Biopharmaceutical Holding Company Incubator: Commercial-stage Diagnostics and Clinical-stage Therapeutics

February 2020
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.
AMBS: Executive Team

Amarantus Bioscience Holdings Management

Gerald E. Commissiong: Co-Founder, President & CEO, Director  
CEO of Todos Medical Ltd. (Todos has JV subsidiary Breakthrough Diagnostics, Inc.)

Brian Harvey, MD, PhD: Chief Regulatory Advisor  
Former EVP Regulatory Strategy at Pfizer & Sanofi, Former FDA Investigator

Elise Brownell, PhD: Exec. Vice President of Project Management and Operations  
Former Head of Project Management at Bayer Biotechnology

Richard Edelson: Chief Financial Advisor  
Former CFO & Director of Due Diligence at RBC Alternative Asset Management

Subsidiary Key Executives:
- Hempori: Grant Magers, MBA - Co-Founder of Hempori
- Cutanogen Corporation: Richard Kagan, MD - Former Chief of Staff, Shriners Burn Hospital Cincinnati
- MANF Therapeutics: John Commissiong, PhD - Former Head of Neurotrophic Factors Group, NINDS: NIH
- Elto Pharma: Paula Trzepacz, MD - Former Senior Medical Fellow at Eli Lilly
- Breakthrough Diagnostics: Paula Trzepacz, MD - Former Senior Medical Fellow at Eli Lilly
- Avant Diagnostics: Mick Ruxin, MD - Former CEO Global Med Technologies
AMBS: Biopharma Holding Company

Portfolio
- Central Nervous System
- Regenerative Medicine
- Ophthalmology
- Neuro-diagnostics
- Cancer Diagnostics
- Cannabis

Therapeutics Portfolio
- Elto Pharma
  - 5HT1a/b Oral Capsule
    - ADHD (Ph. 3)
    - Parkinson’s (Ph. 2b)
    - Alzheimer’s (Ph. 2)
- Cutanogen
  - Tissue Engineered Skin
    - Severe Burns Ph. 2/3
    - Orphan Disorders
    - Cosmetic
- MANF Tx
  - Therapeutic Protein
    - Wolfram’s Syndrome
    - Retinitis Pigmentosa
    - Glaucoma

Diagnostics Portfolio
- Breaththrough Dx
  - LymPro Test™
    - Alzheimer’s disease
    - Chronic Traumatic Encephalopathy (CTE)
- Avant Dx
  - Theralink ®
    - Combo Selection
    - Side-Effect Reduction
    - New Targets

Pending License: 50.1%
License Complete: 90.1%
Pending Acquisition: 31.5%

Hempori
CBD Wellness

OWNERSHIP %
Retail Store Locations: Hempori is opening up CBD retail stores across Texas. Currently Hempori has two corporate locations (Dallas, TX and Mesquite, TX).

- Rapid roll-out in Texas and nationwide via licensing and franchise model

Suppliers: Existing suppliers in place, with continual upgrade of offerings

Near-term Geographic Focus: Dallas, TX and other cities in Texas

Initial sales growth strategy: Hemp Smokes data collection on smoking cessation

E-Commerce: Went active on the website April 1, 2019, preparing to expand reach

Wholesale: Resellers are in Texas, Washington and Oklahoma. Looking to expand

Strategies for Success: Rapid expansion to quickly establish large retail footprint and garner economies of scale. Retail environments and Wellness culture focused on:

1. Education
2. Feedback
3. Building Trust
Hemp Smokes Marketplace

- Positioning as alternative to cigarettes and e-cigarettes with a focus on hemp as wellness-like alternative to tobacco
- Seeking to disrupt the $650B Tobacco smoking marketplace
- Smoking cessation marketplace $15B in 2018, expected to grow to $39B by 2023, representing 20% CAGR
  - Most people do not like prescription drugs
- Collect Data to Evaluate potential to improve smoking cessation treatment paradigms
- Sales via physical locations and online/digital smoking cessation plans
- Potential Companion Biomarker Collection
Hempori Product Offerings – www.hempori.com

AVAILABLE NOW
1. Tinctures, Sprays
2. Pain Cream for joints
3. Hand and Body Lotion
4. Hard Candy
5. Dog Treats, Pet Tinctures
6. Shampoos, Soaps and Deodorants
7. Bath Bombs
8. Acne Serum
9. Plumping Serum

10. HEMP Smokes – New product targeting smokers

UNDER REGULATORY REVIEW
1. Gummies
2. Chocolates
3. Drinks (Focus, Calm, Energy, Sleep, Waters)
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**License Status**
- 50.1% Hempori
  - CBD Wellness
- 90.1%
- 100%
- 31.5%

**Pending License**
- Emerald Organic Products
  - Pending License
- License Complete
“The fact that this product (ESS) is not on (the) market is the biggest disappointment of my career.”

