Lantheus Presents New Data on Novel Cardiac PET Imaging Agent LMI 1195 in Development for the Diagnostic Assessment of Ischemic Heart Failure Patients at Risk for Sudden Cardiac Death at ACC.18

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Findings Show LMI 1195 Provides a Comparable Measure of Cardiac Sympathetic Nerve Function as PET imaging with C11 HED

NORTH BILLERICA, Mass.--(BUSINESS WIRE)--Mar. 12, 2018-- Lantheus Holdings, Inc. (NASDAQ: LNTH), the parent company of Lantheus Medical Imaging, Inc. ("LMI"), a global leader in the development, manufacture and commercialization of innovative diagnostic imaging agents, today announced positive new data from a Phase 2 study of LMI 1195, a fluorine-18 (F18) labeled tracer for use in cardiac positron emission tomography (PET) to assess myocardial presynaptic sympathetic nerve function. Altered sympathetic nervous system (SNS) function has been implicated in a broad range of clinical conditions including heart failure and sudden death. The data will be presented during a poster presentation at the American College of Cardiology's 67th Annual Scientific Session (ACC.18) on Monday, March 12, 2018 at 9:45 a.m. ET in the Noninvasive Imaging Moderated Poster Theater.

The data show that PET imaging with LMI 1195 provides a comparable measure of cardiac sympathetic nerve function and more favorable kinetics for early cardiac imaging as PET imaging with carbon-11 (C11) hydroxyephedrine (HED). C11 HED has been used in cardiac PET imaging to characterize SNS integrity and risk-stratify patients with ischemic cardiomyopathy considered for implantable cardiac defibrillators (ICD). However, widespread clinical utility is limited due to the short half-life of C11-labeled tracers, which require the onsite availability of a cyclotron.

"The Phase 2 study findings are encouraging and show the comparability of PET imaging with LMI 1195 and C11 HED in a variety of relevant cardiac conditions, including patients with ischemic cardiomyopathy at risk for sudden cardiac arrest," said Rob Beanlands, M.D., Head, Division of Cardiology, University of Ottawa Heart Institute and an investigator in the study. "The PAREPET study conducted at the University of Buffalo has previously indicated that PET C11 HED imaging may provide additional information useful for the risk stratification of patients considered for ICD placement. Our initial findings suggesting the comparability of LMI 1195 and C11 HED are important. A new, widely available non-invasive tool that could lead to a more precise selection of patients prior to ICD implantation would be a very welcome addition to the currently available, but limited armamentarium."

Nine participants were enrolled in the study. Participants (n=2 healthy controls; n=6 ischemic cardiomyopathy patients with left ventricular (LV) ejection fraction (EF) =34±4; and n=1 non-ischemic cardiomyopathy patient with EF=37%) underwent two separate PET imaging visits within one week. On the first visit, participants underwent N13 ammonia and dynamic HED PET imaging. On the second visit, participants underwent dynamic LMI 1195 PET imaging. The order of testing was randomized. HED and LMI 1195 retention index (RI) was quantified to assess presynaptic sympathetic nerve function. LV, lung, liver and blood standardized uptake values were also determined at different time intervals.

The findings suggest that LMI 1195 yields a comparable estimate of cardiac sympathetic innervation as C11 HED. LMI 1195 retention index ($r=0.89$, $p<0.0001$) and defect score (r-0.99, $p<0.0001$) correlated highly with HED. LV-to-lung ratios were comparable between the two tracers. In addition, LMI 1195 seems to offer more favorable kinetics for early cardiac imaging than HED. A significant difference in blood clearance was observed between the two tracers resulting in a LV-to-blood ratio of LMI-1195 higher than HED within the first five minutes following administration ($p<0.05$).

"We believe LMI 1195 may represent a first-in-class agent and useful diagnostic tool for a significant population of patients at risk for sudden cardiac death," said Cesare Orlandi, M.D., Chief Medical Officer of Lantheus Medical Imaging. "Nuclear imaging provides a unique tool to measure the molecular changes in the heart, including cardiac function of the norepinephrine transporter (NET), in a non-invasive and repeatable manner. Lantheus developed LMI 1195 to target the NET and we are encouraged by these initial results that have been obtained in a variety of clinical conditions. Data from this and other collaborations with academic centers in Canada and Europe have allowed us to progress the LMI 1195 program to this stage and have provided the basis for the initiation of a Phase 3 trial in ischemic cardiomyopathy patients scheduled to receive an ICD. We look forward to initiating this pivotal study later in the year."

