Vanderbilt Genome Editing Resource

New name, same people - In preparation for the upcoming renewal of the Cancer Center Support Grant, the Vanderbilt Transgenic Mouse/ES Cell Shared Resource (TMESCSR) is changing its name. We will now be known as the Vanderbilt Genome Editing Resource (VGER). The rebranding of this shared resource reflects the fact that CRISPR-Cas9 technology has fully replaced the use of mouse embryonic stem cells for performing targeted mutagenesis of mice. VGER will continue to perform pronuclear microinjections, cryopreservation, rederivation and long term storage services to support your use of genetically altered mice.

Full service gene editing - Since switching to the use of Cas9 ribonucleoprotein complexes, we have achieved a 100% technical success rate for attaining the desired gene edit. Fifteen of sixteen full service projects produced live animals, with embryonic lethality occurring in the sixteenth project. Over the past year we have also gained experience performing several gene edits up to 2 kb in length. Thus, we welcome new projects that involve floxing of genes, insertion of single or multiple point mutations, insertion of exogenous proteins, or introducing inducible point mutations using cre-mediated conditional inversions.

Improved cryopreservation methods - With the attendance of Linda Gower at a recent Jackson Laboratory training course, our cryopreservation methods are now state of the art. Through a combination of culture media additives and expedited oocyte collections, both sperm motility and oocyte quality are improved. This results in higher rates of embryo fertilization and better IVF project outcomes. We encourage you to cryopreserve your valuable mouse strains. Not only will it protect your lines from diseases and genetic drift, you will save money by not maintaining unused mouse lines as live animals.

Vanderbilt-specific ILAR code, *Vu* - Many new mouse models are being created with CRISPR-Cas9, and the greater use of standardized nomenclature to describe new stains has increased in importance. On account of this, we sought and were granted a Vanderbilt-specific ILAR code, *Vu*, which will be appended to all lines accepted into the Vanderbilt Cryopreserved Mouse Repository (VCMR). We encourage Vanderbilt investigators to submit their gene-edited lines to the VCMR. Not only will it assure compliance with the NIH Animal Resource Sharing Policy, you will no longer have to pay annual cryostorage fees, or manage the distribution of mice to others.

For all mouse services contact Jennifer Skelton at jennifer.skelton@vanderbilt.edu or visit our website.

To initiate a genome editing project contact Leesa Sampson at leesa.sampson@vanderbilt.edu or visit our website.

For information regarding the Vanderbilt Cryopreserved Mouse Repository, please contact vcmr@vanderiblt.edu or visit the VCMR website.

Happy Holidays! We look forward to helping you advance your research in the New Year.

Mark A. Magnuson
Jennifer Skelton
Leesa Sampson
Linda Gower

Vanderbilt Center for Stem Cell Biology