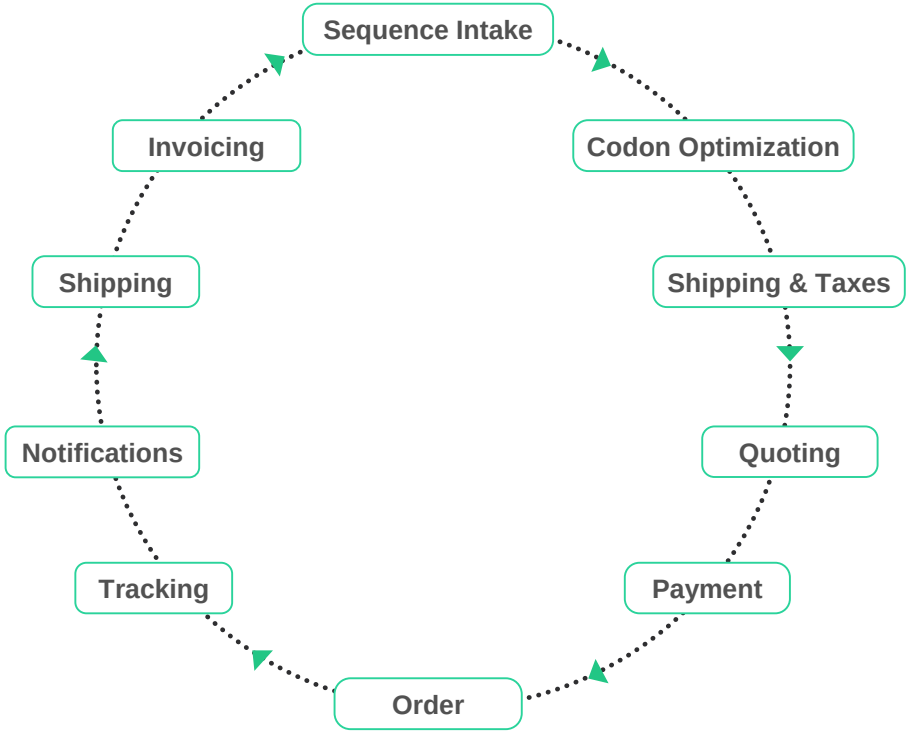
E-COMMERCE IMPACT

Q1-18 VS. Q1-19*

45% lower PO size as we reach long tail

3.5x more orders

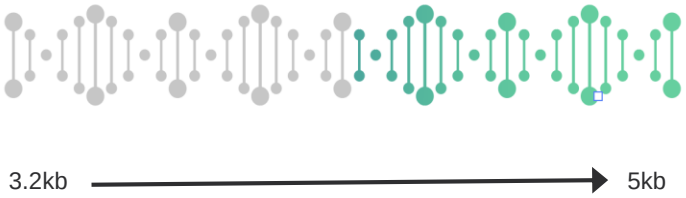
*unaudited, ex-Ginkgo, synbio



Now Available:

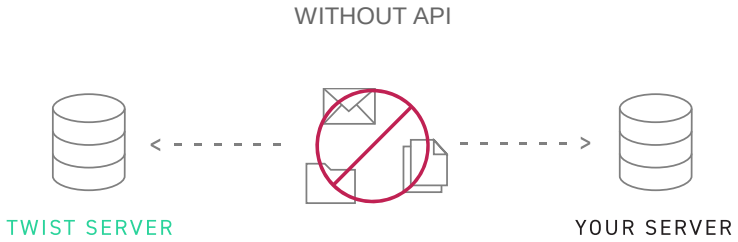
5kb Genes
at disruptive price

- Increase serviceable market
- Enable maker to buyer conversion



API

- Seamless integration
- Increase service stickiness



Robert Carnahan

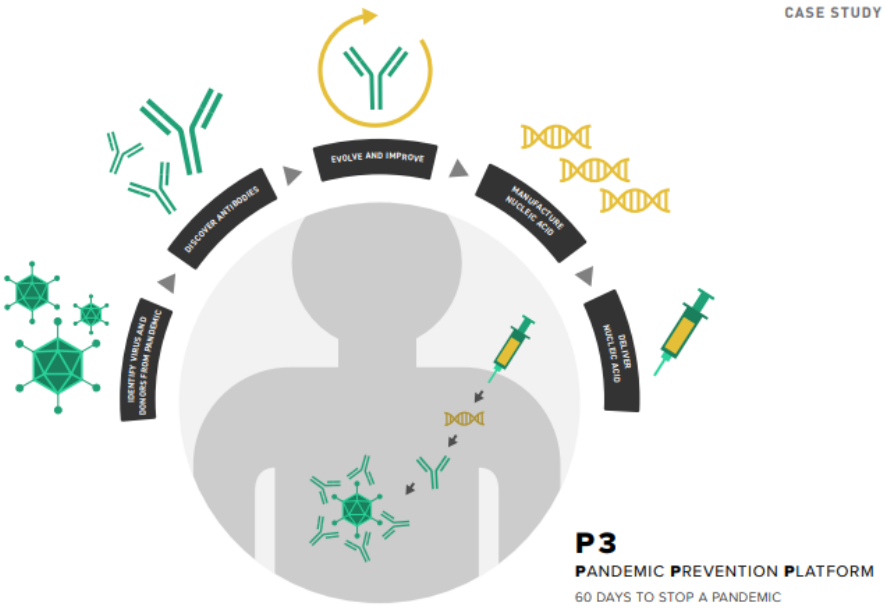
ASSOCIATE PROFESSOR OF PEDIATRICS, VACCINE CENTER AT VUMC

VANDERBILT UNIVERSITY MEDICAL CENTER

"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."

Tasked with an ambitious goal from DARPA to develop a rapid response to help medical workers fight viral diseases in the field, Vanderbilt University Medical Center has already reduced the time to develop antibodies significantly. High-throughput, synthetic genes from Twist Bioscience have allowed the lab to expedite this process.

- Scale to high quantities with Twist's gene synthesis platform
- Affordable synthetic DNA
- High-throughput platform allowed VUMC to accelerate the antibody identification process
- Twist delivered hundreds of genes in **9 business days** for first DARPA sprint

