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FOR
TECHNOLOGY TRANSFER AND RESEARCH COMMITTEE**

Committee Meeting: 11/5/2014

Board Meeting: 11/6/2014
El Paso, Texas

*Wallace L. Hall, Jr., Chairman
Ernest Aliseda
Alex M. Cranberg
R. Steven Hicks
Jeffery D. Hildebrand*

	Committee Meeting	Board Meeting	Page
Convene	2:00 p.m. <i>Chairman Hall</i>		
1. U. T. System: Report and discussion on the Institute for Transformational Learning’s vision, mission, and status of current projects	2:00 p.m. Report/Discussion <i>Dr. Mintz Dr. Baker Stein</i>	Not on Agenda	138
2. U. T. System: Update on the U. T. Horizon Fund portfolio	2:20 p.m. Report/Discussion <i>Mr. Vijay</i>	Not on Agenda	147
3. U. T. System: Allocation of \$12.5 million of Available University Funds for the U. T. Horizon Fund and for associated administrative activities of the Office of Technology Commercialization	2:35 p.m. Action <i>Dr. Hurn Mr. Vijay</i>	Action	158
4. U. T. System: Report on Aeglea BioTherapeutics, a commercialization success story	2:40 p.m. Report/Discussion <i>Mr. Vijay Dr. David G. Lowe, Aeglea BioTherapeutics</i>	Not on Agenda	159
Adjourn	3:00 p.m.		

1. **U. T. System: Report and discussion on the Institute for Transformational Learning's vision, mission, and status of current projects**

REPORT

Dr. Steven Mintz, Executive Director of the U. T. System Institute for Transformational Learning (ITL), and Dr. Marni Baker Stein, Chief Innovation Officer, will report on the ITL's vision, mission, and status of current projects.

BACKGROUND INFORMATION

Established in Fall 2012, and endowed with \$50 million, the ITL has a bold mandate to make higher education more affordable, accessible, and effective by leading transformational initiatives powered by technology. The ITL seeks to dramatically increase student success through the design and delivery of breakthrough programming models that are student-centered, competency-based, and industry-aligned; and through the development of the next generation learning environments and student lifecycle management technologies, analytics, and services needed to power the future of higher education at scale. The initiatives being implemented by the ITL are summarized in the presentation on the following pages.

The Institute for Transformational Learning (ITL)

Steven Mintz, Ph.D., Executive Director
Marni Baker Stein, Ph.D., Chief Innovation Officer

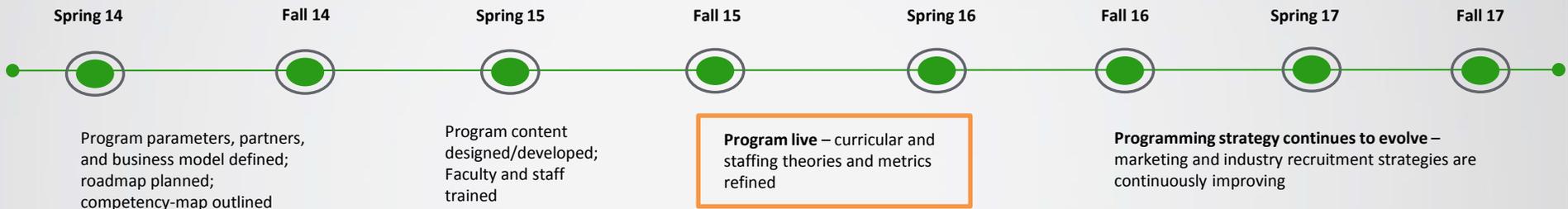
U. T. System Board of Regents' Meeting
Technology Transfer and Research Committee
November 2014



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Competency-based, Cross-Institutional Programming at Scale: In Progress: Competency-based Education BS in Biomedical Science



Opportunities

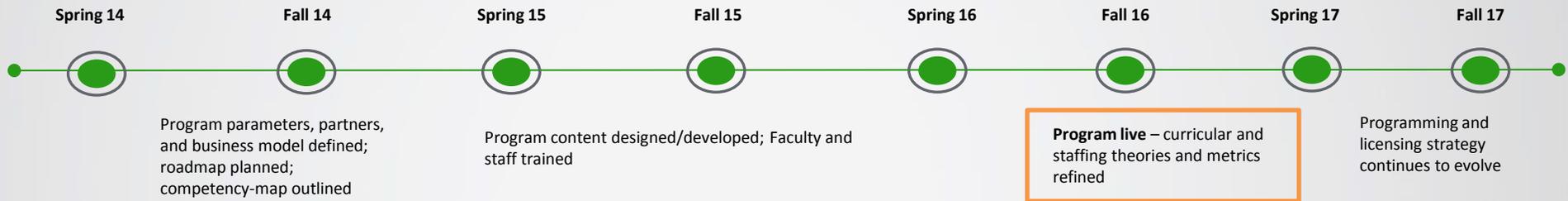
- Significantly increase program completion rates across all student profiles
- Significantly increase student engagement and accelerate time to degree
- Increase total enrollments to: 2500+ FTE (through programming and licensing “curriculum as a service” partnerships)
- ITL operated in partnership with U. T. Rio Grande Valley (UTRGV)
- Tuition Revenue flows into UTRGV (ITL program operation expense allocated)
- Licensing revenue flows into U. T. System and is distributed through partnership model

Challenges

- Partner institution context and commitment
- Ambitious schedule/small team
- Contracting complexity (ITL is serving as general contractor in partnership with multiple private sector partners)
- Culture change



Competency-based, Cross-Institutional Programming at Scale: In Progress: Next Generation Medical School



