Filed by Lantheus Holdings, Inc.
Pursuant to Rule 425 of the Securities Act of 1933
and deemed filed pursuant to Rule 14a-12
of the Securities Exchange Act of 1934
Subject Company: Progenics Pharmaceuticals, Inc.
Commission File No.: 000 – 23143

The following is a slide deck relating to the proposed transaction involving Lantheus Holdings, Inc. and Progenics Pharmaceuticals, Inc. available at www.lantheusprogenics.transactionannouncement.com.


Lantheus
Holdings
Corporate Presentation
May 2020

Safe Harbor Statements

Important Information For Investors And Stockholders

This document does not constitute an offer to sell or the solicitation of an offer to buy any securities or a solicitation of any vote or approval in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to appropriate registration or qualification under the securities laws of such jurisdiction. No offering of securities shall be made except by means of a prospectus meeting the requirements of Section 10 of the U.S. Securities Act of 1933, as amended.

In connection with the proposed transaction, Lantheus filed with the Securities and Exchange Commission ("SEC") a registration statement on Form S-4 on November 12, 2019, as amended by Amendment No. 1 to that registration statement filed with the SEC on March 16, 2020, that includes a joint proxy statement of Lantheus and Progenics that also constitutes a preliminary prospectus of Lantheus. The registration statement was declared effective by the SEC on March 18, 2020, and Lantheus and Progenics commenced mailing the joint proxy statement/prospectus to stockholders of Lantheus and Progenics on or about March 19, 2020. INVESTORS AND SECURITY HOLDERS OF LANTHEUS AND PROGENICS ARE STRONGLY ENCOURAGED TO READ THE JOINT PROXY STATEMENT/PROSPECTUS AND OTHER DOCUMENTS THAT ARE FILED OR WILL BE FILED WITH THE SEC CAREFULLY AND IN THEIR ENTIRETY BECAUSE THEY CONTAIN OR WILL CONTAIN IMPORTANT INFORMATION. Investors and security holders are able to obtain free copies of the registration statement and the joint proxy statement/prospectus and other documents filed with the SEC by Lantheus or Progenics through the website maintained by the SEC at https://www.sec.gov.

Copies of the documents filed with the SEC by Lantheus will also be available free of charge on Lantheus' website at https://www.lantheus.com/ or by contacting Lantheus' Investor Relations Department by email at ir@lantheus.com or by phone at (978) 671-8001. Copies of the documents filed with the SEC by Progenics will also be available free of charge on Progenics' internet website at https://www.progenics.com/ or by contacting Progenics' Investor Relations Department by email at mdowns@progenics.com or by phone at (646) 975-2533.

Certain Information Regarding Participants

Lantheus, Progenics, and their respective directors and executive officers may be considered participants in the solicitation of proxies in connection with the proposed transaction. Information about the directors and executive officers of Lantheus is set forth in its Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the SEC on February 25, 2020, and its definitive proxy statement for its 2020 annual meeting of stockholders, which was filed with the SEC on March 12, 2020. Other information regarding the participants of Lantheus in the proxy solicitation and a description of their direct and indirect interests, by security holdings or otherwise, will be contained in the joint proxy statement/prospectus and other relevant materials to be filed with the SEC regarding the proposed transaction when they become available.

Information about the directors and executive officers of Progenics is set forth in its Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the SEC on March 13, 2020. Other information regarding the participants of Progenics in the proxy solicitations and a description of their direct and indirect interests, by security holdings or otherwise, will be contained in the joint proxy statement/prospectus and other relevant materials to be filed with the SEC regarding the proposed transaction when they become available. You may obtain these documents (when they become available) free of charge through the website maintained by the SEC at https://www.sec.gov and from Investor Relations at Lantheus or Progenics as described above.

