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Bioscience



THERANOSTICS HEALTH
Advancing Personalized Medicine Through Molecular Diagnostics

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THERANOSTICS HEALTH

Advancing Personalized Medicine Through Molecular Diagnostics

www.amarantus.com www.avantdiagnostics.com www.theranosticshealth.com Ticker: OTCQB:AVDX Ticker: OTCQX:AMBS

Proposed 3-Way Business Combination

Forward-Looking Statements

This presentation contains “forward-looking statements” within the meaning of the “safe-harbor” provisions of the Private Securities Litigation Reform Act of 1995. Such statements involve known and unknown risks, uncertainties and other factors that could cause the actual results of the Company to differ materially from the results expressed or implied by such statements, including changes from anticipated levels of sales, future international, national or regional economic and competitive conditions, changes in relationships with customers, access to capital, difficulties in developing and marketing new products and services, marketing existing products and services, customer acceptance of existing and new products and services and other factors. Accordingly, although the Company believes that the expectations reflected in such forward-looking statements are reasonable, there can be no assurance that such expectations will prove to be correct. The Company has no obligation to update the forward-looking information contained in this presentation.

Business Case Moving Forward

The combined company will offer cutting edge pharma services in the areas of cell cycle biology and signal transduction pathways to assist pharmaceutical companies and medical researchers in identifying treatment pathways for disease.

The combined company will leverage its CLIA/CAP laboratory infrastructure to launch proprietary diagnostic tests in the areas of Ovarian Cancer, Multiple Sclerosis and Alzheimer's disease, and related non-proprietary assays.

Proposed Executive Team

Gregg Linn: Chief Executive Officer & President

President and Managing Member at Issuers Capital Advisors, LLC

President and CEO at Precision Metal Products, LLC

COO and CFO at Vital Living, Inc. (VTLV)

CFO at Skyline Multimedia Entertainment, Inc. (SKYL)

CFO at Biomechanics Corporation of Amerca (BCAM)

Glenn Hoke, PhD: EVP, Chief Scientific Officer

President & CEO at Theranostics Health, Inc.

EVP & CSO at Dyad Corporation

VP Research & Development at Gene Logic

VP at Genetic MediSyn

Ronald Hencin: Vice President Business Development

VP of Business Development at Theranostics Health

VP BioResearch Sale at Gene Logic

IT Entrepreneur

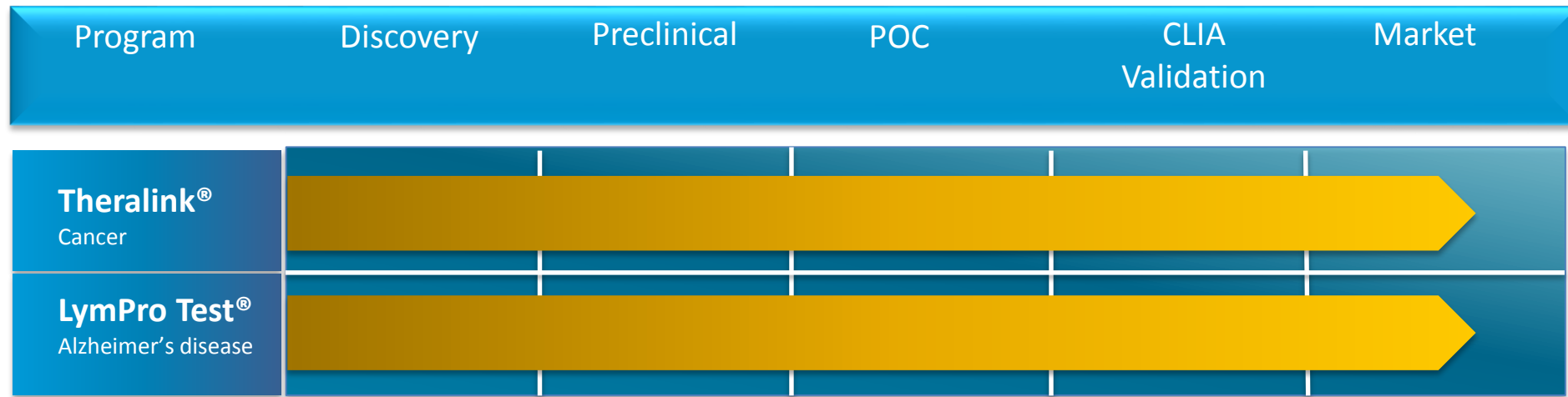
Gerald E. Commissiong: Member of the Board of Directors

Co-founded AMBS in 2008: Led acquisition of entire AMBS portfolio via over \$40M in capital raised

Professional athlete: CFL Calgary Stampeders

Stanford University, Management Science & Engineering





Pharma Services Product Pipeline



Current Challenges in Cancer Diagnosis & Treatment

Current diagnostics do not accurately predict response to therapy; patients are thus often subjected to costly treatments with many side effects and low response

Current treatments for breast cancer deliver modest benefits relative to costs

Regimen <i>from label</i>	Trastuzumab <i>+paclitaxel</i>	Pertuzumab <i>+docetaxel +trastuzumab</i>	Everolimus <i>+exemestane</i>	Lapatinib <i>+capecitabine</i>
Efficacy <i>(Change in PFS)</i>	2 month increase	6 month increase	6 month ¹ increase	5 month increase
Safety <i>(key side effects)</i>	<ul style="list-style-type: none">CardiomyopathyExacerbation of neutropenia	<ul style="list-style-type: none">Left-ventricular dysfunctionEmbryo-fetal toxicity	<ul style="list-style-type: none">Hepatic impairmentDecreased wound healingRenal failure	<ul style="list-style-type: none">Left-ventricular dysfunctionHepatotoxicityCutaneous reactions
Annual Cost	 \$40,000	 \$110,000	 \$100,000	 \$120,000

TheraLink® matches patients to their optimal therapy based on individual biopsy results

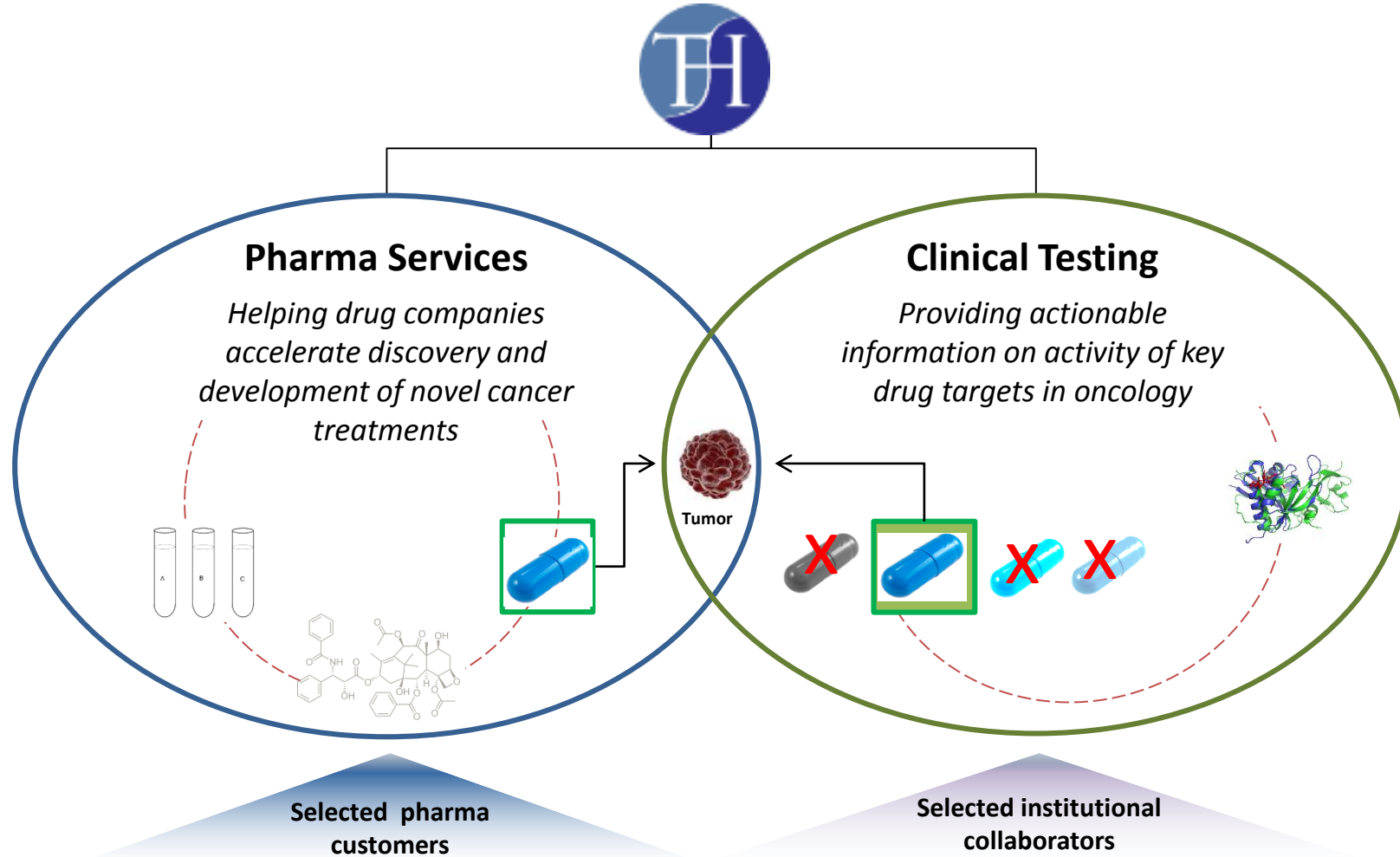
Phospho-Proteomic vs. Genomic Testing

The TheraLink® Assay provides actionable information beyond what genomic testing provides, enabling oncologists to select more appropriate treatments

