



We engineer **enzymes** to improve health...
of people and the planet

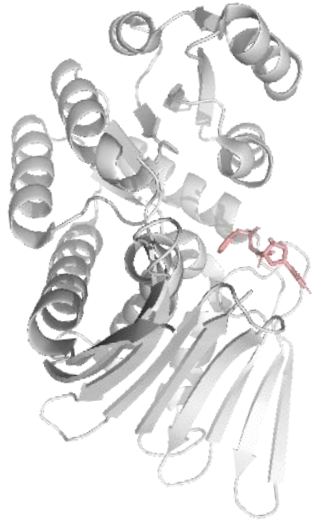
Corporate Presentation

May 2021

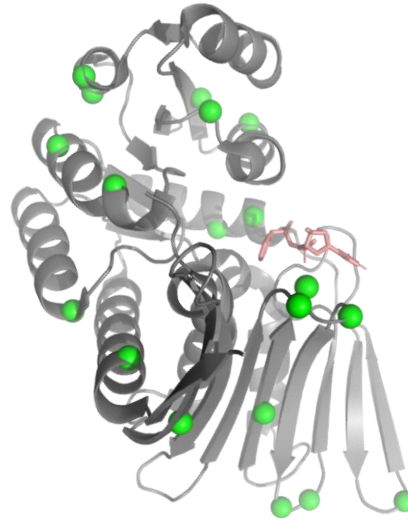
Forward Looking Statements

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Codexis Enzymes: Enabling the Promise of Synthetic Biology

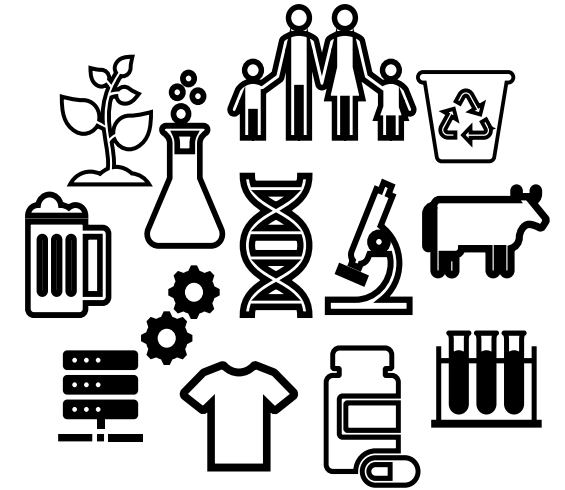


Enzymes
from Nature



Commercially
Relevant Enzymes

*Product
Generating
Engine*



Limitless
Opportunities

“As much as 60 percent of the physical inputs to the global economy could, in principle, be produced biologically”

CodeEvolver® Enzyme Engineering Platform

Constantly Accelerating Enzyme Discovery & Commercialization Engine

1600+ patents and patent applications worldwide



Scale: >15 enzyme discovery projects, simultaneously

ML/AI: increasingly accurate enzyme predictions

Speed: constantly accelerating time to reach targets

Results: achieving superior enzyme performance levels

Proven: chosen platform by Merck, GSK, Novartis

A Solid Foundation and Attractive Addressable Markets



Performance Enzymes Segment



Biotherapeutics Segment

¹ Includes Pharma manufacturing, Food ingredient manufacturing, Industrial enzymes and others

² GrandView Research: Molecular Biology Enzymes, Reagents And Kits, Sept 2020;
Oligonucleotide Synthesis, Oct 2018; Biosensors, Mar 2020

³ Global Enzyme Replacement Therapy Market 2020, Global Info Research, October 2020

⁴ Gene Therapy 2019 Market, Fortune Business Insights Market Research Report, August 2020



Sustainable Manufacturing

Driving higher yielding processes, while reducing capital requirements, energy usage and waste generation



Pharma Manufacturing

Biocatalysis as the go-to process technology



Food & Nutrition

Sustainable, clean label, high purity products

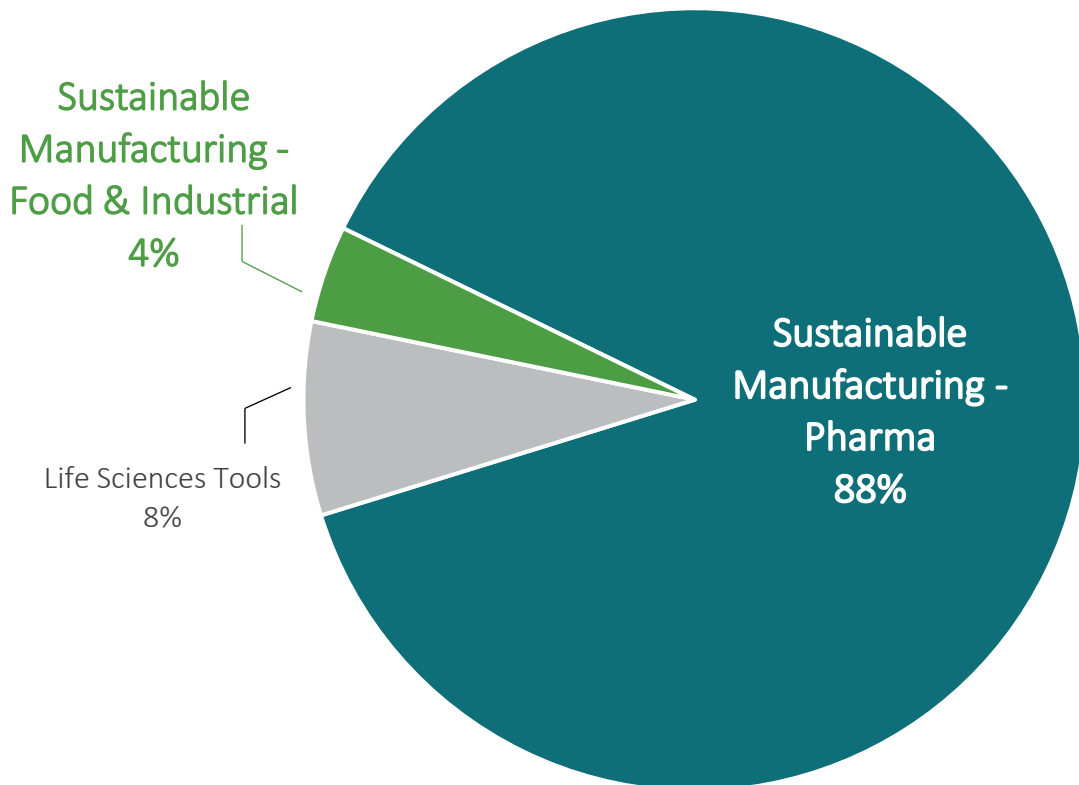


Industrial Biochemistry

Innovate and execute in new verticals

Sustainable Manufacturing: Solid, Growing Base

% Total 2020 Performance Enzymes Revenue



















\$48 Million Total 2020 Performance Enzymes Revenue

- 22% product sales 5-year CAGR
- Key customers
 - 21 of top 25 pharma companies
 - Tate & Lyle, other large industrials emerging
 - 15 customers > \$100K avg quarterly 2020 revenue
- Growth drivers
 - New market extensions – food, industrials
 - Faster to commercialize, larger product targets
 - Higher product gross margins
 - CodeEvolver licensing 100% margin backends

