



# AGBT 2020

**Advances in Genome Biology & Technology**

**Marco Island, Florida**

**February 24, 2020**



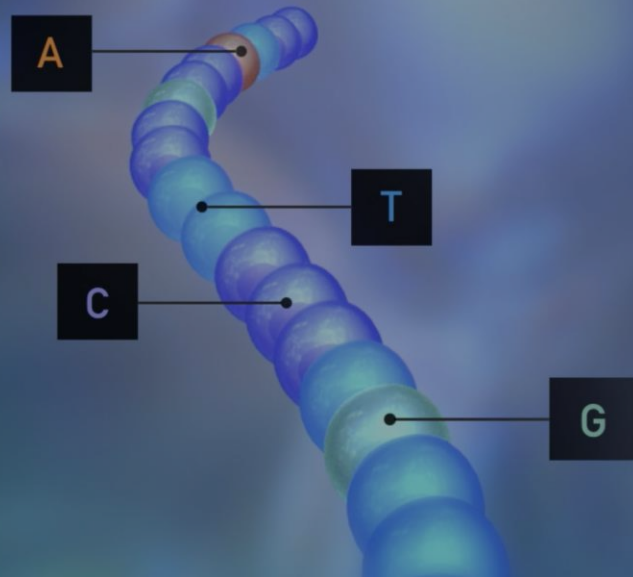
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# TWIST

BIO SCIENCE

## DNA WRITING ON SILICON

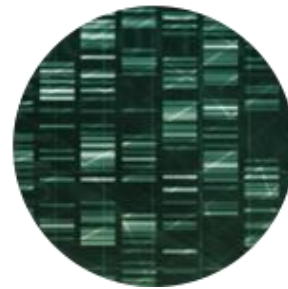
## Writing the Future

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

# Significant Growth in NGS



# 2

We launched our NGS product offering at AGBT **two years ago**.

# 39%

In Fiscal 2019, we reported \$70 million in orders, **~39%** of which came from NGS

## Fiscal 1Q 2020 Updates:



- 37 out of 91 large customers have adopted
- Shipped target enrichment products to 187 customers



Reported NGS revenue of \$7 million



Continued strong order growth

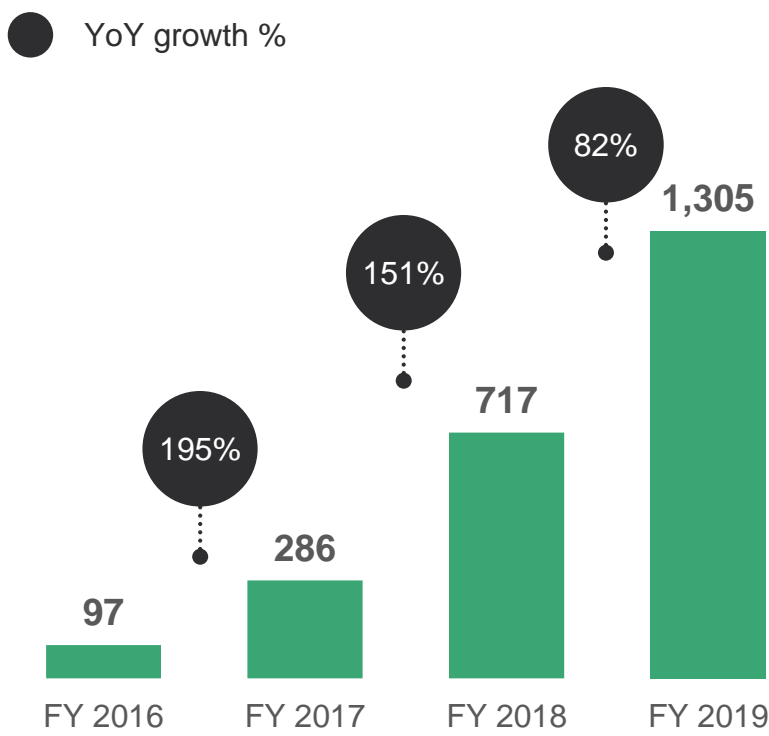


Continued to pursue large volume customers in liquid biopsy, cancer diagnostics, and rare disease

# NGS' Contribution to our Core Business



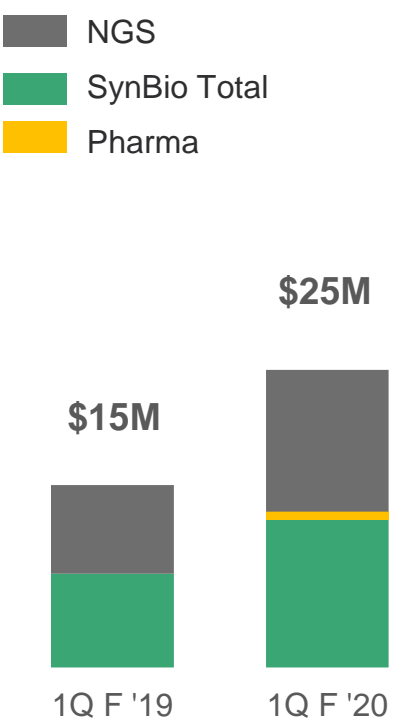
## Total Customers (SynBio & NGS)



