



# EMMA - European Mouse Mutant Archive

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European  
Mouse  
Mutant  
Archive





# *EMMA - European Mouse Mutant Archive*

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## OVERVIEW

- EMMA objectives
- EMMA network
- EMMA archive statistics
- EMMA projects
- Infrafrontier





## *Key Objectives of EMMA*

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- Archiving and Distribution
- Resource Database Development
- Training / Technology development





# The EMMA Network

## Shaping the European Research Area

European  
Mouse  
Mutant  
Archive

**CNR/IBC**

Istituto di Biologia Cellulare, Monterotondo, Italy

**CNRS/CDTA**

Centre de Distribution, de Typage et d'Archivage animal, Orléans, France

**MRC/MGU**

Mammalian Genetics Unit, Harwell, UK

**Karolinska Institutet**

Karolinska Institutet, Stockholm, Sweden

**FCG/IGC**

Instituto Gulbenkian de Ciência, Oeiras, Portugal

**HMGU/IEG**

Institute of Experimental Genetics, Munich, Germany

**EMBL/EBI**

European Bioinformatics Institute, Hinxton, UK

**GIE-CERBM/ICS**

Institut Clinique de la Souris, Illkirch/Strasbourg, France

**Sanger Institute**

Wellcome Trust Sanger Institute, Hinxton, UK

**CNB/CSIC**

Centro Nacional de Biotecnología, Madrid, Spain

**Fleming**

Biomedical Sciences Research Center Al. Fleming, Athens, Greece

**OULU**

University of Oulu, Oulu, Finland

**BIAT**

Vetmeduni Vienna, Biomodels Austria, Vienna, Austria

**IMG**

Institute of Molecular Genetics, Prague, Czech Republic

**TAU**

Tel Aviv University, Tel Aviv, Israel

**NKI**

Netherlands Cancer Institute, Netherlands, Amsterdam



Tel Aviv ✦





## The EMMA Network – Funding

European  
Mouse  
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**EMMA is supported by:**

➤ Institutional Funding

➤ National Research Programmes

➤ EC FP7 Capacities Specific Programme

EMMAservice project, 8 Mill €, 2009 - 2012



Total EC contribution / 4 grants / 18.5 Mill €





# The EMMA Network – Funding model

European  
Mouse  
Mutant  
Archive

## Use of funds – Partial cost recovery model

### Archiving

Free of charge access

### Distribution

Cost recovery



EMMA service total cost for archiving: 5,96 Mill €





## EMMAservice Project – Technology Development

### Specific Objectives:

- Optimisation of sperm freezing
- Exploitation of laser assisted IVF
- Establish an ICSI capability within EMMA
- Transportation of unfrozen embryos

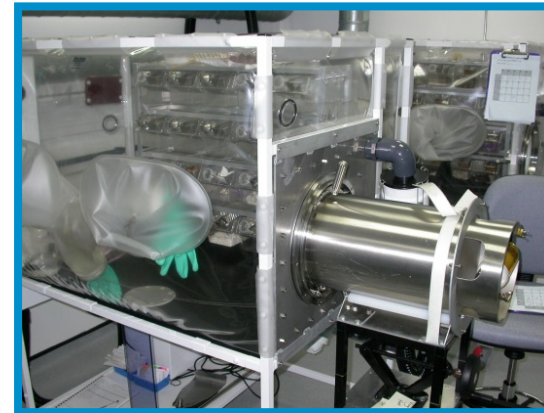




## Special EMMA service: Axenic mice

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- Axenic (germ-free) mice are important in the study of many human disease conditions. The intestinal flora is an important etiological factor in diseases (e.g. autoimmune diseases)
- Mice carrying a defined intestinal flora are important for the analysis of *in vivo* interactions of genes with environmental factors







# EMMA Website and Database Development

European  
Mouse  
Mutant  
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## The European Mouse Mutant Archive - EMMA

is a non-profit repository for the collection, archiving (via cryopreservation) and distribution of relevant mutant strains essential for basic biomedical research. The laboratory mouse is the most important mammalian model for studying genetic and multi-factorial diseases in man. Thus the work of EMMA will play a crucial role in exploiting the tremendous potential benefits to human health presented by the current research in mammalian genetics.

EMMA is supported by the partner institutions, national research programmes and by the EC's FP7 Capacities Specific Programme.