TheraLink® Measurements	Why This Matters	How TheraLink® Is Different	KOL insight
Quantity of proteins	<ul style="list-style-type: none">Measuring the quantity of given proteins in a tumor helps distinguish among disease pathways (which create different amounts of proteins) and assess treatment response	<i>Genomic testing detects defective genes but not which pathway they contribute to</i>	<i>"I like that this addresses pathways that there aren't currently Dx for." —Pathologist/Oncologist</i>
Activity of proteins	<ul style="list-style-type: none">In certain disease pathways, proteins need to be not only present but also activated (i.e., phosphorylated) to be involved in the disease process	<i>Genomic testing does not evaluate whether proteins are activated</i>	<i>"Mutations do not always yield functional proteins, hence genomics testing is not entirely conclusive" — Oncologist</i>
Entire pathway of protein signaling	<ul style="list-style-type: none">A diverse range of proteins, some mutated and some not, may be implicated in a given disease pathway. Analyzing the entire pathway identifies likely drug targets	<i>Proteins can participate in aberrant signaling pathways despite being genetically normal</i>	<i>"Not all HER2+ patients respond to therapy because there may be resistance downstream. This test could replace IHC and FISH." —Pathologist/Oncologist</i>

Company Snapshot

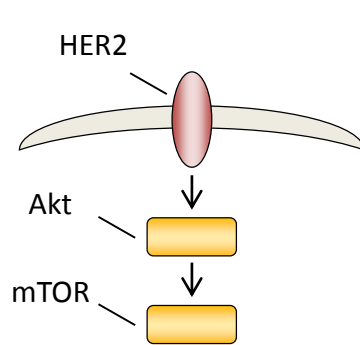
Theranostics Health offers the TheraLink® Assay phospho-proteomic test to the pharmaceutical and clinical sectors, helping them optimize cancer treatment



Importance of Phospho-Proteomic Testing

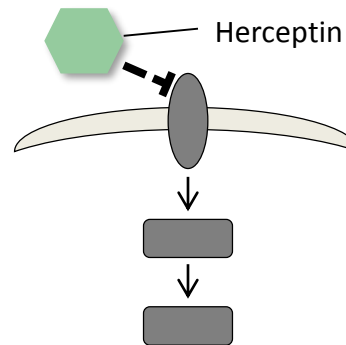
Evaluating downstream signaling activity triggered by cell-surface proteins is critical to identifying the drug most likely to inhibit tumor growth

Rationale for TheraLink®: Why is the Signaling Pathway Important?



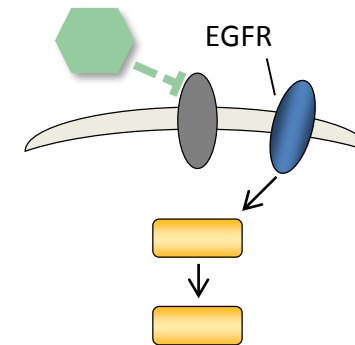
Cell-surface proteins activate signaling molecules involved in causing cancer

For example, in a subset of breast tumors, HER2 activates Akt and, in turn, mTOR



Blocking those proteins with a drug may turn off the pathway

Herceptin disarms HER2 and prevent Akt / mTOR activation



However, compensatory mechanisms may activate the same pathway by other means

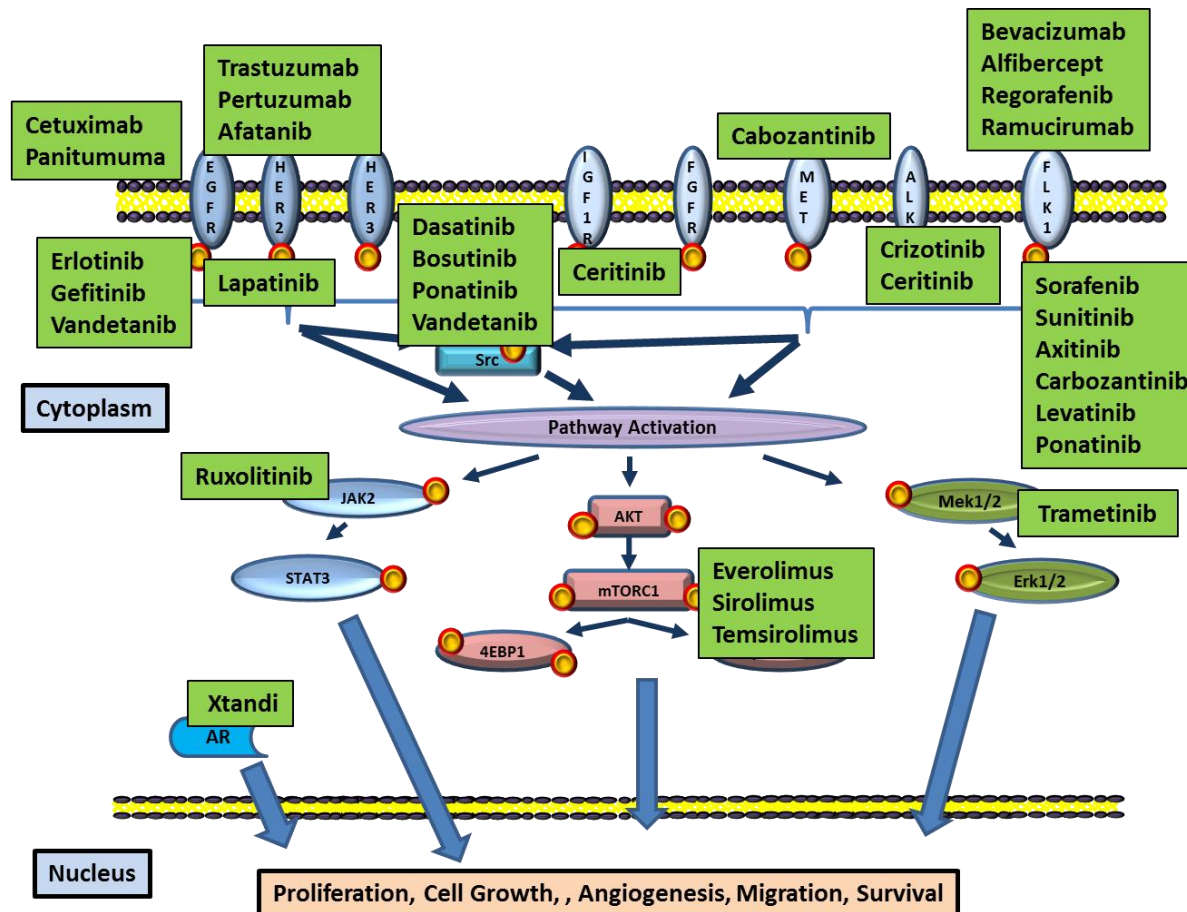
This helps to explain why up to 70% of advanced HER2+ patients fail Herceptin therapy¹

In this example, the TheraLink® assay would be able to identify that the Akt/mTOR pathway was activated via EGFR and recommend treatment with an EGFR inhibitor

Business Overview: The TheraLink® Assay

The 24 markers analyzed by TheraLink® were chosen for their relevance to treatment – a majority are targets of current cancer therapies