Q1'21 Development

- Novel enzymes for manufacture of COVID-19 Antivirals
 - Two candidates moving rapidly through clinical development with a goal of fast-tracked regulatory submissions
 - Codexis enzymes currently key to synthesis of both customers' candidates

Sustainable Manufacturing: Deep and Expanding Pipeline

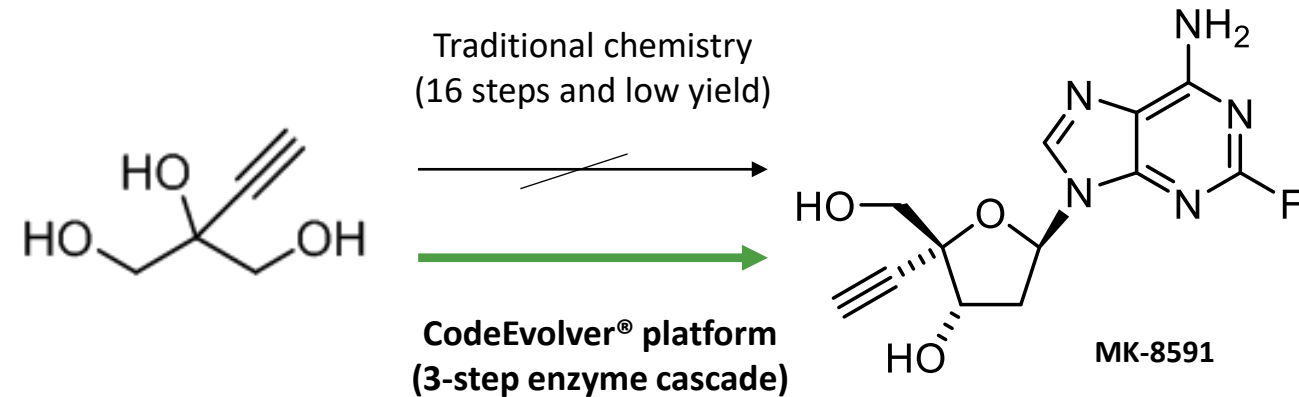
	Market Segment	# of programs	Research	Development	Commercial	Example Partner(s)
Pharma Manufacturing	Platform Licenses	3				  
	Commercial APIs	11				 
	Phase II/III APIs	19				Multiple Partners
	Research & Early Clinical	>50				Multiple Partners
Food & Nutrition	Natural sweeteners	2				
	F&B Ingredients	2				Undisclosed Partners
Industrial Biochemistry	Recycling & Upcycling	2				Undisclosed Partner
	Biomaterials	1				Undisclosed Partner
	Consumer Care	2				Undisclosed Partner
	Animal Feed	1				Undisclosed Partner

Sustainable Manufacturing Case Study: Islatravir Cascade



Islatravir, antiviral drug candidate

- Converted 16-step process into 3-step process
- Enabled by nine enzyme cascade
- Higher yield and capital efficiency



Q1'21 Development

- >\$1M product sales in Q1'21, enabling Merck's clinical stage manufacturing campaign



Life Science Tools

Engineering the next generation of enzymes for the next generation of life science tools



Sequencing and Detection

Improve accuracy, speed, and robustness of NGS and diagnostic workflows



DNA & RNA Synthesis

Improve yield, speed and cost of oligonucleotide synthesis

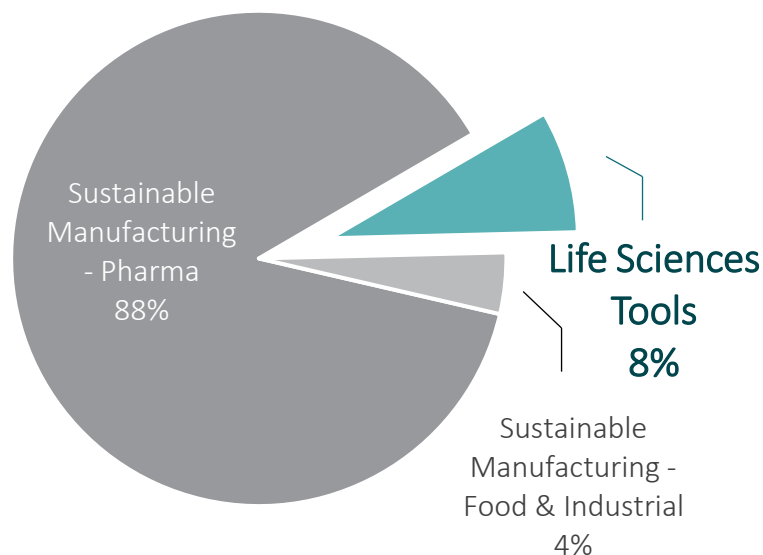


Health Monitoring

Enable novel biosensors for human and environmental health

Life Science Tools: High Growth

% Total 2020 Performance Enzymes Revenue



- **From \$0 revenue in 2018 to \$3.6 M in 2020**
 - Three commercial enzymes
- **Enzymes marketed to multiple customers:**
 - Primary target: next gen sequencing users
 - Closer to end market
 - Select partnerships: Roche, Alphazyme, Molecular Assemblies
- **Growth Drivers:**
 - Commercial enzymes customer adoption
 - Additional new product launches
 - Early-stage, private company partnership investment opportunities

- **Strong Progress in Q1'21**

- Initial sales of Codex® HiCap RNA polymerase to multiple customers; under testing with mRNA manufacturers
- Dozens of potential customers trialing Codex® HiFi DNA polymerase for use with current and future NGS kits
- Record new customer-partnered R&D programs
- Excellent progress towards commercialization the DNA synthesis enzyme in partnership with Molecular Assemblies

Life Science Tools: Rapid Growth Demonstrates Value Proposition

	Product	Research	Development	Commercial	Go-to-Market Approach
Sequencing & Detection	T4 DNA Ligase				Partner with 
	Codex® HiFi DNA Polymerase				Targeting Multiple Customers
	Reverse Transcriptase				Targeting Multiple Customers
	New products				Wholly Owned & Undisclosed Partners
DNA/RNA Synthesis	Codex® HiCap RNA Polymerase				Targeting Multiple Customers
	Enzymatic DNA Synthesis				Partner with 
	New Products				Wholly Owned
Health Monitoring	Blood alcohol sensing enzyme				Wholly Owned
	Enzymes for New Biosensors				Undisclosed Partners
	Enzyme for Medical Device				Undisclosed Partner

