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Neurome, Inc. announces publication of new research findings in the Proceedings of the National Academy of Sciences

Three-dimensional brain gene expression atlas enables visualization of powerful data suggesting that the adult brain has transcriptional 'imprint' established during embryogenesis, important for maintaining regional specificity and functional relationships between regions.

LA JOLLA, CA -- Neurome, Inc. announced today that it has completed work contributed towards a study aimed at understanding how regional gene expression patterns in the brain are related to brain architecture and organization, including construction of a regional gene expression atlas of the adult mouse brain. The results of the study are to be published today in the Proceedings of the National Academy of Sciences of the United States of America (PNAS), Vol. 102, No. 29 pp. 10357-10652 (2005). The paper by Matthew A. Zapala et al. is entitled "Adult Mouse Brain Gene Expression Patterns Bear an Embryologic Imprint" and is also available in the online edition of PNAS at www.pnas.org.

The study combines quantitative gene expression data from 24 specific regions of the mouse brain with a high resolution, coordinate-based brain atlas to permit the visualization of relative gene expression levels in the context of the whole brain. The gene expression data were imported and visualized onto a three-dimensional (3D) brain atlas representation using Neurome's proprietary NeuroZoom™ software, providing a virtual *in situ* hybridization in which relative gene expression levels for specific brain regions are color-coded. This method offers significant advantages in that it uses both standard stereotaxic coordinates and strict dissection protocols that respect natural boundaries, in an effort to accurately display gene expression patterns that represent whole subregions rather than a mixture of multiple regions.

"Neurome's technologies make it possible to import and display highly quantitative brain gene expression data from a variety sources such as Neurome's open-system gene expression profiling technology, TOGA®, and DNA microarrays (gene chips) onto multi-dimensional brain atlas templates", commented Floyd E. Bloom, M.D., Chairman, Founding Chief Executive Officer

and Chief Scientific Officer of Neurome. "Our ability to create powerful visual displays of numerical data provides a more comprehensive means of understanding this important information."

"Brain region relatedness has primarily been understood to be based upon cytoarchitecture, neurochemistry and connectivity", commented Carrolee Barlow, M.D., Ph.D., Vice President of Biology Research at Brain Cells Inc., adjunct faculty member at the Salk Institute for Biological Studies and Principal Investigator on the project. "The findings presented here revealed similar gene expression patterns for regions that collectively shared a developmental origin, which suggests that brain regions in the adult are instead related based upon gene expression patterns imprinted during embryonic development." This imprinting is critical for maintaining regional specificity and functional relationships between brain regions in the adult.

The paper is co-authored by Iiris Hovatta, Ph.D. (the Salk Institute), Julie A. Ellison, Ph.D. (the Salk Institute), Lisa Wodicka, Ph.D. (the Salk Institute), Jo A. Del Rio, Ph.D. (the Salk Institute), Richard Tennant (the Salk Institute), Wendy Tynan (the Salk Institute), Ron S. Broide, Ph.D. (Neurome, Inc.), Rob Helton (the Salk Institute), Barbara S. Stoveken, Ph.D. (BrainCells, Inc.), Christopher Winrow, Ph.D. (the Salk Institute), John Reilly, Ph.D. (Neurome, Inc.), Warren G. Young, Ph.D. (Neurome, Inc.), Floyd E. Bloom, M.D. (Neurome, Inc.), David J. Lockhart, Ph.D. (Ambit Biosciences Corp.), and Carrolee Barlow, M.D., Ph.D. (BrainCells, Inc. and the Salk Institute).

Research on brain development is a critical priority. Measuring broad and quantitative gene expression patterns in the mouse brain will enable researchers to relate gene expression, anatomy, function and phenotype. The mouse is an excellent model for studying many aspects of behavior with relevance to a wide range of human mental health, neurologic and psychiatric disorders. Brain region specific gene expression information, including 3D quantitative analysis, will contribute to the generation of new hypotheses concerning the genes, pathways and mechanisms involved in modulation of phenotypes related to brain functions and associated pathologies that contribute to mental health and other disorders. This work has been supported by an NIH grant entitled "Molecular Genetic Mapping of the Mouse Brain" with Principal Investigators Carrolee Barlow, M.D., Ph.D. and David J. Lockhart, Ph.D. Additional information may be found at www.barlow-lockhartbrainmapnimhgrant.org. Knowing where genes are used in the brain is a first step in understanding what they do in cells and how they interact with other genes and environmental signals. This information will speed studies of the normal and abnormal changes that occur in the human nervous system throughout life.

About Neurome

Neurome, Inc. is a discovery stage biotechnology company that seeks therapeutic solutions to human neurodegenerative diseases. The company focuses its efforts on Alzheimer's disease, Parkinson's disease, Huntington's disease, and Amyotrophic Lateral Sclerosis (ALS or Lou Gehrig's disease) – usually fatal neurodegenerative disorders that are currently untreatable and share characteristics which make them particularly amenable to Neurome's expertise and technologies. Neurome is also engaged in the research and development of novel delivery systems for targeted mucosal vaccines.

Since its founding in 2000, Neurome has developed and optimized proprietary technologies to reveal and quantify gene expression patterns and the resultant morphological details of brain structures in normal and pathological brains with an unprecedented level of sensitivity, specificity and resolution. Neurome's unique technologies to measure and assess neurodegenerative processes at work – at the molecular, cellular and macroscopic levels – are ideally suited to identify the earliest evidence of pathology in models of human diseases of the Central Nervous System, as well as to evaluate the comparative effectiveness of pharmaceutical candidates for intervention. The company dedicates these technologies to discovery and development of drugs to provide effective treatments for diseases characterized by neurodegeneration. Detailed information on the Neurome technologies and the scientific and medical challenges of human neurodegenerative disorders are available at Neurome's website: www.neurome.com.