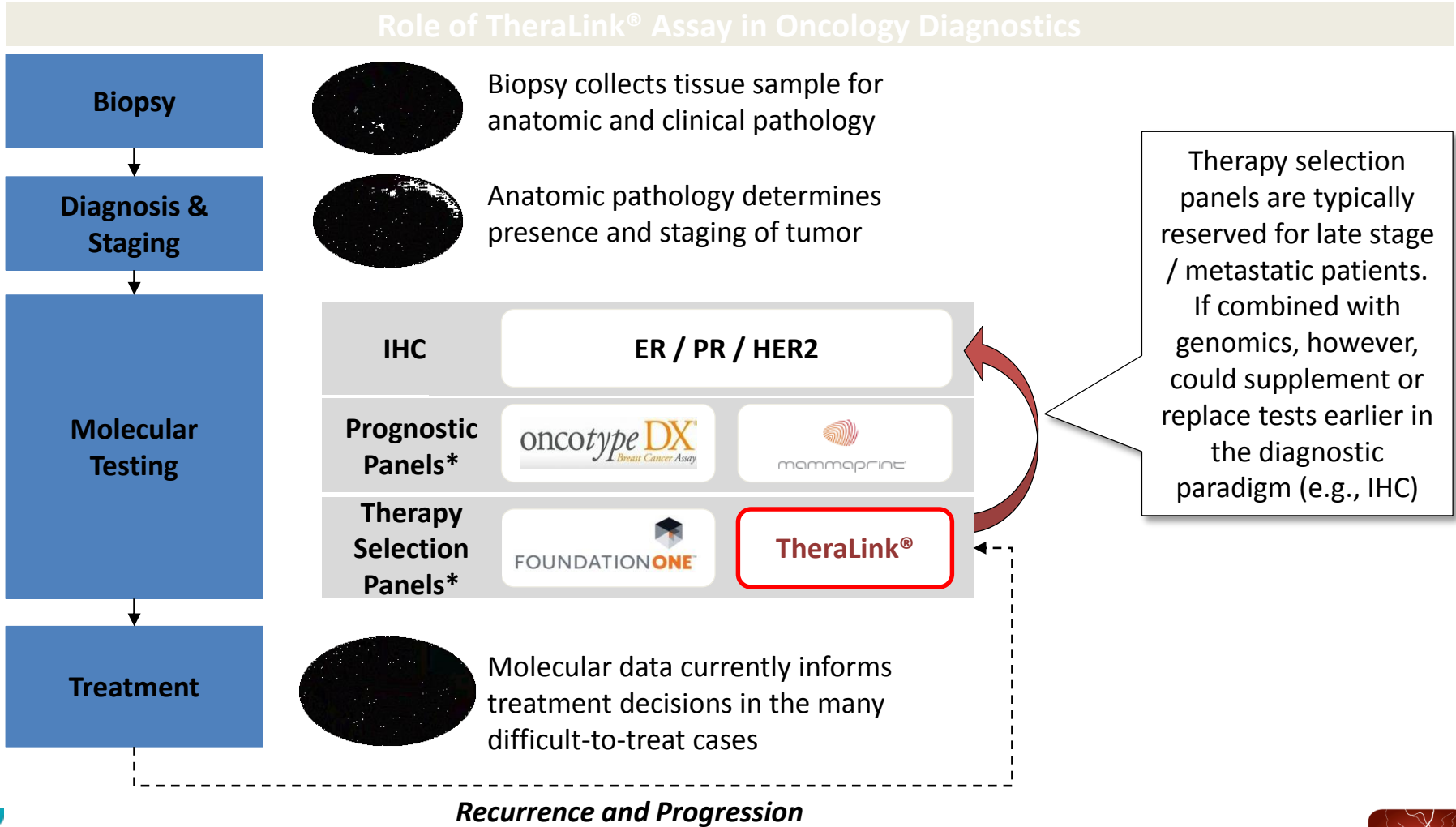
Molecular Therapies Targeting TheraLink® Markers (Current)



- Most of the markers analyzed by TheraLink® **are drug targets**
- Hence, TheraLink® identifies **therapeutic options most likely to suppress tumor growth** for a particular patient

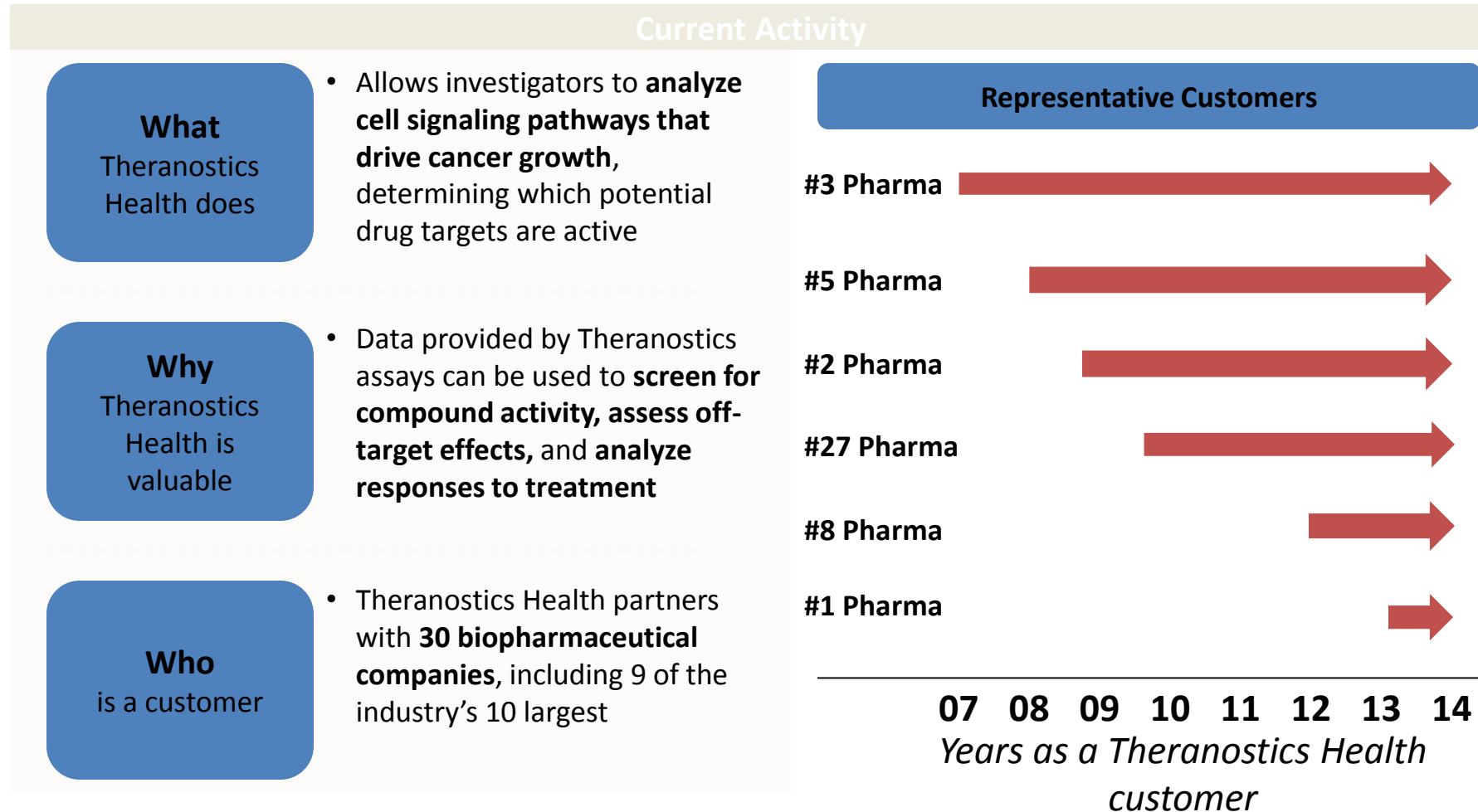
Business Overview: The Role of TheraLink®

TheraLink® improves on current oncology diagnostics by enabling rapid, actionable insights to help inform treatment decisions



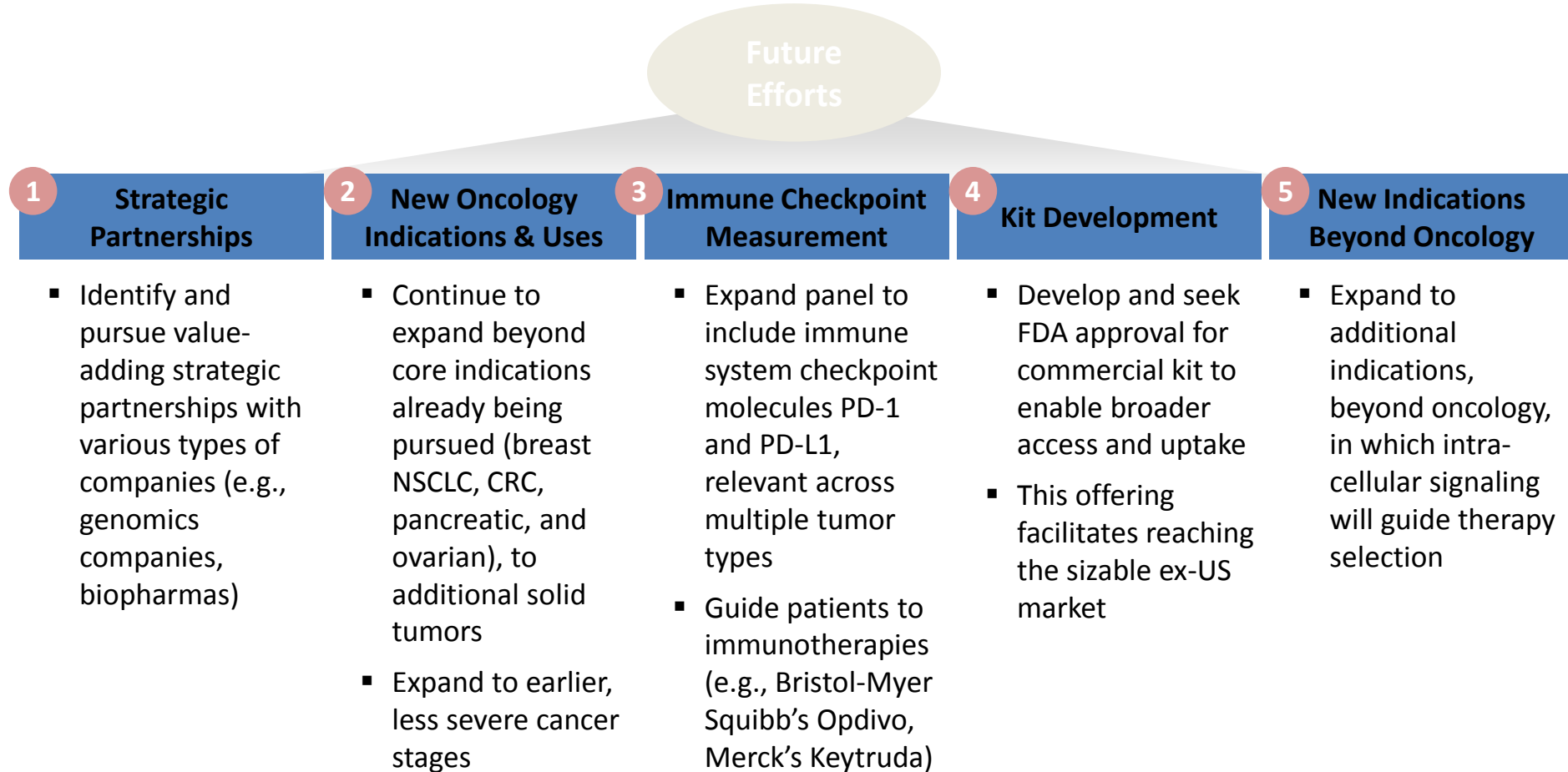
Business Overview: Pharmaceutical Services