Engineered RNA Polymerase for improved mRNA Synthesis

Codex® HiCap RNA Polymerase

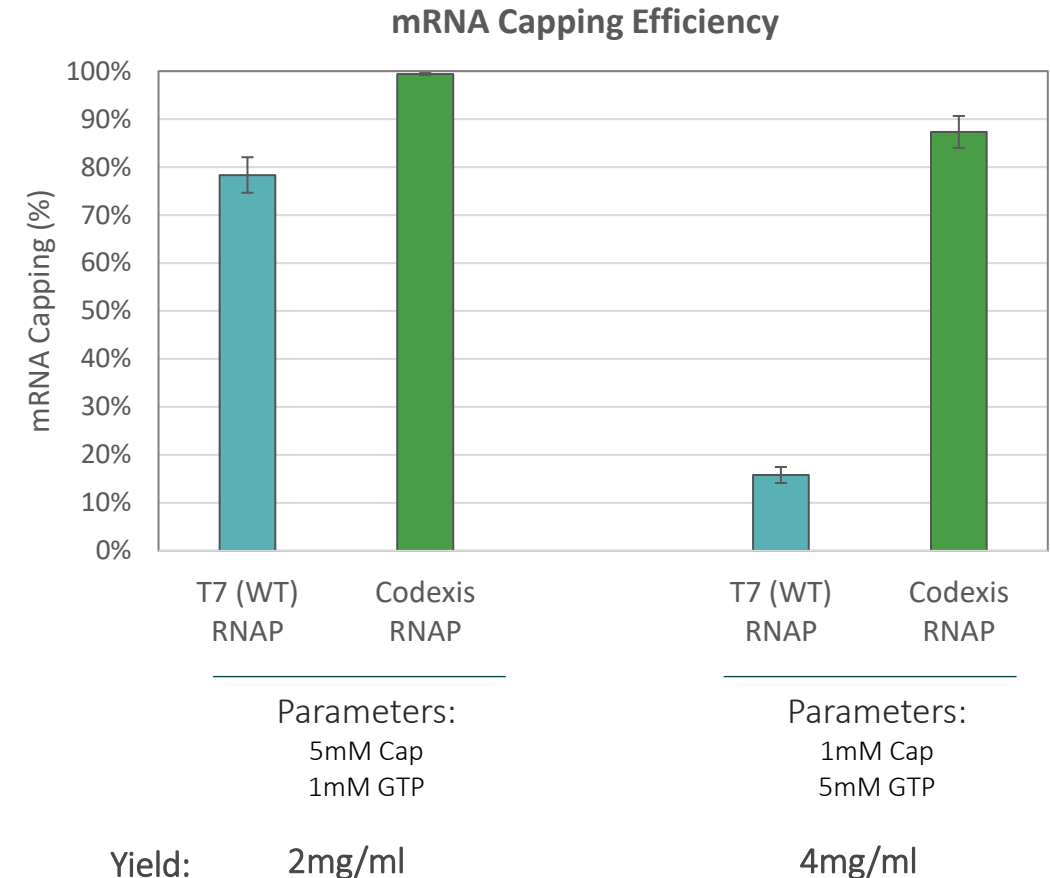
Engineered for improved mRNA capping efficiency

Key features & benefits

- Significantly higher capping efficiency with much lower 5' cap concentration
 - Increased yields of fully capped mRNA product (2x observed)
 - Decreased use of expensive capping reagents (5x observed)
- Decreased unwanted double-stranded RNA synthesis
 - Reduced negative immune responses with less dsRNA
 - Reduced cost in purification to remove dsRNA product
- Highly effective with many commercially available and custom 5' Caps
- Enzyme designed to be a drop-in solution to replace wild-type RNAP

Current Status

- First commercial sales made to multiple customers in 2021
- In various stages of customer trials with several other mRNA manufacturers



Biotherapeutics

Harnessing the power of engineered proteins to discover and develop a high-value pipeline of therapeutics