- NEWS
- About EMMA
- EMMA partners
- EMMA projects
- EMMA procedures
- Deposit mice
- Order mice
- EMMA axenic (germ-free) service
- FAQs
- EMMA protocols
- Training courses
- Bibliography
- Links
- Internal Site

Deposit mice



Order mice





# EMMA Website and Database Development

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Search by gene name, strain name, phenotype, EMMA\_id, OMIM name/ID...   [Help](#)

Alternative searches: [Advanced BioMart Search](#) [Ensembl Das](#)

Please view our strain ordering information page for details on delivery time, shipment costs and service charges.

To order a mouse strain from the list click on the 'order' link of appropriate strain.

To express interest on a mouse strain in the pipeline please fill our 'express interest' form.

[Browse by Strains](#) [Browse by Genes](#) [Browse by Phenotypes](#) [Browse by Human Diseases](#)

[Mutation Types](#) [Research Tools](#) [Wellcome Trust knockout mice](#) [EUCOMM strains](#) [Full strain list](#)

## expressing Cre Recombinase

Found 75 records

EMMA ID	gene symbol - click to view MGI mutant alleles	common strain name(s) - click for the strain description	(International) Strain Designation	click to order/ register an interest
EM:01147	Cd19	CD19-Cre	B6.129P2-Cd19 <sup>tm1(cre)Cgn</sup> /CgnCnrm	<a href="#">order</a>
EM:02077	Cd19	B6-CD19-Cre	B6.129P2-Cd19 <sup>tm1(cre)Cgn</sup> /Cnrm	<a href="#">order</a>
EM:01924	Dbx1	Dbx1CRE	B6;129P2-Dbx1 <sup>tm2(cre)Apie</sup> /Orl	<a href="#">order</a>
EM:05144	Dct	Dctko	B6;129-Dct <sup>tm1(cre)Bee</sup> /Orl	<a href="#">order</a>
EM:01220	Del(2Hoxd11-Hoxd13)27Ddu	P1Del	B6.129S2-Del(2Hoxd11-Hoxd13)27Ddu/Orl	<a href="#">order</a>
EM:01221	Del(2Hoxd4-Hoxd13)28Ddu	Tg(d11Cre)Del7	B6.129S2-Del(2Hoxd4-Hoxd13)28Ddu/Orl	<a href="#">order</a>
EM:00330	Gja1	Cx43-KI-CreER(T)	STOCK Gja1 <sup>tm5(cre/ERT)Kwj</sup> /Cnrm	<a href="#">order</a>
EM:00410	Gt(ROSA)26Sor	RCM2	STOCK Gt(ROSA)26Sor <sup>tm2(cre/ERT2)Brn</sup> /Cnrm	<a href="#">order</a>
EM:02417	Gt(ROSA)26Sor	Cre2ERT2	B6;129-Gt(ROSA)26Sor <sup>tm2(jcre/ERT2)Jp</sup> /Orl	<a href="#">order</a>
EM:02418	Gt(ROSA)26Sor	DiCre	B6;129-Gt(ROSA)26Sor <sup>tm1.1(cre)Jp</sup> /Orl	<a href="#">order</a>
EM:05488	Gt(ROSA)26Sor	Gt(ROSA)26Sor	Gt(ROSA)26Sor <sup>tm1(ACTB-cre,-EGFP)lcs</sup>	<a href="#">order</a>
EM:02506	Hnf4a	Hnf4 cre	Hnf4 cre	<a href="#">order</a>





# EMMA Website and Database Development

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Nucleic Acids Research Advance Access published September 26, 2009

*Nucleic Acids Research*, 2009, 1–7  
doi:10.1093/nar/gkp799

## EMMA—mouse mutant resources for the international scientific community

Phil Wilkinson<sup>1</sup>, Jitka Sengerova<sup>1</sup>, Raffaele Matteoni<sup>2</sup>, Chao-Kung Chen<sup>1</sup>, Gaetan Soulat<sup>3</sup>, Abel Ureta-Vidal<sup>1</sup>, Sabine Fessele<sup>4</sup>, Michael Hagn<sup>4</sup>, Marzia Massimi<sup>2</sup>, Karen Pickford<sup>5</sup>, Richard H. Butler<sup>2</sup>, Susan Marschall<sup>4</sup>, Ann-Marie Mallon<sup>5</sup>, Amanda Pickard<sup>5</sup>, Marcello Raspa<sup>2</sup>, Ferdinando Scavizzi<sup>2</sup>, Martin Fray<sup>5</sup>, Vanessa Larrigaldie<sup>3</sup>, Johan Leyritz<sup>3</sup>, Ewan Birney<sup>1</sup>, Glauco P. Tocchini-Valentini<sup>2</sup>, Steve Brown<sup>5</sup>, Yann Herault<sup>3</sup>, Lluís Montoliu<sup>6</sup>, Martin Hrabé de Angelis<sup>4</sup> and Damian Smedley<sup>1,\*</sup>