## Orders



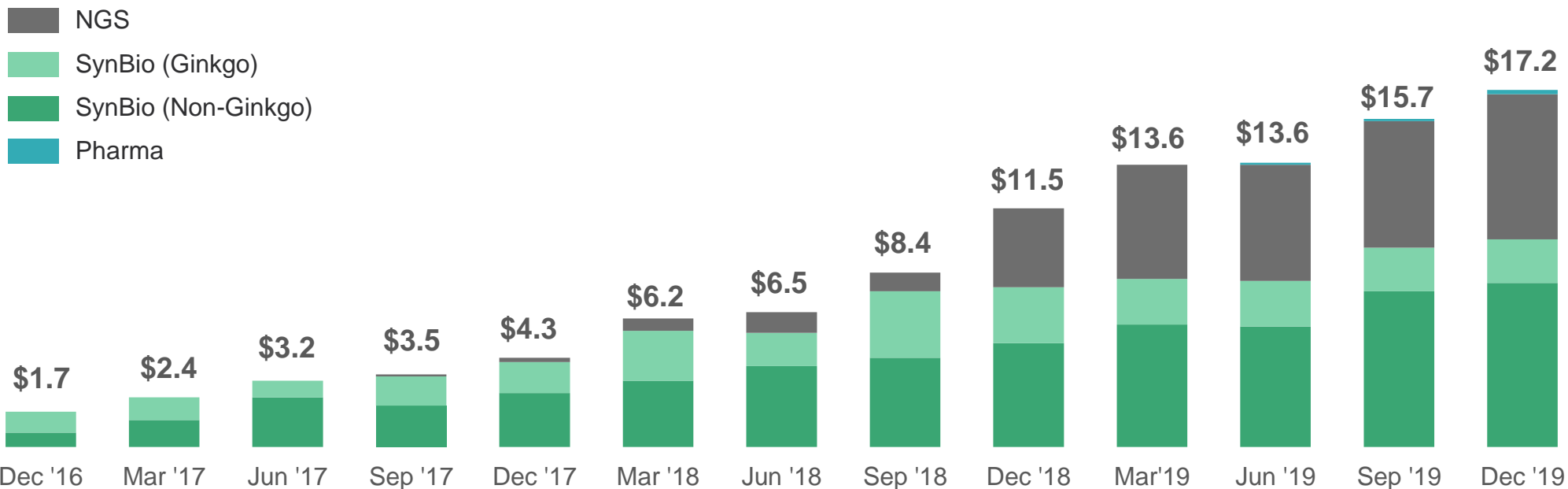
## Orders



# Quarterly Revenue Growth



## Revenue (\$M)



	FY 2017					FY 2018				FY 2019			1Q20
QoQ Growth	--	41%	33%	9%	23%	44%	5%	29%	37%	18%	0%	15%	10%
YoY Growth	--	--	--	--	153%	158%	103%	140%	167%	119%	109%	87%	50%