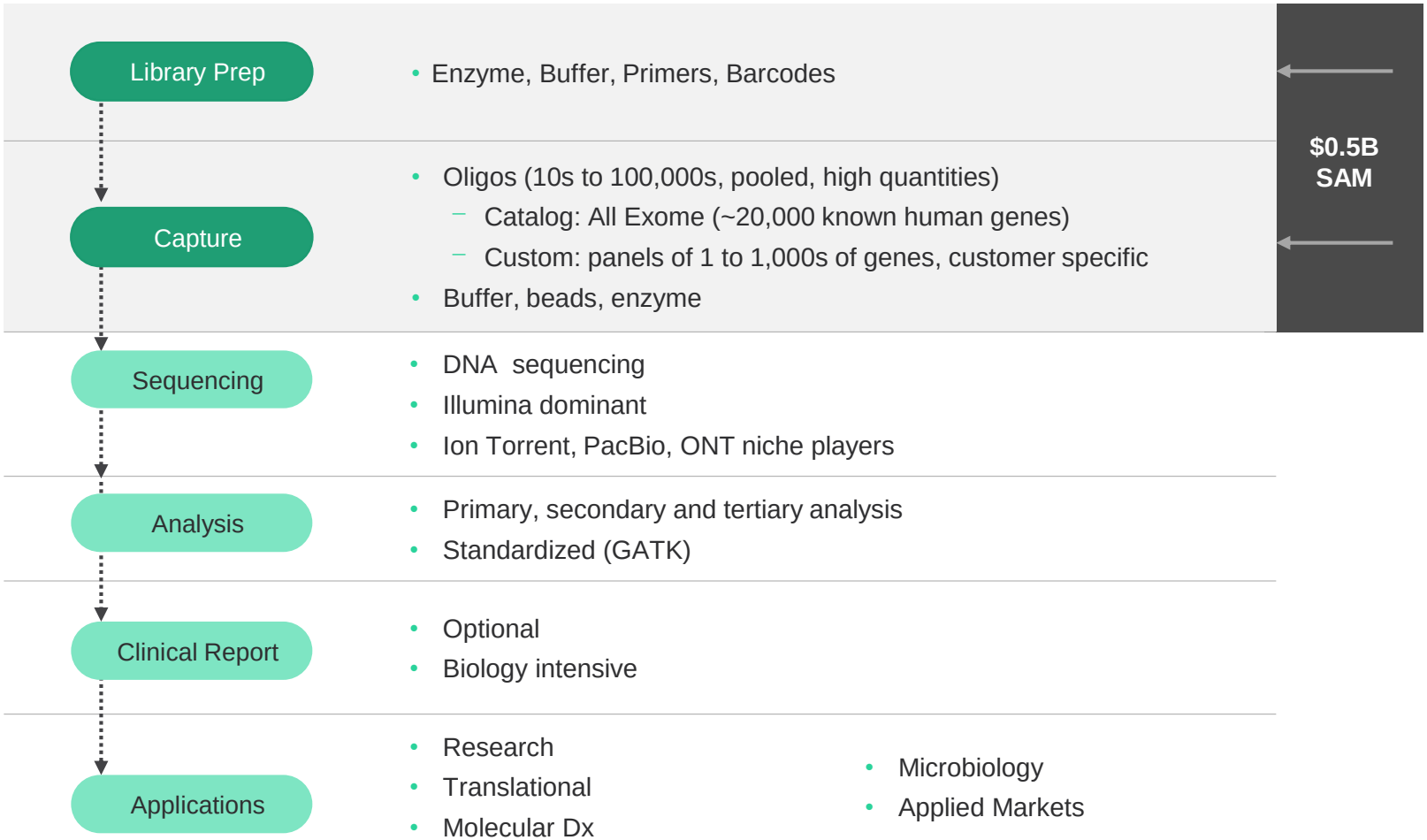


Disease Diagnostics

Targeted NGS is enabling reading of patient's and/or pathogen's DNA to inform precision or personalized medical treatment

- Reduced sequencing cost per sample
- Faster time to results
- Increased sensitivity / complete coverage of difficult regions

Targeted NGS value chain



Launched at AGBT

New NGS Products

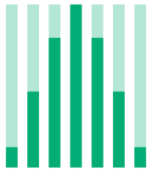
(available to Early Access customers), providing dramatic time savings and lowering sequencing costs

- Twist Fast Hybridization and Wash Kit
- Twist Universal Blockers (to allow flexible blocking and improved on-target capture)
- Twist Universal Adapter System (to maximize performance for library preparation)
- Twist Mechanical Fragmentation Library Prep Kit (to amplify highly-degraded samples)

NGS Customer Presentations

Demonstrating the power of using the Twist NGS Target Enrichment Solutions to identify neurological and inherited diseases, quickly scale consumer DNA testing, and the development of liquid (blood) biopsies.

Targeted NGS – Strong Value Proposition



PERFORMANCE / COST

- High Uniformity
- Low Sequencing Costs

CUSTOMIZATION

- 2-3 Weeks Design to Production
- On Custom and Exome Panels

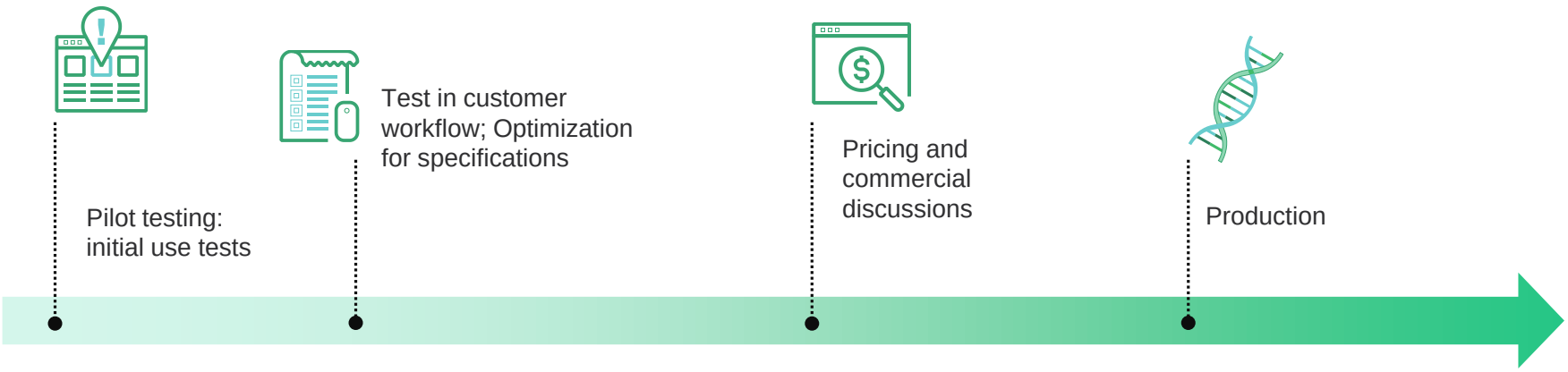
FULL KIT

- All Consumables From One Provider

QUALITY MANAGEMENT SYSTEMS

- ISO 13485:2016 Design/manufacture of NGS target enrichment panels for medical device applications
- ISO 9001:2015 Design/manufacture of NGS target enrichment panels

NGS Conversion – Pilot to Production Pipeline



- Pilot to production cycle typically requires 9 to 18 months
- First Twist customers moved to production Q4 2018
- Capturing more orders and increasing average order size as customer scale-up:

Shipped to over 100 customers in Q1-FY19*	**Out of 74 major potential customers: 17 have adopted Twist in their production**

