



INFRAFRONTIER Research Infrastructure

INFRAFRONTIER2020 Project - Trans-national Access call - April 2018

Precision mammalian model development / rat models

Call information and application form

Context and aims of the call

INFRAFRONTIER is the European Research Infrastructure for phenotyping and archiving of model mammalian genomes. The INFRAFRONTIER Research Infrastructure provides access to first-class tools and data for biomedical research, and thereby contributes to improving the understanding of gene function in human health and disease using rodent models. The core services of INFRAFRONTIER comprise the systemic phenotyping of mouse mutants in the participating mouse clinics, and the archiving and distribution of mouse mutant lines by the European Mouse Mutant Archive (EMMA).

Main objective of this INFRAFRONTIER open call is to facilitate access for the wider biomedical research community to the unique infrastructure and scientific expertise of the participating INFRAFRONTIER partners, to deliver novel rat mutant models that will advance knowledge of human disease and will be of widespread use in biomedical science. Many cognitive and physiological characteristics that make the rat an ideal human disease model and choice for laboratory studies in neurobiology, cardiobiology, and immunology. Recent advances in genome-editing technology will be used to develop new rat models of human disease. INFRAFRONTIER will provide open access to all newly developed disease models through the European Mouse Mutant Archive (EMMA). Access to this free-of-charge-service will be granted on the basis of the applicant's research plans and the potential impact of the proposed novel rat model on the wider biomedical research community.

During the course of the INFRAFRONTIER2020 project three Trans-national Access calls for the development of mammalian model development supporting a total of 28 projects will be published. One further call supporting the production of 12 mouse precision models will be released in 2018.



The INFRAFRONTIER2020 project has received funding from the EU Research and Innovation programme Horizon 2020 (H2020-EU.1.4.1.1. Developing new world class research infrastructures)

Trans-national Access (TA) activity of the INFRAFRONTIER2020 project Free of charge precision rat model development service / Access modalities

- The EC Horizon 2020 funded INFRAFRONTIER2020 project (2017 – 2020) supports eligible customers with a free-of-charge rat model development service implemented as a Trans-national Access activity supporting a total of 6 projects in this call.

- The **access unit** offered covers the production of a single F1 genome-edited rat line (at least one individual of a F1 genome edited rat line will be provided).
- The **model development service** using **genome editing** involves project design, preparation of sgRNAs and Cas9 mRNA/protein, and injection into zygotes to generate F0 founder mutant animals (Sprague Dawley genetic background). Selected F0 animals (very often mosaic) will be bred to germ line to produce F1 genome edited animals. Possible allele types that can be generated are indels, exon deletions (< 10kb) and point mutation insertions.
- Newly developed rat models will be made available to selected applicants within an average of 12 months following provision of all required information to start the rat production.
- The generated **rat models will be made available to the scientific community**. An optional grace period of up to 1 year for rat models may apply, with immediate release of rat resources after expiry of the grace period. Rat mutant lines will be deposited into the INFRAFRONTIER/EMMA repository for subsequent use by the scientific community. Newly developed rat models will be owned by the production centres and will be distributed by the INFRAFRONTIER/EMMA repository using their institutional MTAs.
- **Costs:** The access to the INFRAFRONTIER2020 model development service is free of charge. However, the shipment cost of the newly developed rat models must be borne by the applicants.
- **Eligibility:** The INFRAFRONTIER2020 **Trans-national Access call is open** and proposals can be submitted from applicants around the world. Five projects must be allocated to applicants from EU Member States and Associated Countries, and one project can be allocated to applicants from third countries.
- **Application:** Service requests for the INFRAFRONTIER2020 model development service can be made via this **application form**. Applications for the Trans-national Access activity must include a short description of the research plans for utilising the newly developed rat model that is being generated by the INFRAFRONTIER2020 TA service.
- **Selection procedure:** Proposals from eligible customers for free of charge access to the INFRAFRONTIER2020 rat model development service will be subject to a review procedure. The review will be based on short descriptions of the projects involving the rat mutants that will be produced by the TA service. A mixed panel of members of INFRAFRONTIER and of an external Evaluation Committee will assess service requests supported by the TA activity. In addition to scientific merit of applicants, soundness of the proposal and research plans, and the beneficial impact of the proposed novel rat model on the wider biomedical research community will be assessed. Applicants will be informed on the outcome of the evaluation within 6 weeks after the end of the call for which the TA application was submitted. All applications will be handled with strict confidentiality.
- **Acknowledgements:** Please do acknowledge any support under this scheme in all resulting publications with "Part of this work has been funded by the European Union Research and Innovation programme Horizon 2020 (Grant Agreement Number 730879). The participating infrastructure which provided the service should be specifically mentioned in any publication resulting from the service.

Support offered

Beyond the TA service provision applicants will benefit from extensive user support which covers detailed consulting on project design. Gene-editing approaches frequently yield a number of mutant alleles which can be provided and cryopreserved (at additional cost) for later use as only selected founder animals will be bred to the F1 generation. Logistic support will be provided by arranging shipments to the applicant's animal facilities. At additional cost a colony expansion can be provided. For long term availability new animal models will be cryopreserved by the participating production centres at own cost and deposited into the EMMA repository.