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

“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

Cutanogen Corporation: Phase 3-Ready in Pediatric Severe Burns

- Phase 2/3-stage w/Orphan Drug Designation assigned in Pediatric Severe Burns
  - **Phase 2 Data: 75% mortality reduction & 27x Body Surface Area Covered/harvest vs. control**
  - Potential Priority Review Voucher (PRV) w/ Rare pediatric disease designation (to be filed)
  - Potential Regenerative Medicine Advanced Therapy (RMAT) Designation
- Potential FDA Approval in 18-36 months from Ph 2/3 trial start
- Expected rapid adoption in pediatric severe burns:
  - Strong KOL Support
  - Speed to wound closure to < 45 days from 90-180 days:
  - Cost savings. $10k- 15k/day, $0.5M –$10M per patient
- **Patented process improvement w/ hair, melanocytes & gene therapy**
  - Significant potential additional uses beyond severe burns
- Phase 1/2 Data in Giant Congenital Melanocytic Nevus (GCMN)
- Non-dilutive funding opportunities
- Proprietary technology with issued US & Intl’ patents and trade secrets
MANF Tx: Therapeutic Protein Drug Candidate

- Cardiovascular
- MANF
- Diabetes

Neurology
- Parkinson’s disease
  - Stroke
  - Traumatic Brain Injury

Ophthalmology
- Wolfram’s - ORPHAN
- Retinitis Pigmentosa – ORPHAN
- Retinal Artery Occlusion (RAO) - ORPHAN
- Glaucoma
• Local Delivery of Recombinant Protein *Initial* Development Strategy at AMBS
  o Prioritizing indications for which localized administration is feasible
    o Ophthalmology (intravitreal injection or eye drops)
    o Parkinson’s disease (convection enhanced-delivery)

• Orphan Ophthalmology → Initial Lead indications
  o Wolfram’s syndrome
  o Retinal Arterial Occlusion (US Orphan Drug Designation)
  o Retinitis Pigmentosa (US Orphan Drug Designation)

• Glaucoma post-orphan approval program

• 2nd Generation LifeCycle Management with Gene Therapy:
  o Ophthalmology
  o Parkinson’s
  o Diabetes
  o Cardiomyopathy

*Lindholm and Saarma, DevNeurobiol (2010)*
**AMBS: Biopharma Holding Company**

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    - Alzheimer’s (Ph. 2)
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- **MANF Tx**
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- **Breathrough Dx**
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- **Avant Dx**
  - Theralink®
    - Combo Selection
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**Diagnostics Portfolio**
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**Ownership %**
- XX.X% = OWNERSHIP %
Eltoprazine development originated at Solvay (now Abbvie)
- 5HT1a/1b partial agonist

Evaluated in nearly 30 Phase I & II studies
- Over 600 subjects
- Max duration: 2 years, up to 30 mg bid
- Max dose: 5 days, 40 mg bid

Strong Safety Profile:
- Repeat toxicity studies in rat and dog up to six months
- Genotoxicity, reproductive & developmental tox studies completed → no significant findings
- No effect on hERG, QT or cardiovascular activity

Pharmacokinetics:
- Plasma Half-life: ~ 8 hrs
- Good oral bioavailability, low binding to plasma proteins (< 15%)
- No CYP inhibition & little CYP metabolism
Elto Pharma: Eltoprazine Phase 2b/3-Ready in Adult ADHD

• Former Abbvie, Inc. program (via Solvay Pharmaceuticals acquisition)

• Phase 2b/3-ready efficacy data in Adult ADHD: Reformulation is Next Step
  o Non-stimulant
  o Open IND in Psychiatry division of FDA
  o Strong Phase 2 Data @ 5mg 2x/day: Next step reformulation to 1x/day
    o 5mg dose in Inattention subscale (p=0.003)
    o Hyperactivity subscale (p=0.008)
    o CGI-I scores (p=0.023)
    o POMS (p=0.006)
    o Anger hostility score (p<0.001)
    o BAS reduction in restlessness (p=0.029)
    o BAS Awareness of Restlessness sub score (p=0.003)

