Amarantus Announces Successful Delivery and Distribution of MANF in Preclinical Model to Brain Areas Involved in Parkinson's Disease

Collection Using Renishaw Plc's Convection-Enhanced Delivery Device Demonstrated MANF Can be Precisely Delivered to Parkinson's-Associated Brain Areas

Delivery and Distribution Data Solidifies Rationale for Preclinical Development of MANF as a Potential Disease-Modifying Treatment in Parkinson's Disease

SAN FRANCISCO and GENEVA, May 15, 2015 (GLOBE NEWSWIRE) -- Amarantus BioScience Holdings, Inc. (OTCQB:AMBS), a biotechnology company focused on developing therapeutic and diagnostic products for neurological disorders and orphan indications, announced that it has completed a study of mesencephalic-astrocyte-derived neurotrophic factor (MANF) administration to the putamen and the substantia nigra of pigs by convection-enhanced delivery. This study generated MANF brain delivery and distribution data, further supporting the rationale for MANF's development in the treatment of Parkinson's disease (PD). The study was conducted in the United Kingdom in collaboration with Renishaw plc's Neurological Applications Department and its leading academic partner, Functional Neurosurgery Research Group at the University of Bristol.

In previously reported studies, MANF has been demonstrated by multiple laboratories to be neuroprotective and neurorestorative in rat models of Parkinson's disease. The current study demonstrated that: (i) MANF can be delivered to the porcine putamen and substantia nigra, brain areas centrally involved in PD, and (ii) that pharmacologically efficacious levels are achieved using Renishaw's convection-enhanced delivery device currently in human clinical development. The porcine brain is considered a good model to evaluate the feasibility of delivering therapeutic agents to the human brain, as it has a significantly larger brain volume than that of a rat or non human primate (NHP). These data demonstrating accurate surgical targeting and distribution of MANF mark an important step in the development of MANF for the treatment of PD.

"We are very encouraged by this important set of data demonstrating that MANF can be delivered to the brain with great accuracy," said Gerald E. Commissiong, President & CEO of Amarantus. "MANF was precisely delivered to sites of the brain affected by Parkinson's disease and the volume of distribution was thought to be sufficient to elicit a treatment effect. This data further positions Amarantus in the Parkinson's disease space, as we are preparing to initiate our Phase 2b small molecule program of our lead product candidate, eltoprazine, in Parkinson's disease levodopa-induced dyskinesia and continue with the development of MANF as a potential disease-modifying treatment for PD."

In the study single bilateral catheters were implanted into the putamen and the substantia nigra, respectively. High accuracy to within 0.5 mm of the planned target was demonstrated by post-operative magnetic resonance imaging (MRI) while infusing Gadolinium-DTPA (Gd) during real-time scanning. MANF was administered to the porcine brain target sites 14 days later by convection-enhanced delivery. No evidence of reflux was detected. Immuno-staining on serial axial and coronal sections combined with volumetric analysis demonstrated MANF distribution volumes of 307 mm$^3$ and 105 mm$^3$ for the putamen and the substantia nigra, respectively. The observed distribution in porcine putamen was comparable to the one required to elicit neuroprotection in the rat PD model.
Moreover, MANF and Gd distribution volumes correlated well and Gd did not appear to alter MANF's pattern of
distribution. The Company believes these data provide a firm basis for studies in NHPs as well as subsequent
human clinical trials.

The Company expects to publish further data from this study in peer-reviewed journals and at scientific
congresses over the course of 2015.

**About Parkinson's Disease**

Parkinson's disease is a chronic, progressive neurological disorder that causes motor symptoms such as tremors,
rigidity and slowed movements as well as non-motor symptoms including cognitive impairment and autonomic
dysfunction. The Parkinson's Disease Foundation estimates that there are approximately one million people living
with PD in the United States and seven to ten million PD patients worldwide. The most commonly prescribed
treatments for PD are levodopa-based therapies. There is currently no cure available for Parkinson's disease.