Oral Biologics

Optimized proteins enabling safe and efficacious GI therapeutics

Addressable Market Size = \$10bn¹

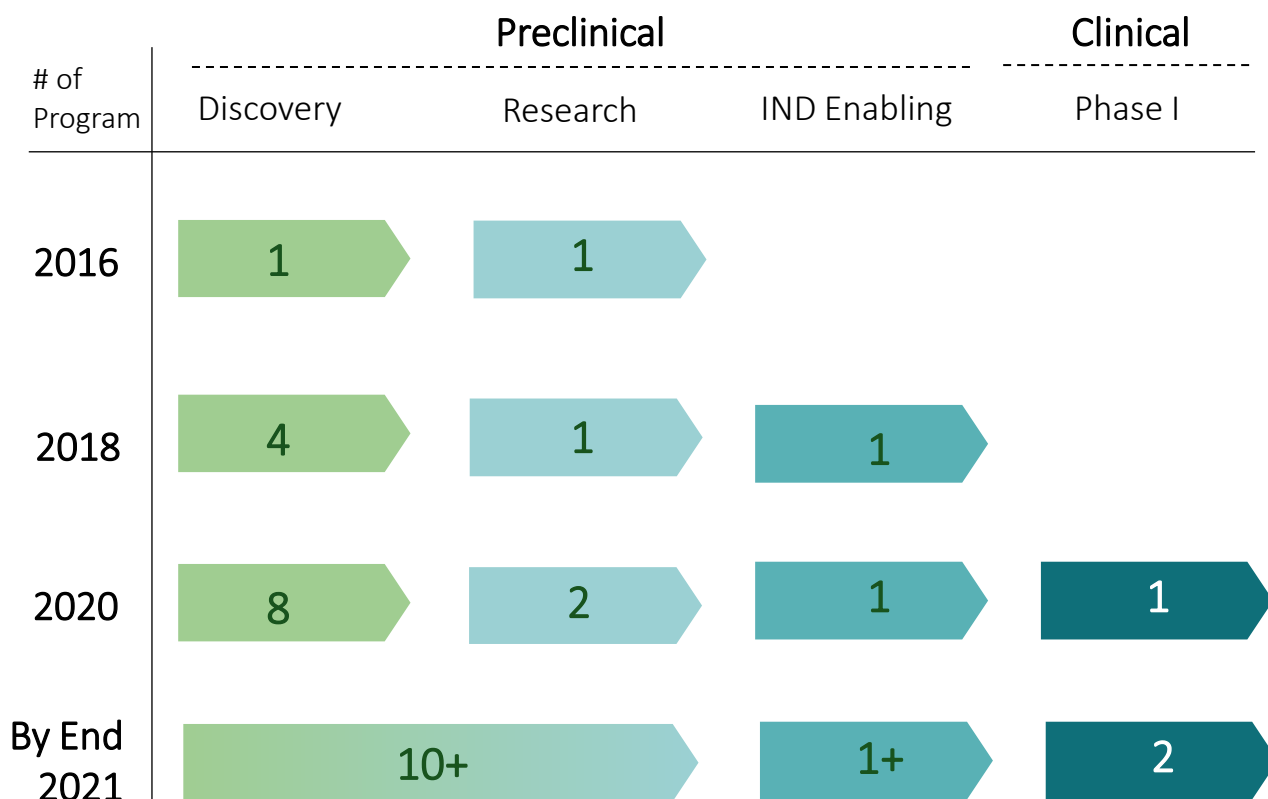


Gene Therapies

Enhanced transgenes, delivery vectors, and vector manufacturing

Addressable Market Size = \$4bn²

Biotherapeutics: Rapid Pipeline Expansion and Validation



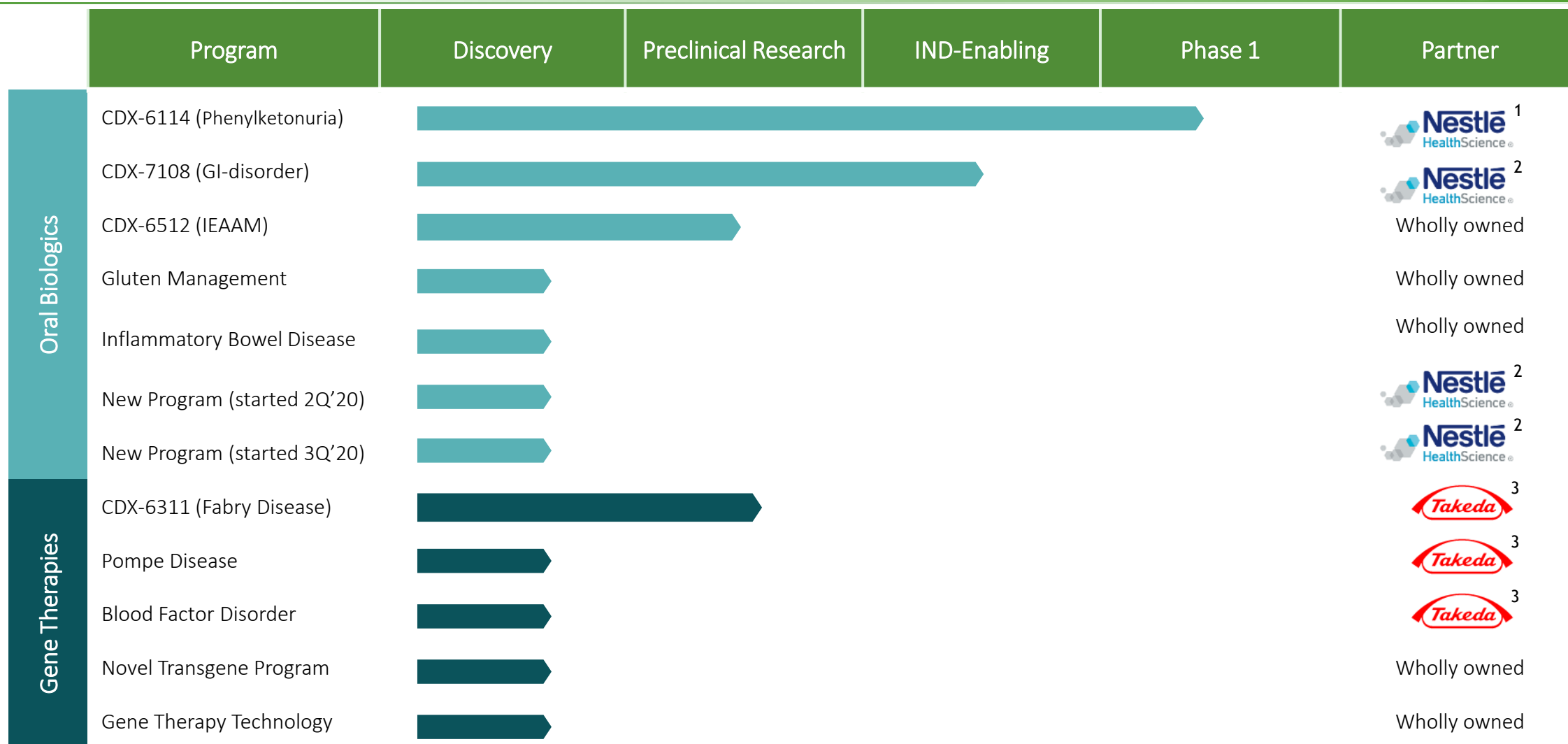
- **Key Partnerships:**

- Nestlé Health Science
- Takeda

- **Growth Drivers:**

- Accelerating number of candidates entering clinical trials
- Partnered assets generating milestones and royalties
- Increasing Codexis ownership of pipeline assets
- Holding select assets deeper to clinical PoC in future

Biotherapeutics: Pipeline Addressing Significant Unmet Patient Needs



Gene Therapy Case Studies: Fabry and Pompe Diseases



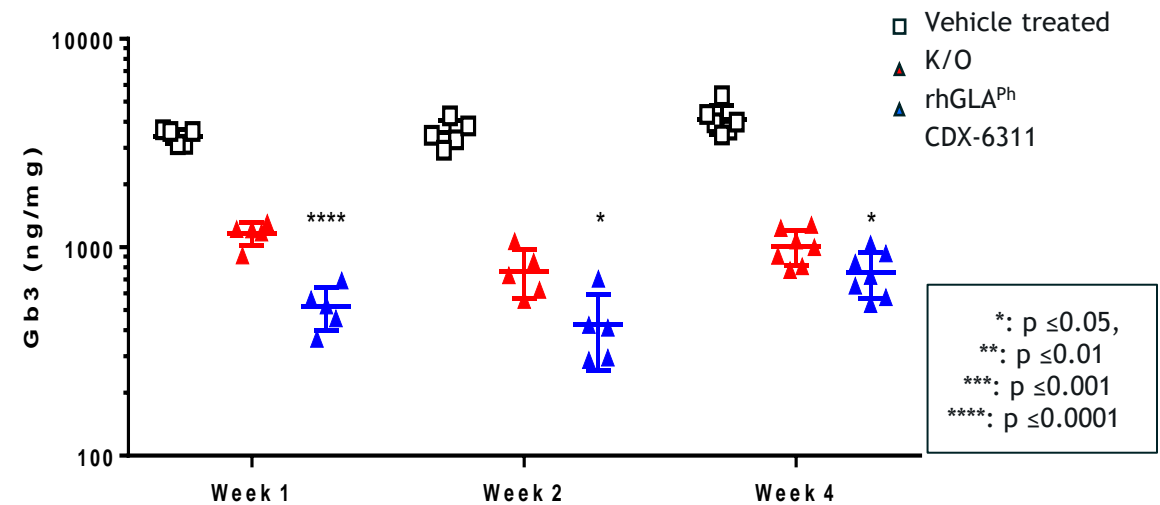
Partnership to discover optimized transgenes for Takeda's gene therapies for Fabry and Pompe Diseases, plus an undisclosed blood factor deficiency

Advancing Lead Candidates for Pompe Disease

- Overcoming wild type α -glucosidase (GAA) limitations
- Nine rounds of CodeEvolver[®] enzyme engineering performed to date; assessed >19,000 GAA variants
- Improvements demonstrated preclinically to date:
 - Enzyme stability at target pH to enable enhanced half life
 - Higher time-dependent uptake into hard to access cells
 - 40% fewer predicted T cell epitopes to enable reduced immunogenicity risk
- Presented by Dr. Rachel Botham, World LSD, Feb 11, 2021

CDX-6311 for Fabry Disease

Preclinical PoC Demonstrates Superior Gb3 Reduction



Corporate & Financial Highlights

Strong Track Record of Driving Growth

Sustainable Manufacturing

Performance enzymes

- ✓ 2015 - 2020 product sales CAGR of 22%
- ✓ Sales to 21 of Top 25 pharma co; 3 platform licensees
- ✓ Extending into higher growth food and industrial sectors

Life Sciences Tools

- ✓ In only ~ 3yrs, established high growth entry and capabilities
- ✓ Sequencing: Roche deal +2 more enzymes being widely offered
- ✓ Primed RNA and DNA synthesis commercialization

Biotherapeutics

Biotherapeutics

- ✓ CDX-6114 clinical safety and MoA; validated oral biologics
- ✓ Engineered transgenes enable improved gene therapies
- ✓ Partnerships with Nestlé Health Science & Takeda

