

# Codexis Investor Presentation

*Nasdaq: CDXS*



CodeEvolver®

Protein  
Engineering

*Transform Your Thinking™*

# Forward-Looking Statements



- These slides contain forward-looking statements that involve risks and uncertainties. These statements relate to future events or our future financial or operational performance and involve known and unknown risks, uncertainties and other factors that could cause our actual results, levels of activity, performance or achievement to differ materially from those expressed or implied by these forward-looking statements. Forward-looking statements include all statements that are not historical facts. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “would,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “projects,” “predicts,” “potential” or the negative of these terms, and similar expressions and comparable terminology intended to identify forward-looking statements. These forward-looking statements represent our estimates and assumptions only as of the date hereof, and, except as required by law, we undertake no obligation to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise.
- Other factors that could materially affect actual results, levels of activity, performance or achievements can be found in Codexis’ Form 10-K for the period ended December 31, 2016 filed with the SEC on March 9, 2017, including under the caption “Risk Factors,” and Codexis’ subsequent SEC filings. If any of these risks or uncertainties materialize, or if our underlying assumptions prove to be incorrect, actual results, levels of activity, performance or achievement may vary significantly from what we projected.
- Our logo, “Codexis,” “CodeEvolver®,” “Transform Your Thinking™” and other trademarks or service marks of Codexis, Inc. appearing in this presentation are the property of Codexis, Inc. This presentation contains additional trade names, trademarks and service marks of other companies. We do not intend our use or display of other companies’ trade names, trademarks or service marks to imply relationships with, or endorsement or sponsorship of us by, these other companies.

# Codexis Investment Thesis

- **Robust, 15yr Proven, CodeEvolver® Protein Engineering Platform Technology**
  - Powered by competitively advantaged, proprietary artificial intelligence software
  - Creates patentable, value-creating protein products – better, faster, cheaper
  - Deep and expanding patent estate with over 850 patents and patent applications
- **Platform Driving Multiple Growth Businesses Targeting Large, Attractive Markets**
  - Catalysts that enable more efficient pharmaceutical and food ingredient manufacturing
  - Industrial enzymes that enhance performance of in vitro diagnostics and genomics research
  - Discovery and development of proprietary biotherapeutic drug pipeline for partners & Codexis
- **Validated by Growing List of the World’s Leading Companies**
  - CodeEvolver® platform technology licensing pharmaceutical partnerships with Merck and GSK
  - Two food ingredient partnership deals with Tate & Lyle, most recent in March of 2017
  - Doing business with 15 of the world’s top 20 pharmaceutical companies
- **Experienced Team Executing to Deliver Strong Financial Returns**
  - Double-digit growing, catalyst and enzyme products & services business, with strong financial leverage
  - Leveraging platform to discover novel biotherapeutics for unique upside opportunity for Codexis

# Proteins: *Untapped Source of Value Creating Materials*

**Codexis Engineers Novel Proteins with Previously  
Unachievable Performance**

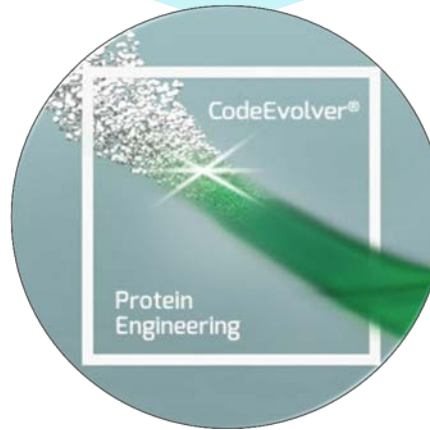
***better, faster, cheaper***



**Nearly infinite protein design optionality**

*Hundreds long linear chain, or 'sequence' length*

*Twenty amino acid choices at each sequence position*



**Industry and science has only scratched the  
surface of creating new proteins:**

- Mother nature offers a tiny subset, i.e., around 50,000 proteins in the human body \*
- Only 125,000 proteins, a tiny fraction, have their 3-D structure determined \*\*

