

GSF Owns One of the Largest Libraries of Mutant Mouse Embryonic Stem Cells Worldwide

Institute of Developmental Genetics

Technologies for high-throughput mutagenesis are a prerequisite for the development of large numbers of animal models of human diseases. Current mouse models of human diseases are mostly based on mutations of the respective genes. Analyzing these mouse models makes it possible to elucidate the biological functions of different genes, in particular, their involvement in the development of human diseases. This also provides a starting point for the discovery of novel therapies.

Team leader Dr. Roland Friedel is inserting a cell culture plate with mutant embryonic stem cells into an automated colony picker.



For example, the mouse models of Parkinson's disease are used to investigate the causes of the disease and the role of environmental factors on the severity of the symptoms.

Gene trapping is a leading technology for high-throughput mutagenesis. It involves using a gene trap vector to create insertional mutations that are distributed randomly over the genome. As a mutagen, gene trap vectors inactivate a trapped gene while simultaneously reporting its expression. The inserted gene trap vector also provides a unique signal for the identification of the trapped gene. The cell lines generated by this



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technology can then be used to create transgenic mice as animal models for particular human diseases. This resource will provide researchers invaluable tools to study human diseases.

GSF Institute of Developmental Genetics has so far generated one of the largest academic libraries of mutant mouse embryonic stem cells worldwide. The library contains more than 67,000 molecularly characterized mutant embryonic stem cell lines that represent more than 6,300 different genes of the mouse. 417 of these genes are associated with human diseases such as Alzheimer's Disease, Parkinson's Disease, colon and breast cancer, Chorea Huntington, and nephritic syndrome. These cell lines are freely available for the academic community and can be requested from the International or the German gene trap consortia.

Literature:

- Hansen, J. et al.:
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