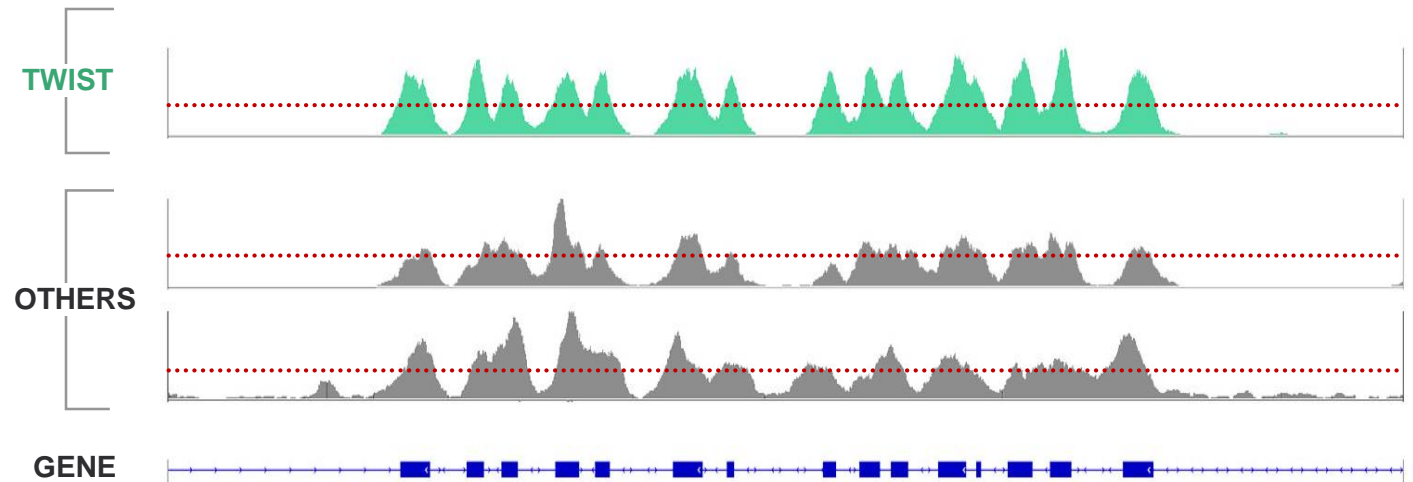
# Targeted Sequencing

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

Human Comprehensive Exome Kit

Pan-Viral

Mouse Exome

Custom Panels

Library Prep Kits

Fast Hyb & Wash Kit

Universal Adapters

## Roadmap

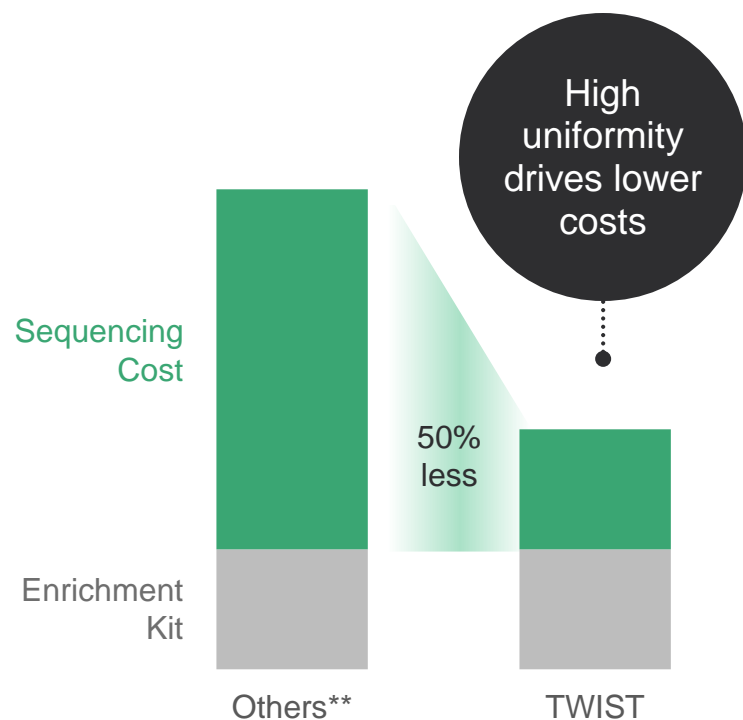
Oncology

Methylation

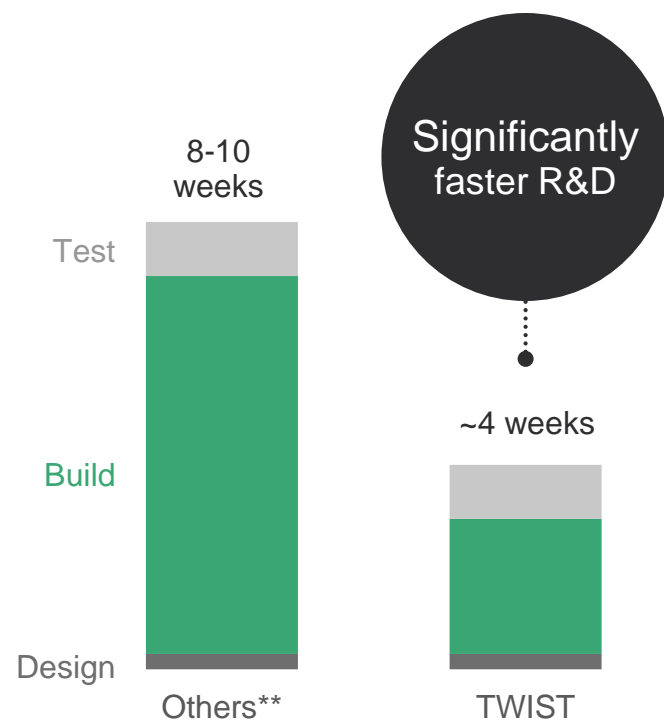
SNP Microarray  
conversion to NGS



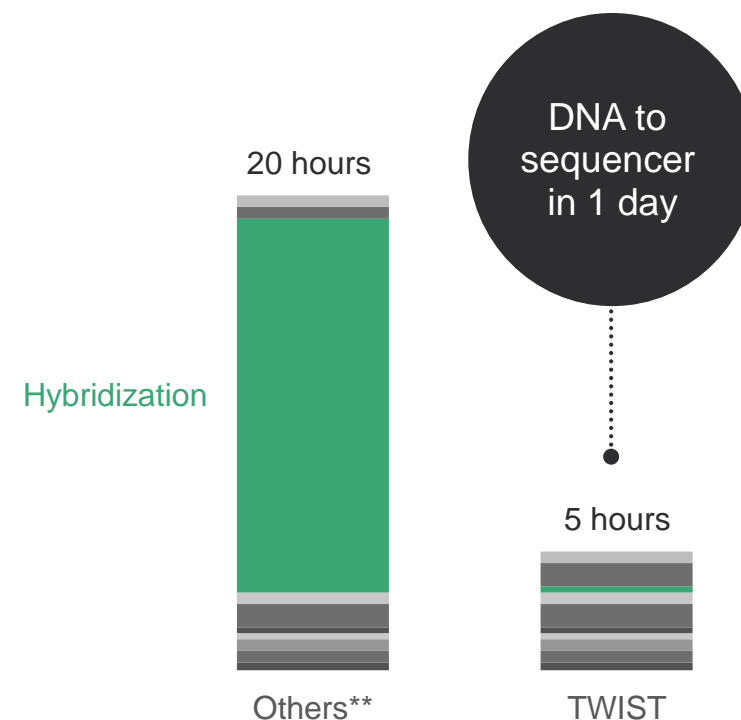
## Low Cost per Sample



## Rapid Customization



## Fast Throughput\*



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

\*\*Illustrative models based on company knowledge of competing technologies.