• Phase 2a efficacy Data in Parkinson’s and Alzheimer’s
  o Parkinson’s levodopa-induced dyskinesia (PD-LID), Orphan Drug: $2B+ market
  o Agitation in Alzheimer’s: $10B+ market
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**License Complete**
- 50.1%
Populations that could benefit from a blood test as an adjunctive diagnostic for Alzheimer’s disease as the etiology of cognitive impairment

An IDEAS naturalistic study of 11,409 outpatients with MCI or dementia with a clinical diagnosis by expert doctors showed, following an amyloid PET brain scan, that 25% of patients diagnosed with AD did NOT have AD and 10% of patients diagnosed as non-AD did have AD. (Rabinovici et al., JAMA (2019))

- Pre-screening of patients to reduce pharma patient acquisition cost by more than 50 percent
- Data generated will add validity to test while building commercial story
- Mechanisms of fundamental disease biology: Emerging therapeutic targets
- $1 billion IUO market opportunity dominated by PET imaging
- Potential in Chronic Traumatic Encephalopathy (CTE)
Breakthrough Dx: Being Acquired by Todos Medical (OTC: TOMDF)

Current pipeline

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<tr>
<th>Marker</th>
<th>Expected US Commercial Status</th>
<th>RUO</th>
<th>IUO</th>
<th>CE</th>
<th>CLIA</th>
<th>US FDA</th>
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<td>Videssa Breast / Breast Cancer</td>
<td>Commercial-stage Now</td>
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<td>TM-B2 / Breast cancer (Dense Breast)</td>
<td>12-24 months</td>
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<td>TM-B1 / Breast cancer (All Breast Types)</td>
<td>24-36 months</td>
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<tr>
<td>TM-C1 / Colorectal cancer</td>
<td>24-36 months</td>
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<tr>
<td>LymPro™ Test / Alzheimer's disease</td>
<td>12 months</td>
<td></td>
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</tbody>
</table>

Videssa Breast
- Breast cancer
  - Designed specifically for breast cancer screening
  - CLIA certified
  - CE Mark granted

TM-B1
- Breast cancer
  - Designed specifically for breast cancer screening
  - CLIA certified
  - CE Mark granted

TM-B2
- Breast cancer
  - Designed for early detection of breast cancer in women who were diagnosed as presenting with BI-RADS score of 3 or 4 (or equivalent)
  - CE Mark granted

TM-C1
- Colorectal cancer
  - Designed for early detection of colorectal cancer
  - CE Mark granted

LymPro™ Test
- Alzheimer's disease
  - Validated blood-based assay for differentiating between non-AD subjects and those with prodromal AD, mild cognitive impairment (MCI) due to AD or dementia due to AD

Multiple patents granted using our proprietary analysis for early cancer detection and new IP filed in Alzheimer's disease detection

* = pending exercise of exclusive option to acquire Provista Diagnostics, Inc. (owner of Videssa)
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  - Ownership: 50.1%

- **Cutanogen**
  - Tissue Engineered Skin
    - Severe Burns Ph. 2/3
    - Orphan Disorders
    - Cosmetic
  - Ownership: 90.1%

- **MANF Tx**
  - Therapeutic Protein
    - Wolfram’s Syndrome
    - Retinitis Pigmentosa
    - Glaucoma
  - Ownership: 100%

**Diagnostics Portfolio**
- **Breaththrough Dx**
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  - Ownership: 90.1%

- **Avant Dx**
  - Theralink ®
    - Combo Selection
    - Side-Effect Reduction
    - New Targets
  - Ownership: 31.5%

**Hempori**
- CBD Wellness
  - Ownership: 50.1%

**Pending License**
- Emerald Organic Products
- License Complete

**License Complete**
- Emerald Organic Products

**Pending Acquisition**
- MANF Tx
- Therapeutics Portfolio
- AMBS Biopharma Holding Company
Avant Diagnostics is the only company with patented RPPA data-generating technologies that can determine which FDA or investigational drug will be effective in which cancer.

Pharmaceutical companies that had contracts and utilized our technology were Genentech, Lilly, Pfizer, Astra Zeneca, BMS, Celgene, Puma, GSK, Novartis, Takeda and 30 other biopharmas. Under current management, we are reengaging these clients.