**Codexis, and our CodeEvolver® Platform Technology, are Leading the  
Markets to Engineer and Commercialize New Value-creating Proteins**

# Codexis Novel Proteins Targeting Large, Growing, Attractive Markets

## Catalysts

**2014:** \$17.1 billion global market

**2020:** Growing to \$22.0 billion

*Markets and Markets Report CH4097, Feb 2016*

## Biotherapeutics

**2016:** \$192.2 billion global market

**2021:** Growing to \$291 billion

*Mordor Intelligence, <https://goo.gl/3867rV>, Sep 2016*

## Industrial Enzymes

**2016:** \$4.6 billion global market

**2022:** Growing to \$6.3 billion

*Markets and Markets Report FB2277, Oct 2016*

# CodeEvolver<sup>®</sup>: Proprietary Artificially Intelligent Software Uniquely Mining the Protein Sequence Big Data Space

## Precision Protein Engineering

- Creates novel proteins with previously unachievable performance attributes
- Customized to deliver high-value creation in specific use applications
- Expanding Codexis IP
- Expanding Codexis partnerships

## Cost

## Low Cost & Speed

- Growing library of unique sequence-performance data
- AI based *in silico* predictive sequencing data mining
- Rapid, high-throughput, robotic creation and testing of software chosen protein variants