*unaudited

Renata Pellegrino, PhD
TECHNICAL DIRECTOR AT PHILADELPHIA RESEARCH CENTER

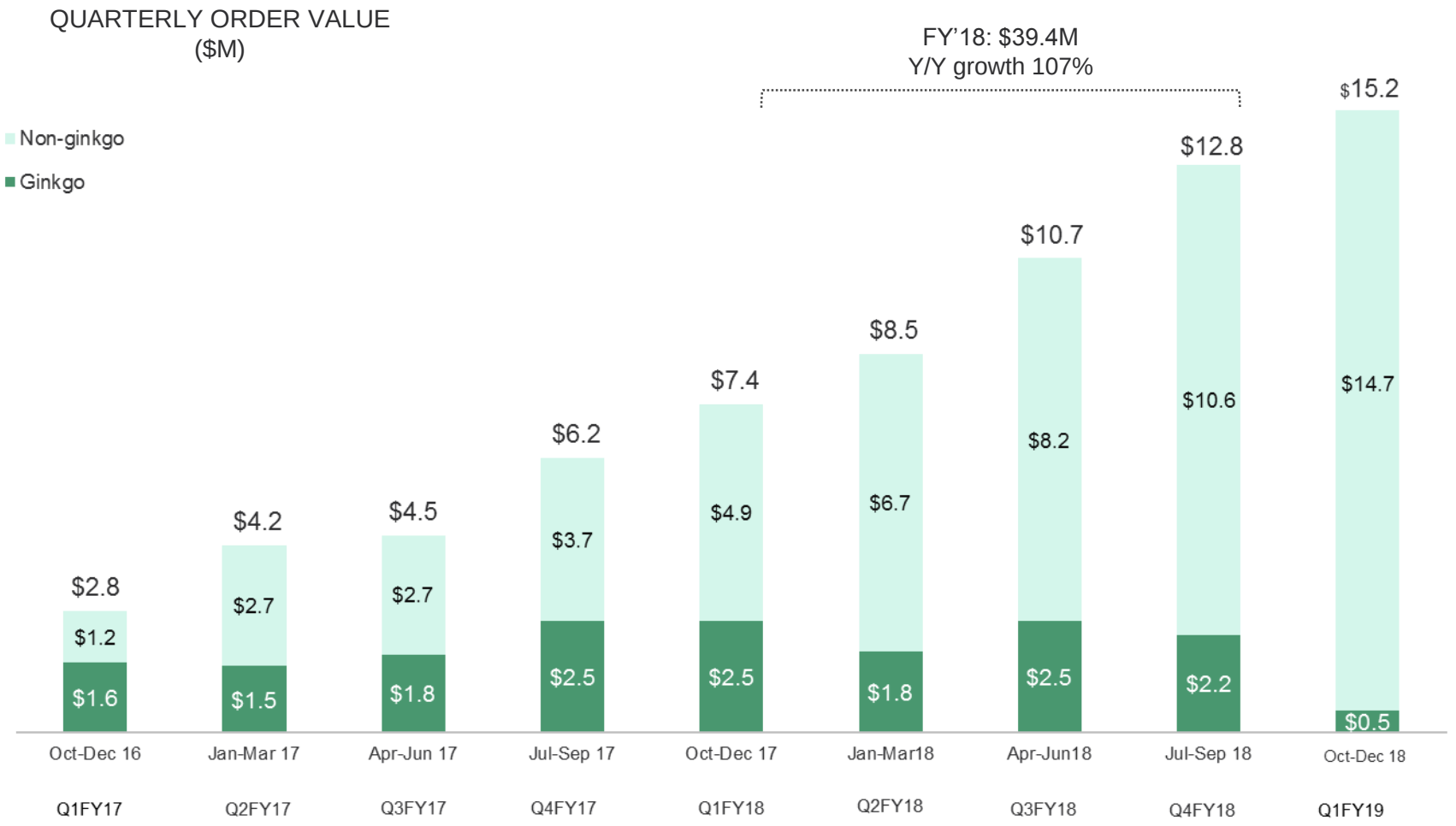
“We do the majority of our research in whole exomes, but at the end of the day the technology is still based on short reads in sequencing and panels are still very powerful and focused.”

Because the dry blood samples used in the lab are often very poor in quality, this current work presents significant challenges to genetic identification. In order to combat these challenges, the Center asked Twist Bioscience to provide custom target enrichment panels rather than seeking to sequence a whole genome or whole exomes, as target enrichment procedures isolate specific genomic regions of interest before next-generation sequencing.

- Twist Custom Panels allowed the team to focus on important, medically relevant genes instead of working with a whole genome
- Concise panel with a simple protocol
- Reasonable cost
- Very good candidate variants already curated by the literature

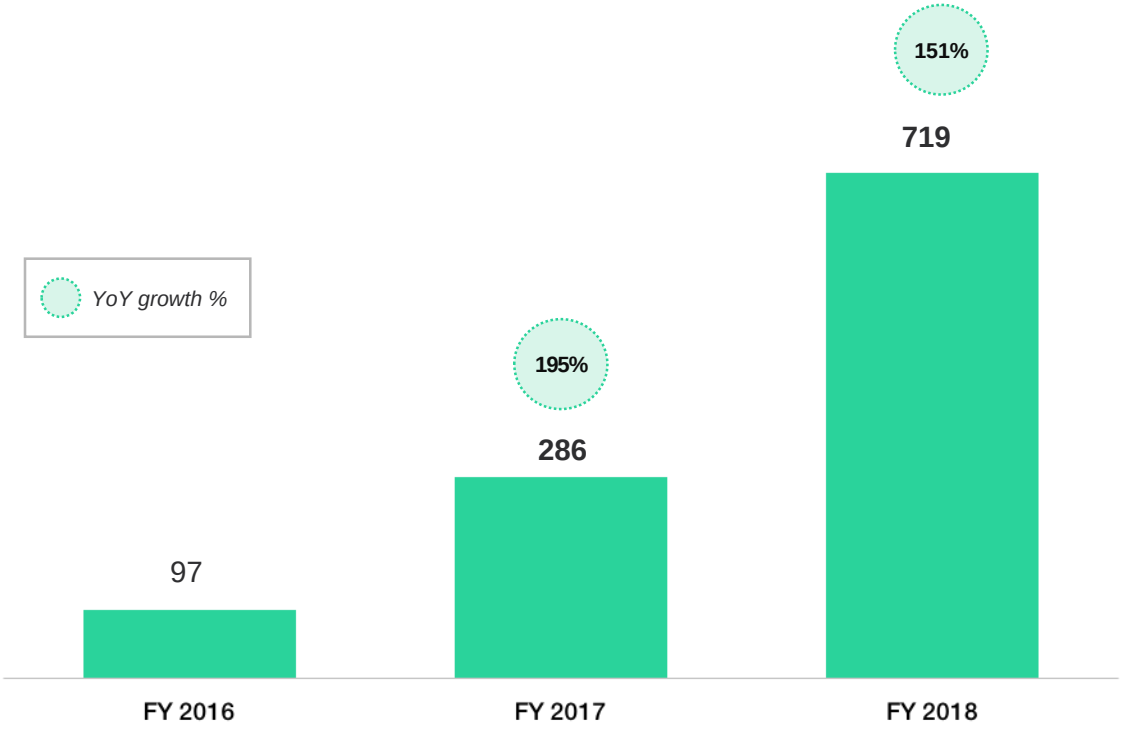
Genetic tests for epilepsy in children from remote reaches of South America conducted by the Center for Applied Genomics at the Children’s Hospital of Philadelphia lead to faster, effective treatment.