Positioned for Growth

Q1'21 Results

\$18M

Q1'21 Total
Revenue +23%
YOY

\$10M

Q1'21 Product
Revenue +100%
YOY

59%

Product Gross Margin
vs. 50% in Q1'20

\$140M

Cash Available for
Growth. No Debt

2021 Guidance



Total Revenue:
\$82M - \$85M

FY'21 Total Revenue
+19% - 23% YOY



Product Revenue:
\$36M to \$39M

FY'21 Product Revenue
+19% - 29% YOY

54% - 58%

Product Gross Margin

vs. 55% in FY'20

2021 Corporate Goals and Catalysts

Sustainable Manufacturing

- ❑ Continue widening pharma adoption, and advancing clients to new CodeEvolver platform deals
- ❑ Enzymes for Phase 2 / 3 pharma processes commercialize into new recurring product revenues
- ❑ \$M+ food enzymes revenues from Tate & Lyle's recently commercialized sweeteners
- ❑ Broaden into other food and industrial applications

Life Science Tools

- ❑ \$M+ product sales from recently commercialized Codex® DNA and RNA polymerases
- ❑ Launch reverse transcriptase; finish DNA synthesis enzyme engineering to enable 2022 launch
- ❑ Additional new product development & SynBio Innovation Accelerator announcements

Biotherapeutics

- ❑ CDX-7018 for GI Disorder begins clinical development
- ❑ Preclinical proof-of-concept data generation for our wholly owned pipeline assets
- ❑ Deliver on strategic partnerships with Nestlé Health Science and Takeda

Growth Accelerators Simultaneously in Motion



More times at bat

↑ **100%**

Discovery capacity (# of R&D teams)



More players on base

↑ **200%**

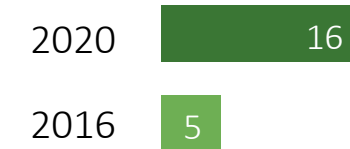
Programs in pre-commercial pipeline¹



More runs per inning

↑ **200+%**

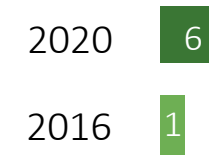
Programs commercializable in <3yrs²



More 2B, 3B, HR

↑ **500%**

Programs w/ \$10m+ peak revenue potential if commercialized³





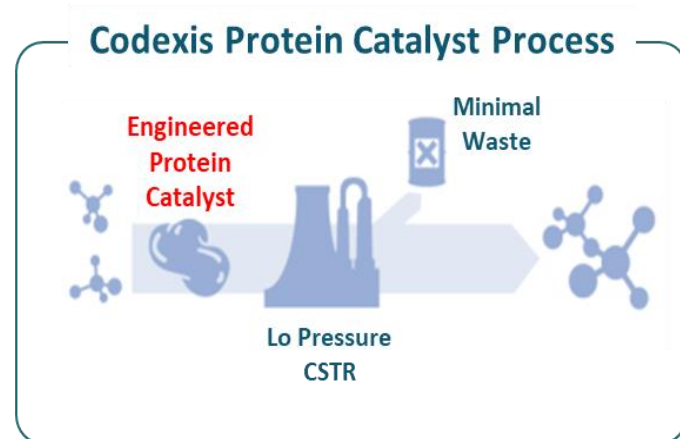
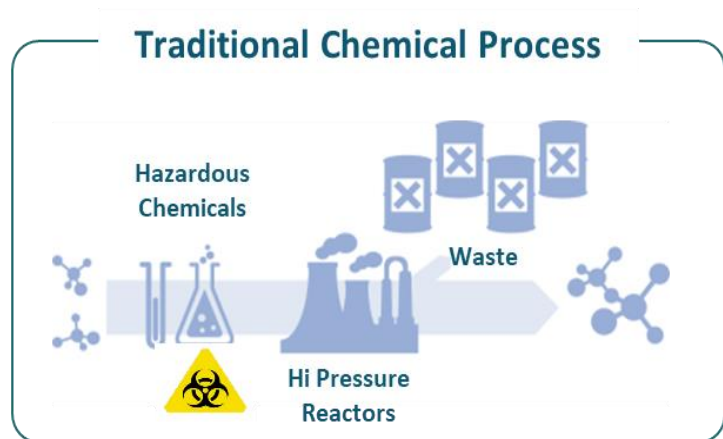
We engineer **enzymes** to improve health...
of people and the planet

Nasdaq: **CDXS**
www.codexis.com

Appendix: Case Studies

Sustainable Pharmaceutical Manufacturing

Doing Business with 21 of Top 25 Pharmaceutical Companies



Benefits Enabled by Codexis Enzymes

- *Lower impurities*
- *Higher yields*
- *Fewer process steps*
- *Atmospheric, CMO portable*
- *Less waste*
- *Energy efficient*

“...[Codexis] helped avoid the cost of building a 2nd factory to meet the rising demand for Januvia®”¹

Skip Volante, Merck VP R&D

Innovative Partnerships with Global Pharma Leaders

Platform Licensees



Upfronts & Tech Transfer (TT)

\$25m

\$18m +

\$22m

Back-end Economics Structure For each¹ licensee created protein:

\$5.75m to **\$38.5m** in milestones

Volumetric 'per kg of API' royalties up to a cap of **\$15m**, plus ROFR on enzyme supply

Volumetric 'per kg of API' royalties with **no cap**, plus ROFR on enzyme supply

Back-end Revenue History

> \$2m milestone earned to date

Islatravir enzyme supply

Too early; finishing TT in 2021

Strategic Channel Partnership



Increase Codexis protein catalysts access of smaller pharma co's
Porton larger RFP pipeline → new opportunity touches for Codexis
Porton manufactures → reduce cost to install → increase penetration

Food & Beverage Case Study: Stevia

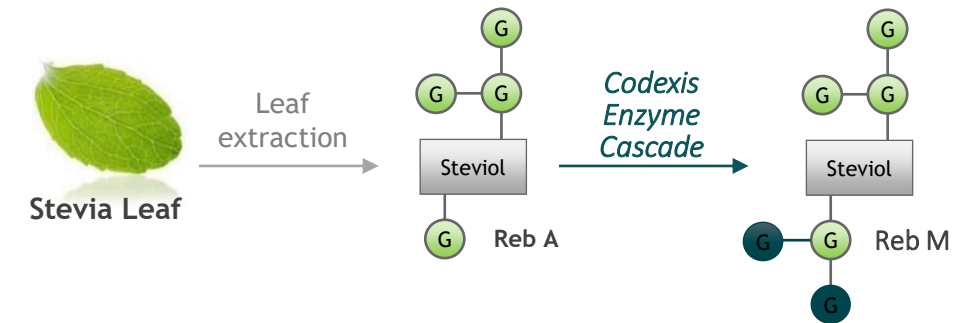


Innovative partnership to efficiently produce better tasting, clean-label sweeteners

- **Tasteva® M Stevia Sweetener:** 200x sweeter than sugar; naturally derived; highly competitive cost-in-use
- **DOLCIA PRIMA® Allulose:** sugar-like functionality and texture, with low calorie and low glycemic index

Tasteva® M Stevia

Codexis Enzyme Cascade for Reb M Production



Reb A in Stevia leaf: bitter taste, severely limits use

Reb M in Stevia leaf: near sugar taste, only trace amount

- ✓ Concept to commercial in < 2 years !
- ✓ Low cost: ↑ titer / yield / cofactor recycle
- ✓ Low capital: One-pot; simple downstream

