

GENSAT

GENSAT (Gene Expression Nervous System Atlas) is a large-scale project that plans to map the expression of approximately 10,000 genes in the developing and adult mouse central nervous system (CNS). The project is implemented in two stages. The first stage is radiometric in situ hybridization to give a broad picture of CNS gene expression. The second stage visualizes candidate gene expression by using a bacterial artificial chromosome (BAC) inserted into a transgenic mouse. The BAC contains the gene of interest along with a GFP marker that reveals the pattern of gene expression. For both the radiometric and BAC approaches, gene expression atlases have been created for mouse brain and spinal cord tissue at three developmental stages and in adulthood.

More than 2800 genes have been analyzed using radiometric in situ hybridization. Over 500 BAC transgenic mice have been generated to allow exquisite mapping of gene expression at the cellular level and to provide details of cellular morphology. Genes are selected by an NINDS-assembled advisory committee using bioinformatics approaches as well as soliciting suggestions from the neuroscience community.

The gene expression data and mouse brain images are available to the public in online, searchable databases. Future GENSAT studies will include the generation of Cre transgenic mice, improved mapping of the GENSAT data, and possible expansion of GENSAT to include analysis of the visual, auditory, and pain pathways.

The BAC mouse lines are powerful tools for pursuing other types of experiments in identified cells, and GENSAT distributes the mouse strains generated for the project via the Mutant Mouse Regional Resource Centers (MMRRCs). More than 200 BAC mouse lines have been placed in the MMRRC repositories since the beginning of the project and are available for a small fee.

Resources

NCBI GENSAT Database www.ncbi.nlm.nih.gov/projects/gensat

BAC Transgenic Mouse GENSAT Database www.gensat.org/index.html

In Situ Hybridization GENSAT Database www.stjudebgem.org/web/mainPage/mainPage.php

Mutant Mouse Regional Resource Centers www.mmrrc.org

(select major collection: GENSAT)

Submit nominations for gene review and analysis to info@ncbi.nlm.nih.gov.

Contact

For general inquiries:

Laura Mamounas, Ph.D.

Program Director, and GENSAT Project Officer
National Institute of Neurological Disorders and Stroke

mamounal@ninds.nih.gov

(301) 496-5745

For general and gene selection inquiries:

Jonathan Horsford, Ph.D.

Program Director and GENSAT Co-Project Officer horsforj@ninds.nih.gov
National Institute of Neurological Disorders and Stroke

(301) 496-5745