Strong Orders Growth



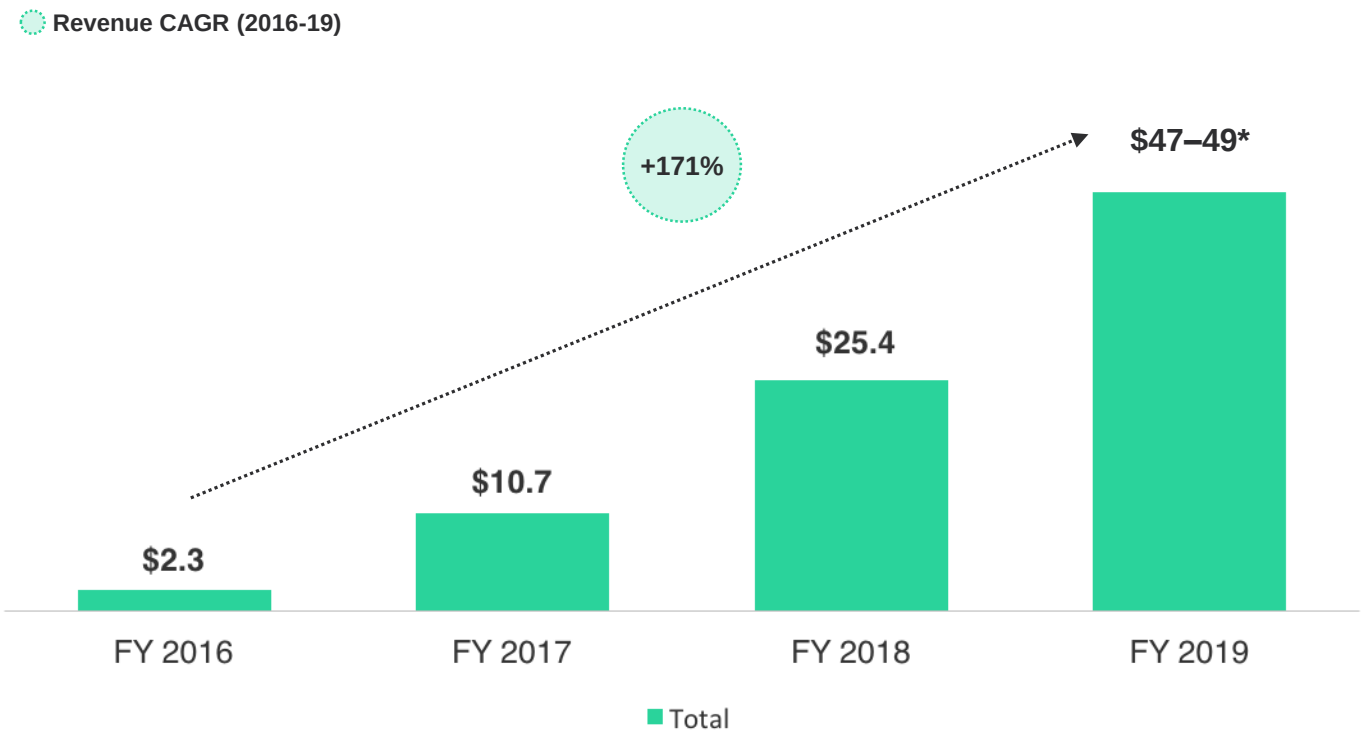
Customer Growth

CUSTOMER COUNT



Revenue Growth FY16-19

FULL-YEAR REVENUE ($M)



*Twist FY19 Revenue Guidance: $47M-$49M

Other Growth Verticals

TWIST'S PLATFROM EXTENDS TO

$1.3B
SYNTHETIC BIOLOGY

- Competitive Turnaround Time
- Lower Cost
- High Throughput
- High Quality

$0.5B
GENOMICS: TARGETED NGS

- Fast Customization
- Performance
- Full Kit
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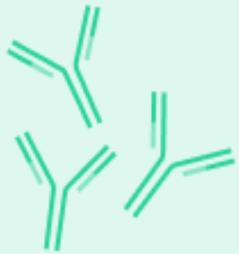
SHORT TERM GOAL
Grow Revenue

Source: BCC Report (2017), Markets and Markets (2014) DeciBio (2015)



LARGE MARKET
DRUG DISCOVERY/ DEVELOPMENT

- High Quality Diversity Hits / Leads
- Shorter Time and Cost from Target to IND

MID TERM GOAL
Develop novel therapeutics

$35B+
DATA STORAGE

- Permanence
- Density
- Ease of Copying
- Universal Format

LONG TERM GOAL
Enter technology market

Source: LDC Market Analysis, LTO Program Technology Provider Companies

Novel Protein Libraries for Drug Discovery
To Enable Efficiency in Drug Discovery

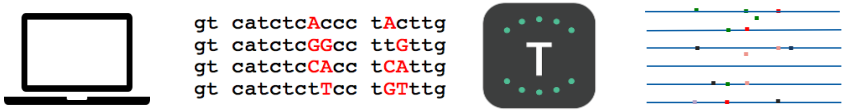
From Needle in a Haystack

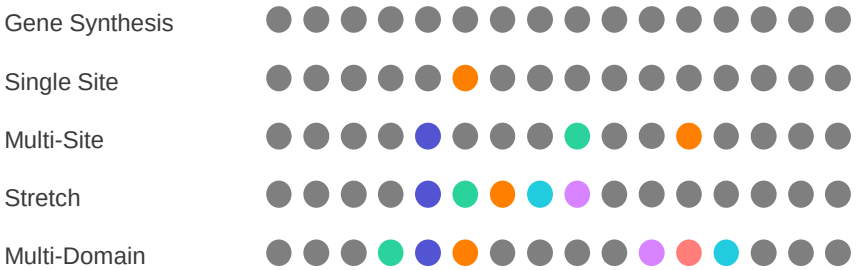
- Random diversity
- Biased representation
- >99% inefficiency
- Lengthy optimization cycle
- Expensive process