Engineered DNA Ligase for improved NGS workflows

Improved double-stranded DNA Ligase for Next Gen Sequencing:

A differentiated enzyme with optimized ligation efficiency

Key features & benefits

- More DNA potentially sequenceable from a sample --> improved chance of detection
- Codexis' enzyme outperforms native T4 ligases with and without crowding agent (PEG) ---> Differentiation and versatility

Licensed by Roche Sequencing Solutions in late 2019

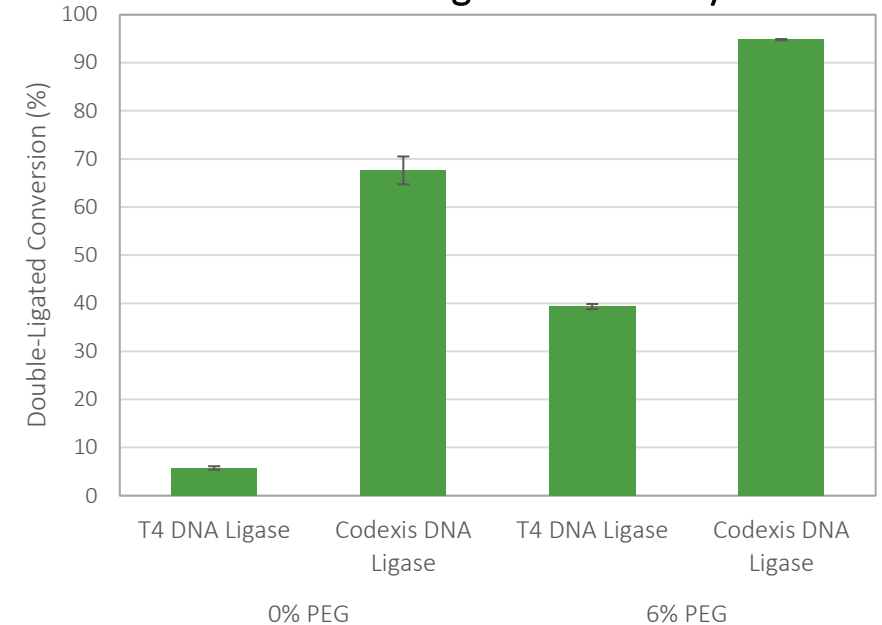
- Upfront, milestones and royalties on Roche product sales



Current Status

- Tech transfer completed
- Roche installing in their NGS library prep kits ahead of launch(es)

Codexis DNA Ligase Increased Ligation Efficiency



Key reaction parameters

Mixture of 4 PCR products, terminating with A,C,G,T

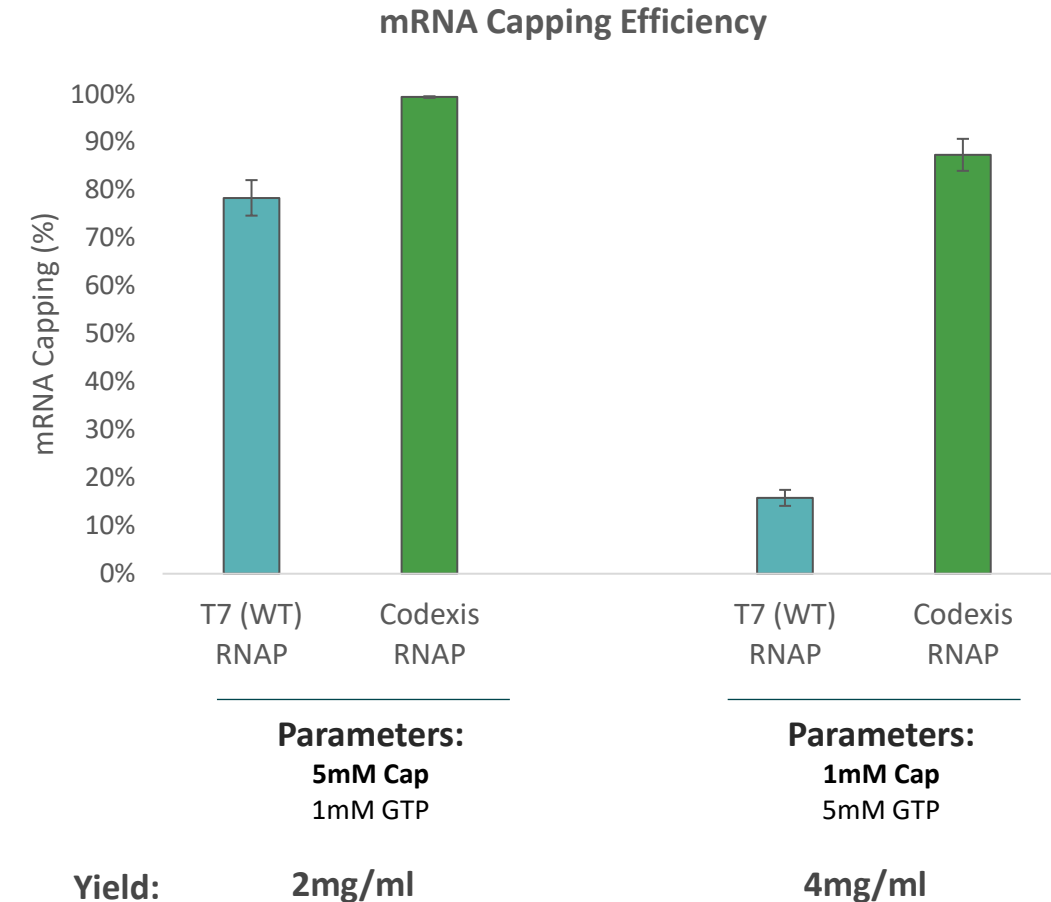
Enzymatically end-repaired and A-tailed

30-min ligation reaction with 30 ng input and a 20-fold molar excess of NGS adapter relative to input DNA.

Engineered RNA Polymerase for Messenger RNA Synthesis

Codex® HiCap RNA Polymerase

- Significantly higher capping efficiency with much lower 5' cap concentration
- Decreased unwanted double-stranded RNA synthesis
- All key attributes of wild-type RNA polymerase maintained or improved
- Designed to be a drop-in solution
- First commercial sales in Q1'21