Safe Harbor Statements

Cautionary Statement Regarding Forward-Looking Statements

This document contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that are subject to risks and uncertainties and are made pursuant to the safe harbor provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements are based upon current plans, estimates and expectations that are subject to various risks and uncertainties. The inclusion of forward-looking statements should not be regarded as a representation that such plans, estimates and expectations will be achieved. Words such as "anticipate," "expect," "project," "intend," "believe," "may," "will," "should," "plan," "could," "target," "contemplate," "estimate," "predict," "potential," "opportunity," "creates" and words and terms of similar substance used in connection with any discussion of future plans, actions or events identify forward-looking statements. All statements, other than historical facts, including the expected timing of the closing of the merger; the ability of the parties to complete the merger considering the various closing conditions; the expected benefits of the merger, such as efficiencies, cost savings, synergies, revenue growth, creating shareholder value, growth potential, market profile, enhanced competitive position, and financial strength and flexibility; the competitive ability and position of the combined company; and any assumptions underlying any of the foregoing, are forward-looking statements. Important factors that could cause actual results to differ materially from Lantheus' and Progenics' plans, estimates or expectations could include, but are not limited to: (i) Lantheus or Progenics may be unable to obtain stockholder approval as required for the merger; (ii) conditions to the closing of the merger may not be satisfied; (iii) the merger may involve unexpected costs, liabilities or delays; (iv) the effect of the announcement of the merger on the ability of Lantheus or Progenics to retain and hire key personnel and maintain relationships with customers, suppliers and others with whom Lantheus or Progenics does business, or on Lantheus' or Progenics' operating results and business generally; (v) Lantheus' or Progenics' respective businesses may suffer as a result of uncertainty surrounding the merger and disruption of management's attention due to the merger; (vi) the outcome of any legal proceedings related to the merger; (vii) Lantheus or Progenics may be adversely affected by other economic, business, and/or competitive factors, including the ongoing COVID-19 pandemic; (viii) the occurrence of any event, change or other circumstances that could give rise to the termination of the merger agreement; (ix) risks that the merger disrupts current plans and operations and the potential difficulties in employee retention as a result of the merger; (x) the risk that Lantheus or Progenics may be unable to obtain governmental and regulatory approvals required for the transaction, or that required governmental and regulatory approvals may delay the transaction or result in the imposition of conditions that could reduce the anticipated benefits from the proposed transaction or cause the parties to abandon the proposed transaction; (xi) risks that the anticipated benefits of the merger or other commercial opportunities may otherwise not be fully realized or may take longer to realize than expected; (xii) the impact of legislative, regulatory, competitive and technological changes; (xiii) expectations for future clinical trials, the timing and potential outcomes of clinical studies and interactions with regulatory authorities; and (xiv) other risks to the consummation of the merger, including the risk that the merger will not be consummated within the expected time period or at all. Additional factors that may affect the future results of Lantheus and Progenics are set forth in their respective filings with the SEC, including each of Lantheus' and Progenics' most recently filed Annual Report on Form 10-K, subsequent Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and other filings with the SEC, which are available on the SEC's website at www.sec.gov. Readers are urged to consider these factors carefully in evaluating these forward-looking statements, and not to place undue reliance on any forward-looking statements. Readers should also carefully review the risk factors described in other documents that Lantheus and Progenics file from time to time with the SEC. The forward-looking statements in this document speak only as of the date of these materials. Except as required by law, Lantheus and Progenics assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