To Stack of Needles

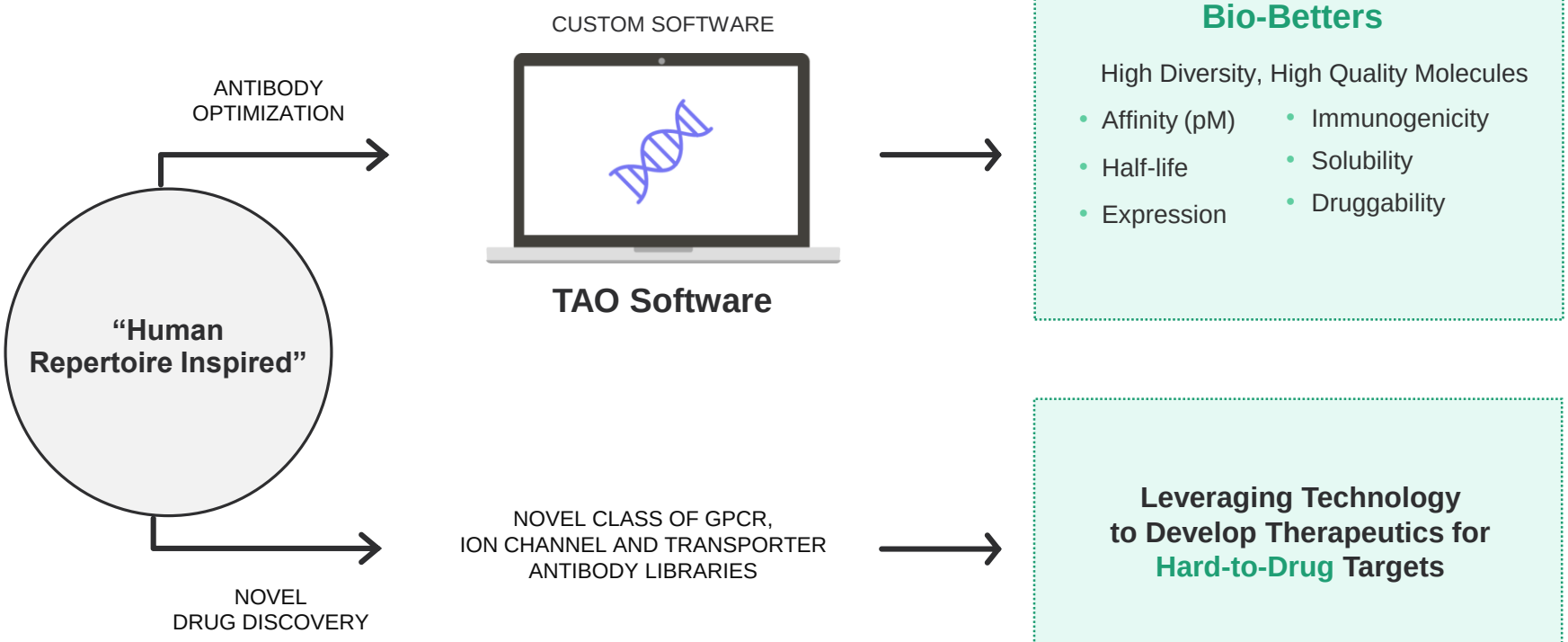
- Explicit
- Even representation
- Human repertoire based
- Fast
- Affordable

Precise Introduction of Variants, Diversity that Enables Screening Efficiency



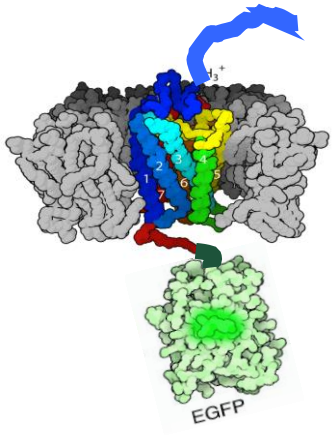


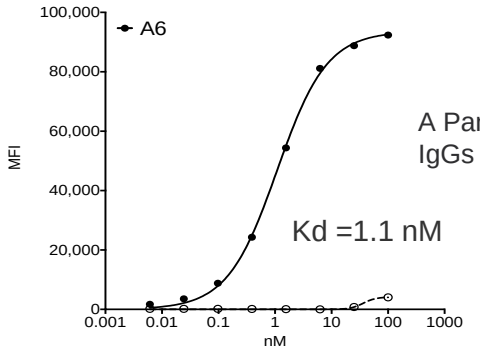
Expanding Drug Discovery Capabilities Enables Tackling Bio-Betters and Hard-to-Drug Targets



Twist Biopharma Proof-of-Concept: GPCR Library and Bio-Better

GPCR: Target 1

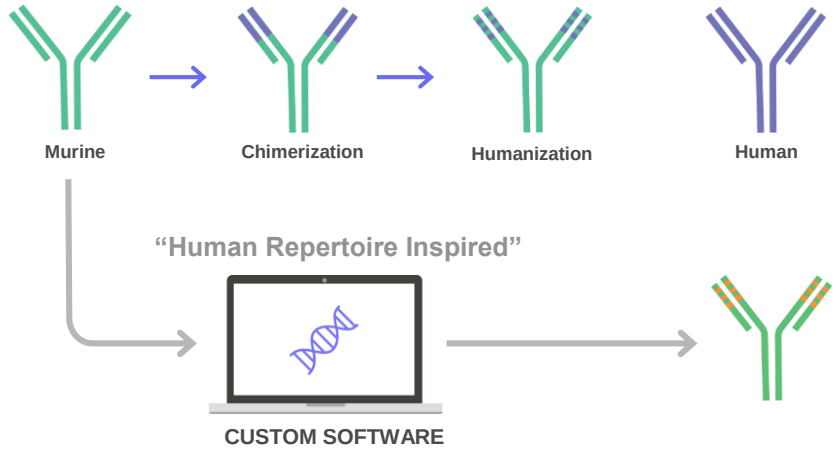




A Panel of Cell Target (+) IgGs Identified

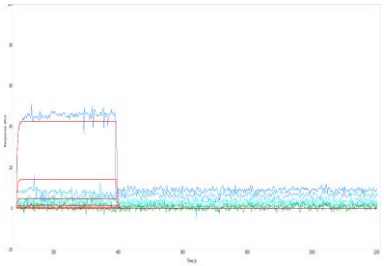
Of These Cell Binding IgGs, several are Antagonists

Bio-Better: PDL1 inhibitor

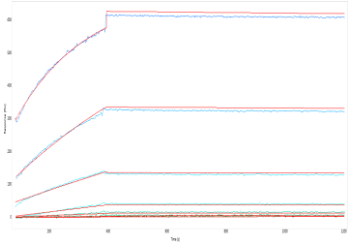


1000× fold
AFFINITY INCREASE

Parental Antibody (>500 nM)



Optimized Antibody (570 pM)



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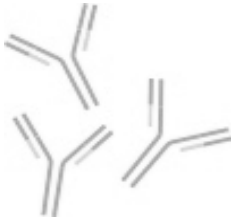

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LONG TERM GOAL
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Source: LDC Market Analysis, LTO Program Technology Provider Companies

DNA: Nature's Choice for Data Storage

**MAN-MADE,
NOT PERMANENT**

STABLE FOR 1000s of YEARS

**20,000
Years ago**

Sequencing the nuclear genome of the extinct woolly mammoth

Webb Miller[1], Daniela I. Drautz[1], Aakrosh Ratan[1], Barbara Pusey[1], Ji Qi[1], Arthur M. Lesk[1], Lynn P. Tomsho[1], Michael D. Packard[1], Fangqing Zhao[1], Andrei Sher[2‡], Alexei Tikhonov[3], Brian Raney[4], Nick Patterson[5], Kerstin Lindblad-Toh[5], Eric S. Lander[5], James R. Knight[6], Gerard P. Irzyk[6], Karin M. Fredrikson[7], Timothy T. Harkins[7], Sharon Sheridan[7], Tom Pringle[8] & Stephan C. Schuster[1]