Opportunities

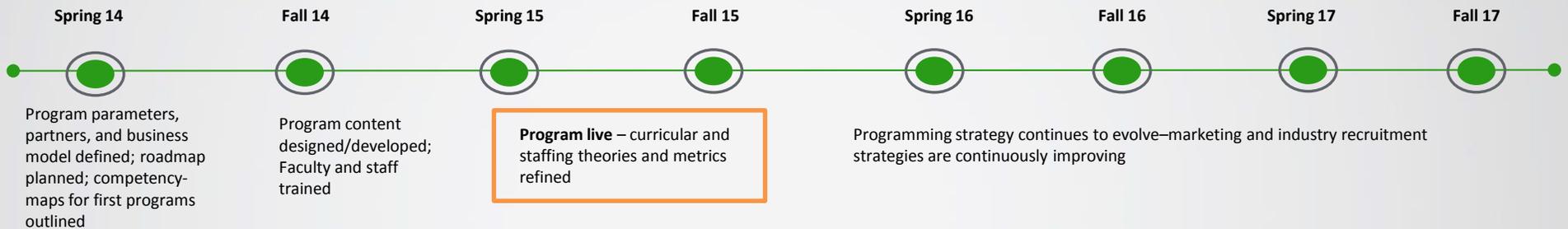
- Significantly increase student engagement and accelerate time to degree
- Increase total enrollments to: 1000+ FTE (through licensing “curriculum as a service” and program partnerships)
- ITL operated in partnership with UTRGV School of Medicine and U. T. Health Science Center - San Antonio
- Tuition Revenue flows into academic partners (ITL program operation expense allocated)
- Licensing revenue flows into U. T. System and is distributed through partnership model

Challenges

- Partner institution context and commitment
- Ambitious schedule/small team
- Contracting complexity (ITL is serving as general contractor in partnership with multiple private sector partners)
- Culture change



Competency-based, Cross-Institutional Programming at Scale: In Progress: Global and Professional Health Marketplace



Opportunities

- Grow total marketplace enrollments to: 8000+ FTE (through retail, industry partnerships, and licensing)
- ITL operated in partnership with U. T. Health Science Center - Houston, U. T. M. D. Anderson Cancer Center, and U. T. Health Science Center - San Antonio. Recruiting more institutional partners once UTxHealth Director is on board
- Tuition and licensing revenue flows into U. T. System and is distributed through partnership model

Challenges

- Partner institution context and commitment
- Ambitious schedule/small team
- Contracting complexity (ITL is serving as general contractor in partnership with multiple private sector partners)
- Culture change



Competency-based, Cross-Institutional Programming at Scale: On the Horizon: UTxEngineering

Estimated timeline - dependent on initiative roadmap and formation of strong supporting campus partnerships



Opportunities

- Significantly increase program completion across all student profiles
- Significantly increase student engagement and accelerate time to degree
- Grow total enrollments to: 10,000+ FTE (through “licensing” and program partnerships)
- ITL operated in partnership with participating academic campuses
- Tuition Revenue flows into participating academic campuses (ITL program operation expense allocated)
- Licensing revenue flows into U. T. System and is distributed through partnership model

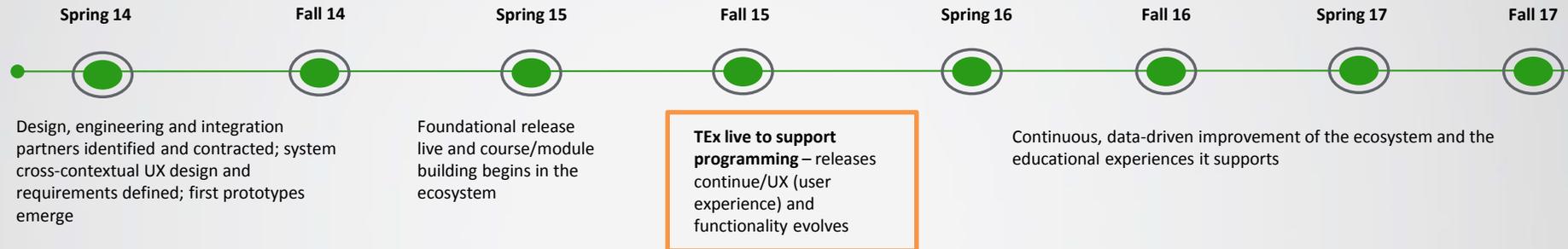
Challenges

- Partner institution context and commitment
- Ambitious schedule/small team
- Contracting complexity (ITL is serving as general contractor in partnership with multiple private sector partners)
- Culture change



Total Educational Experience for Competency-based Education (CBE):

TE_x



Opportunities

- Develop first-of-its-kind ecosystem to support mobile first, personalized, and adaptive learning capable of delivering high impact Competency-Based Education (CBE) initiatives across the U. T. System and beyond (programming and curriculum as a service)
- Define next generation methodologies for student lifecycle management and instructional design
- Collaborate (within Texas and nationally) with innovation-minded systems and institutions interested in growing CBE or outcomes-driven education at scale
- Internet of Things partnerships to enhance the student experience (Apple, Google, Samsung)
- Engine next generation operations, academic, and learning research

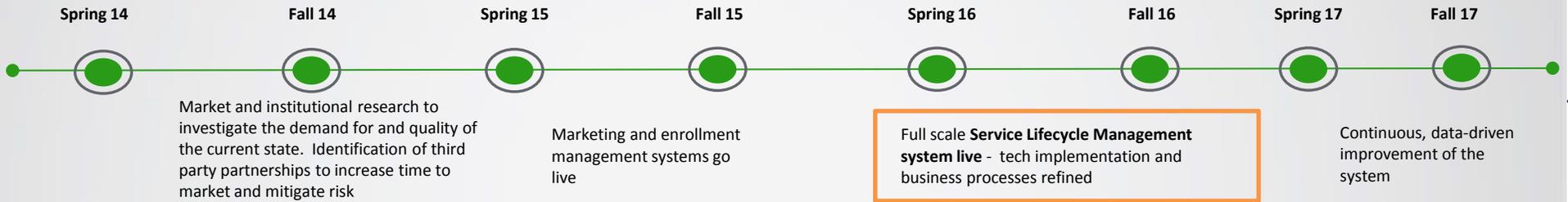
Challenges

- Speed of Request for Proposals/contracting
- Coordination of complex project involving subject matter experts, design, engineering, and integration partners
- Careful selection and continual alignment of partners



Infrastructure and Services:

In Progress: U. T. Online Consortium (UTOC) Reimagined



Opportunities

- Strategic enrollment management in UTOC can lead to increased enrollments across all programs, certificates, and courses
- Portfolio management approach to UTOC can lead to increased efficiencies for curriculum development, instructional staffing, and program administration – and will allow windows into quality, avenues for continuous improvement, and the context for scale
- Significant enrollment upside for undergraduate courses marketplace, which can result in shortened time to degree and increased student satisfaction
- Portfolio management approach to UTOC allows for bundling, packaging, and partnership opportunities