The Lantheus Story

Lantheus Overview

#1 in Ultrasound Contrast Agents

Innovating in Microbubble applications

Leader in Radio-pharmaceuticals

Pioneer in Radiopharmaceutical Diagnostics

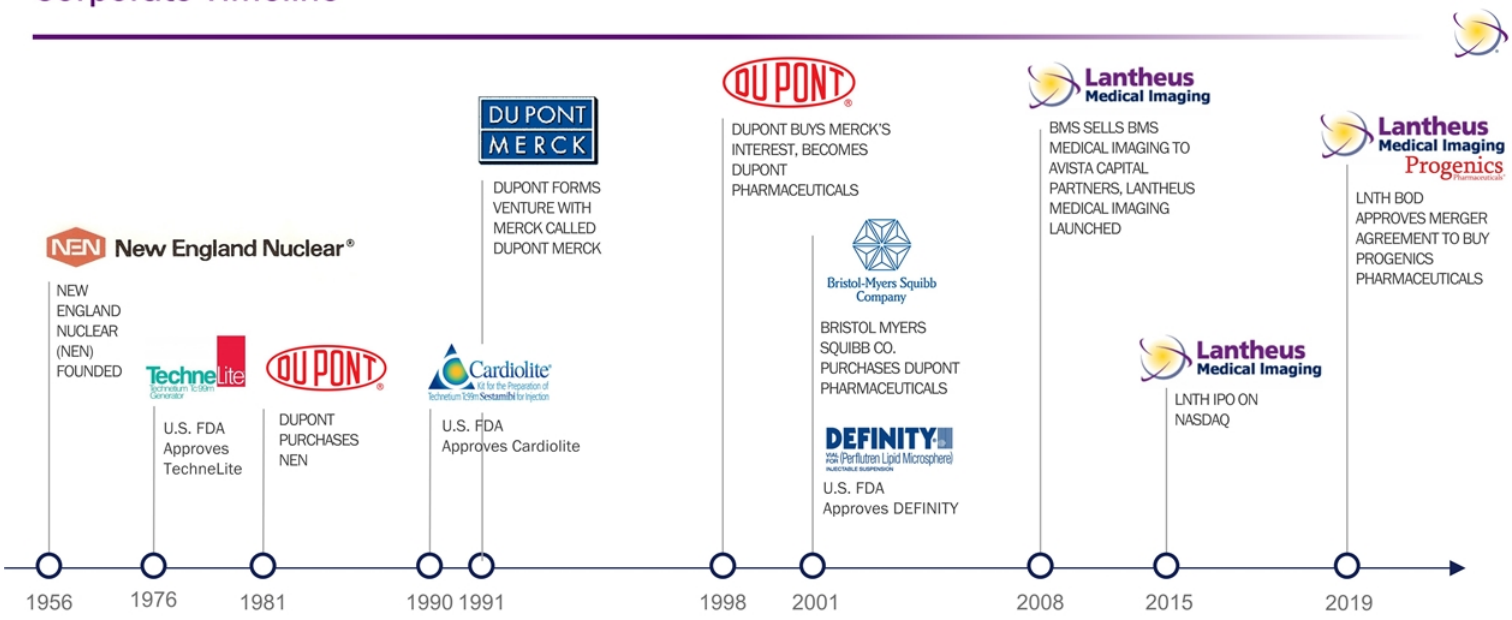
Dynamic Pipeline

Across Microbubble and Radiopharmaceuticals

Operational Excellence

Manufacturing, Supply Chain and Commercial Expertise

Corporate Timeline



Current Product Portfolio

	Revenue 2019* / % of Revenue	Key Product / U.S. Market Share**	Growth Rate***	
Ultrasound Contrast Imaging Agents	$218M / 63%	DEFINITY / ~80%	~18%	
Radiopharmaceuticals and Other	$146M / 37%	TechneLite / ~33%	Overall stable	

* Based on 2019 Worldwide Revenue ($ in millions)
** Source for DEFINITY market share: AMR Echocardiography Monthly Monitor, December 2019.
Source for TechneLite market share: LMI internal estimates.
*** 3-year CAGR (2016-2019)

A Corporate Footprint Balanced By Unique Core Competencies

Expertise in microbubbles

- World market leader in ultrasound contrast
- Room temperature formulation (early 2021)*
- New applications
- New geographies

Strength in direct distribution, logistics and sales

- Hospitals
- Clinics
- Group practices

Development and commercialization capabilities in nuclear isotopes

- 8 commercial products – 7 imaging products & one therapeutic product
- Most successful radiopharmaceutical imaging agent launched to date – Cardiolite

Long-standing channel relationships

- Most diversified Moly supply chain
- Contracted relationships with 5 leading US radiopharmacy chains
- GPOs and IDNs**