Theranostics Health supports clients' drug development efforts, providing non-dilutive capital and strategic insights for product development



Growth Opportunities

Launching from its current efforts, Theranostics Health will expand its range of offerings substantially in the future



Business Overview: Applications of the TheraLink® Assay

Unlike other Dx (e.g., genomic panels), TheraLink® measures the activity of targets specified on drug labels, empowering clinicians to select the optimal therapy



HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use AFINITOR safely and effectively. See full prescribing information for AFINITOR.

AFINITOR (everolimus) tablets for oral administration
Initial U.S. Approval: 2009

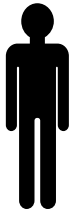
12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Everolimus is an inhibitor of mammalian target of rapamycin (mTOR), a serine-threonine kinase, downstream of the PI3K/AKT pathway. The mTOR pathway is dysregulated in several human cancers. Everolimus binds to an intracellular protein, FKBP-12, resulting in an inhibitory complex formation (mTORC1) and thus inhibition of mTOR kinase activity. Everolimus reduced the activity of S6 ribosomal protein kinase (S6K1) and eukaryotic elongation factor 4E-binding protein (4E-BP1), downstream effectors of mTOR, involved in protein synthesis. In addition, everolimus inhibited the expression of hypoxia-inducible factor (e.g., HIF-1) and reduced the expression of vascular endothelial growth factor (VEGF). Inhibition of mTOR by everolimus has been shown to reduce cell proliferation, angiogenesis, and glucose uptake in *in vitro* and/or *in vivo* studies.

Business Overview: Value Proposition

Theranostics Health benefits multiple stakeholders



For Patients

- Receive the right INDIVIDUALIZED therapy for the best outcome
- Reduce exposure to ineffective, potentially toxic treatments



For Oncologists

- Identifies appropriate treatment options
- Guides therapies for patients who develop resistance to treatment



For Insurers

- Reduces cost of ineffective therapies
- Enables channeling of savings to funding of effective therapies



For Pharma Companies

- Reduce clinical trial failures rates and cost
- Increase efficacy rates that can support premium pricing

Competitive Landscape: TheraLink® Key Advantages

TheraLink® offers several key advantages that appeal to community-based oncologists, the key decision-makers in diagnosis and treatment

Focused

- ▶ Targets included in the panel are **well-known and clearly linked to drugs**
- ▶ Panel is **targeted for specific tumor types**
- ▶ Provides **only the information that oncologists need to know**

"This gives me only information that I can use – that's a real advantage."
—KOL Oncologist

Actionable Data

- ▶ The Theralink® report directly **supports therapy selection**
- ▶ Easily helps physicians **identify which therapies to use** and which therapies *not* to use

"If there's nothing actually going on in the HER2 pathway, why give an inhibitor?"
—KOL Oncologist

Supported by Growing Evidence

- ▶ **Body of evidence** supporting the underlying technology (RPMA) is growing
- ▶ Additional **clinical evidence gathering** is underway
- ▶ Covered by **intellectual property**

"These are well-validated, known druggable targets."
—KOL Oncologist

Business Overview: Theranostics Health's Strategy & Vision

Expand offerings in both clinical testing and pharma services

Strategy

Demonstrate Value

- **Develop robust evidence base** to demonstrate clinical utility, particularly in breast cancer
- **Work with thought leaders to communicate value** to the broader oncology community
- **Leverage partnerships** to expand commercial capabilities and negotiate reimbursement

Drive Awareness & Uptake

- Launch in new tumor types
- Establish programs to **help providers file claims / appeals** and **assist patients** in covering out-of-pocket costs
- Seek more **comprehensive reimbursement** coverage via unique code

Expand the Offering

- Expand offering with **strategic partnerships** to encompass a broader 'Omics approach
- Leverage partnership to **shift use earlier in the diagnostic paradigm**
- Continue demonstrating value through **additional clinical utility studies**

Vision

Empower the broader cancer community with targeted, actionable molecular information



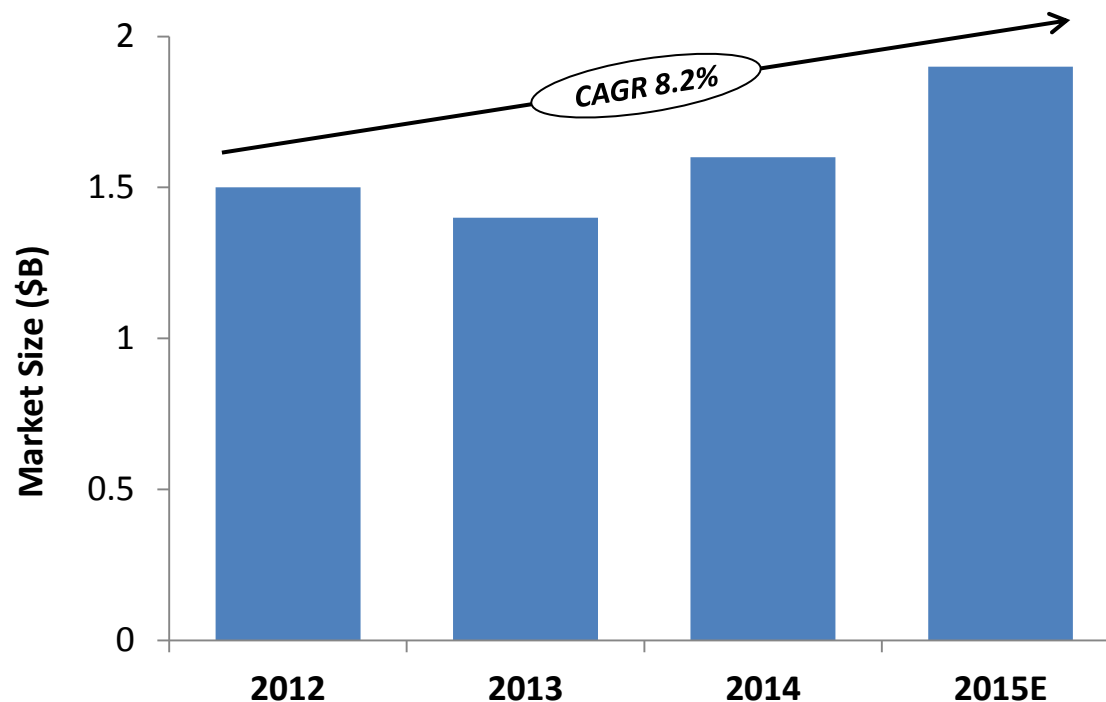
Business Overview: Upcoming Test Releases

- TheraLink® Assay for Colorectal Cancer
 - Conducting validation in Q3/16
- TheraLink® Assay for Pancreatic Cancer
 - Samples are being collected and conducting validation Q3/16
- TheraLink® Assay for Non-Small Cell Lung Cancer
 - Currently negotiating agreements for access to NSCLC tissues
 - Validation starting after Pancreatic Cancer and likely available by end of year
- TheraLink® Assay for Immune Checkpoints (PD-1, PD-L1, etc.)
 - Q4/2106 timing of studies with multiple pharma partners, and further work on method development

Market Assessment: Oncology Diagnostics Market Size

Within the rapidly-growing molecular diagnostics industry, oncology diagnostics – the segment that includes the TheraLink® assay – have been notably successful




Oncology Molecular Diagnostics: Industry Revenue (2012 – 2015, WW, US\$)



- The molecular diagnostics industry as a whole has enjoyed robust growth since 2012, with an overall CAGR of 7.8%
- Hematology / oncology diagnostics, the segment that includes the TheraLink® assay, have been among the fastest-growing in the sector, posting a CAGR of 8.2%