265

Customers shipped

36

in production

2

OEM partners

2

SNP microarray conversion

## Exciting Use Cases



Liquid biopsy



Degraded DNA



SNP

Blueprint  
Genetics



Rare disease

# What's New at AGBT?



## New NGS Products

- Twist Comprehensive Exome Panel
- Twist Methylation Solution

## Customer Presentations

Customers Highlight their Results with Twist NGS Solutions



CATHERINE FOO,  
PH.D.  
*Director of Laboratory  
Sciences at Ancestry*

“Launching an NGS assay for estimating genetic ancestry and providing health insights”



UNIVERSITY OF  
CAMBRIDGE



GAHEE PARK,  
PH.D.  
*Research Associate,  
University of Cambridge*

“Targeted Epigenome Sequencing of cell-free DNA to improve sensitivity for cancer early detection”



JESSE SALK,  
M.D., PH.D.  
*Chief Executive Officer,  
Chief Scientific Officer,  
Board Member,  
TwinStrand Biosciences*

“Ultra-sensitive residual leukemia detection with patient-specific Duplex Sequencing”



## GenapSys customers to receive Twist's best-in-class target enrichment workflows

- Provides researchers with optimized assays spanning cancer test panels to whole human exome sequencing
- GenapSys to integrate new products into workflow in Q2 2020
- Working with a single vendor provides benefit of “one-stop shopping”

Visit GenapSys in Osprey 7!



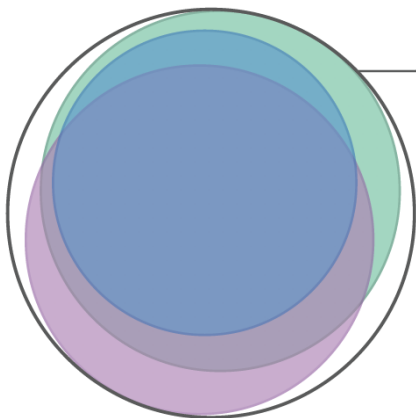
## Collaboration brings target enrichment and sample library preparation kits to Miro Canvas, a novel automation platform developed by Miroculus

- Streamlines the experimental process
- Provides more efficient solutions for a wide range of clinical applications
- Maximum flexibility and reproducibility

# NEW! Twist Comprehensive Exome



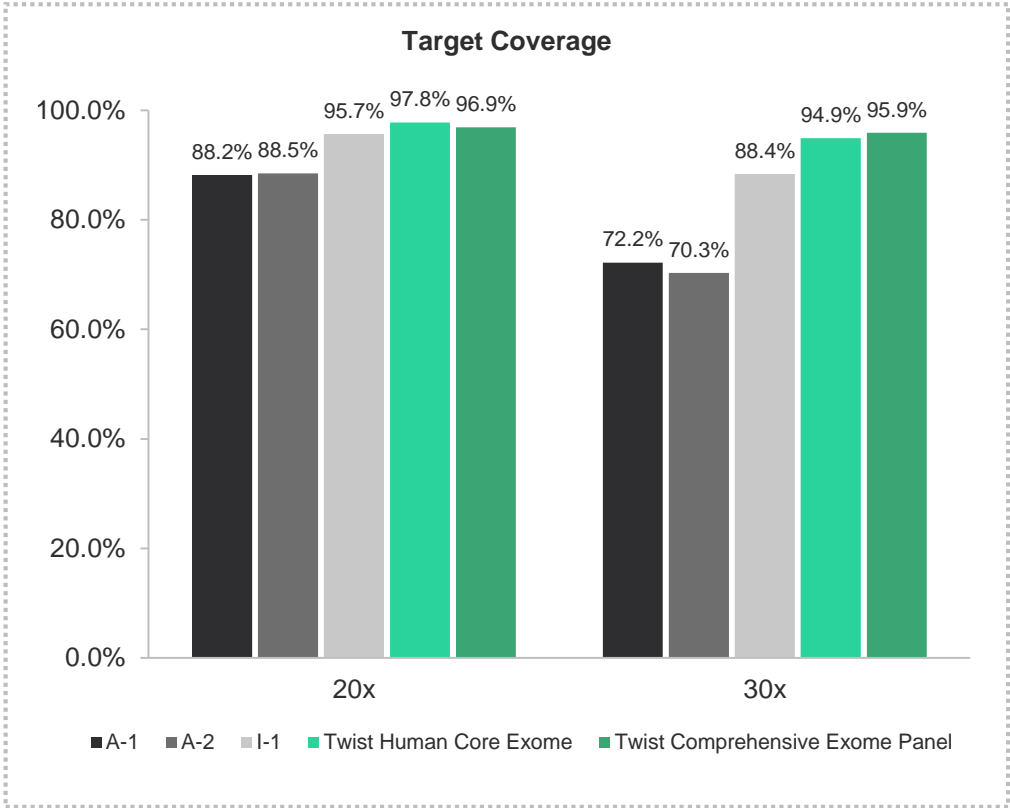
## Performance You Know and Trust with Comprehensive Coverage