Seasoned and experienced management team

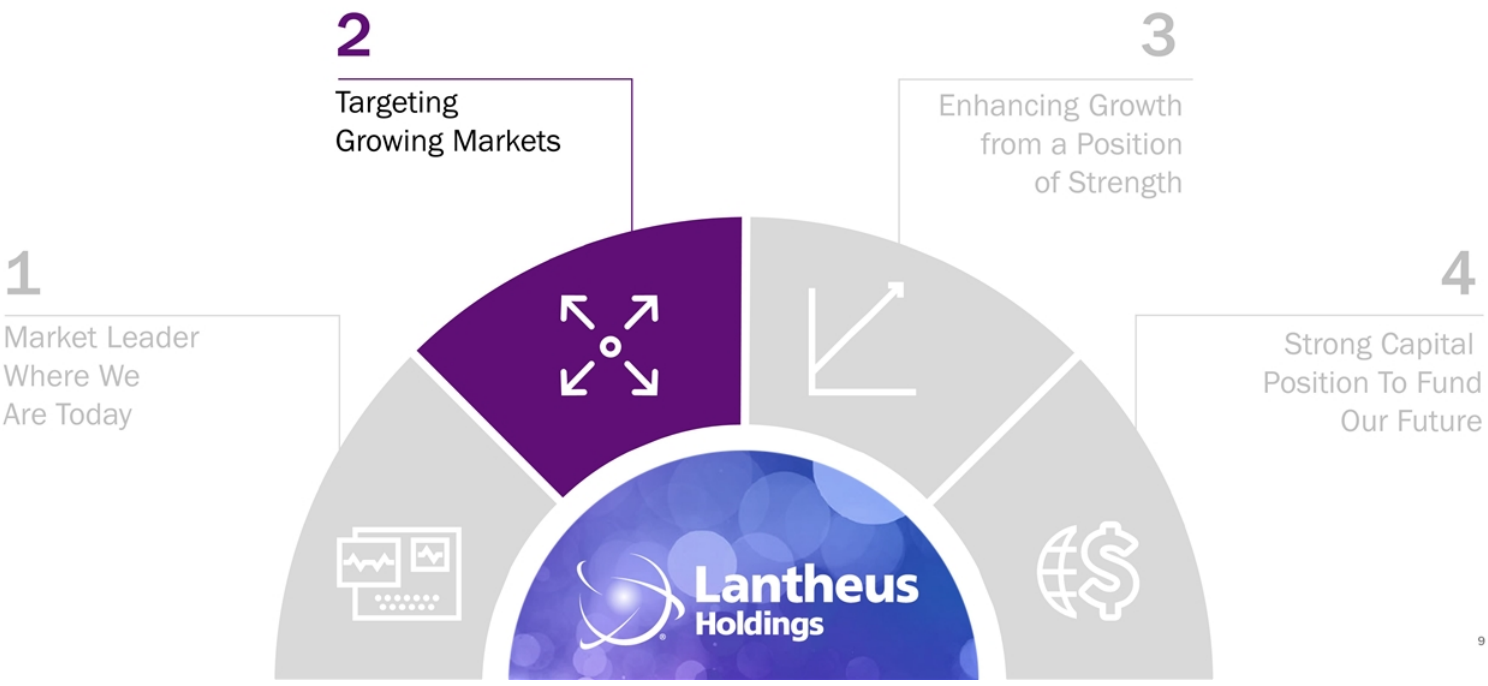
- Pharma / Biotech / Medical Device expertise
- Tenured and highly specialized field personnel

Strong relationships

- Cardiologists
- Nuclear medicine physicians
- Technologists
- Sonographers

* - We currently believe that, if approved by the FDA, the modified formulation could become commercially available in early 2021, although that timing cannot be assured.
** - Group Purchasing Organizations (GPOs) and Integrated Delivery Networks (IDNs)

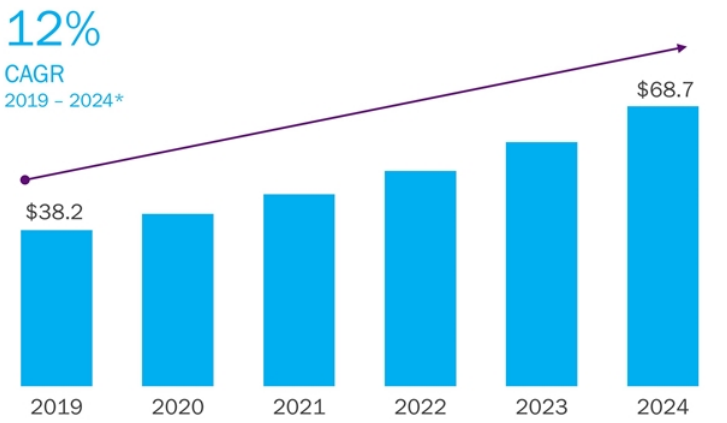
The Lantheus Story



Large, Growing Global Markets

Global Diagnostic Imaging Market

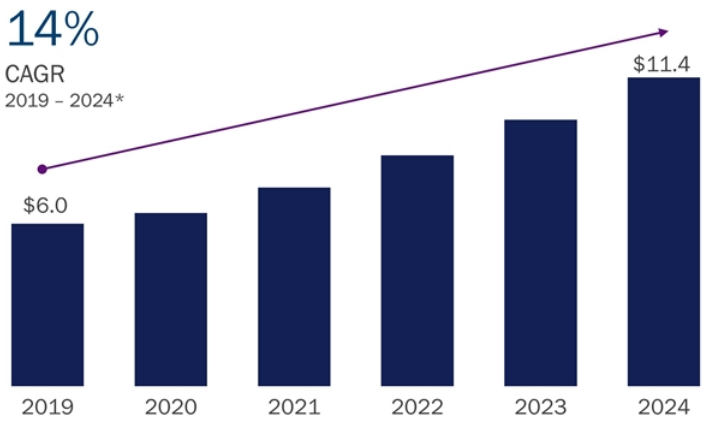
($B)