Challenges

- Partner institution context and commitment
- Partner resistance to cross-institutional collaboration, and recommendations for program growth or sun-setting
- Investment in UTOC requires non-trivial ITL resources: staff, technology, vendor agreements, etc.
- Culture change

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Updates:

- Shared Services Alliance for Distance Education
- UTx Strategic Communications Strategy Development
- Systemwide Content Services Initiative

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2. **U. T. System: Update on the U. T. Horizon Fund portfolio**

REPORT

Mr. Jeet Vijay, Assistant Vice Chancellor for Investments and Entrepreneurship, will provide an update on the U. T. Horizon Fund portfolio. Mr. Vijay's presentation is set forth on the following pages.

U. T. Horizon Fund Update

Mr. Jeet Vijay

Assistant Vice Chancellor for Investments and Entrepreneurship

U. T. System Board of Regents' Meeting
Technology Transfer and Research Committee
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Agenda

- Recent fund activity
- Fund performance
- Portfolio performance
- Solutions performance

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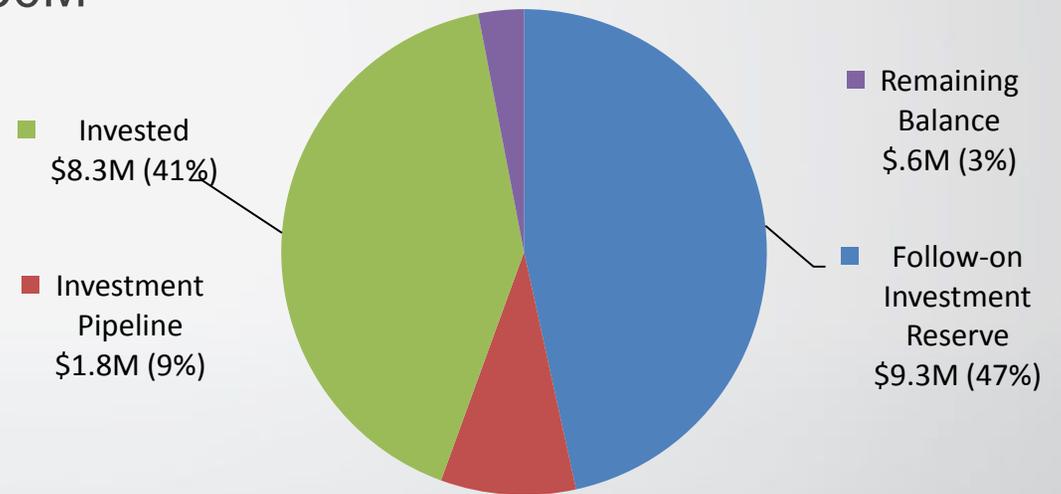
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Fund Statistics

- Fund vintage: 2012
- Committed (Part A) Capital: \$50M
- Contributed Capital: \$20M
- Investment portfolio: 14
- Investment pipeline: 4
- Investment universe: 160+

Contributed Capital Allocation



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U. T. Horizon Fund (UTHF): Recent Transactions

Company Highlight	Major Investors	\$ Raised
 <p>“Revolutionizing patient care through the development of endoscopic surgery”</p>	PTV II Allergan U. T. Horizon Fund (\$2.5M)	\$130M
 <p>“Exploiting Errors in Metabolism to Advance Treatment of Human Disease”</p>	Lilly Ventures Fund I, LLC Novartis Bioventures Ltd. U. T. Horizon Fund (\$1M)	\$11M
 <p>“The Right Drug for the Right Patient”</p>	Jack Gill* Rice University U. T. Horizon Fund (\$593K)	\$3.6M

*Founder of Vanguard Ventures



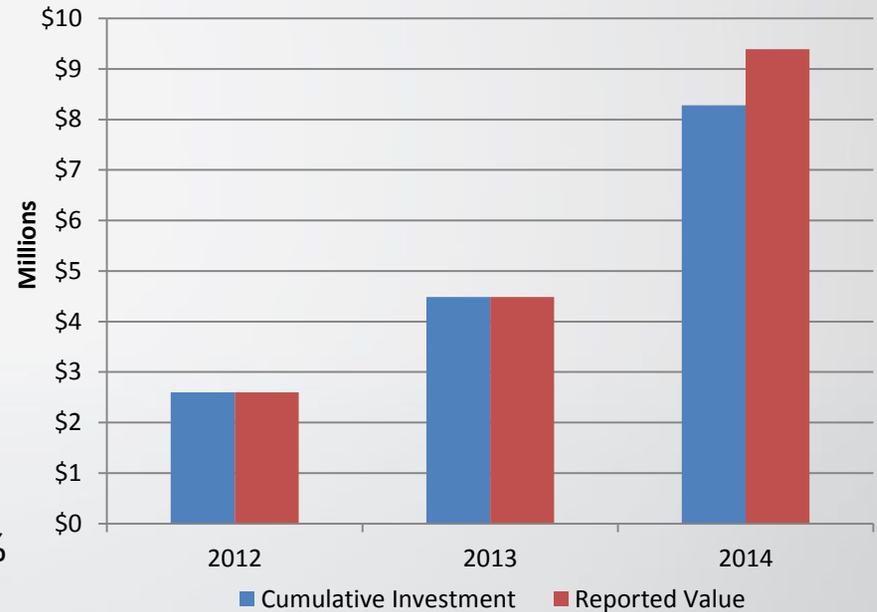
Current Fund Performance

<u>ASSETS</u>	
Investments at Cost	\$8.28M
Unrealized Gain / Loss on Investments	<u>\$1.11M</u>
Investments at Fair Value	\$9.39M
Cash and Cash Equivalents	\$11.72M
Total Assets	<u>\$21.11M</u>

<u>VALUATION CHANGE</u>	<u>INCREASE</u>	<u>DECREASE</u>
Driven by new investment round	3	0
Driven by 409A valuation	0	1