**40,000
Years ago**

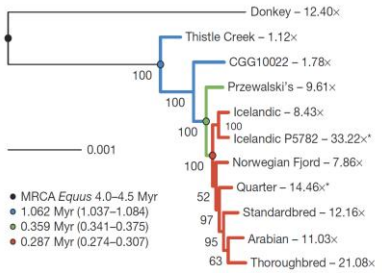
A Draft Sequence of the Neandertal Genome

Richard E. Green,[1*†‡] Johannes Krause,[1†§] Adrian W. Briggs,[1†§] Tomislav Maricic,[1†§] Udo Stenzel,[1†§] Martin Kircher,[1†§] Nick Patterson,[2†§] Heng Li,[2†] Weiwei Zhai,[3‖] Markus Hsi-Yang Fritz,[4†] Nancy F. Hansen,[5†] Eric Y. Durand,[3†] Anna-Sapfo Malaspinas,[3†] Jeffrey D. Jensen,[6†] Tomas Marques-Bonet,[7,13†] Can Alkan,[7†] Kay Prüfer,[1†] Matthias Meyer,[1†] Hernán A. Burbano,[1†] Jeffrey M. Good,[1,8†] Rigo Schultz,[1] Ayinuer Aximu-Petri,[1] Anne Butthof,[1] Barbara Höber,[1] Barbara Höffner,[1] Madlen Siegemund,[1] Antje Weihmann,[1] Chad Nusbaum,[2] Eric S. Lander,[2] Carsten Russ,[2] Nathaniel Novod,[2] Jason Affourtit,[9] Michael Egholm,[9] Christine Verna,[21] Pavao Rudan,[10] Dejana Brajkovic,[11] Željko Kucan,[10] Ivan Gušic,[10] Vladimir B. Doronichev,[12] Liubov V. Golovanova,[12] Carles Lalueza-Fox,[13] Marco de la Rasilla,[14] Javier Fortea,[14¶] Antonio Rosas,[15] Ralf W. Schmitz,[16,17] Philip L. F. Johnson,[18†] Evan E. Eichler,[7†] Daniel Falush,[19†] Ewan Birney,[4†] James C. Mullikin,[5†] Montgomery Slatkin,[3†] Rasmus Nielsen,[3†] Janet Kelso,[1†] Michael Lachmann,[1†] David Reich,[2,20*†] Svante Pääbo[1*†]

**560,000 - 780,000
Years ago**

Recalibrating *Equus* evolution using the genome sequence of an early Middle Pleistocene horse

Ludovic Orlando[1*], Aurélien Ginolhac[1*], Guojie Zhang[2*], Duane Froese[3], Anc
Enrico Cappellini[1], Bent Petersen[4], Ida Moltke[4,5], Philip L. F. Johnson[6], Matt
Thorfinn Korneliussen[1], Anna-Sapfo Malaspinas[1], Josef Vogt[6], Damian Szkla
Andrei Dobocan[12], Jesper Stenderup[1], Amhed M. V. Velazquez[1], James Cahill
Grant D. Zazula[13], Andaine Seguin-Orlando[1,14], Cecilie Mortensen[1,14], Kim
Jacobo Weinstock[16], Kristian Gregersen[2,15], Knut H. Røed[16], Véra Eisenmann
Douglas F. Antczak[18], Mads F. Bertelsen[22], Soren Brunak[4,23], Khaled A. S. A
John Mundy[20], Anders Krogh[1,4], M. Thomas P. Gilbert[1], Kurt Kjær[3], Thomas
Jesper V. Olsen[16], Michael Hofreiter[21], Rasmus Nielsen[24], Beth Shapiro[5], Jun



Data Storage in DNA

1 Coding

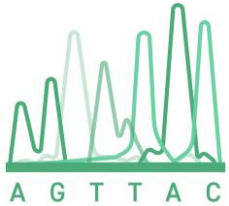
00 → A
01 → G
10 → C
11 → T

2 Synthesis

3 Storage

4 Retrieval

5 Sequencing



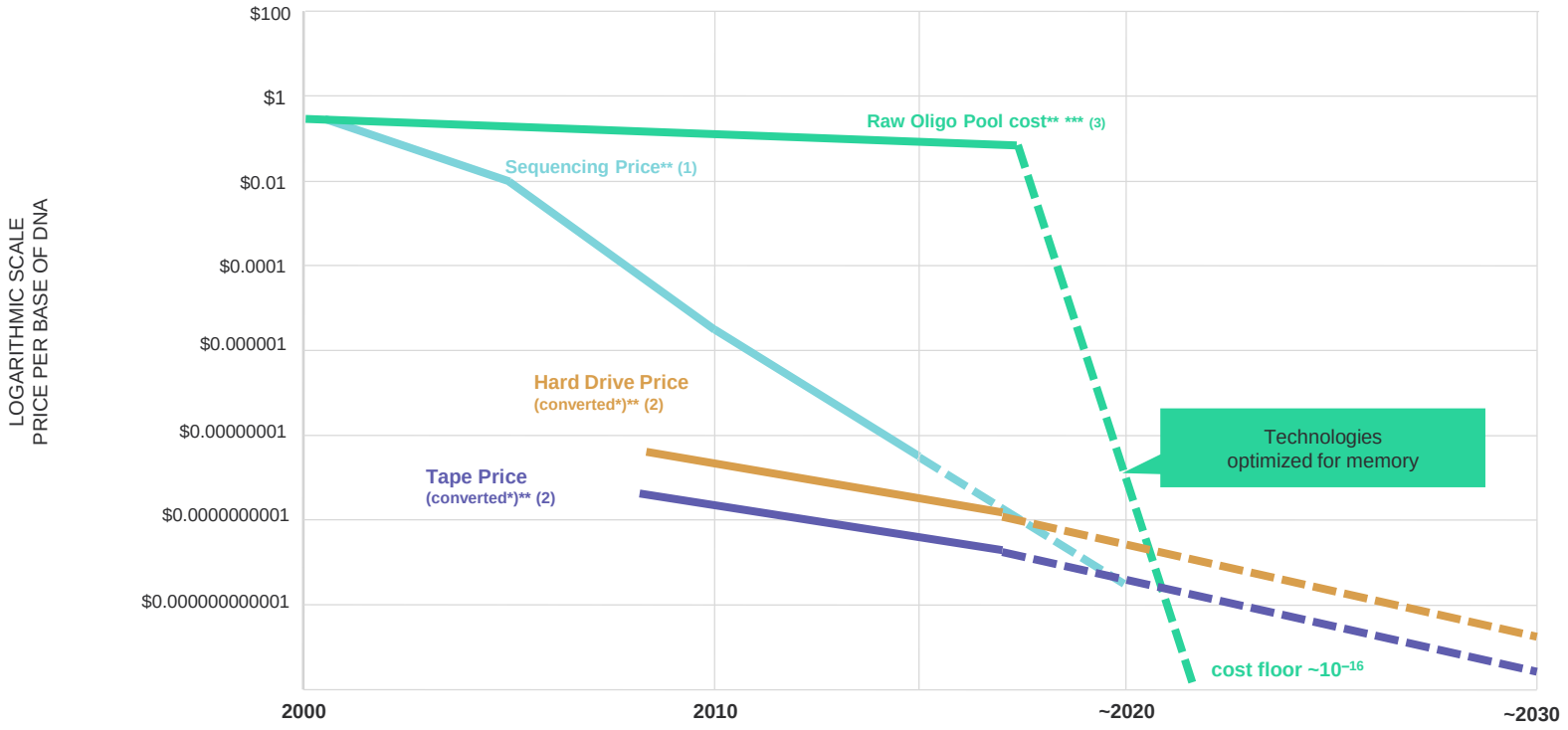
6 Decoding

A → 00
G → 01
C → 10
T → 11

Permanence • Density • Random Access • Universal format

DNA Data Storage Trends and Projections

We believe new DNA technologies and cost efficiencies could surpass mature IT hardware solutions in 3–5 years