Source: GlobalData, Sept 2019

Global Nuclear Medicine Market

($B)

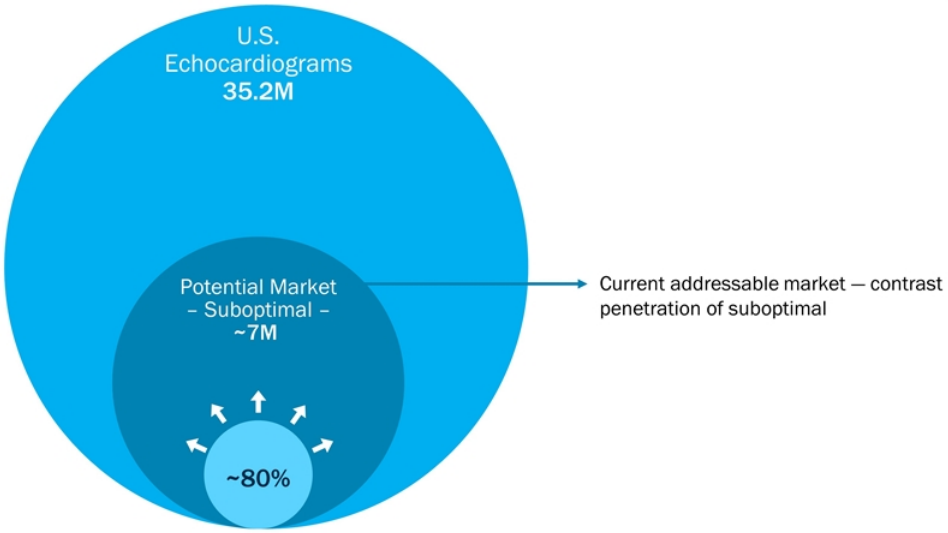


Source: MedRaysIntell, July 2019

* 5-year CAGR

Large Echocardiography Market Opportunity — in the U.S. Alone

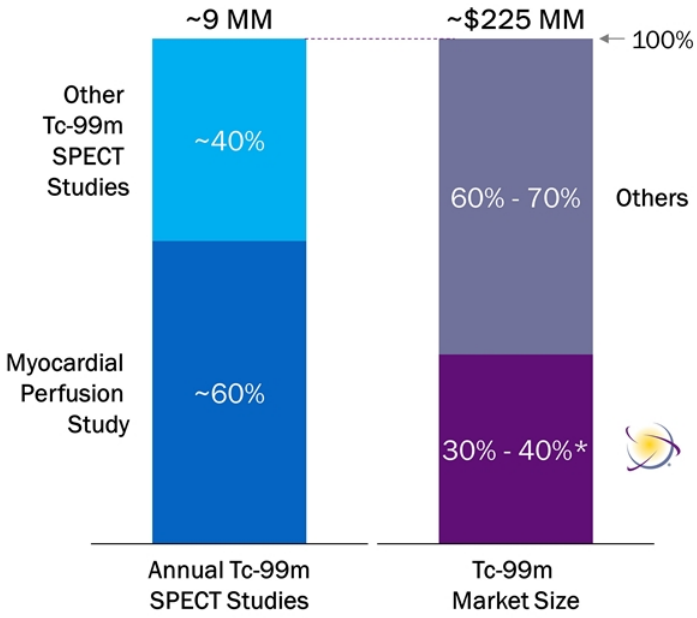
~2% Annual Growth Rate in Total Echocardiograms



Currently, Lantheus has ~**80%** market share of contrast imaging agent use.

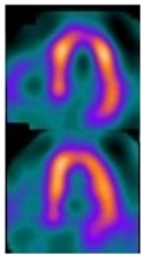
Source: AMR Echocardiography Monthly Monitor, December 2019
Note: Circles not drawn to scale

U.S. Tc-99m Market: ~$225 MM Generator Market Driven Primarily by Cardiac Studies



