Developing Therapeutic and Diagnostic Products for Neurological Disorders and Orphan Indications

Corporate Presentation
(last update December, 2015)
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.
Amarantus is singularly focused on bringing life-changing programs in neurology and regenerative medicine to the patients who need them.
Our Focused Business Process Yields a Rich Product Landscape

Process:

- **Identify** undervalued assets
- **Develop** through key value inflection points
- **Monetize** to derive value
- **Reinvest** in pipeline

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<thead>
<tr>
<th>REGEN MED</th>
<th>NEUROLOGY</th>
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<tbody>
<tr>
<td>ELTO – PD LID</td>
<td>ELTO – ADHD</td>
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<tr>
<td>MANF – Retinitis Pigmentosa</td>
<td>ELTO – AD Aggression</td>
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<td>MANF – Retinal Artery Occlusion</td>
<td>MSPrecise – Multiple Sclerosis Dx</td>
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<td>ESS – Severe Adult Burns</td>
<td>LymPro – AD Dx</td>
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<td>ESS – Severe Pediatric Burns</td>
<td>(ESS – Broader dermatological applications)</td>
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<td>ESS – Congenital Giant Hairy Nevus</td>
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<th>NON ORPHAN</th>
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<td>ELTO – ADHD</td>
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<td>(ESS – Broader dermatological applications)</td>
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Pipeline addressing high-value, high need therapeutic areas with significant shortcomings

<table>
<thead>
<tr>
<th>Program</th>
<th>Preclinical</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Next step</th>
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<tbody>
<tr>
<td>ESS</td>
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<td>1. FDA Meeting: pivotal design</td>
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<td>Pediatric 50%+ TBSA</td>
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<td>2. RPDD + ODD</td>
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<td>Congenital Giant Hairy</td>
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<td>Nevus</td>
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<td>ESS</td>
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<td>Phase 2 Clinical Trial w/ US Army</td>
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<td>Adult 50%+ TBSA</td>
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<td>Stage 3&amp;4 Burns</td>
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<td>Eltoprazine</td>
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<td>FDA Meeting: pivotal design</td>
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<td>Adult ADHD</td>
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<td>2. Phase 2b results</td>
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<td>induced Dyskinesia</td>
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Therapeutic Pipeline: Dominated by Clinical Stage Assets

Orphan Designation

Orphan Application
MANF Preclinical Pipeline Has Revolutionary Potential

Pipeline addressing high-value, high need therapeutic areas with significant shortcomings

<table>
<thead>
<tr>
<th>Program</th>
<th>Preclinical</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Market</th>
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<td>MANF Retinal Artery Occlusion</td>
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<td>MANF Glaucoma</td>
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<td>MANF Diabetes/Wolfrma’s</td>
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<td>MANF Ischemic Heart Disease</td>
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Diagnosics Pipeline Readying for Strategic Transactions

Pipeline addressing high-value, high need therapeutic areas with significant shortcomings

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<td>MSPrecise® Multiple Sclerosis</td>
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<td>LymPro® Chronic Traumatic Encephalopathy</td>
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</table>
Accomplished Executive Team

Gerald E. Commissiong, Co-Founder, President & CEO, Director*

Founded AMBS in 2008: Led acquisition of entire AMBS portfolio via over $40M in debt and equity raises
Professional athlete: CFL Calgary Stampeders
Stanford University, Management Science & Engineering

Robert Farrell, JD, Chief Financial Officer

CEO and CFO at Titan Pharmaceuticals
CFO, Group Vice President and General Counsel of Fresenius
CFO, Institute for One World Health (Gates Foundation, others)

Elise Brownell, PhD, Sr. Vice President of Project Management and Operations

Founding Partner, Zephyrbiotech, LLC
Head of Project Management, Aerovance, Inc
Head of Project Management at Bayer Biotechnology
Yale University, PhD in Biology

* Board Director
Distinguished Directors

Joseph Rubinfeld, PhD
Co-Founder of Amgen, served as VP & Chief of Operations; previously a senior executive at Bristol Myers Squibb where he developed and in-licensed several blockbuster products, including Amoxicillin and Cephadroxil and several anti-cancer drugs. Renowned drug development expert.

Donald D. Huffman, MBA
Former Principal and CFO Sanderling Ventures; served as CFO of several companies including Volcano Corporation (now Philips), Guava Technologies (now Merck), Asante Solutions Inc., Microcide Pharmaceuticals and Celtrix Pharmaceuticals Inc. (now Insmed). Currently a director of SteadyMed Therapeutics (NASDAQ:STDY) and Dance Biopharm, Inc.