Avant’s short-term goal is to re-establish CLIA laboratory and begin offering testing to pharmaceutical companies and physicians.

**TheraLink’s® Advantage**

- **TheraLink®** measures the presence and activation status of the drug targets
  - Gene mutations require making correlations or inferences to a potentially active drug target

- If a drug target is not active then the drug will not work!

- If the drug target is active, the drugs that the TheraLink assay identify are recommended to the pharmaceutical companies and physicians.

**Avant Dx: Theralink Phosphoprotein Tumor Analysis**

**Precision Medicine for Life℠**
# Avant Dx: Theralink Phosphoprotein Tumor Analysis

## Competitive Landscape

<table>
<thead>
<tr>
<th></th>
<th>AVANT PROTEOMICS</th>
<th>GENOMICS (e.g., Foundation Medicine)</th>
<th>NEO GENOMICS</th>
<th>NantOms</th>
<th>CARIS</th>
<th>TEMPUS</th>
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<td>Drug Target Activation Mapping</td>
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<td>-</td>
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<tr>
<td>RPPA Activated Phosphoprotein Biomarkers</td>
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<tr>
<td>RPPA Quantitative Protein Biomarkers</td>
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<tr>
<td>RPPA Pathway Oriented Content</td>
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<tr>
<td>Proteomic Markers</td>
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## Commercial Opportunity of the Two Silos

<table>
<thead>
<tr>
<th>Area</th>
<th>Opportunities</th>
<th>Total Market</th>
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</table>
| Biopharma Clinical Trials   | • Match patients to trials  
                             | • Improve trial effectiveness & reduce costs  
                             | • Increase odds of drug approvals                                                   | $1 Billion |
| Oncologist Drug Selection   | • First-line treatment determination with Theralink Assay  
                             | • More accurately predict response  
                             | • Eliminate trial-and-error approach  
                             | • e.g. Tamoxifen Response Predictor Assay                                              | $2 Billion |
| Clinical Monitoring         | • Monitoring of progression/relapse of previously treated patients  
                             | • Treatment Decision for next-line therapy  
                             | • Data-generating assays for real-time assessment of drug response                  | $6 Billion |
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- **Hempori**
  - CBD Wellness

- **Pending Acquisition:**
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**Pending License**
- **Emerald Organic Products**
  - License Complete

**Portfolio Breakdown**
- Central Nervous System: 50.1%
- Regenerative Medicine: 90.1%
- Ophthalmology: 90.1%
- Neuro-diagnostics: 100%
- Cancer Diagnostics: 31.5%

**OWNERSHIP %**
- 50.1%
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- 100%
- 31.5%
- XX.X%
AMBS: Investment Summary

- **Biopharmaceutical Incubator Holding Company w/equity position in subsidiaries**
  - Elto Pharma (50.1%): Phase 2b/3-ready Adult ADHD drug candidate w/Ph2 data in Parkinson’s & Alzheimer’s
  - Cutanogen (90.1%): Phase 3-ready Pediatric Severe Burn cell therapy candidate w/Phase 2 Data in GCMN
  - MANF Tx (100%): Preclinical Vision Loss protein drug candidate w/multiple orphan drug opportunities
  - Breakthrough Dx (80.01%): CLIA-ready Alzheimer’s blood test w/potential to diagnose CTE in life
  - Avant Dx (31.5%): CLIA-ready Tumor Analysis Assay w/novel data input to optimize treatment selection
  - Hempori (50.1%): CBD Wellness Company with storefronts in Dallas, TX

- **Partnerships to Fund Product Development & Commercialization**
  - Emerald Organic Products (OTC: EMOR): License of Elto Pharma, Cutanogen and MANF Tx Assets
  - Todos Medical (OTC:TOMDF): Acquisition of Breakthrough Dx
  - Avant Diagnostics: Seasoned Management & Board driving Theralink commercialization forward

- **Recapitalization Provides Opportunity to Invest at Attractive Valuation**
  - $50M+ raised to date to acquire and develop product candidate portfolio
  - $16M remaining debt exchanging to Preferred Stock upon closing of Reg A
  - Attractive opportunities for growth with Hempori
Amarantus Bioscience Holdings
Gerald E. Commissiong, President & CEO
Gerald@amarantus.com
45 Wall St., Suite 920
New York, NY 10005
http://www.amarantus.com
Phone: 650-862-5391