## Precision

CodeEvolver<sup>®</sup>



## Speed

# CodeEvolver®: *Harnessing Computational Technologies To Drive Biology Advancements*

## Leading-edge Technologies Uniquely Choreographed

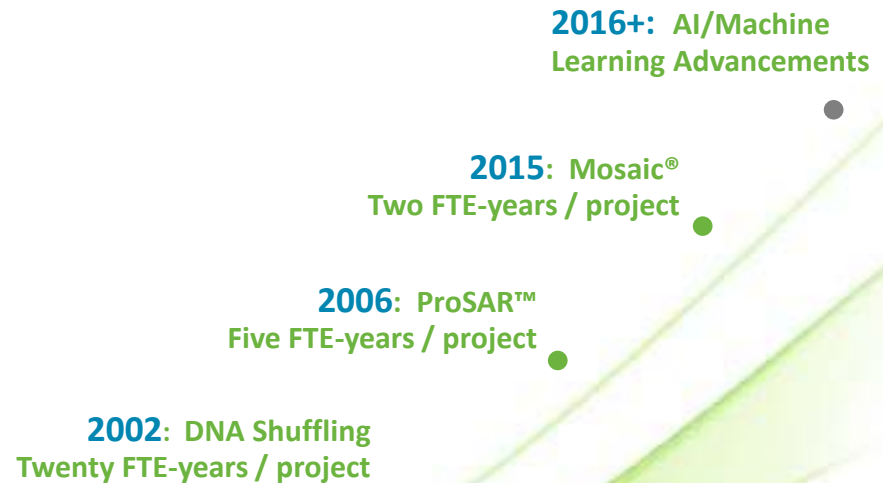
BIOLOGY

ARTIFICIAL  
INTELLIGENCE

HIGH-THROUGHPUT  
ROBOTICS

CHEMISTRY

FERMENTATION



# Codexis Business Models Facilitating Growth

## Leveraging the CodeEvolver<sup>®</sup> Platform to Best Meet Customer Needs



**License Our Platform**



**Collaborate & Supply**



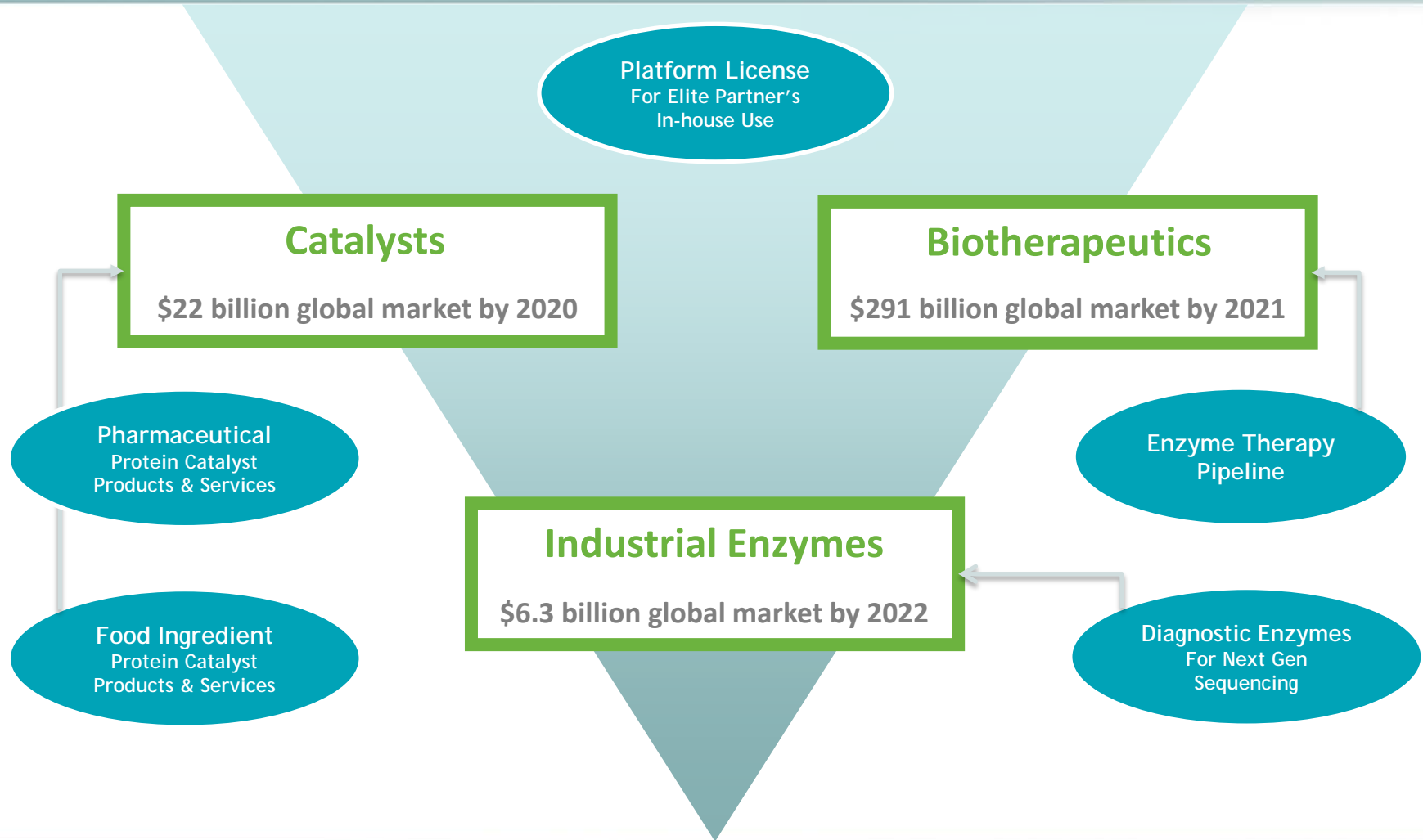
**Develop & Supply**



**Discover, Develop & Outlicense Novel Biotherapeutics**



# Proprietary Codexis Offerings Into Our Target Markets



# Licensing the CodeEvolver<sup>®</sup> Platform

## *Attractive, Win-Win Business Model*

### The Value of CodeEvolver<sup>®</sup> Platform Licensing

#### TO PARTNER

- Internalize protein creation
- Control intellectual property
- Reduce costs of 3<sup>rd</sup> party protein engineering
- Improve security of supply
- Accelerated manufacturing cost reductions

#### TO CODEXIS

- Front-end tech transfer revenue
- Future milestone and/or royalty payments for each\* licensee-created protein
- Backend revenues without Codexis costs
- Intelligence from licensees expands Codexis knowledge base

**Targeting One New CodeEvolver<sup>®</sup> Platform License Every 1-2 Years**

# Solution Area: Pharma Catalysts

## Driving Pharmaceuticals Manufacturing Improvement

### Pharma Catalysts Opportunity

*Expand the number of drugs produced using CodeEvolver® engineered protein catalysts*