- **Twist Comprehensive Exome**  
Most comprehensive content that combines targets from CCDS, RefSeq and GENCODE databases.
- **CCDS**
  - 343, 880 exons
  - 33.2 Mb
  - All included in RefSeq
  - 0.007 Mb not in GENCODE v28
- **RefSeq**
  - All cds
  - 1,362,515 exons
  - 36.0 Mb
- **GENCODE**
  - V28 basic
  - 555,401 exons
  - 34.8 Mb
  - 0.6 Mb unique relative to RefSeq

VENDOR	REFSEQ	CCDS20	GENCODE V28
A-1*	91.7 %	92.0%	90.8%
A-2*	95.4%	100%	99.2%
I-1*	98.3%	99.2%	95.9%
Twist Human Core Exome*	91.8%	99.9%	95.2%
Twist Human Comprehensive Exome*	99.2%	99.9%	99.8%

+ Human Genome Version 19 \* Human Genome Version 38



*Best-in-Class Uniformity, On-target Coverage and Lowest Duplication Rates*

# A New Era in Epigenetics: Twist Targeted Methylation Sequencing Solution

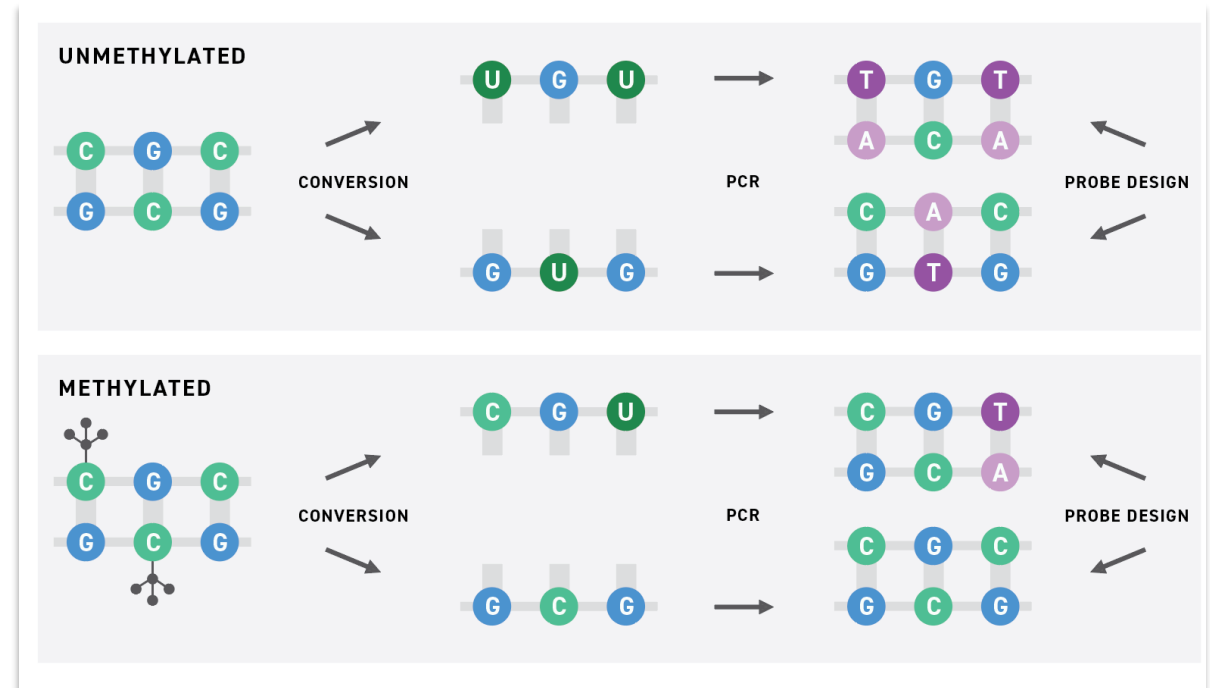


## What is Methylation Analysis?

The study of modifications to DNA molecules:

- These modifications are dynamic and can change over time.
- DNA Methylation patterns can be influenced by the environment.