John Commissiong, PhD, Co-Founder
Former Head of Neurotrophic Factors Group at NIH; Previously served as Founder and CSO at Neurotrophics Bioscience Inc, Prescient Neuropharma and Neurotrophics, Inc.. Discovered MANF in 2002 from Company’s PhenoGuard platform

Robert L. Harris, JD - Lead Director
Distinguished Lawyer – U.S. Supreme Court case; Former VP, Pacific Gas & Electric Company
Engineered Skin Substitute (ESS):

Breakthrough Treatment for Stage 3 and Stage 4 Severe Burns
Severe Burns: The Intractable Issues Faced by Patients and Surgeons

3\textsuperscript{rd}-4\textsuperscript{th}\degree burns over ≥ 50% of the body are life-threatening because of high infection rates and length of time to adequate wound closure

- Rapid wound closure is paramount
- Donor site skin for grafting is at a premium in severe burns
- Serial rounds of donor site harvesting result in decreasing quality of grafts and scarring
- Current standard (Autografts) do not expand/grow with patient
What is ESS and How Is It Made?

- Autologous, permanent skin replacement
- Full thickness (epidermal, dermal layers)
- Grown in cell culture from small donor site sample at Lonza-Walkersville
How Does ESS Address The Challenges of Severe Burns?

- **Only** 1 small donor harvest is required
- Sufficient **full thickness skin** from single harvest to cover entire burn area in as few as 30 days
- Significant reduction in time to wound closure
- Minimal scarring
- **ESS can expand** with growth of patient
  - Critical in pediatric settings
- Reduced need for reconstructive or revision surgeries
Concepts Amply Demonstrated in Previous Investigator-Sponsored Studies

• Earlier generation of ESS (CSS; Permaderm) studied in well over 100 pediatric burn patients (Drs. S. Boyce, R. Kagan, U. Cincinnati, Shriners Hospital)

• Key Findings:
  - ESS approached autograft in % wound closure at day 14
  - ESS covered 15 times greater surface area than autograft at day 28
  - ESS yielded hypopigmented, pliable, flexible skin that grew with patient

Boyce et al., J Burn Care Res, 2006; J Trauma, 2006.
ESS Grows As Patient Grows: Evidence from Congenital Hairy Nevus

Pre Grafting  5 mos  8.5 years  13 years
The Competitive Landscape: ESS Offers Compelling Solution in Severe Burn Space

1\textsuperscript{st} Degree

1\textsuperscript{st} Degree

2\textsuperscript{nd} Degree

2\textsuperscript{nd} Degree

3\textsuperscript{rd}-4\textsuperscript{th} Degree

3\textsuperscript{rd}-4\textsuperscript{th} Degree

Epidermis

Dermis

S.C. Fat

Epicel

StrataGraft

Autograft

ESS

Epidermis

Dermis

S.C. Fat

1\textsuperscript{st} Degree

2\textsuperscript{nd} Degree

3\textsuperscript{rd}-4\textsuperscript{th} Degree
Unconditional Support from Former Presidents of the American Burn Association

“The fact that this product is not on (the) market is the biggest disappointment of my career”.

Dr. David H. Ahrenholz
Former President, American Burn Association

“ESS offers hope to care providers, who treat severely wounded individuals, that a reliable skin substitute will be available for the horrible situation when wound coverage is not possible. I have long wanted to see ESS developed so that we can offer this life-saving technology to our patients.”

Dr. Nicole Gibran,
Former President, American Burn Association
ESS Status: Clinic-Ready at Leading Burn Sites in 1Q 2016

• Lonza is GMP manufacturer (8+ years experience)

• Clinical Stage: Phase 2 (US Army Site is Lead under CRADA)
  o Active IND opened for adult severe burns: CBER-biologic/drug regulatory pathway
  o Open label design, 10 patient study
  o 3 Premier burn centers to participate:
    ▪ ISR/Ft. Sam Houston, San Antonio, TX
    ▪ Arizona Burn Center, Phoenix, AZ
    ▪ Harborview, Seattle, WA
  o Sites to be opened for enrollment in 1Q 2016

• Partial funding from AFIRM (DoD)
Phase 2 clinical study w/ US Army under CRADA (Q1/16 Start)

Initial target population:
  - Adults, 50% or greater TBSA burns
  - In US, 0.5-1K patients per year

Treatment costs /patient:
  - No complications: $1.6M
  - With complications: $10M+