Market Assessment: Key Trends in Molecular Diagnostics

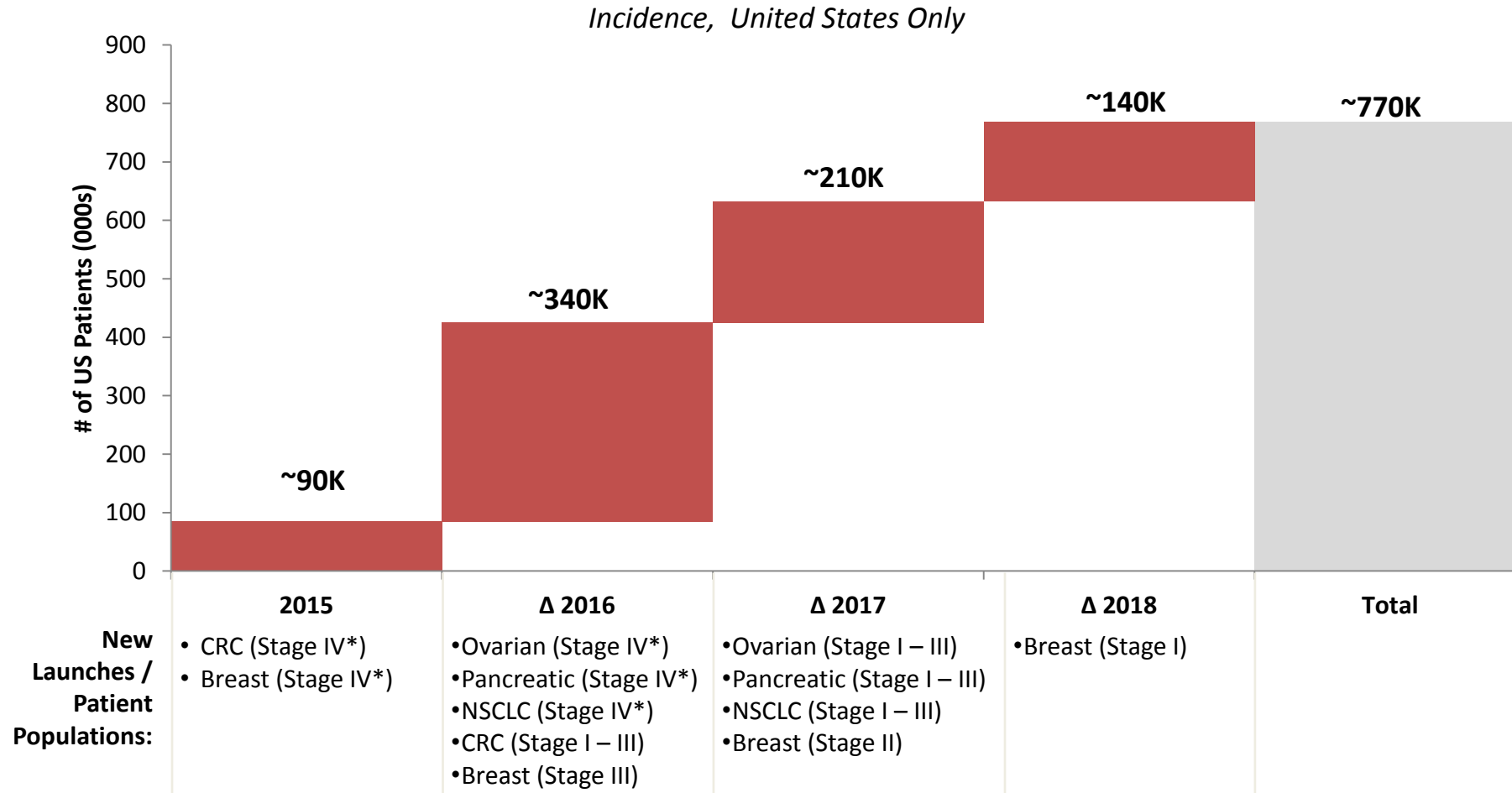
Theranostics Health benefits from major trends in molecular diagnostics, notably the demand for actionability and the rise of proteogenomic testing

Trend	Key Details	Impact on Theranostics Health
Growth of Personalized medicine	<ul style="list-style-type: none">• Cancer is increasingly considered an individual disease driven by a patient's particular abnormalities• This trend parallels a broader shift toward developing personalized therapeutics, particularly in oncology (e.g., Dx to identify appropriate treatment for each patient)	 <i>TheraLink® provides otherwise-inaccessible information on an individual patient's disease pathway</i>
Demand for Actionability	<ul style="list-style-type: none">• The number of competitors in proteomic and genomic testing continues to increase• As oncologists struggle to differentiate among tests, the <i>actionability</i> of data – its usefulness in guiding treatments – is growing in importance	 <i>Ensuring that TheraLink® results are actionable is an ongoing focus for management</i>
Rise of Proteogenomics	<ul style="list-style-type: none">• Studies have linked genomic and proteomic levels of data (e.g., mapping ~84% of the human proteome)• Vendor collaborations have begun to demonstrate serious interest (e.g., the OneOmics partnership of AB Sciex and Illumina)	 <i>Increases in both scientific grounding and vendor interest will strengthen TH's business</i>

Market Assessment: Potential Addressable Market

By 2018, TheraLink® assays will serve an addressable market of nearly 800,000 U.S. patients driven by launches in new tumors and use in earlier stage patients

TheraLink® US Addressable Patient Population: Expansion Over Time Into New Tumors and Earlier Stage Patients



Note: Epidemiology data is for US only.

*Stage IV patient estimates include both newly diagnosed patients as well as those patients who have progressed from earlier stages (I – III)

Note: In addition to growth due to expansion in tumor types and patient populations, there is underlying population growth, but effect is modest and thus not included in graph

Source: Decision Resources PatientBase

Reimbursement: Current CPT Codes and Definitions

To date, Theranostics Health has successfully obtained reimbursement for the TheraLink® Assay through a combination of codes

Code	Description	Reimbursement Rate ¹
81479	Unlisted Molecular Pathology Procedure	\$728 - \$1,820
88325	Pathology consult	\$136 - \$343
88380	Microdissection laser	\$118 - \$304
G0452	Molecular interpretation	\$8 - \$28

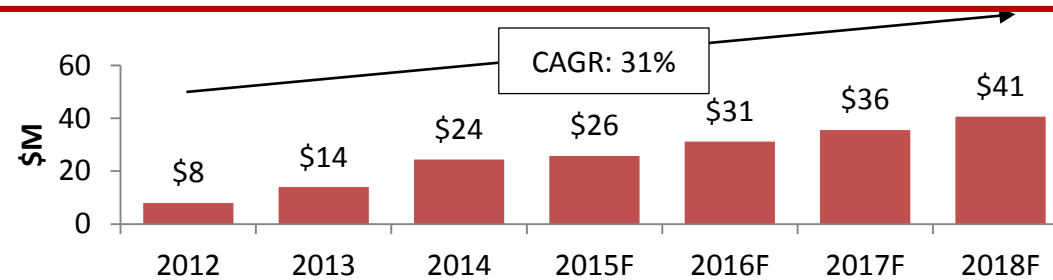
Total of \$990
- \$2,495

Financials: Pharma Services Revenue Model Assumptions

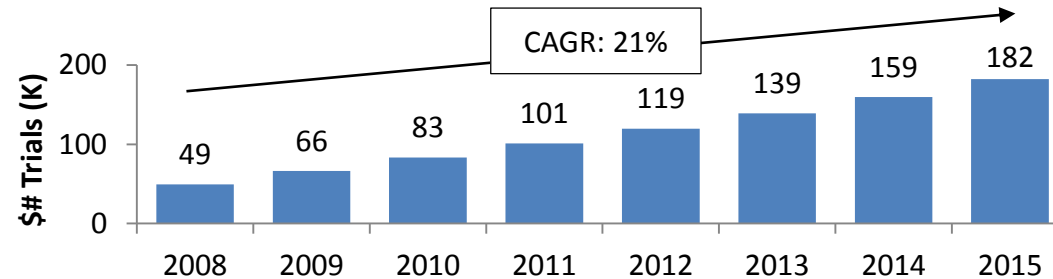
Future revenues for pharma services forecasted based on trends in the industry

Drivers of Pharma Services Revenue: Forecasted and Historical

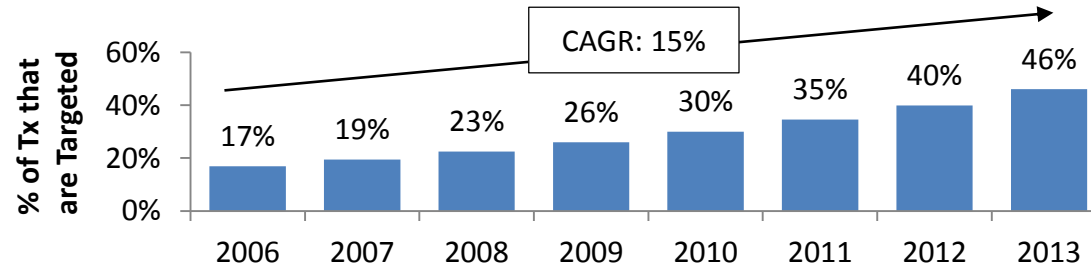
Foundation Medicine Pharma Trials Revenues



Number of Registered Clinical Trials Over Time



Oncology Treatment Modalities*



Based on these trends, pharma services revenue is forecasted to grow at **~20% per year** from 2015 budgeted revenues