**\$1+ billion TAM:** Protein catalysts can reduce the cost of greater than one-third of small molecule drugs



**Collaborate  
& Supply**



**License Our  
Platform**

### Pharma Manufacturing Successes

- **Customer Penetration:** 15 out of top 20 pharma companies are customers
- **# of Our Catalyst Installations:**
  - ✓ 7 commercial products with routine sales
  - ✓ 13 Phase II or later projects advancing
- **Pipeline Momentum:** Of today's 20 pharma project pipeline, only 8 were Phase II or later just two years ago
- **# of Elite Platform Licensing Partners:**
  - ✓ GSK and Merck are platform licensees
  - ✓ Third partner deal expected in 2H'17
  - ✓ Targeting new partner every 1-2 years
- **Platform Licensing Backends:** Began to flow in 2016 (GSK milestone earned 3Q'16)

# Pharma Catalyst Success Story

## *Big Pharma Collaboration Leads To Product Supply*

### ***Codexis Protein Catalyst Transforms Merck's Januvia Manufacturing Process***



- > **Speed:** Protein catalyst engineered from zero activity to fully commercialized in ~12 months
- > **Cost Savings** vs prior Merck process:
  - Variable: higher yield, lower energy & waste
  - Fixed: Unit operations eliminated; expanded production with ~ same capex
- > Plus, more stable vs. volatile priced metal catalyst

53% higher productivity

10-13% yield increase

19% lower energy usage

No need for special equipment

No need for toxic reagents

**Merck avoided investing in a new factory**

**Codexis catalyst sales supplying to Januvia<sup>®</sup>: \$5M+ in 2016; growing in 2017**

# Solution Area: Food Ingredient Catalysts

## Increasing Food Manufacturing Efficiency & Lowering Costs

### Food Industry Opportunity

*Expand the number of food products using CodeEvolver® engineered proteins*

### Enhanced Business Case Attractiveness vs Pharma:

- *Faster to Commercialize*
- *Larger Product Sales Potential @ Peak*



**Collaborate  
& Supply**



**Develop &  
Supply**

### Food Industry Successes

- **Customer Penetration:** Significant business with Tate & Lyle and one other leading food industry client
- **# of Collaborative Projects to Date:**
  - ✓ *1 commercialized product with routine sales to Tate & Lyle*
  - ✓ *2 additional partnered projects*
- **Pipeline Momentum:** Accelerating progress since entered just 3 years ago
- **Self Funded Protein Development:** novel protein catalysts engineered for growing food ingredient target



**Self-investment Enabled Second Tate & Lyle Partnership, Signed March 2017**

# Food Catalyst Success Story

## Cost Reductions Core To Tate & Lyle's Product Positioning

### The Challenge:

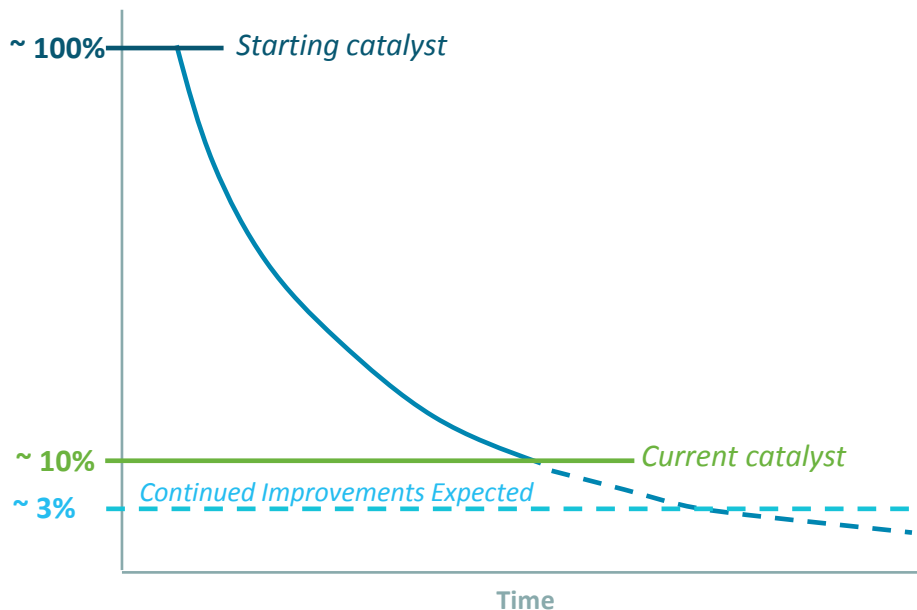
**Costs too high** for Tate & Lyle's process for making a new ingredient for its customers