- Unrealized Gain/Loss based on third party driven valuation change of 4 portfolio companies
- Fund internal rate of return (IRR) to date: 14.83%

Reported Fund Value vs. Investment Cost Basis

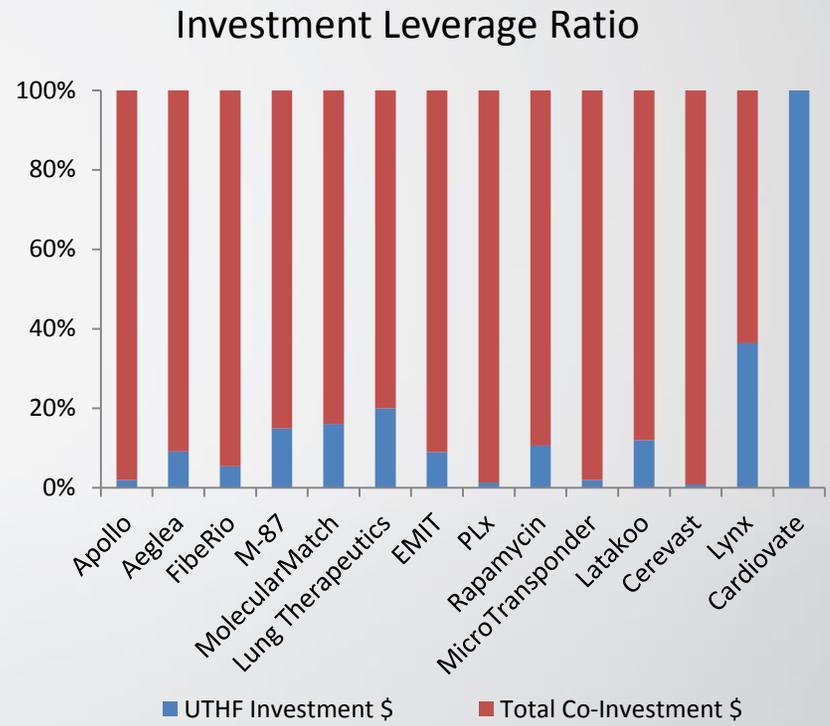


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UTHF Performance: Syndication and Leverage

- Strong Syndicate Partners
 - Average number of reputable venture capital firms in each portfolio company: 2
 - Average investment leverage ratio for each portfolio company: 27.9
 - Extensive syndication pool: U.S., Europe, Middle East, and Asia represented



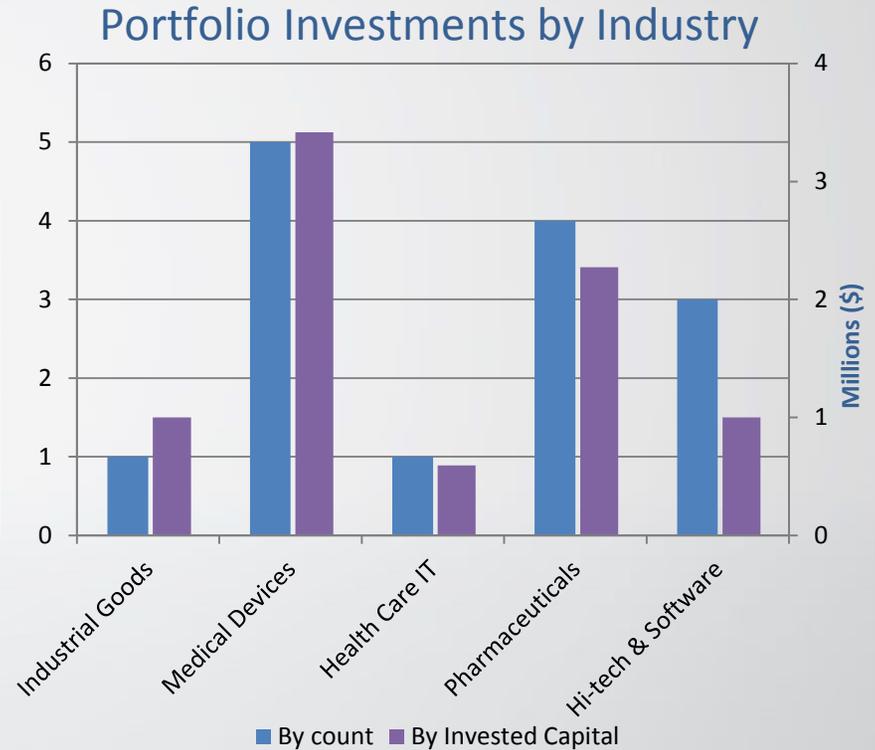
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Portfolio Overview

- Life sciences industry accounts for more than 2/3rd of portfolio companies, invested amount, and investment opportunities

	Life Sciences	Others
Total Investments	10	4
Total \$ Invested	\$6.2M	\$2M
Reserve Allocation	\$7.6M	\$1.7M
Investment Universe	69%	31%

- Life science investment strategy includes:
 - Long-term investment commitment
 - Large reserve allocation



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Portfolio Performance Milestones

Company/Variables	Business Development Milestones			Financial Strength Milestones		
	Key Regulatory Approvals	Commercial Product	Generating Revenue	Strategic Industry Investors	Strategic Financial Investor	Investment Leverage Ratio
Apollo Endosurgery	✓	✓	✓	✓	✓	51.09
Cardiovate						0.20
Cerevast Therapeutics	✓	✓		✓	✓	122.84
EMIT Corporation	✓	✓	✓		✓	10.12
FibeRio	Not Applicable	✓	✓	✓	✓	17.50
Latakoo	Not Applicable	✓	✓			7.33
Lung Therapeutics						4.00
Lynx Labs	Not Applicable	✓	✓		✓	1.75
M-87	Not Applicable	✓		✓	✓	5.70
MicroTransponder	✓				✓	49.80
PLx	✓				✓	76.72
Rapamycin Holdings						8.41
Molecular Match, Inc	Not Applicable				✓	5.22
Aeglea BioTherapeutics				✓		10.00