 Impacts forecast

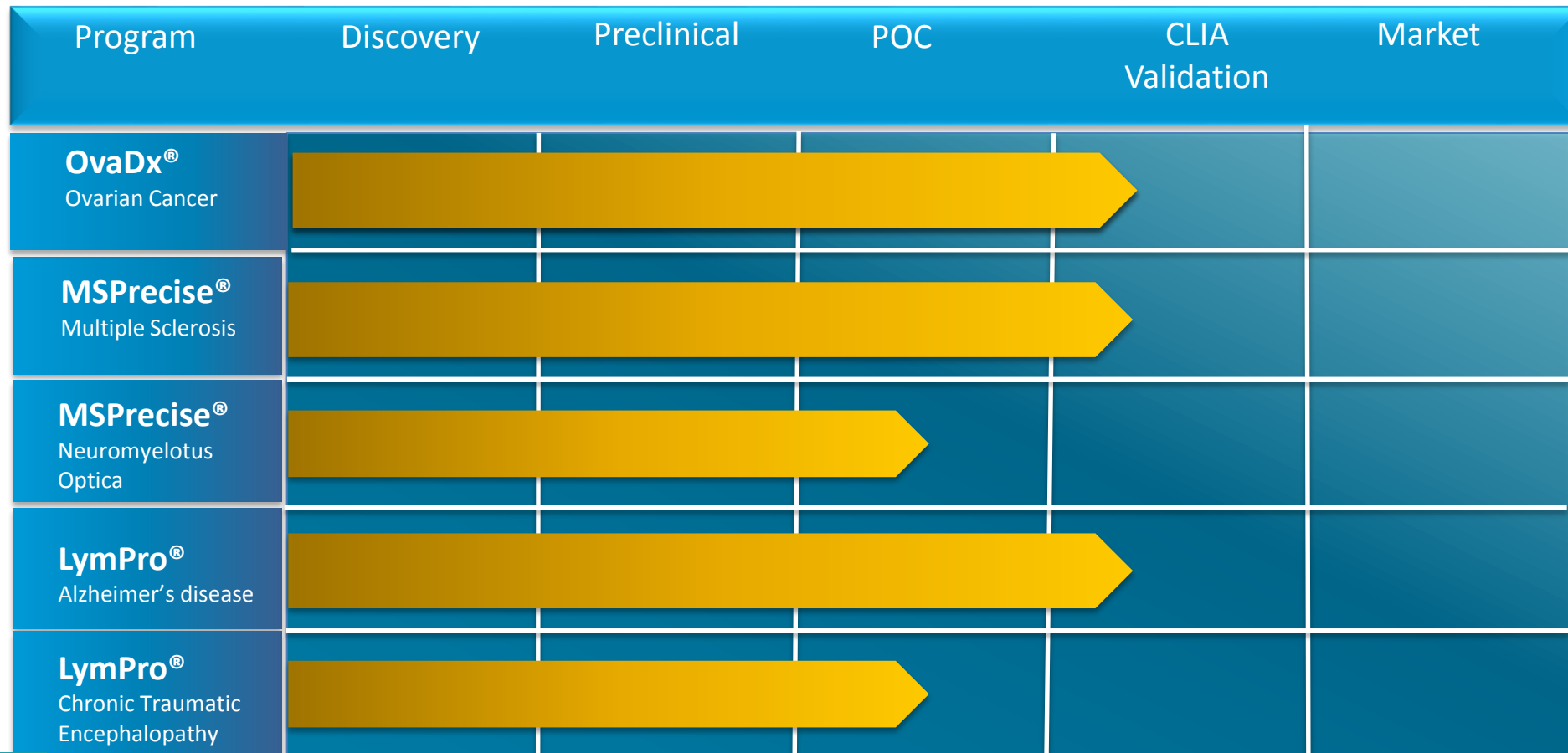
*CAGR and annual estimates extrapolated based on data from 2003 and 2013; other treatment modalities include cytotoxics, hormonal, and supportive care

Source: EvaluateMedTech analyst consensus, clinicaltrials.gov, PhRMA

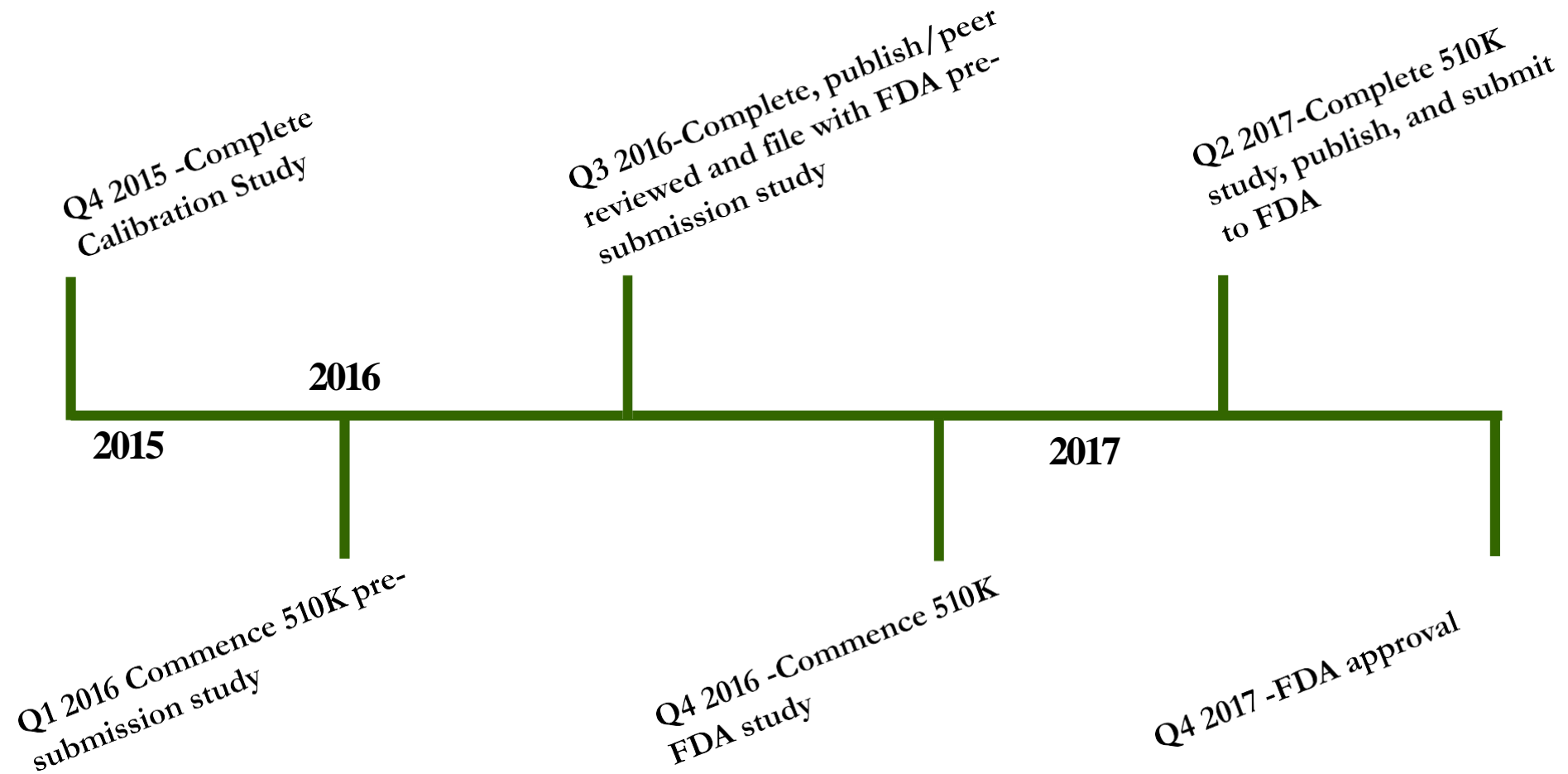
Business Case for LymPro Test® Pharma Services in Alzheimer's disease

- Interest created from 2014-2015 from same customer list as Theranostics Health
- Major challenges
 - Overall business focus shifted towards therapeutics
 - Scarcity of resources forced Amaranthus to devote majority towards diagnostics
 - Balance sheet challenges gave potential customers pause
 - Concern was if Amaranthus had financial difficult it could damage customer trials
- Spin-off of Amaranthus Diagnostics into Avant/Theranostics allows for clean balance sheet and familiar services provider
- Overall cell cycle biology expertise added bonus
- Amaranthus business development to work with Theranostics to take over relationships

CLIA Diagnostics Pipeline Ready for Development

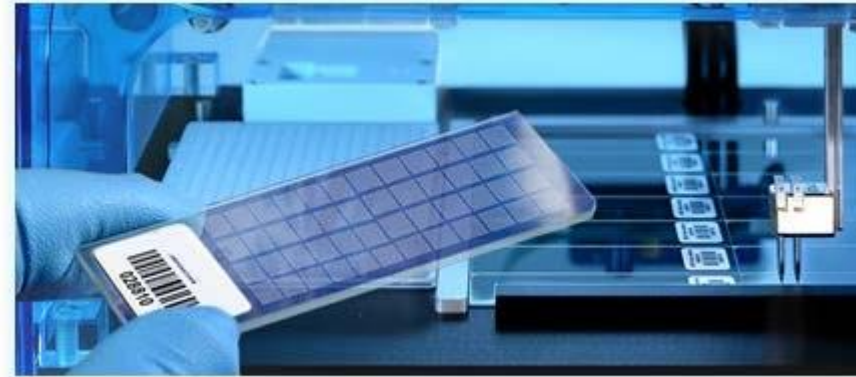


OvaDx[®] Pipeline



OvaDx® Overview

- Monitoring test with a performance profile that has the potential to **completely transform** the diagnosis and treatment of patients with ovarian cancer.
- Based on 10+ years of research and development by leaders in cancer diagnostics and tumor immunology
- OvaDx targets the **tumor-specific antibodies**, which allows for earlier detection of cancers, because the immune system produces large quantities of antibodies in the blood, even when only a few tumor cells are present
- OvaDx uses a **proteomics approach** to test for multiple disease markers simultaneously, which are combined by a sophisticated statistical algorithm that further enhances sensitivity and specificity
- **Microarray** construction allows for **high throughput, low cost** sample processing

