INFRAFRONTIER via canSERV

Generation of precision cancer mouse models using CRISPR-Cas9

Provider: Vetmeduni

What service do we offer?

Generation of precision cancer mouse models using CRISPR-Cas9

Cancer mouse models are generated using CRISPR-Cas9 technology that enables the modification of genome to produce precise and unique genetically modified (GM) mouse models. This service is for academic customers only. The service includes the design of guides and DNA template, preparation, and electroporation of the targeting complex into zygotes to generate F0 founder mutant animals (C57BL/6N or C57BL/6J genetic background preferred). We always try to minimize the off-target effects and increase the on-target effects of the guide RNAs. Selected F0 animals will be bred to germline to produce F1 genome edited animals. Possible allele types that can be generated are indels, exon deletions (<5kb) and point mutations and small insertions. Newly developed mouse models will be made available to selected applicants within an average of 12 months following provision of all required information to start the mouse production. Novel models are archived as cryopreserved material and distributed as part of the EMMA archive.

APPLY NOW!!

Included in the service:

This is included in the service provision by default.

- **Generation of novel knock-out or knock-in mouse models including**
  - design of the guides (crRNA+tracrRNA),
  - design of ssODN or lsODN DNA templates,
  - electroporation into either C57BL/6N or C57BL/6J zygotes
  - genotyping of founders by sequencing of the target site
  - breeding of founders (2-4 per line)
  - genotyping of F1 mice by sequencing of the target
  - organising the shipment of mice (two founder lines for each mutation), costs covered by the customer.

Additional support:

This can be provided on demand if there is canSERV funding available, or on a fee-for-service or collaborative basis and will require further negotiations with the applicant.

- Breeding of animals in a specific pathogen free environment.
- Breeding of F1 animals (2-4) and genotyping of F2 generation.
- Logistics support and advice to ship generated/rederived mice to the receiving institute.
- Dedicated shippers for transportation of frozen materials and recommendations on specialised courier services.
- Other methods for generation of GM mouse lines available are ES cell targeting or transgenic DNA injections. Vetmeduni may assist in designing genomic editions.
- Recovery of EMMA-archived/customer-provided mouse lines from frozen materials.

Who provides this service?

Institute of in vivo and in vitro Models, VetBioModels (VBM), University of Veterinary Medicine Vienna (Austria)

vetmeduni
University of Veterinary Medicine, Vienna

The Institute of in vivo and in vitro Models of Vetmeduni Vienna is responsible for the generation of mouse models for basic biomedical research in our Core Facility Platform VetBioModels (VBM) of the Vetmeduni Vienna. Our repertoire includes methods for the development of new genetically modified mouse models. We also archive, revitalize, and rehabilitate mouse strains for basic biomedical research. The research group tries constantly to improve the methods used for gene editing and for developing genetically modified organisms. The VBM Core Facility and Institute of in vivo and in vitro Models at the Vetmeduni serve as the Austrian European Mouse Mutant Archive (EMMA) node with about 300 publicly available mouse lines and INFRAFRONTIER (www.infrafrontier.eu/) partner.

Contact: Maik Dahlhoff <maik.dahlhoff@vetmeduni.ac.at>
Auke Boersma <auke.boersma@vetmeduni.ac.at>

References:

During 2021-2023 we have generated 18 knock-in lines using CRISPR technology, of which research is currently ongoing.

- Hedegger K, Blutke A, Hommel T, et al. **Trapping all ERBB ligands decreases pancreatic lesions in a murine model of pancreatic ductal adenocarcinoma**. Mol Oncol, 2023; 17(11):2415-2431. doi: 10.1002/1878-0261.13473.

- Hedegger K, Algül H, Lesina M, et al. **Unraveling ERBB network dynamics upon betacellulin signaling in pancreatic ductal adenocarcinoma in mice.** Mol Oncol, 2020; 14(8):1653-1669. doi: 10.1002/1878-0261.12699.

- Dahlhoff M, Gaborit N, Bultmann S, et al. **CRISPR-assisted receptor deletion reveals distinct roles for ERBB2 and ERBB3 in skin keratinocytes**. FEBS J. 2017; 284(19):3339-3349. doi: 10.1111/febs.14196.

INFRAFRONTIER, the European Research Infrastructure for Modelling Human Diseases, is a non-profit organisation dedicated to advancing disease understanding and treatment through cutting-edge models. Operated by a network of over 20 leading biomedical research institutes, it empowers research on human health and disease. Committed to excellence, INFRAFRONTIER adheres to rigorous scientific benchmarks and prioritises animal welfare. Through collaboration with other infrastructures, it fosters global data sharing and contributes to tackling significant health challenges. INFRAFRONTIER serves as a platform for innovative technologies and knowledge exchange, leveraging the power of disease modelling to improve human health.

INFRAFRONTIER offers a host of cutting-edge in vivo services in canSERV like generation of precision cancer models, in-depth cancer phenotyping and more! These free-of-charge services are offered by INFRAFRONTIER partners that are world-class experts in disease modelling.