UTHF Performance: Solutions

Solutions	Current Users	Quantitative Return Potential	Qualitative Return Potential	User Feedback	Assessment
Royalty Exams	3 Health Institutions	High	High	Very Positive	Deploy Systemwide
IP Management Software	3 Academic Institutions Integrated	Low	High	Positive	Continue Deployment
Partnerships Initiatives	All Institutions	Low	High	Very Positive	Upfront and Ongoing Engagement
Distributed Services	All Institutions	Low	High	Positive	Continue Sourcing Value-add Services
Education and Collaboration	All Institutions	Low	Medium	Positive	Continue Education Initiatives
OTC Branding	All Institutions	Low	Medium	Needs Improvement	Implement a Holistic and Integrated Strategy
Entrepreneur Database	All Institutions	Low	Medium	Needs Improvement	Continue Database Development



Strategic Initiatives

Near Completion	Initiated
<ul style="list-style-type: none"> Evaluation of Fund monitoring and reporting tools 	<ul style="list-style-type: none"> Annual portfolio performance audit practices evaluation
<ul style="list-style-type: none"> Implementation of enhanced performance reporting metrics 	<ul style="list-style-type: none"> Proof of concept and seed fund landscape analysis
<ul style="list-style-type: none"> Backtesting model update 	<ul style="list-style-type: none"> Fund Proforma Model development

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3. **U. T. System: Allocation of \$12.5 million of Available University Funds for the U. T. Horizon Fund and for associated administrative activities of the Office of Technology Commercialization**

RECOMMENDATION

The Chancellor concurs with the recommendation of the Vice Chancellor for Research and Innovation and the Executive Vice Chancellor for Business Affairs that the U. T. System Board of Regents approve and authorize \$12.5 million from Available University Funds (AUF) as the second allocation under a four-year plan to continue to enhance the goals of the U. T. Horizon Fund. Each year, funding for the Horizon Fund is subject to approval and authorization by the Board upon receipt of a satisfactory report of activities undertaken as a result of the previous year's allocation. The requested funds will be utilized as follows:

- a. \$10 million for Fund investments; and
- b. \$2.5 million for associated services to be provided centrally by the Office of Technology Commercialization under the oversight of the Office of General Counsel and the Office of Business Affairs.

BACKGROUND INFORMATION

The Fund, a strategic investment fund for the U. T. System, was approved first by the Board of Regents on August 25, 2011, and capitalized with \$10 million of AUF (Phase I). On February 14, 2013, the Fund was reauthorized with expanded funding from AUF (Phase II) to be deployed over four years. At that time, the first allocation of Phase II was capitalized with \$12.5 million of AUF. As of October 2014, \$19.4 million of funds have been, or are in the process of being, deployed or are being held as reserve funding for follow-on investments. This represents 97% of the total funding allocated for investments.

The Fund's overall goals are to improve commercialization of U. T. System institution technologies and improve sustainability through a positive return on investment. The Fund's Syndicate Investment funding program enables the U. T. Horizon Fund to invest alongside other investors in companies that are commercializing U. T. System startup companies. The program seeks to protect against dilution and to enhance equity position in successful U. T. System startup companies. Continued participation not only supports the growth of U. T. System startup companies, but also enhances the investment return potential for U. T. System both in terms of delivering real products and services beneficial to society, as well as providing financial return.

The Fund's Seed Investment program focuses on addressing one of the biggest bottlenecks at the earliest stages of commercialization -- access to seed capital. By providing the much needed seed investment, the U. T. Horizon Fund enables U. T. System startup companies to secure entrepreneurial talent and business services needed to embark on the commercialization pathway.

4. **U. T. System: Report on Aeglea BioTherapeutics, a commercialization success story**

REPORT

Mr. Jeet Vijay, Assistant Vice Chancellor for Investments and Entrepreneurship, will introduce Dr. David G. Lowe, Chief Executive Officer and Co-Founder of Aeglea BioTherapeutics.

Dr. Lowe will discuss the growth and success of Aeglea BioTherapeutics (Aeglea), highlighting its origin from U. T. Austin research, the growth and performance of the company including the U. T. Horizon Fund's role in supporting the growth and success, as well as sharing the company's societal and financial returns. Dr. Lowe's presentation is set forth on the following pages.

BACKGROUND INFORMATION

Aeglea is a U. T. Austin licensee formed on December 16, 2013, with the goal to exploit errors in metabolism in the advancement of human disease. Aeglea is projected to commercialize three engineered human enzymes that degrade L-arginine, L-cystine, or L-methionine as cancer therapeutics. The company is the leader in biologic targeting of abnormal metabolism, focused on the treatment of cancer and inborn errors of metabolism. In cancer, the company is exploiting the abnormal amino acid dependence of tumor cells.



Dr. David G. Lowe

Chief Executive Officer and Co-Founder, Aeglea BioTherapeutics

U. T. System Board of Regents' Meeting
Technology Transfer and Research Committee
November 2014

THE GENESIS OF AEGLEA BIOTHERAPEUTICS

INVENTORS

Professor George Georgiou, Ph.D.

- Cockrell Endowed Chair Professor, Departments of Chemical Engineering, Biomedical Engineering, Molecular Genetics and Microbiology, U. T. Austin
- Protein and cell engineering from a Chemical Engineering perspective
- Over 200 publications and 45 issued or pending patents
 - >60% of these have been licensed to corporate partners
- Member National Academy of Engineering and Institute of Medicine

Everett Stone, Ph.D.

- Staff scientist
- U. T. Austin

THE GENESIS OF AEGLEA BIOTHERAPEUTICS (CONT.)

ENTREPRENEUR

David G. Lowe, Ph.D.