### The Risk:

The new food ingredient could be **priced out of the market**

### Catalyst System Cost-in-Use

(\$ per lb of Partner's Product)



### Codexis' Collaboration with T&L

- **7 months of CodeEvolver<sup>®</sup>** protein engineering drove 20-fold enzyme stability improvement
- **Collaboration yields** additional cost process system cost reductions
- **Tate & Lyle installs improved catalyst system** and introduces ingredient to their target markets

**Exclusive agreement to supply proprietary enzyme finalized in December 2016**

# Solution Area: Novel Biotherapeutics

## Discovering & Developing Novel Biotherapeutics

### Biotherapeutics Opportunity

*Apply our protein engineering to growing set of biotherapeutic modalities and drugs*

#### **Targeted CodeEvolver® Derived Improvements:**

- *Stability, Safety, Efficacy, Convenience, Manufacturability*

#### **Business Models:**

- *Collaborative R&D to improve client's biotherapeutics*
- *Discovery & development of proprietary Codexis biotherapeutics*



**Discover, Develop &  
Outlicense Novel  
Biotherapeutics**

### Biotherapeutics Successes

- **3 collaborations demonstrate growing applicability of CodeEvolver® technology to modalities beyond enzyme therapies**
  - ✓ First-in-class, \$3.25 million R&D services project with leading biopharma partner
  - ✓ Panel of enzymes developed for Merck enable discovery of novel insulin therapeutics
  - ✓ One additional project successfully developed for top 20 global pharma partner
- **Codexis Investing in Proprietary Biotherapeutics Pipeline**
  - ✓ Lead Asset: Oral enzyme for PKU disease; targeting IND 2018
  - ✓ Additional biotherapeutic product candidates in earlier discovery and development

# Codexis Biotherapeutic Pipeline

## Attractive Lead Asset Targeting PKU Disease

CodeEvolver® Generated *in vitro*  
Candidate Discovery

Preclinical  
Research

IND  
Enabling

Human  
Trials

PKU



**PKU Partnering Discussions  
Proceeding Well Since 4Q'16**

Project 2



Project 3



Project 4



Project 5



### Codexis PKU Development Plan

- ✓ *in vitro* enzyme 50+-fold improved
- ✓ Patent applications filed
- ✓ Efficacy shown in 4 preclinical models
- ✓ IND enabling work under way
- IND targeted 2018

**Step-out Opportunities from Monetizing Biotherapeutics Pipeline**



# Solution Area: Marketing Industrial Enzymes

## Improved Enzymes for NGS/Genomics/MDx

### Next Gen Sequencing Opportunity

**Provide enhanced enzymes to NGS users for in vitro diagnostics and genomics research**

**\$100m+ TAM:** NGS users purchase a suite of enzymes to prep samples / libraries for genomic analysis. NGS use explosion for genomics research. Bright outlook for NGS use in new clinical diagnostics

**Codexis Solution:** Use CodeEvolver® to improve NGS diagnostic efficiency (improved fidelity, less bias, etc.)



**Develop & Supply**

### Enzyme Success for NGS

- **Self-Funded Protein Development:** In 2016, successfully engineered an enzyme that can enable a step change improvement to core NGS workflows