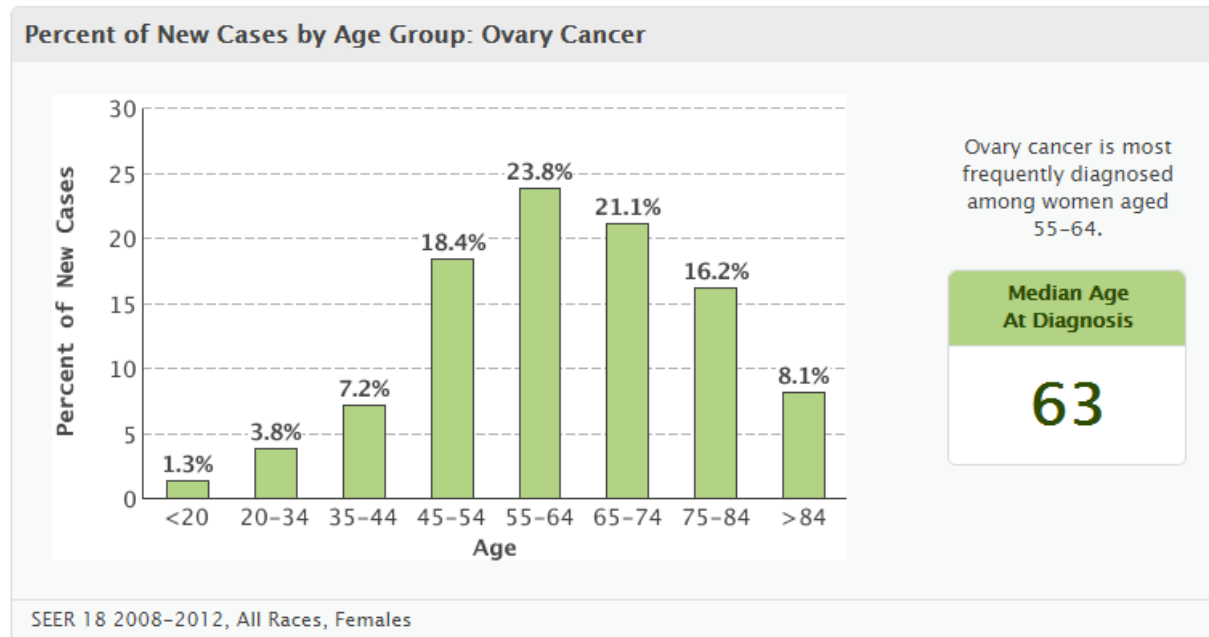


Ovarian Cancer – The Silent Killer

- Known as the “Silent Killer” due to the fact that in its early stage disease symptoms are ambiguous and often ignored by many patients
- With early stage (IA) detection, ovarian cancer can be cured in most patients using a simple surgical procedure and no chemotherapy; 95% of women lead productive lives
- Late stage detection (III and IV) has a poor prognosis and a 5-year survivability of
 - <20%
- Because the majority of patients present stage III or IV disease, most patients die within 5 years of diagnosis, making ovarian cancer one of the most deadly cancers
- There is a compelling and unmet medical need for new testing technology that detects ovarian cancer in its pre-symptomatic stages

Ovarian Cancer By The Numbers

- American Cancer Society estimates that 21,290 new cases of ovarian cancer will be diagnosed and 14,180 women will die of ovarian cancer in the U.S. in 2015. Approximately 192,000 women are currently living with the disease
- Fifth leading cause of cancer death among U.S. women
- A woman's lifetime risk of developing invasive ovarian cancer is 1 in 72



Early testing suggests that OvaDx will vastly exceed CA-125 in every aspect of diagnostic performance

❑ Superior technology to CA-125....

- ✓ OvaDx tests for autoantibodies, which are found in higher quantities in the blood than proteins like CA-125, which are found within cancer cells themselves
- ✓ OvaDx tests for 10 different tumor autoantibodies rather than a single cancer cell protein
- ✓ OvaDx employs a proprietary algorithm that determines a probability score based on the blood level of each of the 10 autoantibodies, significantly increasing overall accuracy

❑ OvaDx has produced superior results in pre-clinical studies

	OvaDx Test Results	
	Positive	Negative
Ovarian cancer patients	231	22
Healthy patients	0	258

Very strong initial performance in the detection of early and late stage disease

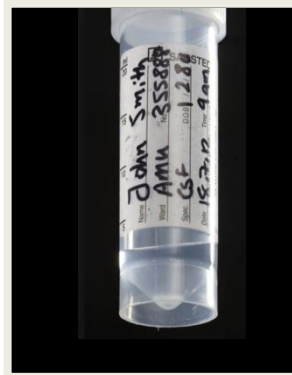
High sensitivity of 91.2% despite the fact that samples contained many Stage I and Stage II cancers that CA-125 is known to miss

ZERO false positives (100% specificity), which means that OvaDx may one day help avoid unnecessary surgery and chemotherapy in thousands of women due to falsely elevated CA-125

MSPrecise: First in Class Molecular Diagnostic for MS

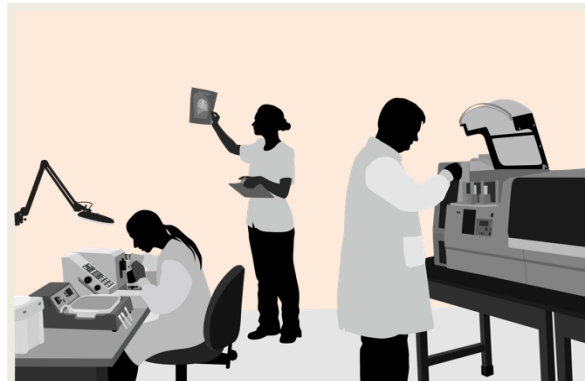
How Does It Work?