The participating INFRAFRONTIER partners routinely provide mouse and rat model development services using all standard approaches such as gene targeting, the generation of chimeric mice from gene-targeted ES cells and gene editing technologies such as TALENs or CRISPR/Cas9. The participating centres are engaged in large scale mouse production projects like the IMPC and have a capacity of 100 to 150 model development projects per year. Furthermore, model development services are provided to academic and for-profit clients from across the world.

Participating infrastructures:

- Czech Centre for Phenogenomics
- Phenomin-ICS

Application Form - INFRAFRONTIER2020 precision rat model development service Closing of call on May 31st - Evaluation process until July 15th

First name	
Family name	
Email	
Phone	
Fax	
Institution	
Address	
Town	

Postcode	
Country	
Link to lab website	
Link to publication list	

**The following data is required by the EC for statistical purposes.
Applications can only be considered if all data are provided.**

Gender	
Birth year	
Nationality	
Researcher status (e.g. Prof, Postdoc)	
Scientific background	

Description of proposed project

Please describe briefly the proposed project involving the rat mutant line to be developed using genome editing technology. This description will be the foundation for the evaluation of your project. Informal enquiries prior to proposal submission are welcome via proposals@infrafrontier.eu

Gene of interest	



Please, do not extend beyond the provided space (max 2 pages including references)

Send your proposal to proposals@infrafrontier.eu by May 31st 2018

INFRAFRONTIER2020 project description

INFRAFRONTIER2020 - Towards enduring mouse resources and services advancing research into human health and disease

INFRAFRONTIER2020 objectives

The INFRAFRONTIER Research Infrastructure integrates European Mouse Clinics and the European Mouse Mutant Archive (EMMA) with the common goal to ensure access to mouse models for basic research of human health and disease, and to translate this knowledge into therapeutic approaches for the benefit of the European society.

The expanded INFRAFRONTIER2020 network, coordinated by the INFRAFRONTIER GmbH, includes 3 SMEs and is strategically responding to the INFRADEV3 call with aligned objectives to advance the long-term sustainability which are **1)** development of business models and a stable legal framework; **2)** raise awareness of the INFRAFRONTIER Research Infrastructure; **3)** provide bespoke services aligned with user demands; **4)** promote best practices in mouse phenogenomics; **5)** enhance robustness of the INFRAFRONTIER IT infrastructure and use of the EMMA strain resource; and **6)** improve business processes. Towards achieving these objectives key INFRAFRONTIER2020 project deliverables are:

- INFRAFRONTIER Business Plan2.0, and business models for all services
- Stable legal framework built on the INFRAFRONTIER legal entity
- INFRAFRONTIER annual stakeholder conferences
- Customised mouse model and secondary phenotyping pilot services
- INFRAFRONTIER advanced training schools in mouse phenogenomics
- Reengineered EMMA Database2.0 system
- Annotated mouse models of human diseases
- Quality management system for the legal entity

INFRAFRONTIER2020 will **1)** enhance the sustainable operation of the INFRAFRONTIER RI; **2)** continue to structure the ERA, **3)** foster innovation, and **4)** address major societal challenges in human health by customised service pilots supporting research into common and rare diseases. A sustainable INFRAFRONTIER RI will ensure the quality of deposited mice and support the reproducibility of biological results. Outreach efforts will raise awareness of resources and services

and facilitate sustainable engagement with industry and global consortia such as the International Mouse Phenotyping Consortium



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Participating INFRAFRONTIER mouse clinics

Czech Centre for Phenogenomics (CCP) / <http://www.phenogenomics.cz/>

The Czech Centre for Phenogenomics provides expertise and services to the biomedical research community which study the function of genes in biological processes and / or human disorders in vivo using mouse or rat models. CCP covers a full spectrum of genetic engineering services, strain cryopreservation and archiving services, advanced phenotyping and imaging services, as well as specific pathogen free (SPF) animal housing and husbandry.

Phenomin-ICS / <http://www.phenomin.fr/>

PHENOMIN is founded by 3 major national nodes: the Institut Clinique de la Souris (ICS, Illkirch), the Transgenesis and Archiving of Animal Models (TAAM, Orléans, Villejuif) and the Centre for Immunophenomics (CIPHE, Marseille) that are devoted to serve the scientific community for the usage of mouse models. PHENOMIN constitutes a unique distributed resource for the creation, the care, the phenotyping, the distribution and archiving of animal models for academics and private corporations.

The **ICS** is a large-scale facility open to the community that ensures the generation of mouse models à la carte, the validation of genetic models, the expansion and preservation and distribution of models with the housing department, and offers in its phenotyping department a series of standardized functional analysis of mouse models that can be performed in a comprehensive pipeline or on demand, as well as for more specialized studies, that cover the major functions and key physiological systems.