About LMI 1195
LMI 1195, developed by Lantheus, is an internally discovered small molecule that may be a first-in-class fluorine-18-based PET radiopharmaceutical imaging agent designed to assess cardiac sympathetic nerve function. LMI 1195 has the potential to become a useful tool in the diagnostic assessment of ischemic heart failure patients who may be at risk of sudden cardiac death.

Heart failure is associated with changes in the cardiac sympathetic nerve function. These changes appear early in the

development of heart failure. The cardiac neuronal norepinephrine transporter (NET) has been shown to be a useful target for the non-invasive monitoring of the cardiac sympathetic status and the assessment of the likelihood of a heart failure patient to develop fatal arrhythmias. Nuclear cardiac imaging provides a unique tool to measure the molecular changes in the heart, including cardiac function of NET, in a non-invasive and repeatable manner. Lantheus developed LMI 1195 to target the NET and are encouraged by initial results that have been obtained in a variety of conditions.

Phase 1 study findings showed that PET imaging with LMI 1195 has favorable safety and dosimetry profiles in healthy volunteers. In addition, LMI 1195 provided excellent quality whole-body images, and the radiation dose to the subjects was found to be well within acceptable limits. The data also showed that blood radioactivity cleared quickly and lung activity was low throughout the study.

About Heart Failure
Heart failure is a major public health challenge because of high morbidity and mortality, frequent hospitalizations, and its financial burden on the community. Heart failure affects 6.5 million people in the U.S. today, and approximately 2 million patients may be eligible for evaluation for ICD implantation.[1] The cost of heart failure continues to rise, placing financial burden on the U.S. economy and healthcare system. Overall heart failure costs were estimated to be approximately $31 billion in 2012.[1] ICDs have been shown to effectively reduce mortality rates.

About the University of Ottawa Heart Institute
The University of Ottawa Heart Institute is Canada's largest and foremost heart health centre dedicated to understanding, treating and preventing heart disease. UOHI delivers high-tech care with a personal touch, shapes the way cardiovascular medicine is practiced and revolutionizes cardiac treatment and understanding. It builds knowledge through research and translates discoveries into advanced care. UOHI serves the local, national and international community, and is pioneering a new era in heart health.

About Lantheus Holdings, Inc. and Lantheus Medical Imaging, Inc.
Lantheus Holdings, Inc. is the parent company of Lantheus Medical Imaging, Inc. ("LMI"), a global leader in the development, manufacture and commercialization of innovative diagnostic imaging agents and products. LMI provides a broad portfolio of products, including the echocardiography contrast agent DEFINITY® Vial for (Perflutren Lipid Microsphere) Injectable Suspension; TechneLite® (Technetium Tc99m Generator), a technetium-based generator that provides the essential medical isotope used in nuclear medicine procedures; and Xenon (Xenon Xe 133 Gas), an inhaled radiopharmaceutical imaging agent used to evaluate pulmonary function and for imaging the lungs. The Company is headquartered in North Billerica, Massachusetts with offices in Puerto Rico and Canada. For more information, visit www.lantheus.com.

Safe Harbor for Forward-Looking and Cautionary Statements

This press release contains "forward-looking statements" as defined under U.S. federal securities laws. Forward-looking statements may be identified by their use of terms such as anticipate, believe, could, should, estimate, expect, intend, may, plan, predict, project, target, will and other similar terms. Such forward-looking statements are subject to risks and uncertainties that could cause actual results to materially differ from those described in the forward- looking statements. Readers are cautioned not to place undue reliance on the forward-looking statements contained herein, which speak only as of the date hereof. The Company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by law. Risks and uncertainties that could cause our actual results to materially differ from those described in the forward-looking statements are discussed in our filings with the Securities and Exchange Commission (including those described in the Risk Factors section in our Annual Reports on Form 10-K and our Quarterly Reports on Form 10-Q).

[1] E.J. Benjamin, M.J Blaha, S.E. Chiuve et al. Heart Disease and Stroke Statistics—2017 Update
A Report From the American Heart Association. *Circulation.* 2017;135:00–00. DOI: 10.1161/CIR.0000000000000485

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