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Received August 12, 2009; Revised September 8, 2009; Accepted September 10, 2009

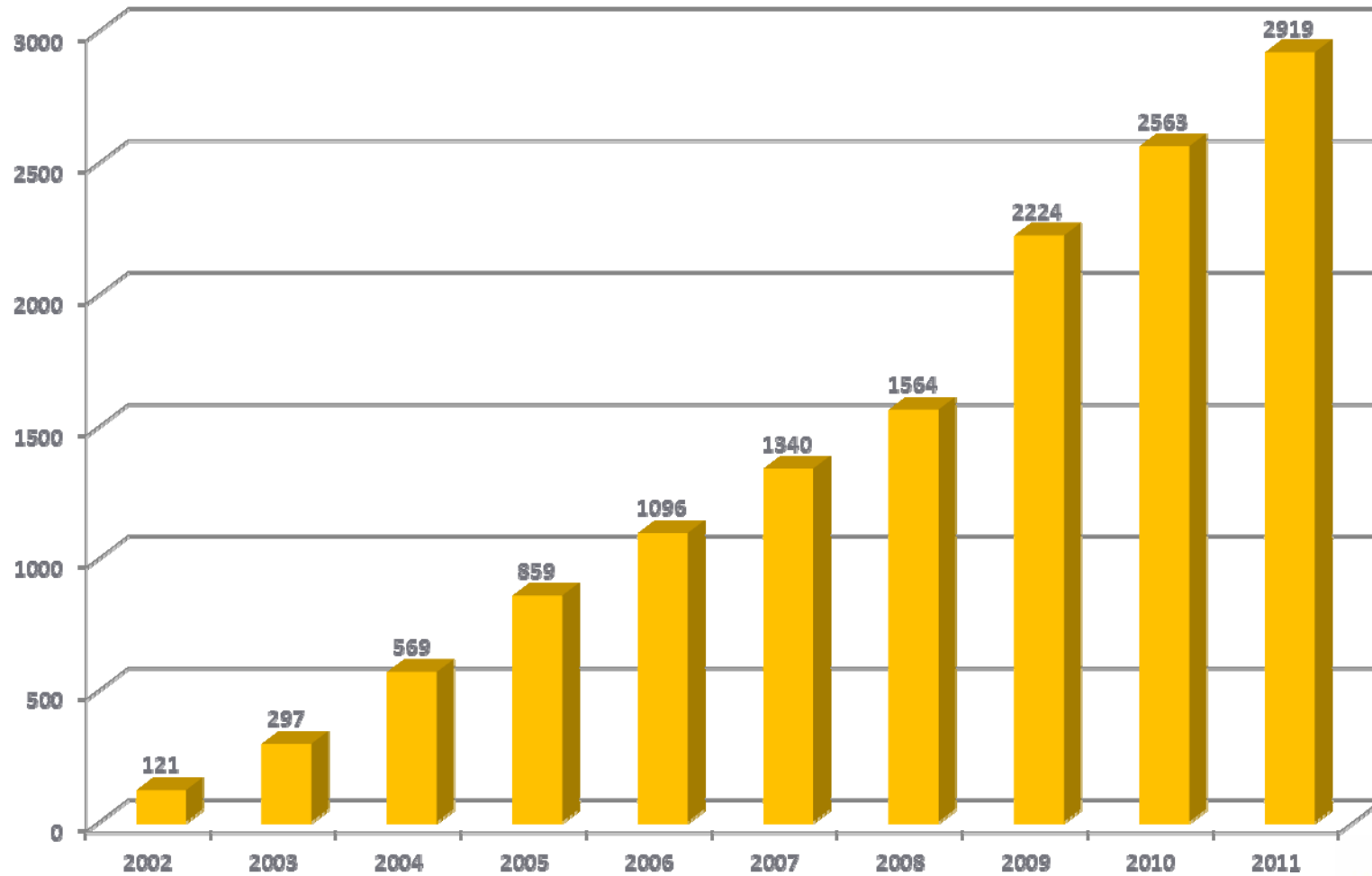




# EMMA – Statistics

Submissions - Total number (Dec 2011)