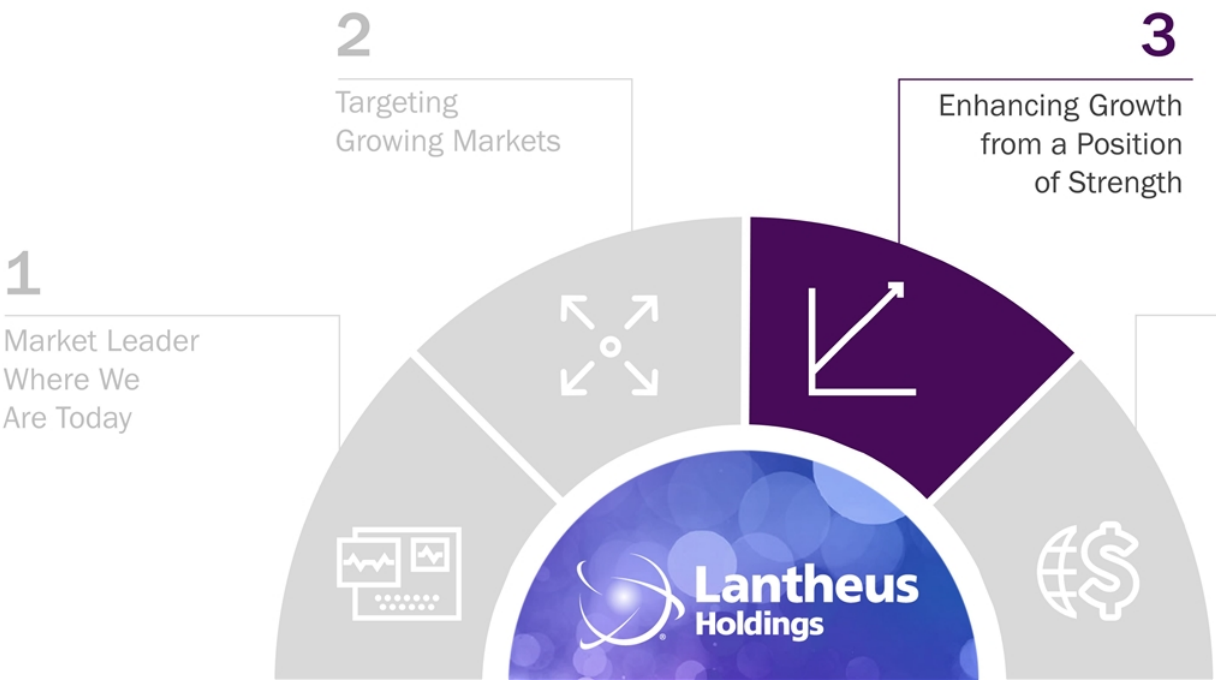
MM = millions
Source: AMR PADDS 2018 database, LMI internal market assessment
* - LMI estimate for market share 2016 - 2019

Market Dynamics



- ~9 MM annual SPECT studies utilize Tc-99m, with ~60% of those Myocardial Perfusion studies
- While number of studies in the TC-99m market is declining 1 – 3% per year, this decline is offset by price
- PET-based studies and related use of isotopes gaining interest

The Lantheus Story



Lantheus 2.0 Areas of Strategic Focus*

Lantheus 2.0 Vision

- Sustain and Accelerate Revenue Growth
- Diversified Portfolio of Diagnostics and Radiopharmaceutical Therapeutics
- Attractive Margins
- Global Reach

* - Assumes closing of the merger with Progenics

Pro Forma Product Portfolio

Microbubbles	Cardiac: DEFINITY® (Perflutren Lipid Microsphere) INJECTABLE SUSPENSION	Multi-Therapeutic Applications: CEREVAST™, CARTHERA
Nuclear 2.0 Diagnostics	Cardiac: Flurpiridaz F 18	Immuno-Oncology: NM-01 NanoMab
Nuclear 2.0 Theranostics	Neuroendocrine Tumors: AZEDRA iobenguane I 131, LMI 1195	Prostate: PyL, AI 1095

Progenics Acquisition - Executing a Compelling Strategic Opportunity

Robust portfolio and pipeline of precision diagnostic and therapeutic products

Driving strategic pipeline investments to capitalize on market opportunities and maximize returns

Sustainable and diversified revenue growth with focus on commercial execution excellence

Attractive financial profile and strengthened cash flow generation, with attention to cost synergy opportunities that support enhanced stockholder returns

Proven leadership with strong commercial, operational and financial expertise; aligned with stockholder interests

Well-balanced Portfolio of Marketed Assets Serving Precision Diagnostics

DEFINITY

- Unparalleled market and brand position
- Dedicated salesforce drives advocacy and awareness
- Long-standing relationships with sonographers/echocardiologists
- Four Orange Book-listed patents in total
- Room temperature formulation has patent protection to 2035

Radiopharmaceuticals

- Wide range of diagnostic imaging for cardiac perfusion, pulmonary function, and cerebral blood flow
- Unique expertise including complex supply chain logistics
- Cardiolite–most used diagnostic product launched (U.S. to date)