* DNA bases per byte for hard drive and tape shown at typical published encoding ranges from about 5:1 to 6.25:1

** All dotted lines represent extrapolations and assumes continued trajectory of historical trends, and that there will be continued decrease in price as technology improves.

*** Raw oligo pool cost extrapolation based on DARPA and another anticipated government-sponsored grant project objectives, both at specified time points

(1) www.genome. Gov (2) Bob Fontana, IBM Systems, Storage Media Overview, May 4,2016 (3) Bioeconomy Capital, Rob Carlson, January 20, 2018, www.synthesis.cc

Experienced Management Team

Emily LeProust, PhD
President, CEO, Co-founder

Agilent Technologies

Bill Banyai, PhD
COO, Co-founder

Complete genomics

Bill Peck, PhD
CTO, Co-founder

Complete genomics

Jim Thorburn
CFO

Televerde

Aaron Sato
CSO, Twist Pharma

LakePharma
The Biologics Company

Ray Tabibiazar
SVP Corporate Development

aravive BIOLOGICS

Patrick Finn, PhD
VP Sales and Marketing

enzymatics

Patrick Weiss
VP Operations

operon molecules for life

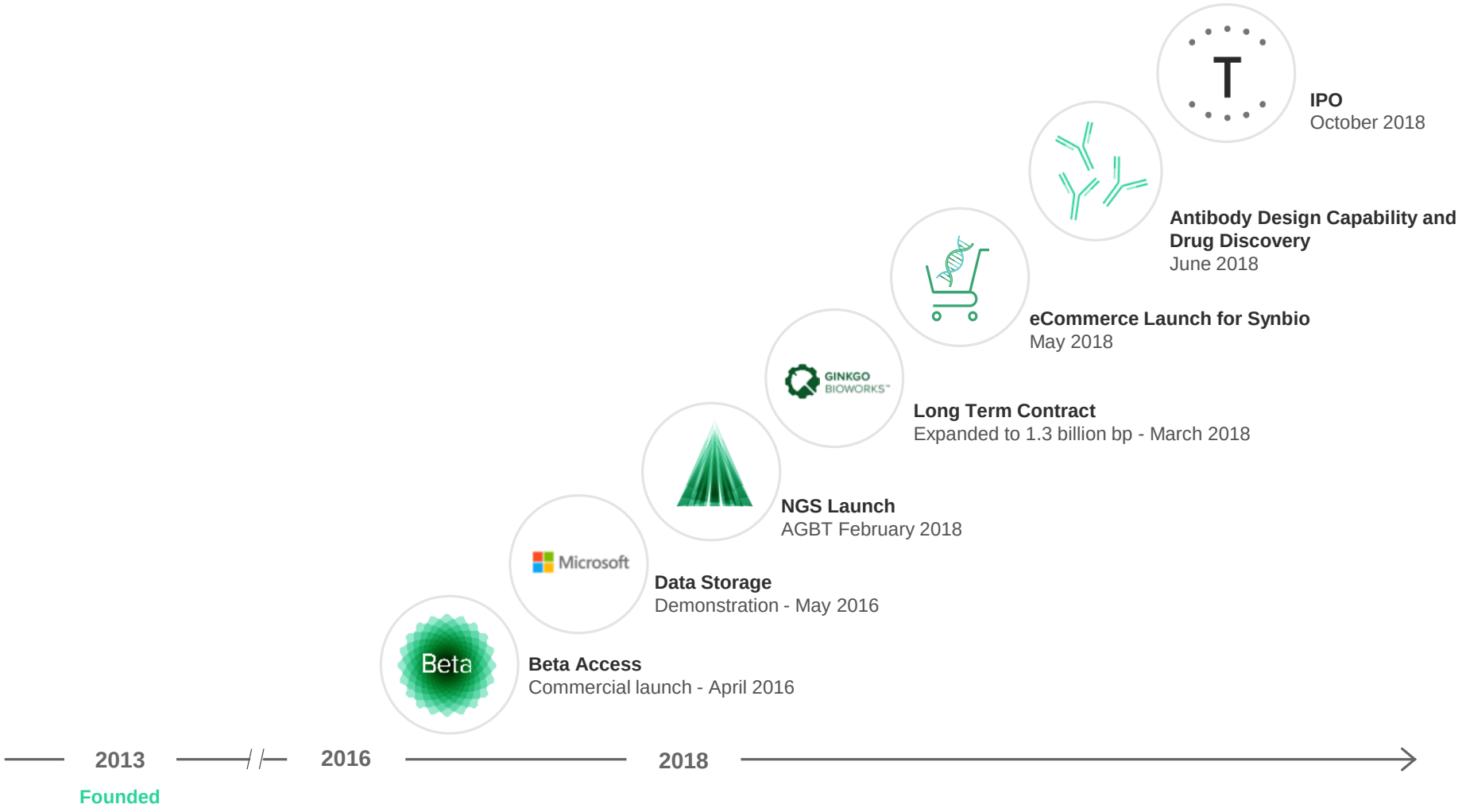
Paula Green
VP Human Resources

QIAGEN

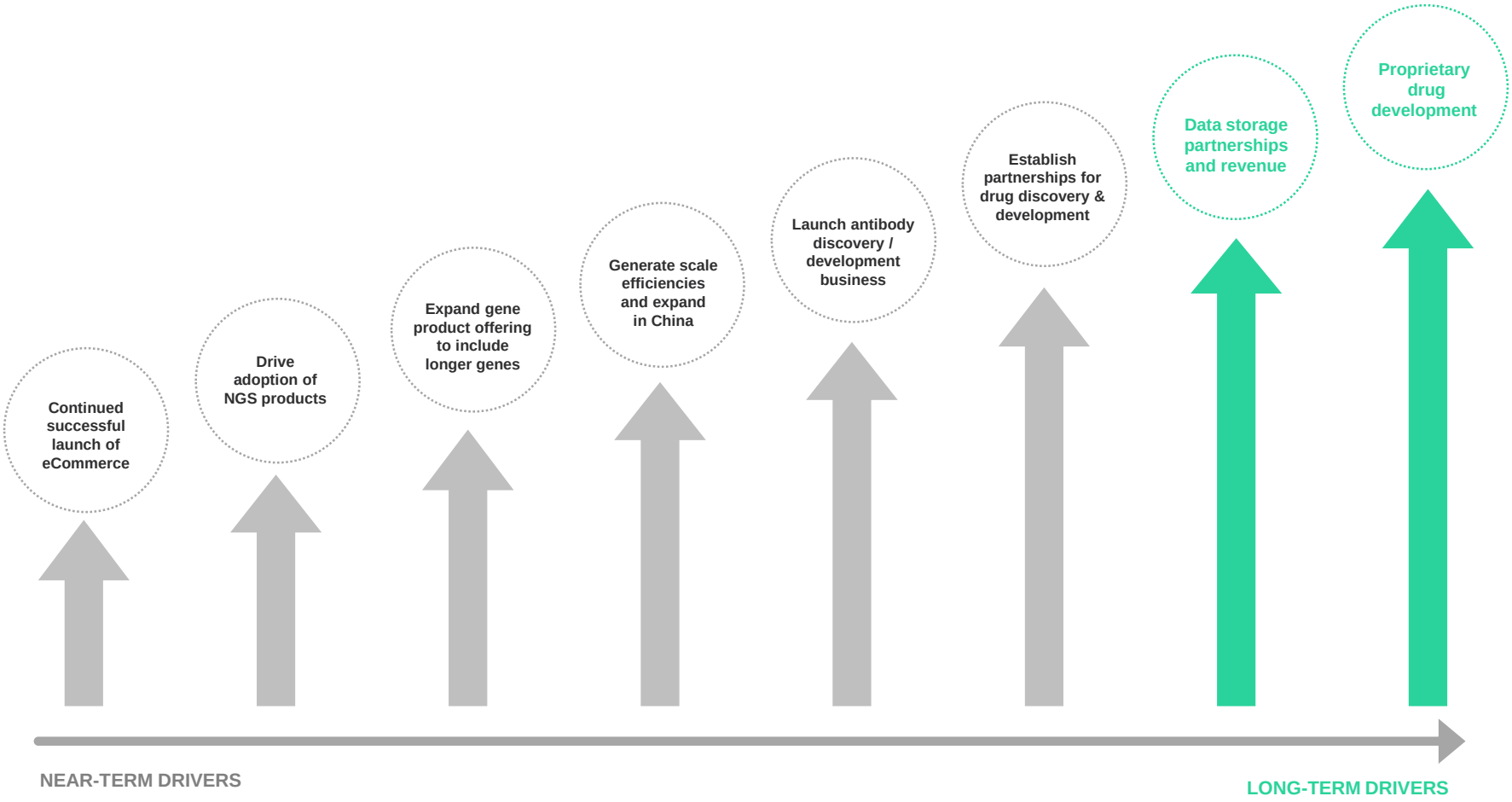
Mark Daniels
Chief Legal Officer, Chief Ethics and Compliance Officer, Secretary

BROADCOM

Strong Momentum and Milestones Achieved



Significant opportunities to drive further growth



Why Twist?

Breakthrough Technology
1st DNA Writing on Silicon Platform

Broad Application
Multiple Product Categories and End Markets

Large Growing Markets
Synthesis DNA, NGS TE, Drug Discovery and Data Storage

High Revenue Growth
2017-2018 revenue growth from $10.8M to $25.4M

Unique Platform & Value Proposition
Focus on Speed, Affordability, and High Quality

Attractive Dynamics
No FDA Approvals or Reimbursements

Experienced Team
with Strong Backing

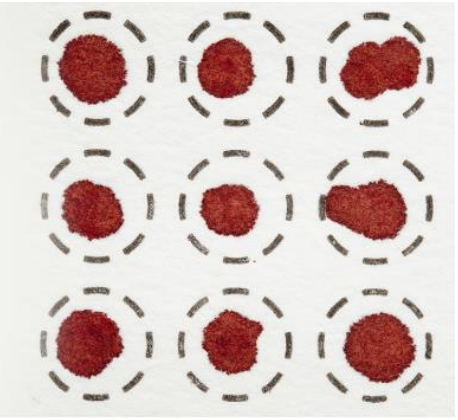