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Mouse  
Mutant  
Archive

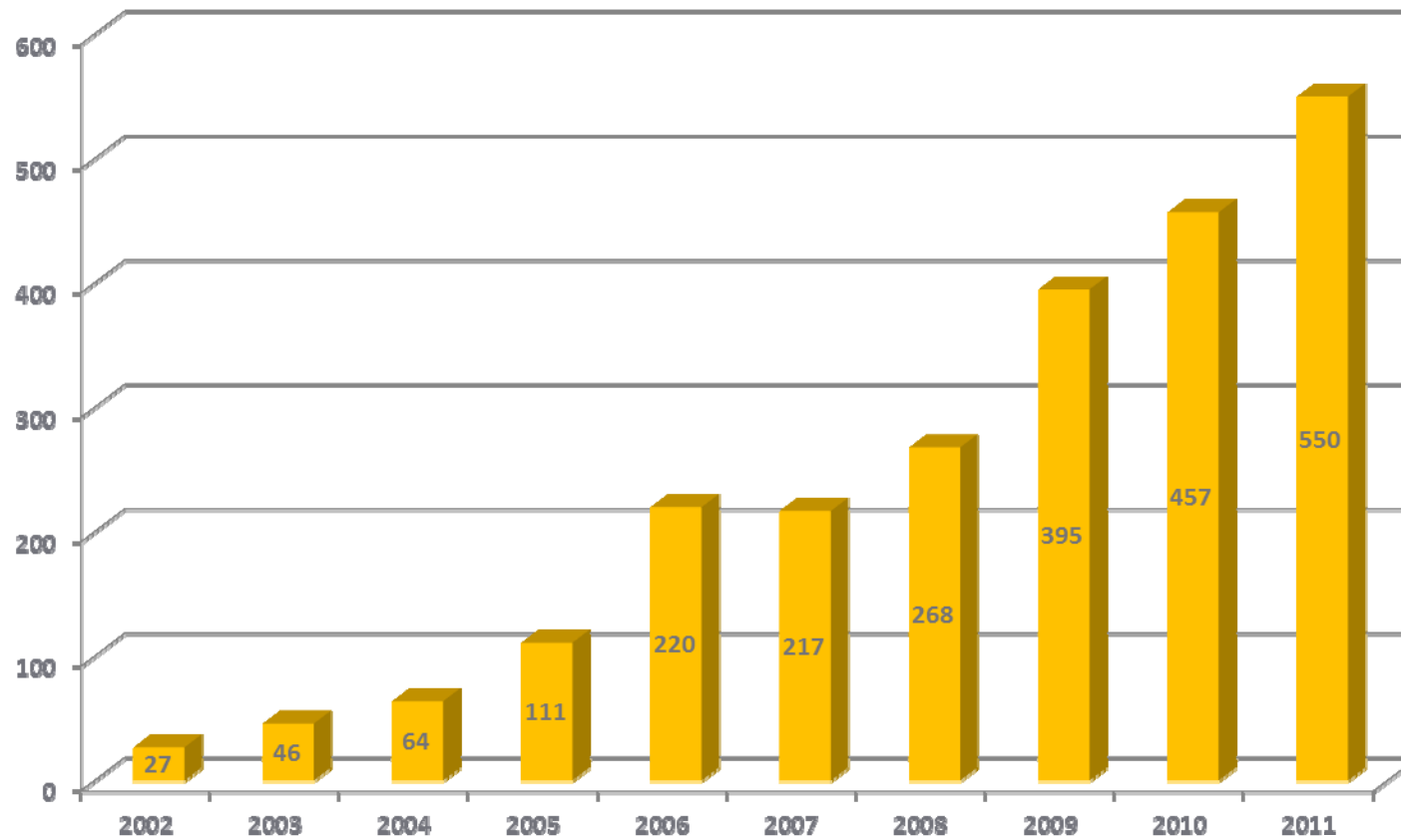




# EMMA – Statistics

*Distribution - Number of requests per year (Dec 2011)*

European  
Mouse  
Mutant  
Archive





# Development of the EMMA Archive

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## ➤ EUCOMM / EUMODIC / EUCOMMtools

- 500 conditional KO mouse mutants / phenotyping
- 250 Cre driver lines



## ➤ IMPC

- Sanger Mouse Genetics Project, MRC, BMBF, Phenomin
- ~ 2000 conditional KO mouse mutants / phenotyping



## ➤ Collaborative Cross (CC) mice

- 500 CC lines





# Infrafrontier

The European infrastructure for phenotyping and archiving of model mammalian genomes

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## Infrafrontier / EMMA – Better mouse models for the biomedical research community



ESFRI

# European Strategy Forum on Research Infrastructures







# ESFRI process started 2002



First roadmap  
in 2006

35  
projects

- BBMRI – biobanking
- EATRIS – translational research
- ECRIN – clinical trials
- ELIXIR – bioinformatics
- **Infrafrontier** – animal disease models
- INSTRUCT – structural biology