Non dilutive funding opportunities
  - DoD, BARDA;
  - Currently receiving AFIRM support for Adult Burn Study

Phase 3 Clinical Studies in design phase
  - Pediatric burns, 30%+ TBSA > 2k patients/yr in US
  - CGHN ~ 8-80 cases/yr in US

Initial Global Market Opportunity is $500M+

2nd Generation w/ Pigmented skin
$2B+
Additional Value Proposition: Rare Pediatric Disease Designation (RPDD)

• RPDD approval gives sponsor a Priority Review Voucher that can be used for another treatment in development
  o Vouchers are highly sought, and can be sold to third parties
    1. Sarepta sold a voucher to Sanofi for $245M, 5/2015
    2. United Therapeutics sold a voucher to Abbvie for $350M, 8/2015

• ESS may qualify for RPDD in Pediatric Burns and/or Congenital Giant Hairy Nevus
  o ODD and RPDD submissions for CGHN planned for Q4/2015
• Differentiated autologous skin replacement fulfilling critical unmet need
• Orphan Drug Designation assigned in Severe Burns
• Likely rapid adoption due to:
  o Speed to wound closure to < 45 days from 90-180 days:
  o Cost savings. $10k- 15k/day, $ 0.45 – 2.7 M per patient
  o Strong, public support from leading KOLs in US
• Non-dilutive funding opportunities
• Potential for Priority Review Voucher(s)

Potential $500 million+ global market opportunity
Eltoprazine:
Phase 2 Clinical Asset for the Treatment of
Parkinson’s Disease Levodopa-Induced Dyskinesia
(PD-LID)

(An Orphan Indication)
Eltoprazine: Potential in Three Indications

• PD-LID (Lead indication)
  - Phase 2b in progress as of 6/15
  - Strong clinical data published in Brain (2/15); no L-Dopa interference
  - Strong secondary endpoints achieved in psychiatric aspects of PD
  - Potential for Orphan Drug Designation (ODD application submitted 10/15)

• Adult ADHD:
  - Phase 2 complete: potentially ready for phase 3 development
  - Positive data on attention & hyperactivity/impulsivity in adults
  - Non-stimulant, non-scheduled drug candidate

• Alzheimer’s Aggression:
  - Data package in aggression produced by Solvay in 1990’s and 2000’s
  - Human clinical data in Alzheimer’s subjects
The Challenge to be Solved in PD - LID

• Levodopa (L-Dopa) = most effective treatment for motor symptoms of PD
  - With disease progression, L-Dopa is taken up by different, alternate pathways in the brain
  - Alternate pathways lack feedback mechanism to control levels of dopamine
  - Excessive dopamine buildup causes uncontrolled movements
  - LID (uncontrolled movements) = disabling, unwanted consequence

• LID severely impairs quality of life

• Only available treatment = Amantadine
  - moderately effective and low response rates
Attractive, Risk-Reduced Profile

- **Oral small compound program** originating at Solvay (now Abbvie)
  - 5HT1a/1b partial agonist
- **Evaluated in nearly 30 Phase I & II studies**
  - Over 600 subjects for periods up to 2 years at doses as high as 30 mg bid
- **Strong Safety Profile:**
  - Repeat toxicity studies in rat and dog up to six months
  - Genotoxicity, reproductive & developmental toxicology studies completed with no significant findings
  - No effect on hERG, QT or cardiovascular activity
- **Pharmacokinetics:**
  - Plasma Half-life: ~ 8 hrs
  - Good oral bioavailability
  - No CYP inhibition & little CYP metabolism
  - Low binding to plasma proteins (< 15%)
Eltoprazine prevents levodopa-induced dyskinesias by reducing striatal glutamate and direct pathway activity.

Current Phase 2b Clinical Path

- **Double-blind, placebo-controlled, multiple dose study**
  - 60 subjects to be enrolled
  - First subject dosed in Q3 2015

- **15 premier PD centers in US and EU**

- **Endpoints:** safety, tolerability and dyskinesia severity using state-of-the-art rating scales, diaries and motion sensors

- **PK-PD relationship will be evaluated to guide late stage development**

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<thead>
<tr>
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<th>2H-15</th>
<th>1H-16</th>
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Eltoprazine Investment Thesis

• Phase 2b small compound program in PD-LID
  o Open IND for Phase 2b multiple dose study at 15 sites in US and EU
  o Potential for Orphan Drug Designation in PD-LID
  o Mechanism of action directly relevant to disease state