Additionally a Portfolio of Key Products Addressing Unique Unmet Needs in Oncology

AZEDRA

QUADRAMET (SAMARIUM SM 153 LEXIDRONAM INJECTION)

RELISTOR methylnaltrexone bromide

aBSI AUTOMATED BONE SCAN INDEX

AZEDRA

- First/only FDA-approved treatment for adults and pediatric patients 12 and older with iobenguane scan positive, unresectable, locally advanced or metastatic PPGL* who require systemic anticancer therapy

RELISTOR

- Only pharmacotherapy with oral and subcutaneous formulations to treat opioid-induced constipation (OIC) in adults with chronic pain – targeted action treats the cause of OIC
- Licensed to Bausch Health

QUADRAMET

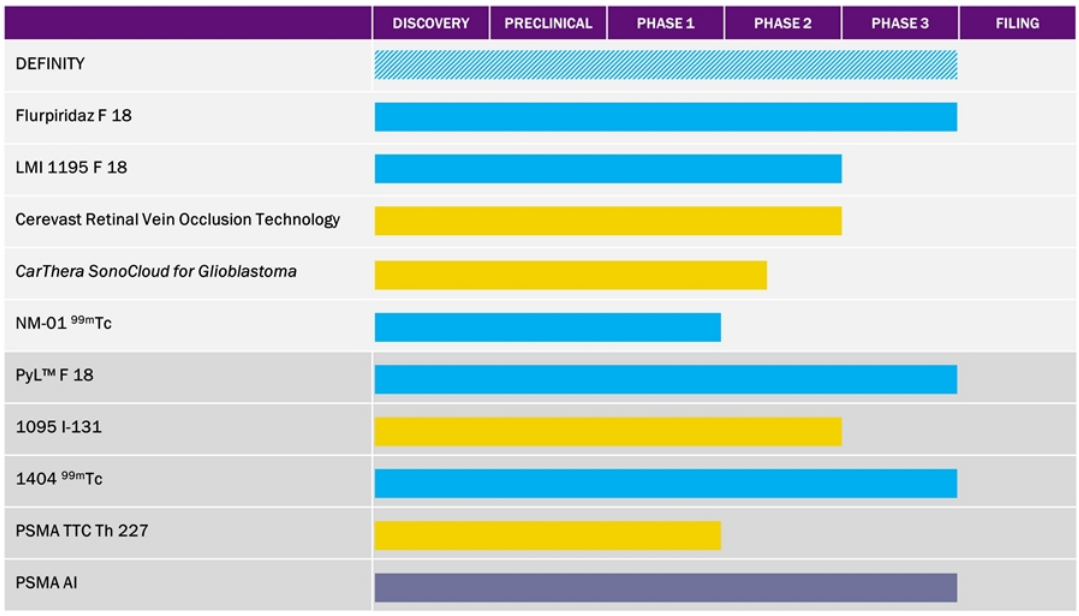
- Injectable radiopharmaceutical primarily used to treat pain associated with osteoblastic and mixed bone metastases confirmed on radionuclide bone scan

Automated Bone Scan Index

- Software as a medical device is designed to quantify the disease burden in bone scans of metastatic prostate cancer patients

- Pheochromocytoma or Paraganglioma

Robust Combined Pipeline with Clear Value Drivers



Development Partners
▪ Lantheus developing
▪ Lantheus in partnership with GE Healthcare[1]
▪ Lantheus developing
▪ Lantheus partnership with Cerevast[2]
▪ Lantheus partnership with CarThera[3]
▪ Lantheus partnership with NanoMab[4]
▪ Progenics developing ▪ Licensed in Europe by Curium
▪ Progenics developing
▪ Licensed in Europe by ROTOP
▪ Progenics partnership with Bayer[5]
▪ Progenics developing

Legend: NCE/NBE Precision Diagnostic; Life Cycle Management; NCE/NBE Therapeutic; Digital Solution

NCE: New Chemical Entity; NBE New Biologic Entity

1. GE Healthcare is conducting the second phase 3 study.
2. Clinical development program conducted by Cerevast.
3. Clinical development program conducted by CarThera.
4. Ongoing Phase 1 clinical development conducted by NanoMab.
5. Clinical development program conducted by Bayer.

