The NIH Neuroscience Blueprint

"there are fundamental themes in neuroscience research that cross Institute and Center boundaries"

***framework to enhance cooperative activities* among 16 NIH Institutes and Centers that support research on the nervous system**

pool resources and expertise to confront challenges too large for any single Institute or Center, and develop research tools and infrastructure that will serve the entire neuroscience community

Neuroscience Blueprint funding

0.6% of the total neuroscience research budgets of the 16 participating members: $25 million per year

$12 million per year for four years from the NIH director's discretionary funds

NIH commitment of staff for Blueprint activities.
25 program directors and other staff helped launch new initiatives and develop programs to coordinate and improve access to existing research resources.

The NIH Neuroscience Blueprint:

"The Blueprint does not target specific nervous system disorders. Instead, it supplements and coordinates the disorder-specific missions of each partner by creating resources of general utility for neuroscience research. "

***2005** Neuroscience Information Framework, courses on neurobiology of disease, NIH Neuroscience Microarray Consortium*

***2006** training programs, new neuroimaging techniques, neuroscience core facilities, and the NIH Toolbox for Assessment of Neurological and Behavioral Function, Pediatric MRI Study of Normal Brain Development and the Gene Expression Nervous System Atlas (GENSAT), Mutant Mouse Regional Resource Centers, mouse "driver" lines*

The NIH Neuroscience Blueprint

2007: Neurodegeneration, the progressive loss of nerve cells, occurs in aging and in neurodegenerative disorders, such as Alzheimer's, Parkinson's, ALS, and Huntington's disease, in retinal degeneration, and other damage to sensory systems (e.g., visual, auditory, somatosensory), in stroke, head and spinal trauma, epilepsy, in drug and alcohol abuse, in infectious diseases, in exposure to industrial and environmental toxicants, and, perhaps, in mental disorders and chronic pain.

2008: nervous system development

2009: neuroplasticity

2007 The NIH Neuroscience Blueprint

Blueprint Neurodegeneration Initiatives

- RFA-AG Interdisciplinary Individual Postdoctoral Fellowshhips for Training in Neurodegeneration Research (F32)
- RFA-DC Short-Term Interdisciplinary Career Enhancement Awards: Neurodegeneration (K18)
  - mentored career development and enhancement training
  - established investigators over short-term
  - new interdisciplinary
- RFA-NS Biomarkers for Neurodegeneration (R21)
  - Biomarkers/biosignatures for early detection of neurodegeneration (including imaging)
- RFA-EY Therapeutics Delivery for Neurodegenerative Diseases (R21)
  - New methods for delivering biologically active molecules into the brain or sensory organs with emphasis on blood brain barrier transport

2008 Blueprint theme: neurodevelopment

"tools and resources for research on neural development are critical for improved comprehension of normal development as well as elucidation of a wide array of nervous system disorders based in aberrant developmental processes

- tools and resources to advance the field of neurodevelopment
- normal neural developmental processes & how aberrant developmental trajectories impact physical and emotional health for a lifetime
- developmental disorders that become apparent during early postnatal life and childhood
- later-emerging neurological and behavioral disorders with developmental antecedents
- genetic and environmental factors
- molecular to behavioral research and animal models to human studies

2008 The NIH Neuroscience Blueprint

Stakeholder Input and planning process

Neurodevelopment Request for Information (RFI) published in the NIH Guide for Grants and Contracts

•goal for 2008 is to generate novel research tools and resources to rapidly advance the field of neural development.

•soliciting input; visionary ideas that will dramatically stimulate the field of developmental neuroscience from the community.

Workshop

- •workshop participants
- •fundamental problems in basic and/or clinical research in neurodevelopment
- •additional tools needed
- •roadblocks or systemic challenges
- •facilitate the rapid advance of knowledge and new discovery
- •Identify technical gaps

2008 Current Blueprint initiatives

- **Tools and Techniques for Elucidating and Manipulating Neural Circuit Development**
  - tools and resources for research on neural development are critical for improved comprehension of normal development as well as elucidation of a wide array of nervous system disorders based in aberrant developmental processes
- **Neuroimaging Informatics Software Enhancement for Improved Interoperability and Dissemination**
  - development of improved tools and resources to enhance the Neuroimaging Informatics Tools and Resources Clearinghouse (NITRC)
- **Neuroscience-Directed Assay Development for High-Throughput Screening (HTS)**
  - The Assay Development for HTS Program, a component of the NIH Molecular Libraries and Imaging Roadmap Initiative, funds the development and adaptation of biological assays for use in automated high throughput screening.

MMRRC
Mutant Mouse
Regional Resource Centers
supported by NCRR-NIH

The NIH Neuroscience Blueprint

- *repository for mouse lines with interesting phenotypes, but low demand.*
- *to ensure the continued availability of genetically engineered mice*
- *to distribute mice to researchers studying biology and disease .*
- *spontaneous and induced mutant mouse lines.*
- *distribute mouse strains and ES cell lines in a cryopreserved state (live colony if needed).*

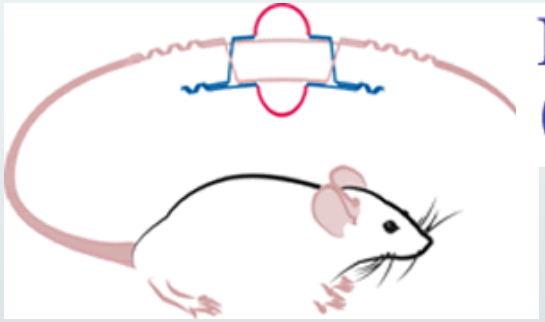
The NIH Neuroscience Blueprint

Tennessee Mouse Genome Consortium

The Neuromutagenesis Project

- Mutagenesis and phenotypic screening facilities focused on alterations in nervous system function and behavior
- To establish, characterize, and distribute novel mutant mouse models for the research community
- Increase genomic and genetic tools for functional gene identification
- Provide mice with mutations that alter the nervous system or behavior

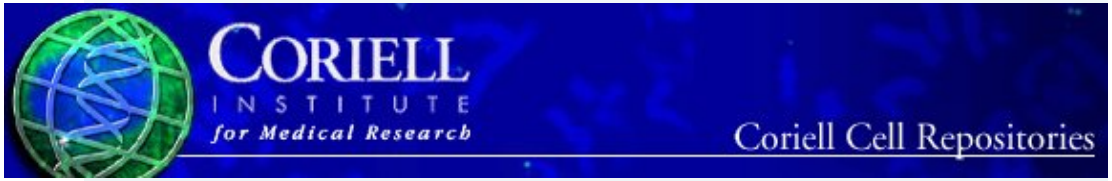
The NIH Neuroscience Blueprint



NIH Knockout Mouse Project (KOMP)

The Knockout Mouse Project is a trans-NIH initiative to generate a comprehensive and public resource comprised of mouse embryonic stem (ES) cells containing a null mutation in every gene in the mouse genome.

NINDS Cell and DNA Repository Catalog



Cell and DNA Repository Catalog of the NINDS Human Genetics Resource Center

- human cells
- DNA samples
- clinical data
- information resources

- Parkinsonism
- Epilepsy
- Cerebrovascular Disease
- Motor Neuron Disease
- Controls
- Genotyping (SNP) Data

- http://neuroscienceblueprint.nih.gov