**Methylation Sequencing evaluates these modifications to DNA which can serve as additional indicators of disease.**



## Why it's important to study:

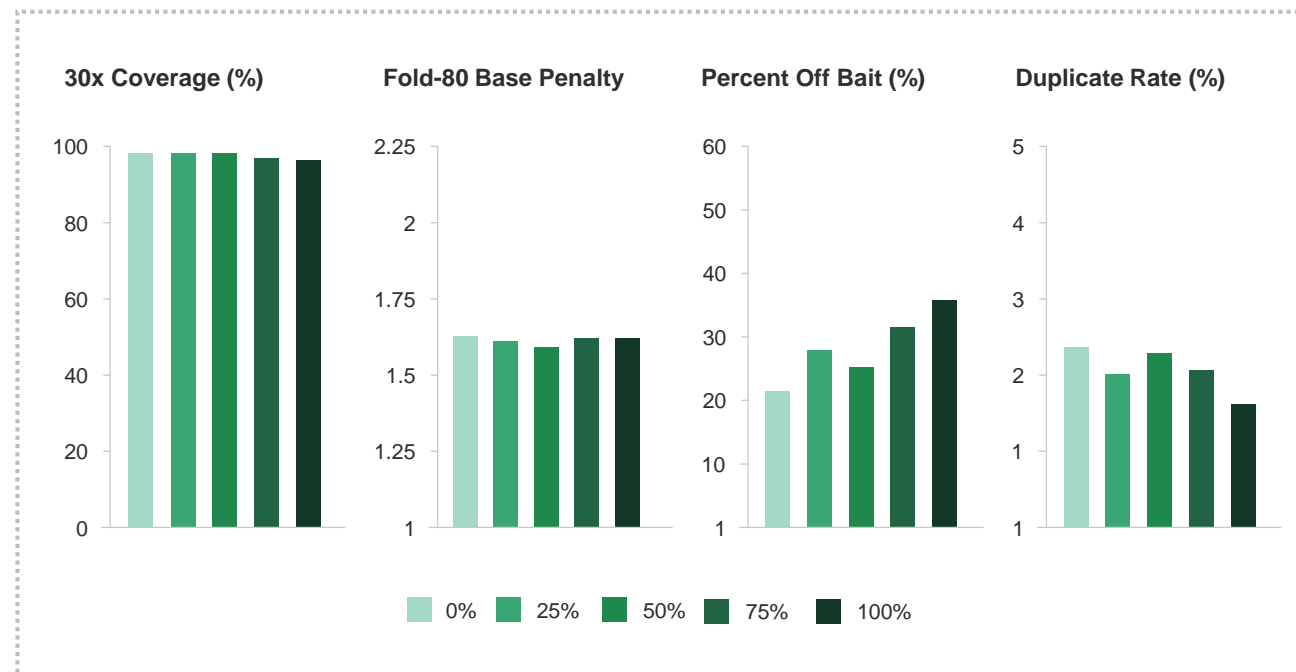
Changes in methylation levels of promoters and other regulatory elements are emerging as some of the **most sensitive markers available for the early detection of cancer.**

# A New Era in Epigenetics –Twist Methylation Sequencing



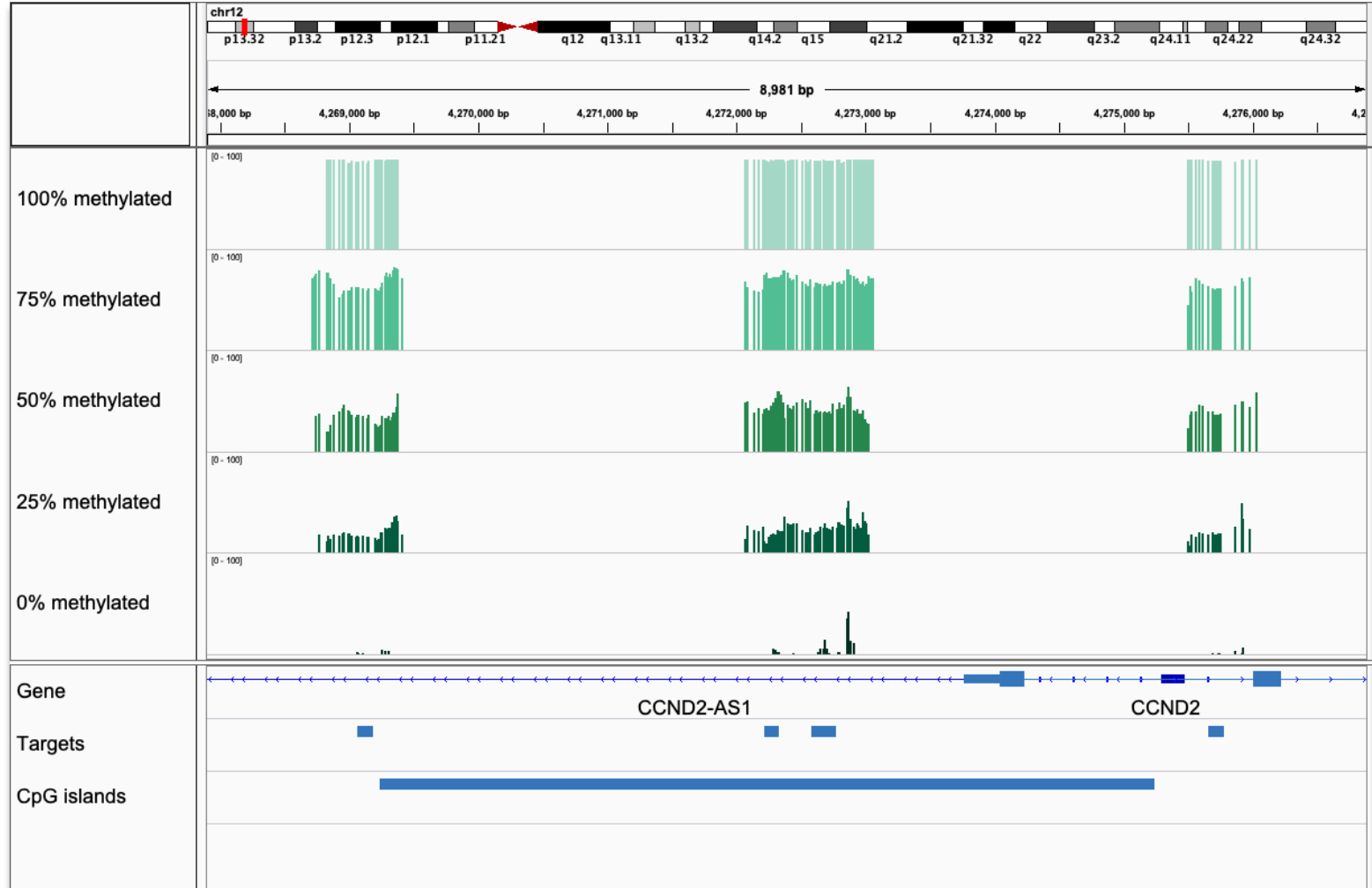
## New Solutions for Methylation Sequencing:

- Panels compatible with bisulfite and enzymatic conversion methods
- Exceptional Performance
- Unparalleled Uniformity
- Sensitivity
- Rapid panel iteration
- Design Flexibility



**Robust performance metrics across a range of differentially methylated samples.**

# Twist Methylation-Optimized Design and Capture Performance



## High Sensitivity in Differential Methylation Detection:

Even at low-input levels, clearly detect target methylation patterns

## Robust Capture of Target Regions:

Captures well over both Hypo- and Hypermethylated regions



# Twist AGBT Roadmap



## Monday, February 24

Join us after dinner!

9:30pm-12:00am | Passport Party, *Caxambus 1*

## Tuesday, February 25

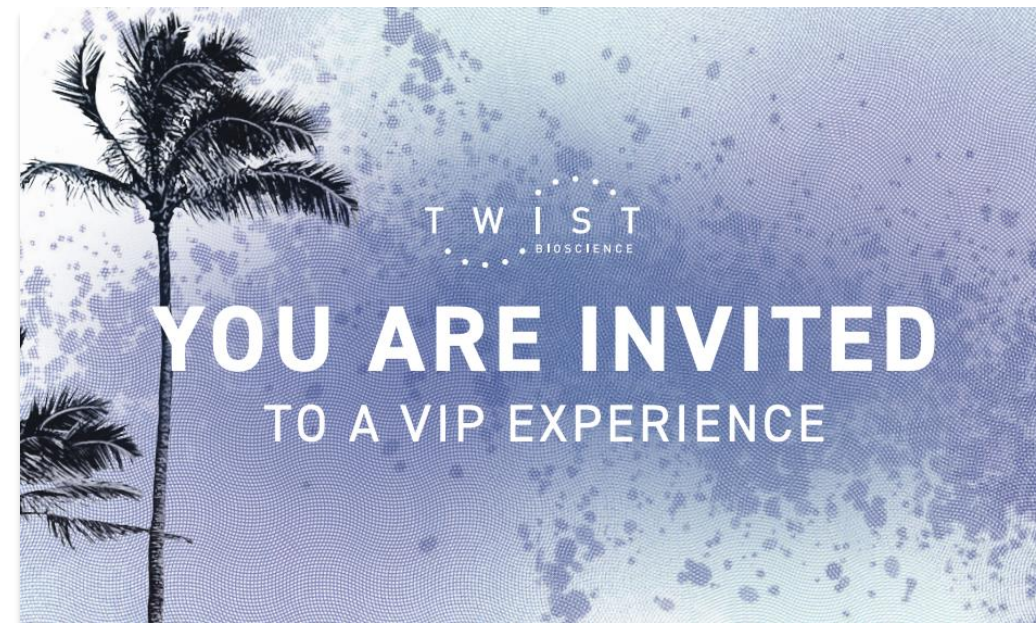
- 8:30am-4:30pm | Booth Hours, *Caxambus 1*
- **12:00pm-1:00pm | Twist Workshop, *Banyan Ballroom***

*Speakers:*

- Emily Leproust, Ph.D., CEO, Twist Bioscience
  - Catherine Foo, Ph.D., Director of Laboratory Sciences, Ancestry®
  - Jesse Salk, M.D., Ph.D., Chief Executive Officer, TwinStrand Biosciences
  - Gahee Park, Ph.D., University of Cambridge, CRUK Early Detection Programme
- 
- 4:30pm-6:30pm | Happy Hour, *Caxambus 1*

## Wednesday, February 26

- 9:00am-11:00am | Booth Hours, *Caxambus 1*



# NGS Campaign Overview



**SEQUENCE LIKE A BOSS**

**EXPERIENCE OPTIMIZED TARGET ENRICHMENT**  
With modular kits for target enrichment and library prep, Twist helps you take your targeted sequencing experiments to new levels. Discover the power of our silicon-based technology and expect exceptional data faster, cheaper, better.