Note: Assumes closing of the merger with Progenics

Proven Management Team With Deep Industry Expertise

Mary Anne Heino
President and Chief Executive Officer

janssen · centocor inc · ANGELINI · labopharm

Mike Duffy
SVP — Law and Public Policy, General Counsel

point therapeutics · ROPES & GRAY

Istvan Molnar, M.D.
Chief Medical Officer

Fusion · BAYER · merrimack

Robert Marshall
Chief Financial Officer and Treasurer

ZIMMER BIOMET Your progress. Our promise. · BROWN & WILLIAMSON TOBACCO

Paul Blanchfield
Chief Commercial Officer

Takeda · Shire · McKinsey&Company

Carol Walker
SVP — Quality

nova biomedical · SIEMENS · iMD · Bayer Diagnostics

John Bolla
Chief Operations Officer

gsk GlaxoSmithKline

Etienne Montagut
SVP — Corporate Development

GE Healthcare · IPSEN Innovation for patient care

The Lantheus Story

2

Targeting
Growth Markets

3

Enhancing Growth
from a Position
of Strength

1

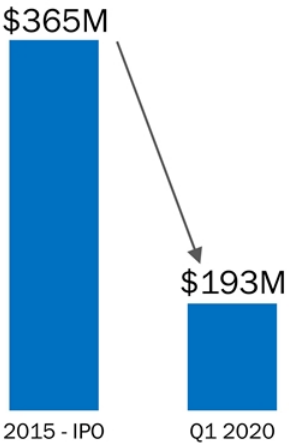
Market Leader
Where We
Are Today

4

Strong Capital
Position to Fund
Our Future

Strong Balance Sheet and Financial Flexibility

Decline in Net Debt



Strong Balance Sheet
(Q1 2020)*

1.4x

Net Leverage

Resources
(Q1 2020)*

Cash on hand	$96M
Available revolving credit	$200M

Generating $40-60M Free Cash Flow annually

- Figures as of Q1 2020. On April 1, 2020, the Company drew down $100.0 million under its 2019 Revolving Facility


Lantheus
Holdings
Appendix

Robust Combined Pipeline with Clear Value Drivers

Life Cycle Management

	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3	FILING	Development Partners
DEFINITY *Octafluoropropane - Room Temperature Formulation*							Lantheus developing

Robust Combined Pipeline with Clear Value Drivers

NCE Precision Diagnostic

	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3	FILING	Development Partners
Flurpiridaz F 18 *PET Myocardial Perfusion Imaging*							Lantheus in partnership with GE Healthcare[1]
LMI 1195 *Flubrobenguane - Neuroendocrine Tumors in Pediatric / Adult Populations*							Lantheus developing
NM-01 ^{99m}Tc *Anti-PD-L1 Biomarker Single-Domain Antibody*							Lantheus partnership with NanoMab[2]
PyL™ F 18 *PSMA-targeted PET / CT Imaging Agent*							Progenics developing. Licensed in Europe by Curium
1404 ^{99m}Tc *PSMA-targeted SPECT / CT Imaging Agent*							Progenics licensed to ROTOP in Europe

1. GE Healthcare is conducting the second phase 3 study.
2. Ongoing Phase 1 clinical development conducted by NanoMab.

NCE: New Chemical Entity

Robust Combined Pipeline with Clear Value Drivers

NCE/NBE Therapeutics

	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3	FILING	Development Partners
Cerevast Retinal Vein Occlusion Technology *Proprietary therapeutic ultrasound technology - Microbubble Franchise*							Lantheus partnership with Cerevast[1]
CarThera SonoCloud for Glioblastoma *Proprietary therapeutic ultrasound technology - Microbubble Franchise*							Lantheus partnership with CarThera[2]
1095 I-131 *PSMA-targeted Small Molecule Therapeutic*							Progenics developing
PSMA TTC Th 227 *PSMA-targeted Conjugate Therapeutic*							Progenics partnership with Bayer[3]

1. Clinical development program conducted by Cerevast.
2. Clinical development program conducted by CarThera.
3. Clinical development program conducted by Bayer.

NCE: New Chemical Entity; NBE New Biologic Entity

Robust Combined Pipeline with Clear Value Drivers

Digital Solution

	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3	FILING	Development Partners
PSMA AI *Automated reading of PSMA images using AI*							Progenics developing

Radiopharmaceutical Business Model Defined by Unique Features

Highly Complex – Supply Chain & Logistics

Limited - Number of Nuclear Isotope Suppliers Worldwide

Highly Regulated - >30 Local, State, Federal, & International Agencies

Stakeholders - Strong Relationships with Radiopharmacies, Hospitals and Payers

Specialized - Product Development & Commercialization Capabilities in Nuclear Medicine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