

The **EPIC Transgenic Unit** offers a wide range of services, from generation of Genetically Modified Mice (GEM) to cryopreservation, as well as revitalization services. With these services we maintain one of the highest hygiene statuses in Switzerland. This guarantees highly reproducible results for animal experiments as well as easy exchange of lines to other facilities.

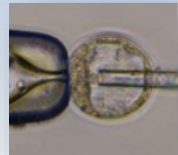
## **Microinjection Services**

### **Pronucleus Injection**

Injection of transgene plasmids and (piggy)BACs in pure C57BL/6 oocytes, transfer into SPF recipient mice, biopsies from the litters, genotyping and founder breeding with wild type mice if desired.

### **ES-cell Injection**

Injection of internal/external (EUComm/KOMP) ES-cells into day 3.5 embryos on appropriate background mouse strains, transfer into recipient mice. Evaluation of chimerism, germline breeding and genotyping if desired.



## **Genome Editing**

**CRISPR/Cas9** system is the state-of-the-art technology for customized genome engineering in mice. Its development has been speeding up the generation of knock-out and knock-in mice by more than 3 months. For genome editing, we offer full service of genome engineering from strategizing to mouse delivery as well as the injection of your own Cas9-RNP complexes in oocytes or the electroporation of your own gene targeting vector in our germline guaranteed ES-cells. Please inquire with our genome engineering experts for support.



### **Vector Cloning**

Design and cloning protein expression or gene targeting vectors, according to your requirements (e.g. ubiquitous or inducible).

## **Rederivation Services**

### **In Vitro Fertilization**

Thawing of desired sperm samples combined with appropriate donor oocytes. Embryo transfer or cryopreservation upon request.

### **Embryo Transfer**

In order to obtain the highest health status for your mouse line, preferentially we will thaw frozen embryos and transfer them into SPF recipient mice. Alternatively, we will utilize living mice in collaboration with our quarantine unit.

## **Cryopreservation Services for preserving and securing your valuable mouse lines**

### **Sperm Freezing**

Sperm from the desired genotype will be frozen in 25 cryopreservation straws and stored in liquid nitrogen. For quality control, we will thaw one straw to perform IVF and culture the resulting embryos until two-cell stage.

### **Embryo Freezing**

To demonstrate the high quality of the cryopreserved embryos, we will thaw one straw with embryos and culture them until blastocyst stage. In case that the quality control is not successful one additional straw with embryos will be thawed- and embryo development in vitro will be monitored again.



Please contact EPIC for more information:

Email: [transgenicervices@epic.ethz.ch](mailto:transgenicervices@epic.ethz.ch)

Website: <http://www.epic.ethz.ch/scientific-services/transgenic-unit>

The **EPIC Phenotyping Unit** provides a comprehensive battery of tests to evaluate the phenotype of genetically modified animals. All devices are available as a full-service to internal or external groups or individually bookable (for ETH users only). In addition, standard sets of phenotypic tests are available as a primary screen for altered anatomy and/or physiological functions, provided as a service by EPIC staff, using standardized SOP's (IMPRESS).

## Imaging

### **SCANCO MicroCT**

In vivo micro-computed tomography standardized analysis in femur to detect differences in bone mass and structure.

### **VisualSonics Ultrasound and Photoacoustic System**

High resolution echocardiography and photoacoustic system for noninvasive and rapid real-time imaging, and measurement of the magnitude of the emission, providing physiologically specific optical absorption contrast in 2D or 3D images of the targeted areas can then be formed.



## Behaviour

### **Open Field Test (Noldus Ethovision)**

Commonly used measure of general locomotor activity, willingness to explore and behaviour in rodents.

### **3-Chamber Sociability Test**

To assess cognition in the form of general sociability and interest in social novelty in rodent models of CNS disorders.



## Locomotor

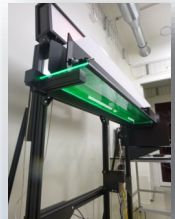
### **Noldus CatWalk XT**

The CatWalk XT is an automated gait analysis system to objectively assess function in rodents including movement deficits, and locomotor problems.

### **Ugo Basile RotaRod**

The rotarod test is used to assess motor coordination and balance in rodents. The rotarod measures motor coordination and motor function. The effects of drugs, disease, ageing, and neural damage on muscle strength may be assessed.

**Grip Strength Meter** - used to measure neuromuscular function as maximal muscle strength.

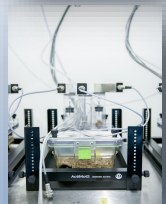


## Metabolism

### **TSE PhenoMaster Metabolic System**

Used for metabolic, calorimetric, physiological & behavioural phenotyping of rodents.

Available with or without climate control (maximum 8 cages with climate control or up to 16 cages without). Also available within an isolator for gnotobiotic / germ free studies.



Please contact EPIC for more information:

Email: [phenotyping@epic.ethz.ch](mailto:phenotyping@epic.ethz.ch)

Website: <http://www.epic.ethz.ch>

**The ETH Phenomics Center (EPIC)** is a centrally organised, state-of-the-art research and service platform for experimental laboratory animal research at ETH Zurich. As a central technology platform, it is open for use to all ETH research and external groups (on request).

The ETH Phenomics Center comprises modern analysis and technology laboratories with high-end scientific infrastructure for phenotypic characterization of various disease-related *in-vivo* models.

The center is built to the latest international standards to ensure high-standard housing of the laboratory mice used in experimental research. Handling laboratory animals competently, showing respect and a sense of responsibility, is an integral part of biomedical research at ETH Zurich.

A dedicated team of EPIC staff carries out animal caretaking, research support services, and technology development in collaboration with the ETH Life Science research community.

## **Laboratory Animal Facilities**

Comprise the required infrastructure, equipment and professional staff to house laboratory animals used for research at ETH Zurich.

## **Isolator Units**

Provide access to germ free and gnotobiotic laboratory mice, with 8 breeding/holding Isolators (M50 and M20), 2 surgical/experimental isolators (M10) and 2 exclusive combined Isolator-Metabolic Systems (TSE - M4).

The isolator units have been established to allow for keeping and metabolic analysis of germ-free and gnotobiotic mice with defined microbiological flora within EPIC.

In addition, we are able to provide germ free embryo transfers of lines directly into the units.

## **Surgical Suites**

Facilities are available to perform surgeries, as well as high quality in-vivo fluorescence microscopy.

## **Scientific Support**

In addition to the listed services and devices, EPIC has a pool of trained staff available to assist researchers by performing injections, blood collection, surgical support, post-operative monitoring, body weights, necropsies / tissue harvesting and examinations as needed. We also offer full study support for projects.

## **Technical Support**

The EPIC technical team provides support to establish new devices and equipment, custom make or modify existing devices and provides training on devices and maintenance, as required.



Please contact EPIC for more information:

Email: [administration@epic.ethz.ch](mailto:administration@epic.ethz.ch)

Website: <http://www.epic.ethz.ch>