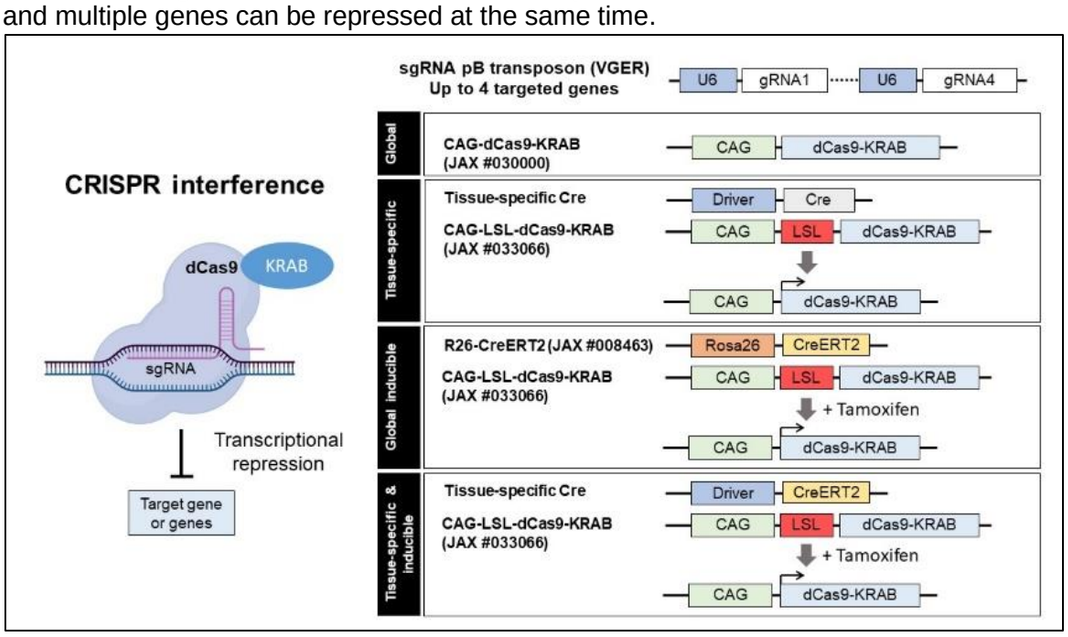
December 2022

Vanderbilt Genome Editing Resource

CRISPR interference mice

CRISPR interference (or CRISPRi) utilizes a small guide RNA (sgRNA) complexed with a dCas9-KRAB fusion protein to epigenetically repress expression/activity of a target gene, non-coding RNA, or regulatory locus. VGER has acquired mice that express dCas9-KRAB either globally or conditionally. We can also efficiently produce mice that express one or more sgRNAs using piggyBac transgenesis. Contact us if you are interested in learning about this new alternative to Cre/loxP. Among the advantages of CRISPRi are that it can be made reversible using a DOX-inducible dCas9-KRAB (JAX#036998 and JAX#036999, not shown) and multiple genes can be repressed at the same time.



VGER to support TransnetYX genotyping services

Many VU/VUMC investigators already utilize TransnetYX to genotype their mice. For all new VGER designed and produced strains, we will provide investigators with both a standard PCR genotyping assay and an automated qPCR assay through TransnetYX. This will enable a nearly seamless genotyping transition as mice are transferred from our possession to yours.

Importing sperm or embryos for rederivation

Compared to live animal import, shipment of cryopreserved sperm or embryos is usually less risky and expensive. Frozen sperm and embryo shipments are not subject to weather delays and health reports are not required. We perform rederivations in the barrier animal facility enabling the mice to be easily transferred to any animal facility on campus. VGER has rederived strains from all over the world and we can draw on that experience to help you narrow down your source and sample type options. To ship samples for rederivation you need to complete both an iLab/VGER and TOPAZ/DAC service request. We will coordinate your shipment so it can be properly received and stored until your service date.

A better method for protein, mRNA, and short ssDNA delivery into mouse embryos

We now utilize electroporation to produce DNA deletions, point mutations and epitope tags in mice. Compared to pronuclear microinjection methods, electroporation of mouse embryos may produce more live born pups and homozyous knock-in founders. We will offer our advice on the best option for producing your desired mutation.

As always, please contact Leesa Sampson at leesa.sampson@vanderbilt.edu or Jennifer Skelton at jennifer.skelton@vanderbilt.edu to discuss or initiate a project. Happy holidays!

Mark A. Magnuson
Leesa Sampson
Jennifer Skelton
Linda Gower

Vanderbilt Center for Stem Cell Biology