- Aeglea BioTherapeutics, Austin, TX 2012 - Present
 - Co-founder, President and CEO

- Skyline Ventures, Palo Alto, CA 2002 - 2012
 - Life Sciences Venture Capital
 - Invested in startups to mid-stage drug development companies, platform technology, and diagnostic companies
 - Led venture capital financings that raised \$262 million
 - Exits from 10 companies generating a 1.6 x return of \$142 million on \$88.6 million of invested capital, projected to be >>2 x on full exit

- Genentech Inc., South San Francisco, CA 1985 - 2001
 - Research Director - delivered eight molecules to clinical development, including two products that generated >\$10 billion in revenue in 2013

- University of Toronto, Biochemistry Ph.D. 1985

AEGLEA BIOTHERAPEUTICS HOLDINGS LLC

Board of Directors

- David G. Lowe, Ph.D.
 - President and CEO
- Armen Shanafelt, Ph.D.
 - Lilly Ventures
- Henry Skinner, Ph.D.
 - Novartis Venture Funds
- George Georgiou, Ph.D.
 - Aeglea Scientific Founder
 - Professor, U. T. Austin

Investors

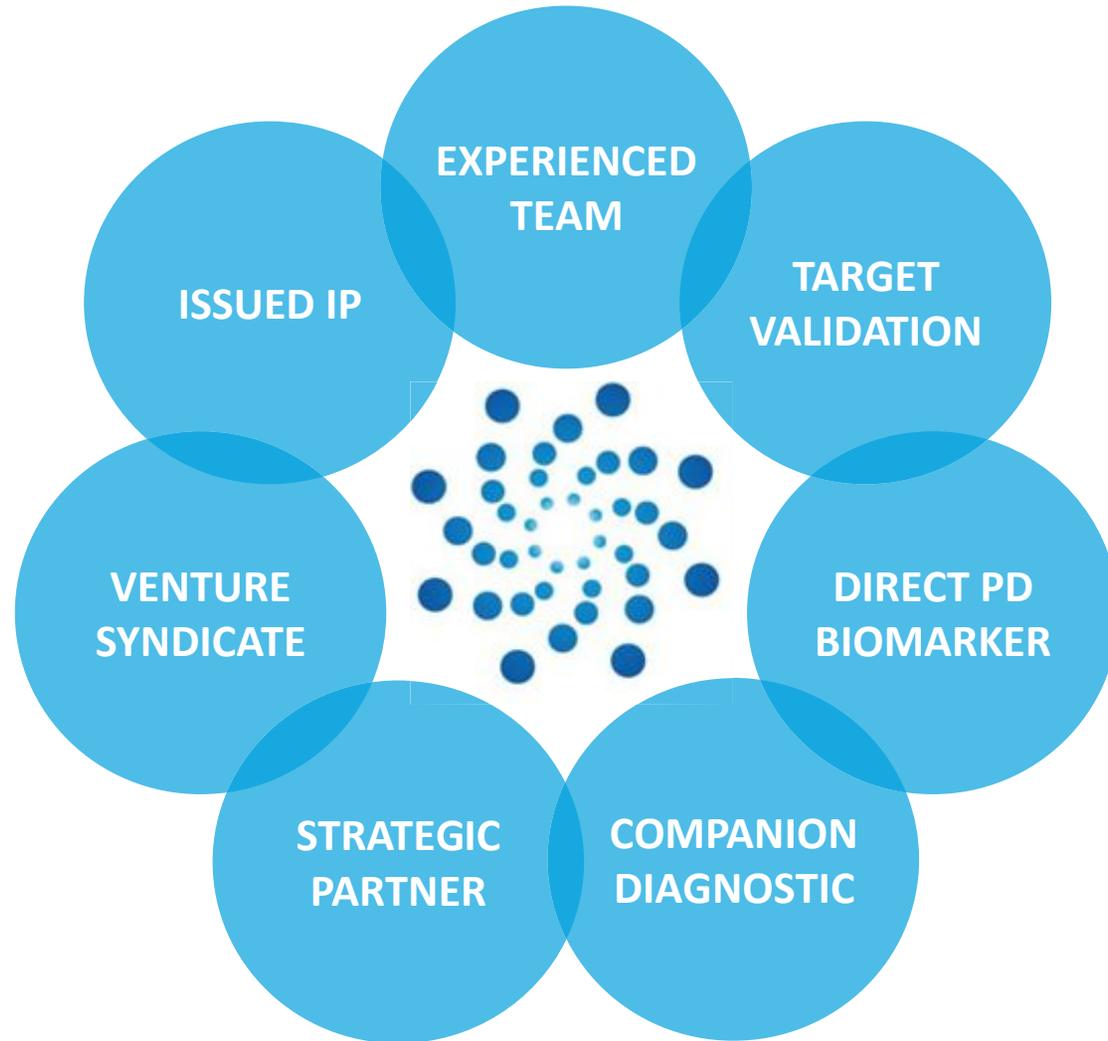


Strategic Partner



AEGLEA PRODUCT DEVELOPMENT

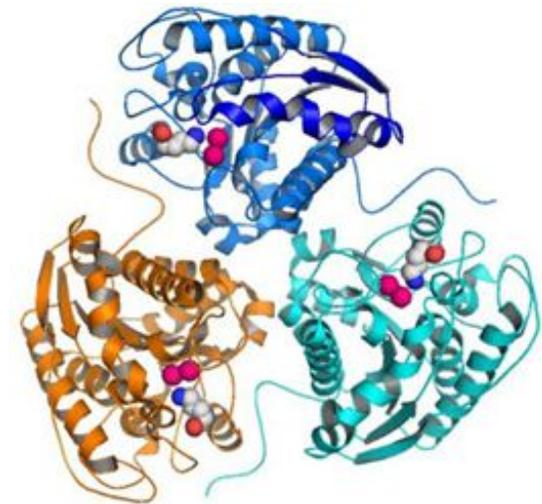
ESSENTIAL INGREDIENTS FOR SUCCESS



