

VCU Research spotlights...

Transgenic / Knockout Mouse Shared Resource Core

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V C U & V C U M A S S E Y C A N C E R C E N T E R

Mission

The L.T. Christian III Transgenic / Knockout Mouse Shared Resource Core efficiently and economically produces genetically modified mice for VCU and Massey Cancer Center researchers. Genetically modified mice (including transgenic mice, in which customized genes are introduced into the genome, or “knockout/knock-in” mice, in which endogenous genes within the mouse genome are specifically inactivated or modified) have become an indispensable tool in the life sciences.

Services

With over twenty years of experience, the staff of the transgenic mouse core have the expertise to assist with you at every stage of your knockout or transgenic mouse project, from initial consultation through final delivery of genetically modified mice. Here are some of the services we offer:

- Transgenic mouse production: The core generates at least three founder mice for each transgene.
- Mouse line rederivation: Lines of pathogen-infected mice are rederived by embryo transfer to generate specific pathogen-free mice.
- Sperm cryopreservation: Lines of mice are cryopreserved by collection, freezing and long-term liquid nitrogen storage of sperm. When needed, re-establishment of the line can be accomplished by thawing sperm and performing in vitro fertilization of eggs isolated from WT females.
- Knockout/knock-in mouse production: The core can perform all or a subset of the following procedures:
 - ES cell electroporation
 - ES cell culture under appropriate selection conditions
 - Expansion of drug-resistant clones
 - PCR/Southern blot screening of clones for the correct recombination event
 - Re-electroporation with a cre expression vector to delete floxed selection markers and subsequent re-screening of clones
 - Injection of targeted ES cell clones into blastocysts for chimeric mouse production.
- Tail DNA genotyping: The core isolates genomic DNA from tail biopsies (or other tissue) provided by the investigator and performs PCR genotyping.
- Consulting services: The core provides consultation on many aspects of transgenic/knockout mouse technology, including experimental design, vector design, budgeting for mouse colony maintenance and preparation of applications to the IACUC for the use of laboratory animals in research. In addition, the core staff provides instruction on overall colony management, including breeding strategies, weaning, ear punching and tail DNA isolation.

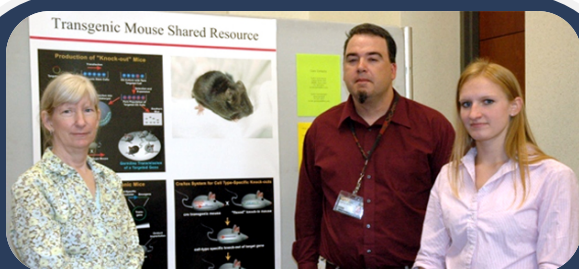


Photo: Transgenic / Knockout Mouse Facility staff (left-right) Jolene Windle, Ph.D., Gregory Campbell and Jillian Stifflinger

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In addition to the services listed above, the core laboratory also maintains an IVIS Spectrum instrument (right) for live-animal imaging studies.

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