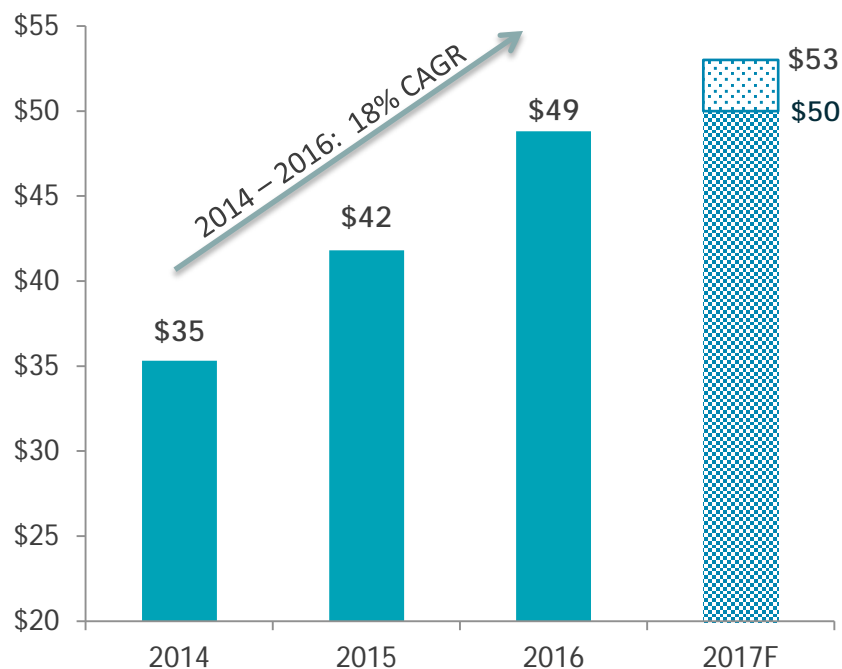
### **Codexis NGS Development Plan**

- ✓ 2016: Developed first NGS enzyme
- ✓ Jan '17: Announced market entry
- ✓ 1Q '17: Confidential customer trials
  - 2Q '17: *Widely marketing samples*
  - 2017: *Additional enzyme(s) launched*
  - 2018: *Target profitable product sales*

**Target Another Industrial Enzyme Segment  
For 2018 Launch**

# Codexis 2017 Financial Outlook

## Total Revenue (\$ million)



**Met or Exceeded Annual Guidance Targets  
in Each of 2014, 2015, & 2016**

## 2017 Annual Guidance (provided Mar 9, 2017)

**Total Revenues: \$50-53m**

**Product Sales: \$21-23m** (+37-50% vs 2016)

**Product Gross Margin: 37-39%** (2016 = 36%)

**Operating Expense (R&D + SGA): +6-8%** (over 2016)

## Assumptions / Additional Insights into 2017 Outlook

Third CodeEvolver® platform license included in 2H'17

- Expect total revenues in 2H'17 to be greater than 1H'17

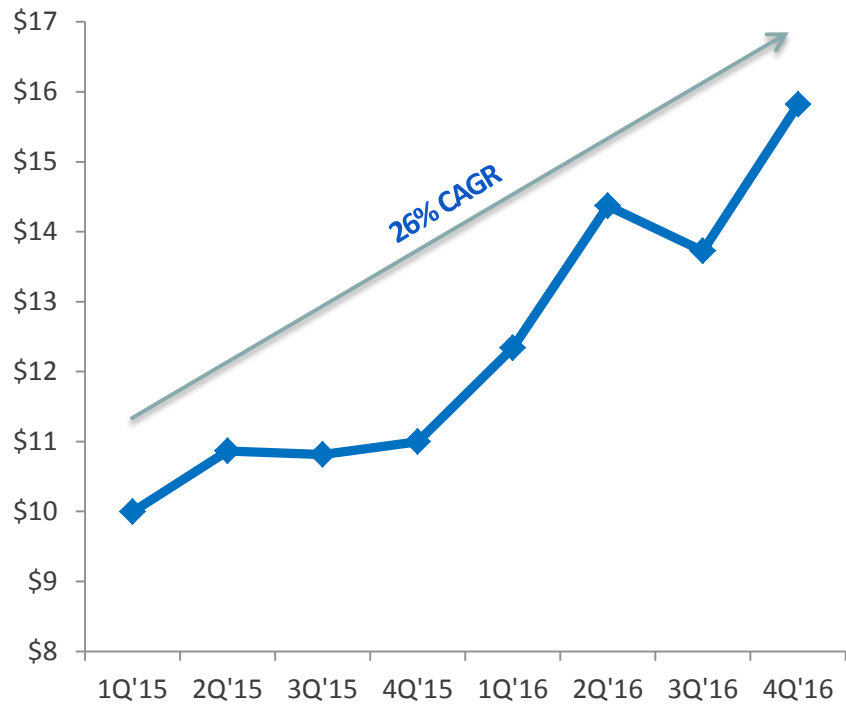
Core protein catalyst strength (i.e. *product sales plus R&D revenues; see slide 19*) more than offsets 2017 headwinds:

- Two CodeEvolver® license deals generating revenue in 2016 shrinks to one revenue generating license in 2017
- Continued expected decline in Exela revenue sharing

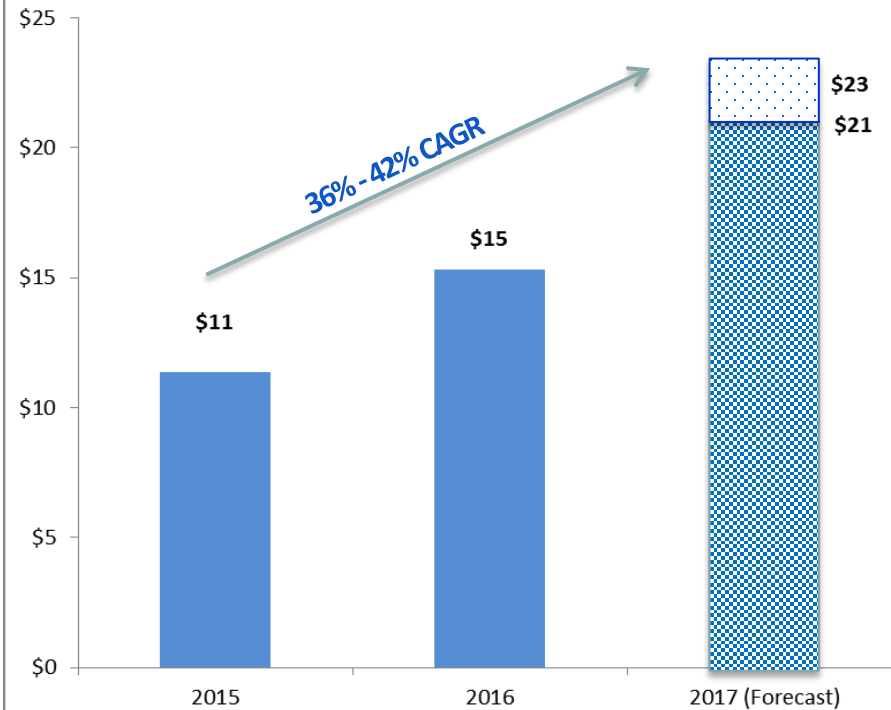
Opex includes full year of IND enabling costs for PKU

# Core, Sustaining Revenues Accelerating

### R&D Revenues (\$m)\*



### Product Revenues (\$m)



\* Rolling four-quarter R&D revenues; excludes CodeEvolver® milestone revenue and 4Q'15 royalty settlement but includes amortized upfront revenues from CodeEvolver® platform licensees

# 2017 Strategic Objectives

## Strengthening on Multiple Fronts

### **Strengthen Our CodeEvolver® Protein Engineering Platform Technology**

- Continued protein engineering speed and cost benefits from enhanced artificial intelligence

### **Deliver On Core, Sustaining Revenue Momentum**

- 37-50% growth in product revenues @ higher gross margins
- Step-up acceleration of R&D service revenue growth
- Continued growing penetration into the food industry