Visit [twistbioscience.com/better](https://twistbioscience.com/better) to learn more.  
#believeinbetter

**T W I S T**  
BIOSCIENCE

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BIOSCIENCE

**TURN NGS INTO OMG**

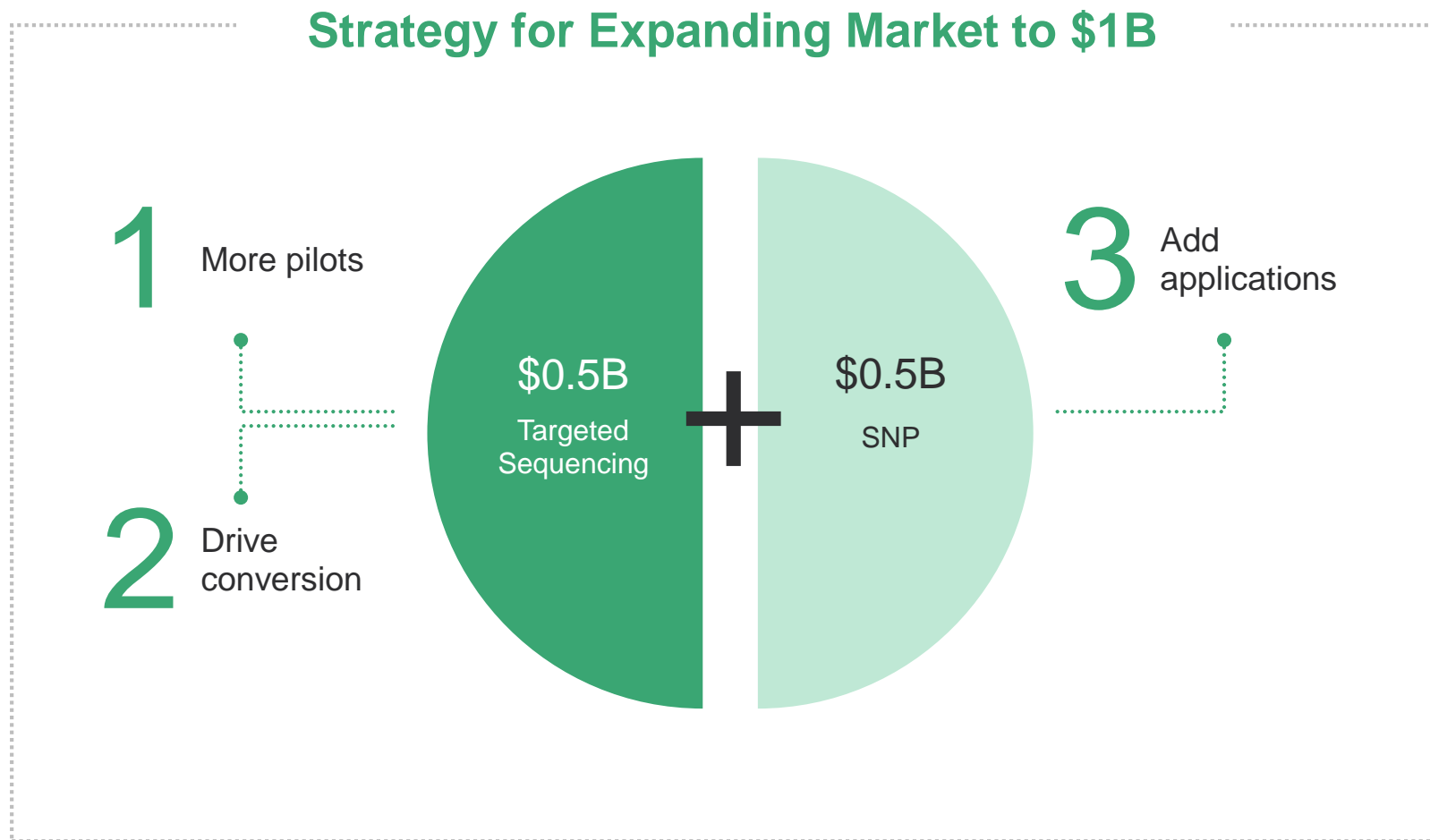
**T W I S T**  
BIOSCIENCE

**JOIN US AT AGBT 2020**

Our technology means we are at the forefront of target enrichment and we enable our customers to lead within their own field, by providing them with exceptional performance, greater flexibility and maximum sequencing efficiency.

## Solution Selling GTM

- Growing sales team
- Adding OEM partners





# 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
- Execute on IARPA
- Increased gross margin, completion of new writer introductions, improved TAT on genes





**SUCCESS  
NEVER  
SETTLES**

**VISIT US IN CAXAMBUS 1**