Engineered DNA Polymerase for Next Gen Sequencing

Codex® Hifi DNA Polymerase

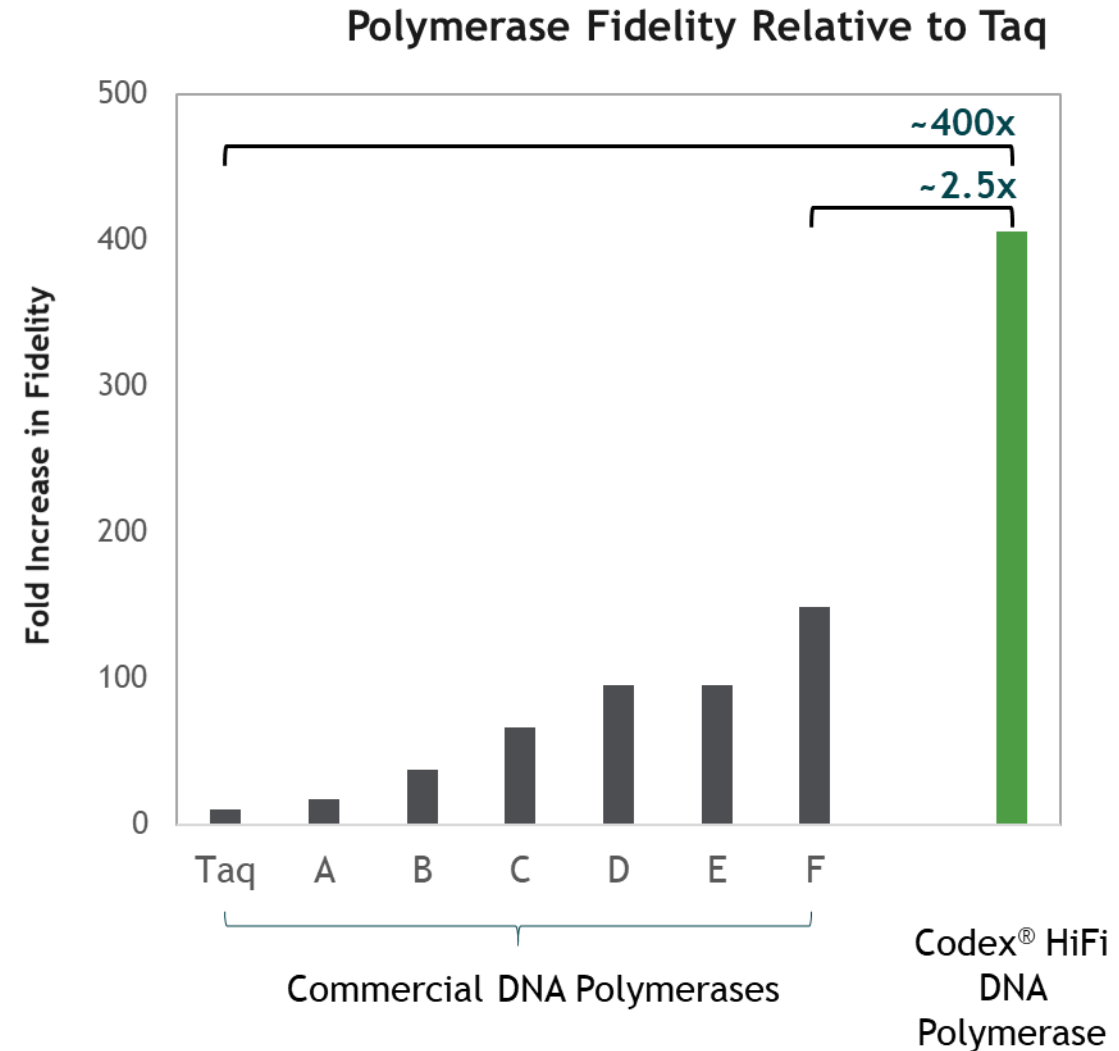
Engineered for improved sequencing fidelity and reduced GC bias

Key features & benefits

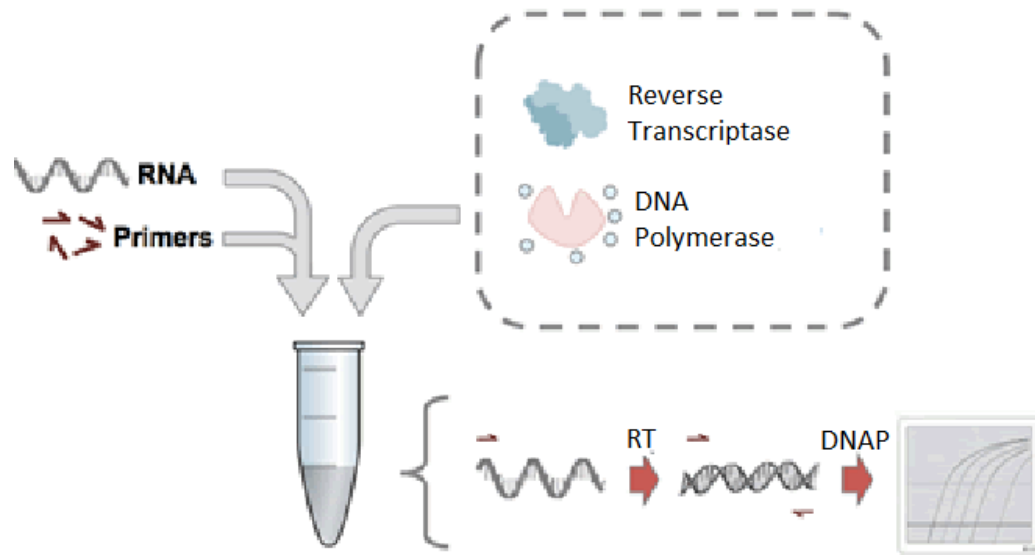
- >400x higher fidelity than native Taq Polymerase
- ~2.5x higher fidelity than market leading high fidelity DNA polymerase
- Fewer sequencing errors ---> better results in fewer reads/less time
- Greatly reduced GC-bias ---> improved accuracy and coverage
- Can be incorporated into any current NGS reagent kit

Current Status

- Master mix formulation of Codex® Hifi DNA Polymerase now commercial
- Currently in trials with dozens of customers



Engineered Reverse Transcriptase for Diagnostics



Codex® Reverse Transcriptase

Engineered for improved processivity and sensitivity

Enzyme is currently in development, targeting PCR-based and Point-of-Care diagnostics

Targeted Key features & benefits for diagnostic applications:

- Thermostability ---> Improved processivity and sensitivity
- Inhibitor Resistance ---> Flexibility for dirtier samples

Future applications will include RNA-Seq - KPIs to be improved:

- Long transcript conversion

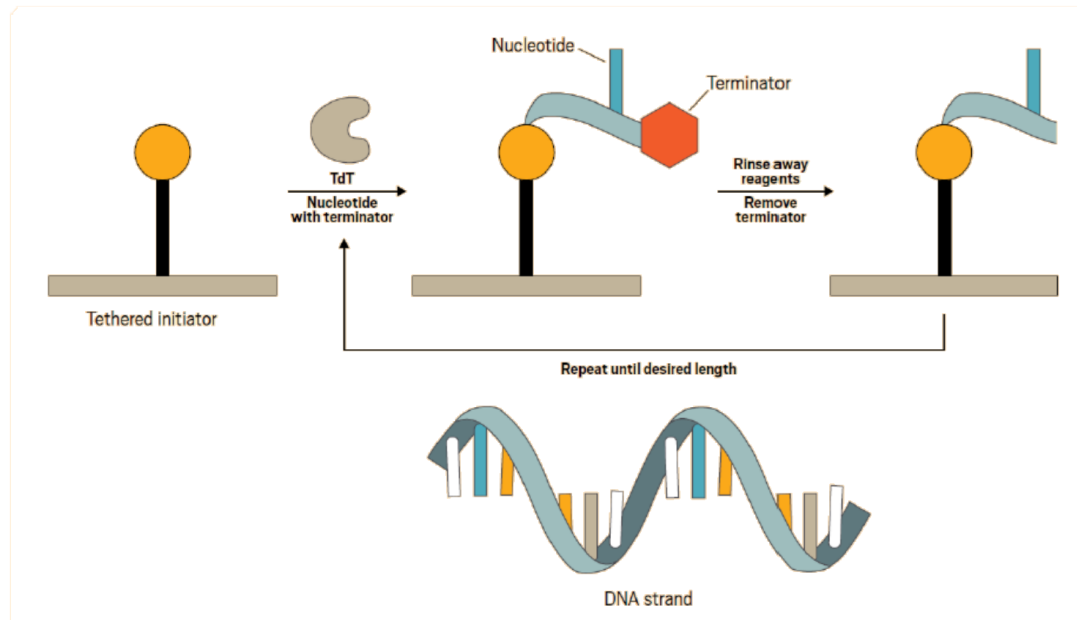
Current Status

- Lining up for commercial launch in 2H21

Engineered TdT Polymerase for Enzymatic DNA Synthesis

Terminal deoxynucleotidyl transferase (TdT)