• Strong safety profile demonstrated in previous studies in over 600 subjects

• Potential utility in additional large indications
  o Alzheimer’s aggression
  o ADHD (Adult and Pediatric)
Mesencephalic Astrocyte-derived Neurotrophic Factor (MANF): A Preclinical Asset For the Treatment of Rare Ophthalmic Disorders

US Orphan Drug Designation In 2 Indications
MANF : Essential Stress Response Protein

- **Recombinant human protein** identified via Amarantus’ proprietary PhenoGuard discovery engine
- **Protects cells against apoptosis** resulting from various stressors such as ischemia and inflammatory events
- **Initial Development Strategy**
  - Indications for which localized administration is feasible
- **Lead indications:**
  - Retinitis Pigmentosa (US, EU Orphan Drug Designation)
  - Retinal Arterial Occlusion (US Orphan Drug Designation)
- **Preclinical development asset**
Impressive Expansion Opportunities In Cell Protection/Restoration Space

• Potential paradigm shift in cell protection and restoration
  o Collaborations w/ Buck Institute, Wash U and UMass
  o 75+ peer-reviewed publications

• Additional Indications
  o Wolfram’s (blindness, diabetes aspects)
  o Parkinson’s (neuronal protection)
  o Diabetes (protection of pancreatic beta cells)
  o Myocardial infarction (protection against ischemic damage)
  o Hearing loss (preservation of hair cells)
• Maintain strong intellectual property estate
  o Composition of Matter / Method IP
  o Licenses from Universities

• Complete IND-enabling program
  o Submit IND 2017

• Expand development program into additional high – value indications

• Submit documentation
  o Rare Pediatric Disease Designation in Retinitis Pigmentosa
Amarantus Diagnostics

• MSPrecise®: Multiple Sclerosis, CSF – based diagnostic assay
  • Finalizing commercial strategy for staged product launch

• LymPro Test®: Alzheimer’s Disease, Blood-based diagnostic assay
  • Optimizing IUO marketing and CLIA strategy

Preparing for Strategic Transaction
CSF sample collection per standard practice by neurologist

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

Our report is delivered to the neurologist

Your MS\textsuperscript{Precise}® Evaluation

<table>
<thead>
<tr>
<th>DNA Mutations</th>
<th>MS</th>
<th>Migraine</th>
<th>NMO</th>
<th>PND</th>
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<tbody>
<tr>
<td>Score: 1.7</td>
<td>Not MS: 0-6</td>
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MS: Multiple Sclerosis
Migraine: Migraine
NMO: Neuromyelitis Optica
PND: Progressive NMO

Amarantus Bioscience
MSPrecise: Transforming How Multiple Sclerosis Is Diagnosed

NOW:
LOW RESOLUTION TECHNOLOGY

**Oligoclonal Banding of Proteins**

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<thead>
<tr>
<th></th>
<th>Normal S</th>
<th>Normal CSF</th>
<th>MS S</th>
<th>MS CSF</th>
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**OCB**

+ **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: 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
### Financial Snapshot

<table>
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<th>Stock Ticker</th>
<th>OTCQX: AMBS</th>
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<tbody>
<tr>
<td>Market Capitalization as of November 16, 2015</td>
<td>~$4M</td>
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<td>Shares Outstanding</td>
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<td>Stock Price as of November 30, 2015</td>
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## Recent and Near-term Milestones

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<td>Eltoprazine: First Site open</td>
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<td>Eltoprazine: First subject on study</td>
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<td>ESS: Dismiss lawsuit/Complete Acquisition</td>
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<td>ESS: Initiate Phase 2 trial</td>
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<td>MANF: Initiate GMP manufacturing</td>
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<td>MANF: RAO ODD applications: FDA and EU</td>
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<td>Preparing for NASDAQ Up-listing</td>
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<tr>
<td>Execute strategic transaction for Diagnostics division</td>
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Investment Highlights

• **ESS** is a potential life-saving Phase 2 clinical asset for severe burns
  - Potential in rare pediatric diseases: Severe Burns, Congenital Hairy Nevus
  - Priority Review Voucher upon approval for any rare pediatric disease indication

• **Eltoprazine** is a Phase 2b clinical asset
  - Launched Phase 2b study in PD LID in June 2015
  - Opportunities to expand into Adult ADHD, Alzheimer’s Aggression

• **MANF** is a paradigm-shifting preclinical asset
  - Multiple orphan ophthalmological indications currently advancing towards first-in-human studies in 2017

• Leading **Neuro-Diagnostics Assets** positioned for strategic transaction

• Up-listing to a **national exchange** is a priority
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