**About Mesencephalic-Astrocyte-derived Neurotrophic Factor (MANF)**

MANF (mesencephalic-astrocyte-derived neurotrophic factor) is believed to have broad potential because it is a
naturally-occurring protein produced by the body for the purpose of reducing and preventing apoptosis (cell death)
in response to injury or disease, via the unfolded protein response. By manufacturing MANF and administering it
to the body, Amaranthus is seeking to use a regenerative medicine approach to assist the body with higher
quantities of MANF when needed. Amaranthus is the front-runner and primary holder of intellectual property
around MANF, and is initially focusing on the development of MANF-based protein therapeutics. MANF, a
naturally-occurring protein that reduces and prevents apoptosis (programmed cell death) in response to injury or
disease, was discovered utilizing Amaranthus' proprietary PhenoGuard™ Protein Discovery Engine.

MANF's lead indication is retinitis pigmentosa, and additional indications including Parkinson's disease, diabetes
and Wolfram's syndrome are currently being pursued. Further applications for MANF may include Alzheimer's
disease, traumatic brain injury, myocardial infarction, antibiotic-induced ototoxicity and certain other rare orphan
diseases currently under evaluation.

**About Amarantus BioScience Holdings, Inc.**

Amarantus BioScience Holdings (AMBS) is a biotechnology company developing treatments and diagnostics for
diseases in the areas of neurology, psychiatry, ophthalmology and regenerative medicine. AMBS' Therapeutics
division has development rights to eltoprazine, a Phase 2b ready small molecule indicated for Parkinson's disease
levodopa-induced dyskinesia, adult ADHD and Alzheimer's aggression, and owns the intellectual property rights
to a therapeutic protein known as mesencephalic-astrocyte-derived neurotrophic factor (MANF) and is developing
MANF-based products as treatments for brain and ophthalmic disorders. AMBS' Diagnostics division owns the
rights to MSPrecise®, a proprietary next-generation DNA sequencing (NGS) assay for the identification of
patients with relapsing-remitting multiple sclerosis (RRMS) at first clinical presentation, has an exclusive
worldwide license to the Lymphocyte Proliferation test (LymPro Test®) for Alzheimer's disease, which was
developed by Prof. Thomas Arendt, Ph.D., from the University of Leipzig, and owns intellectual property for the
diagnosis of Parkinson's disease (NuroPro). AMBS also owns the discovery of neurotrophic factors
(PhenoGuard™) that led to MANF's discovery.

For further information please visit [www.Amarantus.com](http://www.Amarantus.com), or connect with the Company on [Facebook](http://www.facebook.com), [LinkedIn](http://www.linkedin.com), [Twitter](http://www.twitter.com) and [Google+](http://www.google.com).

**Forward-Looking Statements**

Certain statements, other than purely historical information, including estimates, projections, statements relating to
our business plans, objectives, and expected operating results, and the assumptions upon which those statements are based, are forward-looking statements. These forward-looking statements generally are identified by the words "believes," "project," "expects," "anticipates," "estimates," "intends," "strategy," "plan," "may," "will," "would," "will be," "will continue," "will likely result," and similar expressions. Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties which may cause actual results to differ materially from the forward-looking statements. Our ability to predict results or the actual effect of future plans or strategies is inherently uncertain. Factors which could have a material adverse effect on our operations and future prospects on a consolidated basis include, but are not limited to: changes in economic conditions, legislative/regulatory changes, availability of capital, interest rates, competition, and generally accepted accounting principles. These risks and uncertainties should also be considered in evaluating forward-looking statements and undue reliance should not be placed on such statements.

CONTACT: Investor and Media Contact:
   Jenene Thomas
   Jenene Thomas Communications, LLC
   Investor Relations and Corporate Communications Advisor
   T: (US) 908.938.1475
   E: jenene@jenenethomascommunications.com

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