NEUROME

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CONTACT: Floyd E. Bloom, M.D.
Founding Chief Executive Officer
(858) 677-0466

Neurome announces publication of research findings on Alzheimer's disease in the Proceedings of the National Academy of Sciences

Findings conclude that substantial neuronal pathology is evident well before amyloid accumulation occurs.

LA JOLLA, CA - Neurome, Inc. recently completed the third phase of its analysis of Elan's mouse model of Alzheimer's disease (AD), which is to be published today in the Proceedings of the National Academy of Sciences of the United States of America (PNAS), Vol. 101, No. 18 p.p.7141-7146 (2004). The paper by Chi-Cheng Wu et al. is entitled "Selective vulnerability of dentate granule cells prior to amyloid deposition in PDAPP mice: Digital morphometric analyses" and is also available in the online edition of PNAS at www.pnas.org.

Using a specific, high-throughput technique to visualize neurons in their entirety and Neurome's proprietary microscopy software, individual neurons from the brains of these mice expressing the gene associated with familial Alzheimer's disease were reconstructed and analyzed in 3-D. The analysis revealed a specific form of cellular pathology of nerve cells in the region of the hippocampus that earlier Neurome work had shown to be affected before amyloid deposits could be seen. The findings in this new paper suggest that the reduced volume in the dentate gyrus region of the hippocampus is the consequence of an extensive loss of dendrites – the long, branching extensions from a nerve cell that receive synaptic inputs – in this same region.

Normally, a healthy nerve cell has many dendrites. Neurome's quantitative analysis of the structural differences among individual nerve cells in the brains of these mice provides evidence for selective vulnerability of a specific sub-type of nerve cells in the dentate gyrus prior to any amyloid deposition. Furthermore, the location of these nerve cells correlates perfectly with circuits known to be the most vulnerable to degeneration in human Alzheimer's disease, and provides support for previous reports of consequent volume loss in this same brain region of the transgenic mouse model of Alzheimer's disease. This finding further supports Neurome's previous findings suggesting that early intervention will be required to halt the degenerative cascade that occurs in Alzheimer's disease. In addition, the identification of the vulnerable cell class in this mouse model provides an ideal target for measuring the success of experimental therapeutics.

The paper is co-authored by Faisal Chawla (Neurome), Dora Games, Ph.D. (Elan Pharmaceuticals), Russell E. Rydel, Ph.D. (Elan Pharmaceuticals), Stephen Freedman, Ph.D. (Elan Pharmaceuticals), Dale Schenk, Ph.D. (Elan Pharmaceuticals), Warren G. Young, Ph.D. (Neurome), John H. Morrison, Ph.D. (Neurome and Mount Sinai School of Medicine) and Floyd E. Bloom, M.D. (Neurome and The Scripps Research Institute).

"These new findings are doubly interesting to us," said Floyd E. Bloom, M.D., Founding CEO and Chairman of the Board of Neurome and Chairman of the Department of Neuropharmacology at The Scripps Research Institute. "Firstly, they validate precisely our earlier reports that at 90 days of age, long before amyloid deposits can be visualized, the dentate gyrus of the transgenic mouse model of Familial Alzheimer's disease shows significant pathology in exactly the locations where amyloid will deposit much later in the mouse's life."

"Secondly," continued Dr. Bloom, "the new data will allow us to focus on these vulnerable cells and further increase our analytical speed in future trials of any therapeutic interventions we may be called upon to evaluate."

Alzheimer's disease is a progressive, neurodegenerative disease of the brain characterized by memory loss, language deterioration, impaired visuospatial skills, poor judgment, indifferent attitude, but preserved motor function. Symptoms of Alzheimer's disease usually manifest after age sixty-five; however, onset may occur as early as age forty, appearing first as memory decline and, over several years, destroying cognition, personality, and ability to function. There is no known cure for Alzheimer's disease, which affects at least 20 million people worldwide.

About Neurome

Neurome, Inc. performs contract brain research for pharmaceutical and biotechnology companies while at the same time pursuing its own in-house and collaborative research protocols. Neurome develops standardized, quantitative databases that accurately depict and integrate gene expression patterns in the three-dimensional context of the brain's structures, circuits, and cells, and deploys these databases in primary research directed toward the discovery and development of gene targets for enhancement of brain function and treatment of brain-based disease. The data collected from these efforts will populate an evolving, comprehensive database available by subscription and useful on a broad level for analyses of mouse models of brain function and disease. The application of the Neurome technologies provides rigorous, quantitative data that are optimally suited to the measurement of subtle cell-type specific shifts in gene expression, as well as progression and prevention of degenerative events affecting specific cell classes and brain regions. For more information, please visit Neurome's website at www.neurome.com.