Engineered for improved stability and speed of conversion



TdT catalyses the addition of nucleotides to the 3' terminus of a DNA without the need for a template (cDNA)

- Partnership with Molecular Assemblies (MAI) is focused on creating a commercializable solution for enzymatic DNA synthesis

Codexis is engineering a TdT Polymerase to outperform existing organic chemistry-based processes, by improving:

- Stability, activity, and selectivity, all in tandem

MAI goal: faster turnaround, gene-length custom DNA synthesis

Current Status

- Very significant enzyme improvements since project began in 3Q20
- Enzyme engineering expected to be completed in 2H21

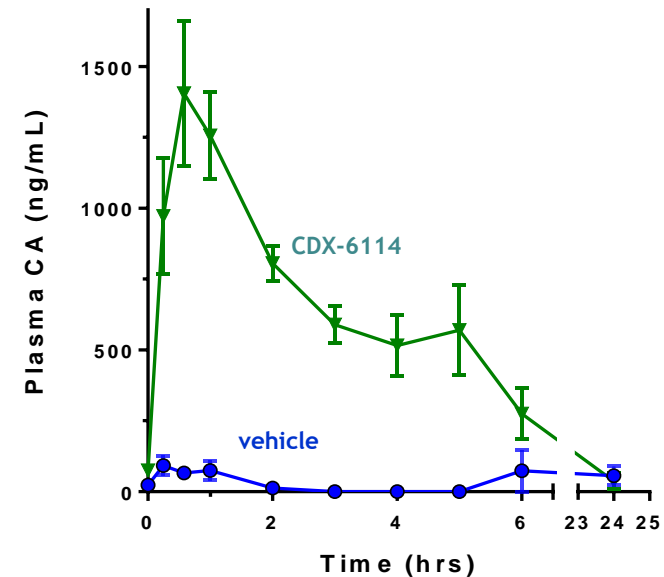
Oral Biologics Case Study: CDX-6114 for PKU



- Orally administered, GI-active enzyme for phenylalanine degradation
- Licensed to Nestlé Health Science
- Two successful Phase 1 studies completed
- Milestones up to \$335 M, plus royalties

CDX-6114 for Phenylketonuria

Preclinical PoC Demonstrates GI Potency



In non-human primates, a single dose of CDX-6114 leads to removal of ~12 mg/kg Phe over a 6-hr period

CA = cinnamic acid, metabolite of phenylalanine

Appendix: Most Recent Pipeline Snapshot

Codexis Pipeline Snapshot – June 30th 2020

Pipeline Project or Product Category		Pre-Commercial Programs		Commercial Sustaining Revenues	Pipeline Total	vs. prior pipeline
		Codexis Self-funded	Customer Partnered	Product Sales and/or Licensing	06/30/2020	6/30/2019
Performance Enzymes	Pharma Manufacturing:		24	11	35	+5
	Clinical Phases II or III		19	n/a	19	+ 4
	Patented On-the-Market Drugs		1	5	6	+ 2
	Generic On-the-Market Drugs		4	6	10	- 1
	Non-Pharma Products & Processes:	7	6	3	16	+4
	Life Sciences	5	2	1	8	+ 3
	Food, Feed & Nutrition	1	3	2	6	-
	Industrial Enzymes	1	1		2	+ 1
BioTx	Discovery and Development of Novel Biotherapeutics	6	8		14	+ 4
Pipeline Total as of June 30, 2020		13	38	14	65	+ 13

vs prior pipeline

+ 1	+ 9	+ 3	+ 13
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GUIDE TO THE PIPELINE SNAPSHOT

Row Headers

- Independent categories in which Codexis is creating high value protein innovations.
- Excludes biocatalysts for small molecule pharmaceuticals through Phase 1 development as they are too numerous, unclear re: stage of development and collectively of minimal revenue impact.

Column Headers

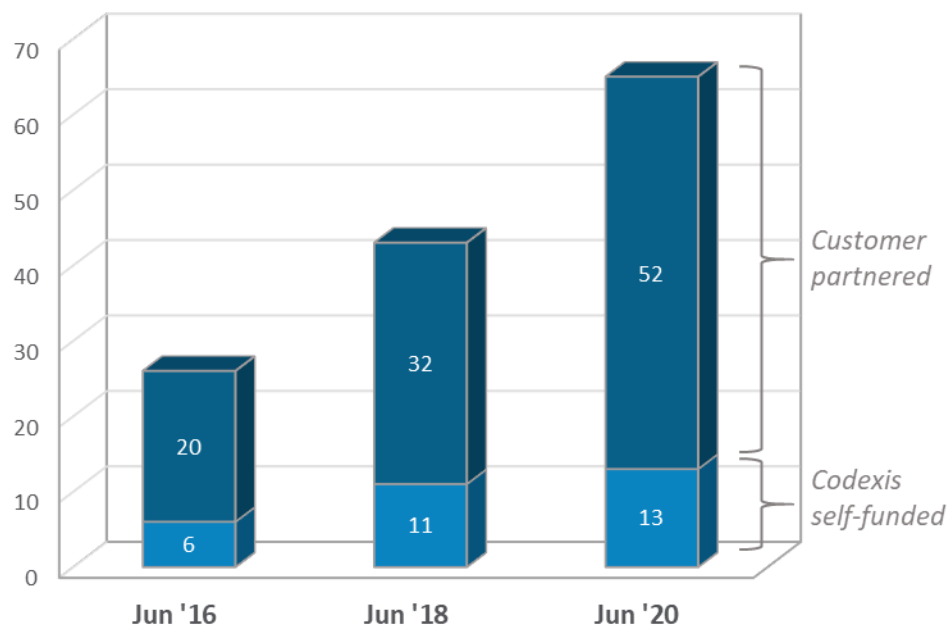
- **ALL Projects are Codexis Driven** – projects where protein innovations have been or are being created by Codexis teams.
- **Pre-commercial** are projects or products that have yet to be fully commercialized by Codexis and/or our customers.
- **Commercial** are projects or products that have been fully commercialized by both Codexis and our customers and are sources of sustained revenue for Codexis.

For a Project or Product to register in our Pipeline

- It must have generated > \$100,000 in revenue and/or incurred > \$100,000 in costs over the prior 2 years.

Codexis Pipeline Snapshot – Growth Trends

Total Pipeline Growth: 2016-2020



Pipeline Distribution and Growth by Segment: 2016-2020