AEGLEA BIOTHERAPEUTICS

EXPLOITING ERRORS IN METABOLISM TO TREAT HUMAN DISEASE

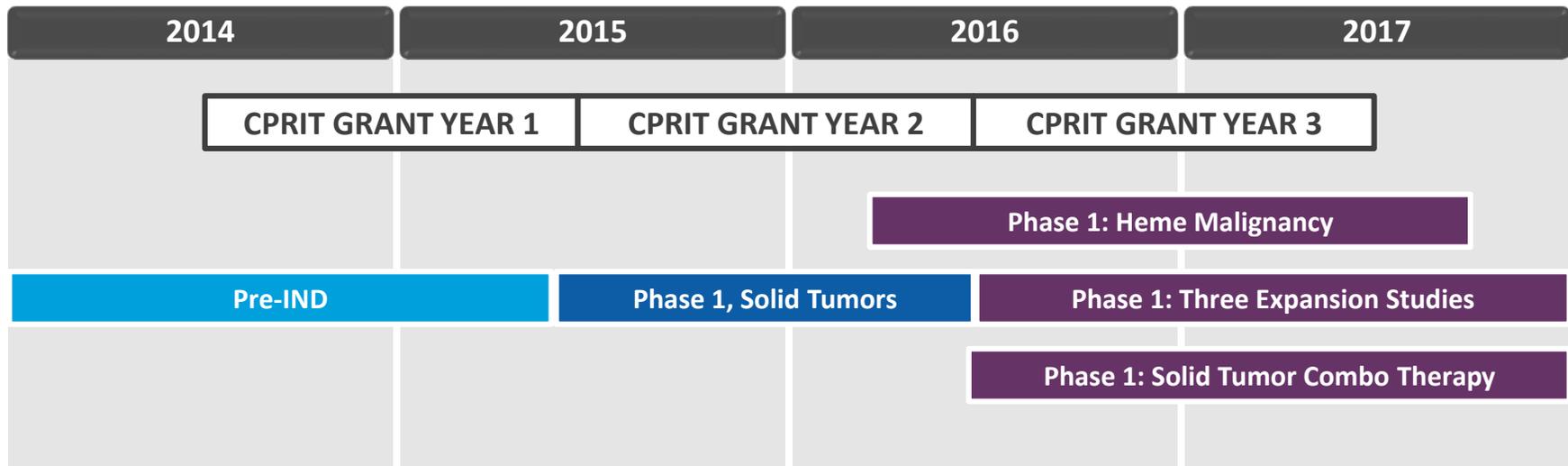
- The leader in biologic targeting of abnormal metabolism
 - Exploit cancer metabolism, starving tumors of essential nutrients
 - Treat inborn errors of metabolism (IEM)
- Platform of engineering human enzymes
 - Degrade target amino acids in blood
 - Companion diagnostics in oncology
 - Three issued patents, others in prosecution
- Robust product development pipeline
 - Three enzymes for oncology
 - Two IEM rare disease programs
 - Ongoing research to identify new pipeline candidates



AEB1102 PRODUCT DEVELOPMENT

DEMONSTRATE CLINICAL PROOF OF RELEVANCE IN SELECTED CANCERS
 ESTABLISH PREDICTIVE VALUE OF A COMPANION DIAGNOSTIC

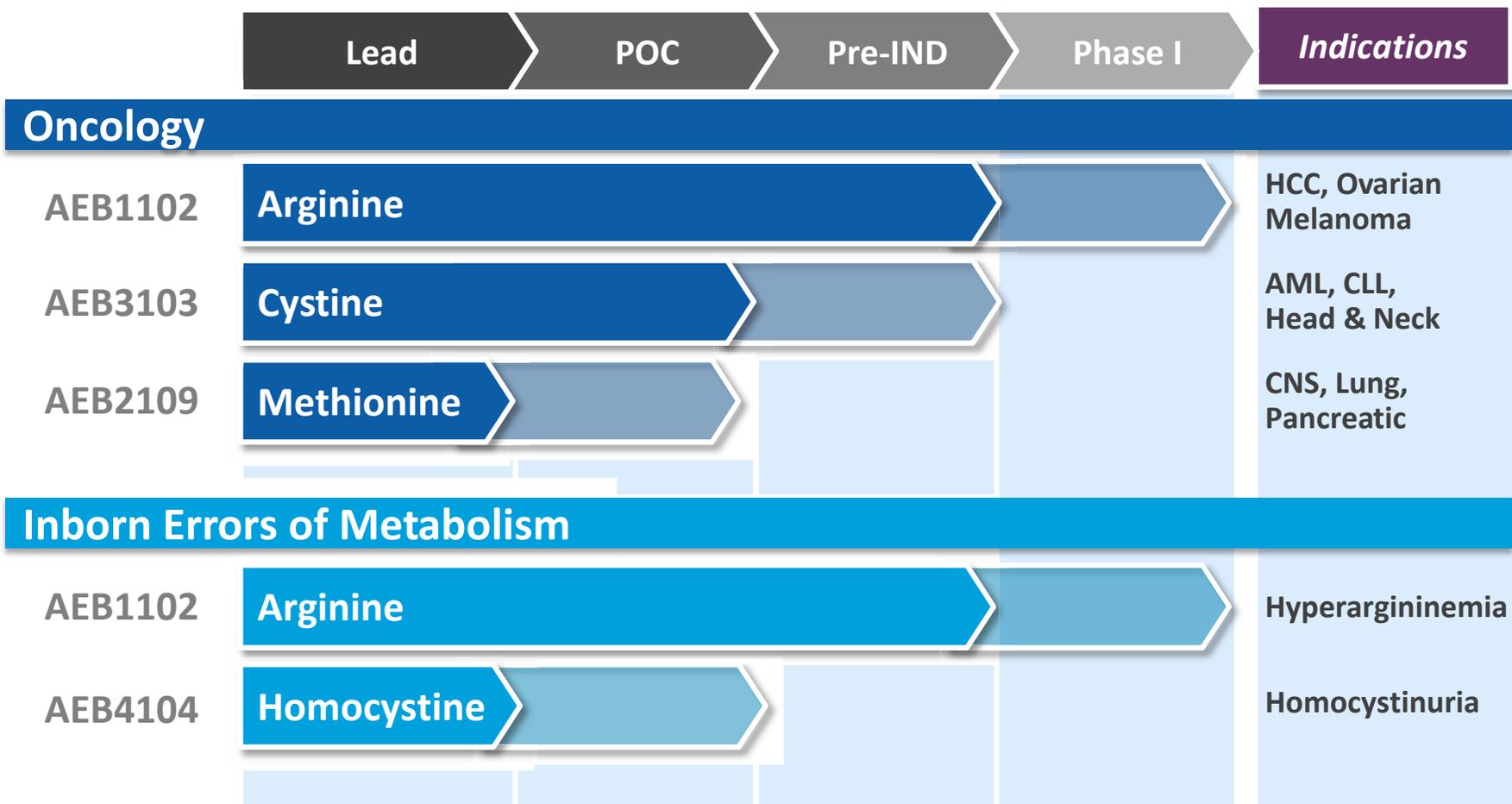
- \$19.8 million Cancer Prevention and Research Institute of Texas (CPRIT) Grant covers three years of operations to completion of enrollment
- CPRIT milestones: IND filing in 1H 2015, start enrollment in Phase I expansion arms
- Biomarker development, technical validation, and *in vivo* validation in PDx models is performed in parallel to clinical development through 1H 2016



