

Experimental Mouse Lines and Data

Cre Driver Network

The goal of the Cre Driver Network is to provide the neuroscience community with mouse strains that are suitable for tissue- and time-specific perturbation of gene function in the nervous system. Using a knockout mutation to eliminate a gene's function is a useful way to study the gene's role in development, but it can lead to lethal or otherwise harmful effects that preclude studying the gene's role in later stages of the mouse lifespan. This project supports the generation of mice in which the expression of Cre recombinase, a DNA exchange enzyme, can be controlled temporally and spatially. These Cre "driver" lines can be used to generate conditional mutations that are activated in distinct cell types, tissues or time points, or inducible mutations that are activated through administration of a drug.

More than 45 Cre driver lines have now been created and characterized, targeting selected neuronal populations in the brain. Data and images detailing the Cre recombinase expression profile for each line are available at www.credrivermice.org. Mice will be available through the Mutant Mouse Regional Resource Center (MMRRC) at the University of Missouri (www.mmrrc.org/catalog/StrainCatalogSearchForm.jsp) or through The Jackson Laboratory's Cre Repository (<http://jaxmice.jax.org/research/cre>) for a nominal fee.

Mouse Archiving and Central Distribution

The NIH Blueprint has provided supplemental funds to two MMRRCs (www.mmrrc.org) for archiving and distributing mouse lines that are of interest to the neuroscience community. These funds will allow approximately 220 mouse lines to be deposited at MMRRCs at the University of California at Davis and the University of Missouri, and will ensure that the lines are made broadly available for further research.

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GENSAT

The Gene Expression Nervous System Atlas (www.gensat.org) involves the large-scale creation of transgenic mouse lines expressing green fluorescent protein (GFP) reporters or DNA recombinases in specific neural and glial cell populations. In each mouse line, expression of the reporter or recombinase is controlled by promoter elements derived from a bacterial artificial chromosome (BAC) containing a specific gene of interest, in order to mimic expression patterns of that gene. To date, approximately 1,000 transgenic BAC-GFP reporter mouse lines have been generated, and many have proven to be extremely valuable in experiments requiring identification of specific cell populations and details of cellular morphology. BAC-Cre recombinase driver lines are being generated in collaboration with the NIMH intramural program. More than 30 fully characterized BAC-Cre driver lines have been created so far, targeting selected neuronal or glial populations in the brain and spinal cord.



Experimental Mouse Lines and Data *(continued)*

The BAC-GFP expression data, as well as in situ hybridization data, are available in online, searchable databases (www.ncbi.nlm.nih.gov/projects/gensat/) and (www.stjudebgem.org/web/mainPage/mainPage.php). Nearly 800 BAC mouse lines have been placed in MMRRCs (www.mmrrc.org) since the beginning of the project and are available for a small processing fee. Researchers can nominate genes to GENSAT (www.gensat.org/GeneNominationForm.jsp), and register interest for specific BAC-Cre recombinase driver lines (www.gensat.org/CrePipeline.jsp).

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