### **Continued CodeEvolver® Platform Licensing Deal Making**

- Third deal with another pharma major generating revenue in 2H'17
- Targeting of one new deal every 1-2 years thereafter
- Platform licensing milestones and/or royalties, minimal in 2017, setting up well for 2018+

### **Build Our Biotherapeutics Pipeline**

- Targeting IND in 2018 for our oral enzyme therapeutic candidate for PKU, CDX-6114
- Discover and advance additional biotherapeutic candidates

### **Setup Codexis Enzymes For NGS / PCR For Profitable Sales in 2018**

### **Penetrate Another New Industrial Vertical As We Move Towards 2018**

# Leadership Team

*Experienced, Disciplined, Technology Business Builders*



**John Nicols**  
*President & CEO*

Joined Codexis in 2012

25+ years building and leading large global industrial P&L's

Engineered the successful transformation of Codexis

Former:  
Albemarle, Hercules



**Gordon Sangster**  
*SVP & CFO*

Joined Codexis in 2014

30+ years of experience; 16 years as life sciences CFO

Champion for operational excellence & discipline

Former:  
Micrus Endovascular,  
HemoSense, AP Pharma



**Jim Lalonde**  
*SVP, R&D*

Joined Codexis in 2004

25+ years of R&D leadership

Career built on driving proteins to improve chemistry

Former:  
Altus Biologics, Vista Chemical



**Michael Aldridge**  
*SVP, Corporate & Strategic Development*

Joined Codexis in 2016

25+ years of healthcare and investment banking experience

Biotech business builder and partner to large pharma

Former:  
Questcor Pharmaceuticals,  
Xenome Ltd, Peplin Inc

# Testimonials and Awards

“Codexis is also **constantly improving** the CodeEvolver® platform, which has allowed them to stay **at the cutting-edge of enzyme evolution technology.**” “We are evaluating opportunities and planning to use Codexis technology **across the entire GSK development portfolio** of small molecule assets. This includes all therapeutic classes.”<sup>1</sup>

*Doug Fuerst, GSK Technology Development Lead, Synthetic Biology*

“We develop many of our technological capabilities in-house, **but by working with Codexis, our efforts have been speeded up by around 4 to 5 years.** This means we have increased **both the quality and the sustainability** of our products in one important step.”<sup>2</sup>

*Mark Buswell, GSK VP Advanced Manufacturing Technologies*

“We view Codexis as an **extension of our internal research and development** programs at Tate & Lyle, and....”<sup>3</sup>

*Michael Harrison, Tate & Lyle SVP, New Product Development*

“...[Codexis advances] helped **avoid the cost of building a second factory** to meet the rising demand for Januvia®”<sup>4</sup>

*Skip Volante, Merck VP R&D*

**Blockbuster Drugs:  
Award Winning Process  
Improvements By Codexis**


**Atorvastatin  
(Lipitor®)**

**Winner 2006**  
EPA Presidential Green  
Chemistry Challenge Award



**Sitagliptin  
(Januvia®)**

**Winner 2010**  
EPA Presidential Green  
Chemistry Challenge Award



**Simvastatin  
(Zocor®)**

**Winner 2012**  
EPA Presidential Green  
Chemistry Challenge Award



1. CheManager, Oct 2014 2. <https://goo.gl/cYiUGf> 3. <https://goo.gl/cnBZal> 4. Chemical & Engineering News, Sep 27, 2010

# Contact Us

## John Nicols

*President & Chief Executive Officer*

[john.nicols@codexis.com](mailto:john.nicols@codexis.com)

(650) 421-2388

## Gordon Sangster

*Senior Vice President & Chief Financial Officer*

[gordon.sangster@codexis.com](mailto:gordon.sangster@codexis.com)

(650) 421-8115

## Jody Cain

*Lippert Heilshorn & Associates*

Codexis Investor Relations Partner

[jcain@lhai.com](mailto:jcain@lhai.com)

(310) 691-7100

## Corporate Headquarters

200 Penobscot Drive

Redwood City, CA 94063

USA

# Codexis Investor Presentation

*Nasdaq: CDXS*



CodeEvolver®

Protein  
Engineering

*Transform Your Thinking™*