1



CSF sample collection per standard practice by neurologist

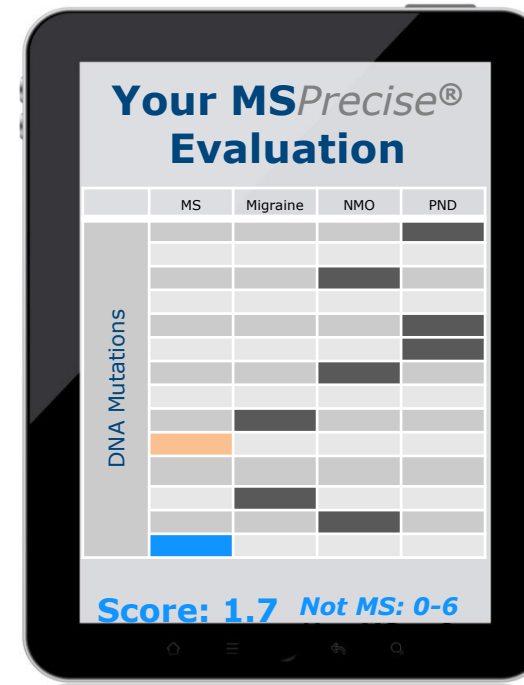
2



Sample shipped to a CLIA lab to measure changes in specific immune cells

Our report is delivered to the neurologist

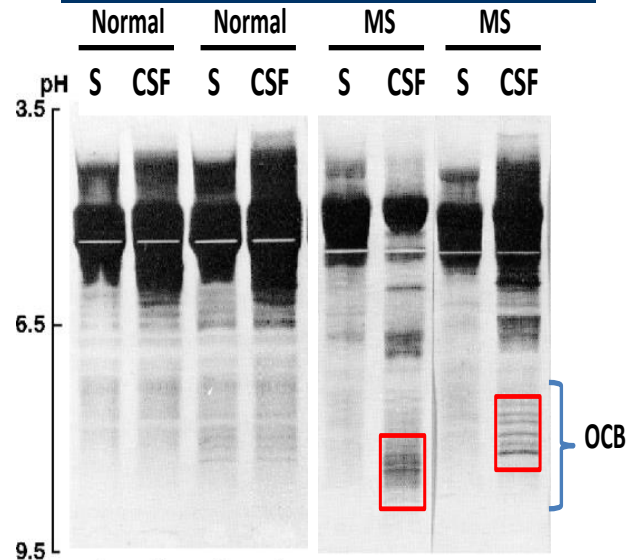
3



MSPrecise®: Transforming How Multiple Sclerosis Is Diagnosed

NOW:
LOW RESOLUTION TECHNOLOGY

Oligoclonal Banding of Proteins

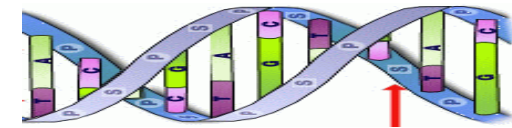


+ PREDICTIVE VALUE = 46-64%



MSPrecise:
HIGH RESOLUTION TECHNOLOGY

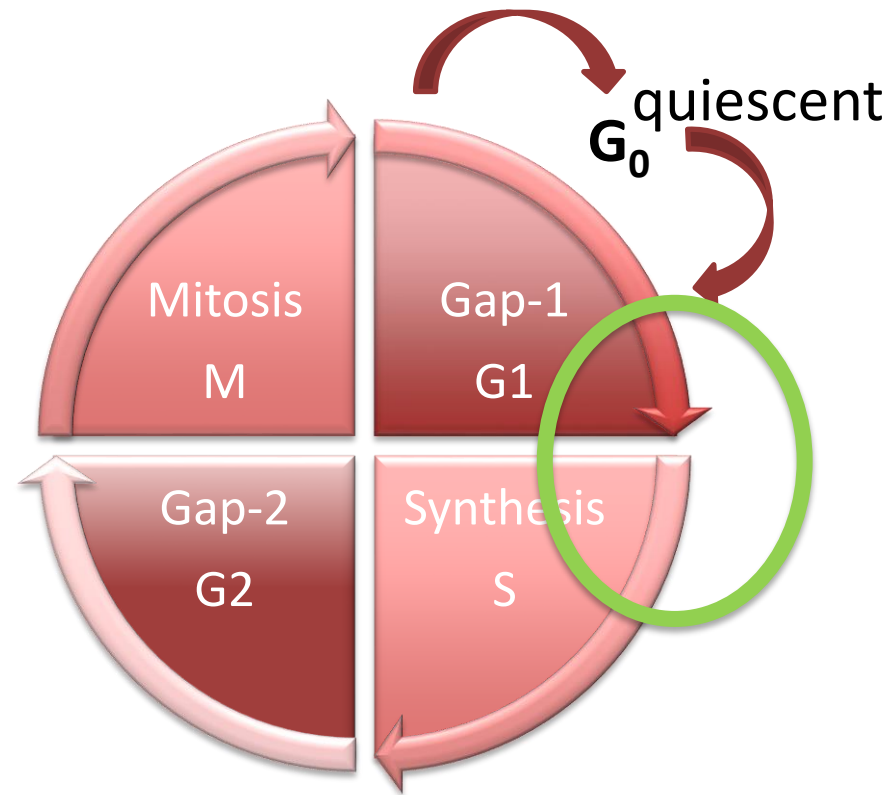
Next Generation Sequence Analysis of Rare Antibody Genes



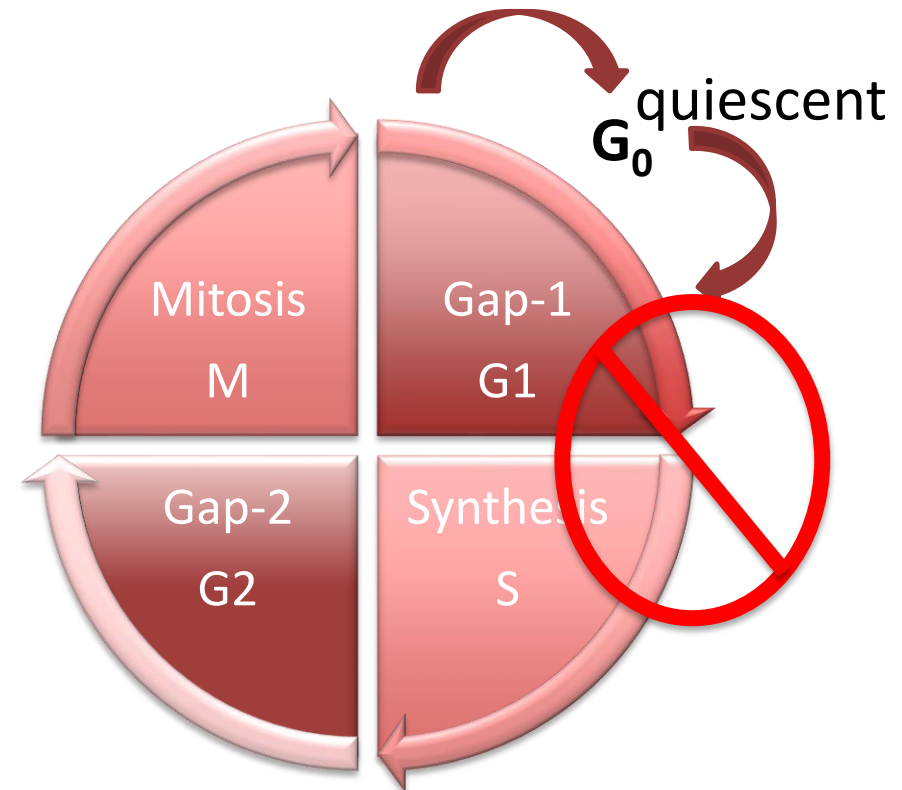
AGT GGG AGC ACC TAC TAC AAC

+ PREDICTIVE VALUE ~ 80%

LymPro Test®: Measuring Cell Cycle Dysfunction in Alzheimer's Disease



Healthy Individuals:
G1-S transition
highly regulated



AD:
G1-S 'Brake' is broken

LymPro: How Does It Work?



Blood sample
collected at clinic
and sent to lab



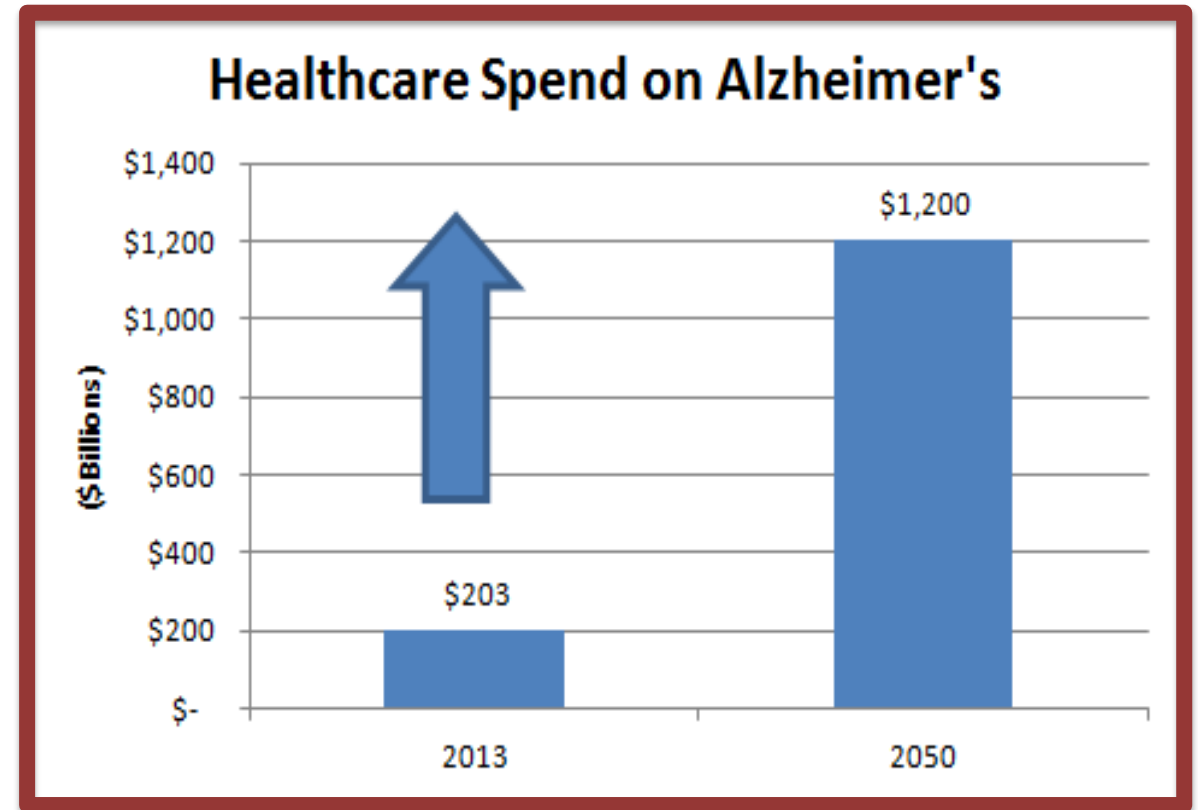
In lab, white blood
cell samples
stimulated to
enter cell cycle

Expression of
specific cell cycle-
related proteins is
detected by flow
cytometry

Proprietary
algorithm
identifies
dysfunctional
patterns

Key Unmet Need: Effective Early Diagnostic

- 1 in 9 Americans over 65 has AD
- 5.2 million Americans have AD
- 500,000 new diagnoses per year
- High misdiagnosis rate
- \$200B costs in the U.S. health system
 - 10% of healthcare budget
- Growing rapidly with aging population



Corporate Strategy

Investment Highlights

- Combination of 3 companies with synergies in biology and indications
- 2015 Pharma Services revenue of \$1.5M expected to grow significant
 - Theralink® in breast cancer to expand into other indications
 - LymPro Test® to add significant potential to pharma services revenue potential
 - Leader in cell cycle biology
- CLIA laboratory operating to highest standards
- Introducing proprietary diagnostic tests into market in 2017
 - Ovarian cancer: OvaDx® Market potential of \$2B+ (replacing CA-125)
 - Multiple Sclerosis: MSPrecise® Market potential of \$200M+ (improving Tx intervention)
 - Alzheimer's disease: LymPro Test® Market potential of \$3B+ (65yr Medicare screen)

Contact Information

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