TWIST BIOSCIENCE

We do the majority of our research in whole exomes, but at the end of the day the technology is still based on short reads in sequencing and panels are still very powerful and focused.

Renata Pellegrino, PhD

TECHNICAL DIRECTOR AT PHILADELPHIA RESEARCH CENTER

Genetic tests for epilepsy in children from remote reaches of South America conducted by the Center for Applied Genomics at the Children's Hospital of Philadelphia lead to faster, effective treatment.



Because the dry blood samples used in the lab are often very poor in quality, this current work presents significant challenges to genetic identification. In order to combat these challenges, the Center asked Twist Bioscience to provide custom target enrichment panels rather than seeking to sequence a whole genome or whole exomes, as target enrichment procedures isolate specific genomic regions of interest before next-generation sequencing.

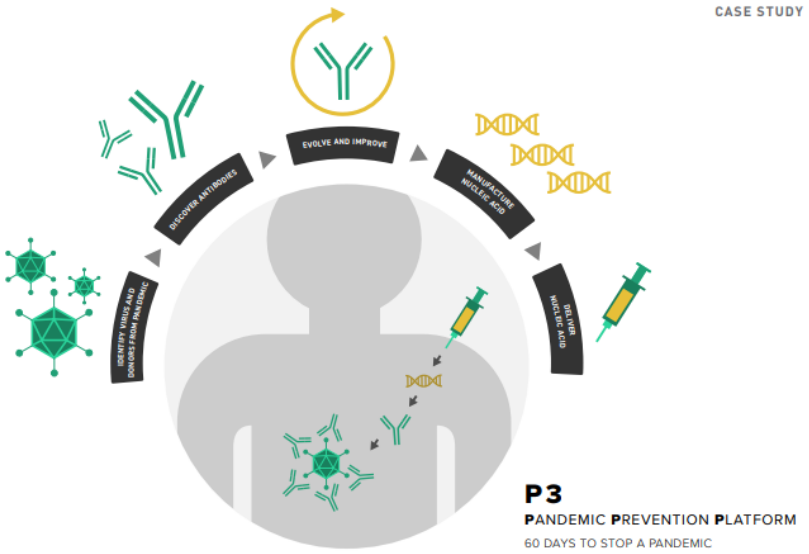
- Twist Custom Panels allowed the team to focus on important, medically relevant genes instead of working with a whole genome
- Concise panel with a simple protocol
- Reasonable cost
- Very good candidate variants already curated by the literature

VANDERBILT UNIVERSITY MEDICAL CENTER

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

ASSOCIATE PROFESSOR OF PEDIATRICS, VACCINE CENTER AT VUMC



Tasked with an ambitious goal from DARPA to develop a rapid response to help medical workers fight viral diseases in the field, Vanderbilt University Medical Center has already reduced the time to develop antibodies significantly. High-throughput, synthetic genes from Twist Bioscience have allowed the lab to expedite this process.

- Scale to high quantities with Twist's gene synthesis platform
- Affordable synthetic DNA
- High-throughput platform allowed VUMC to accelerate the antibody identification process