SERIES B FINANCING

ADVANCING THE PIPELINE

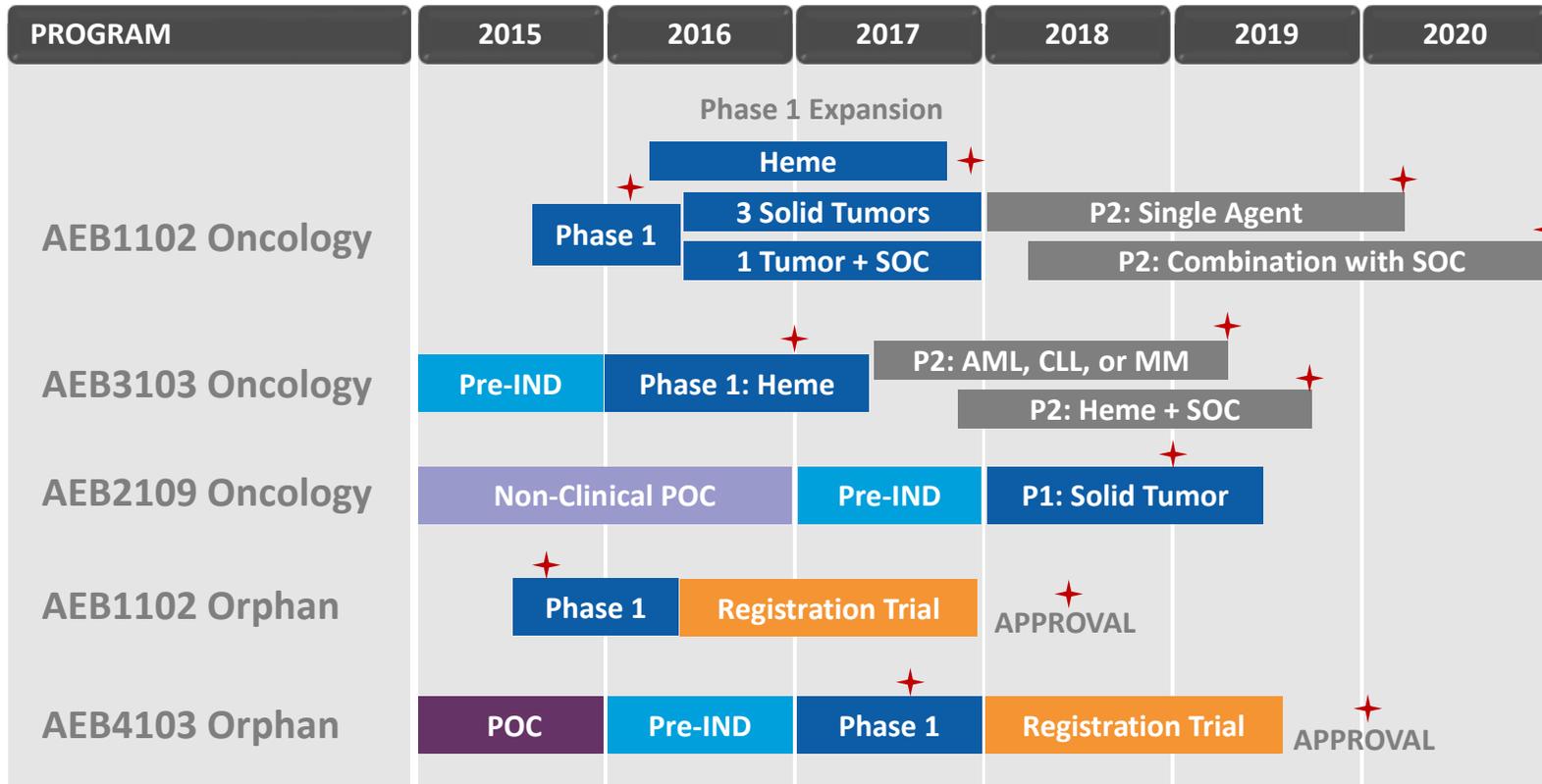
ADVANCING DEVELOPMENT THROUGH SERIES B



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PRODUCT DEVELOPMENT MILESTONES

CLINICAL RESULTS FOR MULTIPLE PROGRAMS STARTING IN 2015



★ = CLINICAL DATA

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COMPANY STRUCTURE: DESIGNED TO LEVERAGE A PLATFORM OF ENGINEERED HUMAN ENZYMES

COMPANY SURVIVES IN THE EVENT OF THE SALE OF A SUBSIDIARY C CORP

- Investment is in the LLC
- Employees work for Aeglea Development Company
- Each drug is held in a wholly owned C corp subsidiary

Aeglea BioTherapeutics Holdings LLC
Investors and Shareholders



AEGLEA CONSORTIA

Aeglea Development Company

AERase Inc.

AECase Inc.

AEMase Inc.

KBI Biopharma

Strategic Partner
↔
Manufacturing

**University of Texas
Georgiou Lab**

Sponsored
↔
Research



THE PATH TO EXIT AND LIQUIDITY

MAXIMUM TRANSACTIONAL FLEXIBILITY UNTIL IPO

- Path to Aeglea IPO in 16 - 24 months
 - Strong pipeline and balance sheet
 - Build syndicate of investors with significant committed capital
- LLC structure proves transactional flexibility in the near term
 - Industry comparable sales in oncology suggest a potential for liquidity early in clinical development = \$100 - \$400 million per asset
 - Orphan indications – inborn errors of metabolism are attractive as acquisition targets with early clinical data
- Clear path to IPO with a strong pipeline
 - Aeglea product development timeline for clinical data and orphan product approval will drive initial investor demand and market capitalization
 - Agios provides a public comparable
 - \$1.5 billion market cap, three Phase 1 programs in oncology and IEM
 - Calithera provides a private company comparable
 - Raised \$80 million in a public offering, one oncology product in Phase 1