Update in  
Dec 2008

+ 10  
projects

- EU-OPENSREEN – chemical biology
- BLS4 – high security labs
- Euro-BioImaging - bioimaging
- EMBRC – marine biology

**Update 2010:** 6 more projects, 3 of them from the biomedical field



# Implementation of Infrafrontier - Objectives

## Preparatory Phase (2008-2012)

### Infrafrontier Project

- **Capacity building** to meet the increasing demands
- Identification of the best **legal form**
- Developing a **business plan** based on a sustainable funding concept
- Providing a **strategic plan** for the implementation phase
- Reaching a **legal agreement** between all partners

## Implementation and Operation (from 2012)

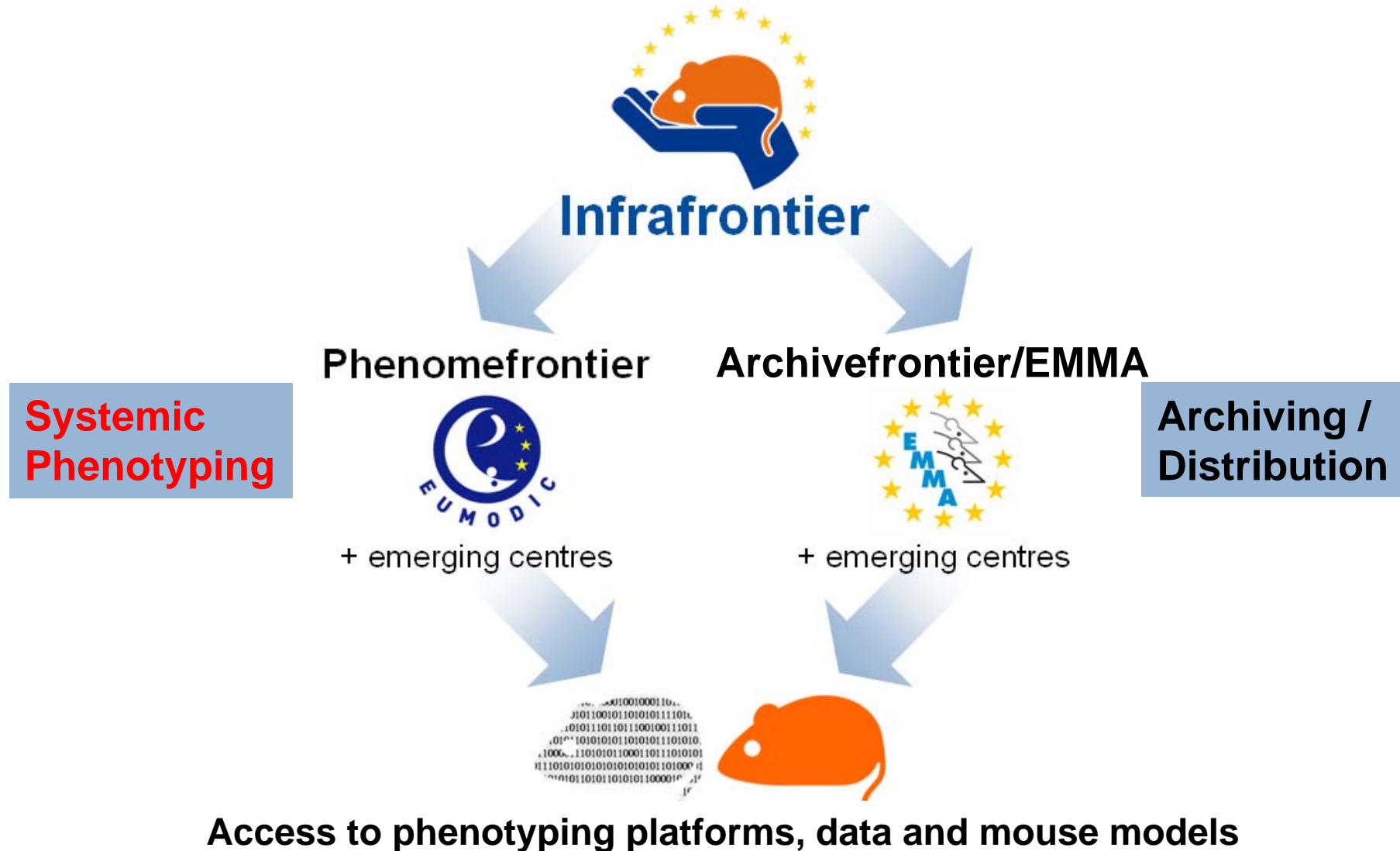
### Infrafrontier Research Infrastructure

Infrafrontier Legal  
Entity

National Infrafrontier  
Partners

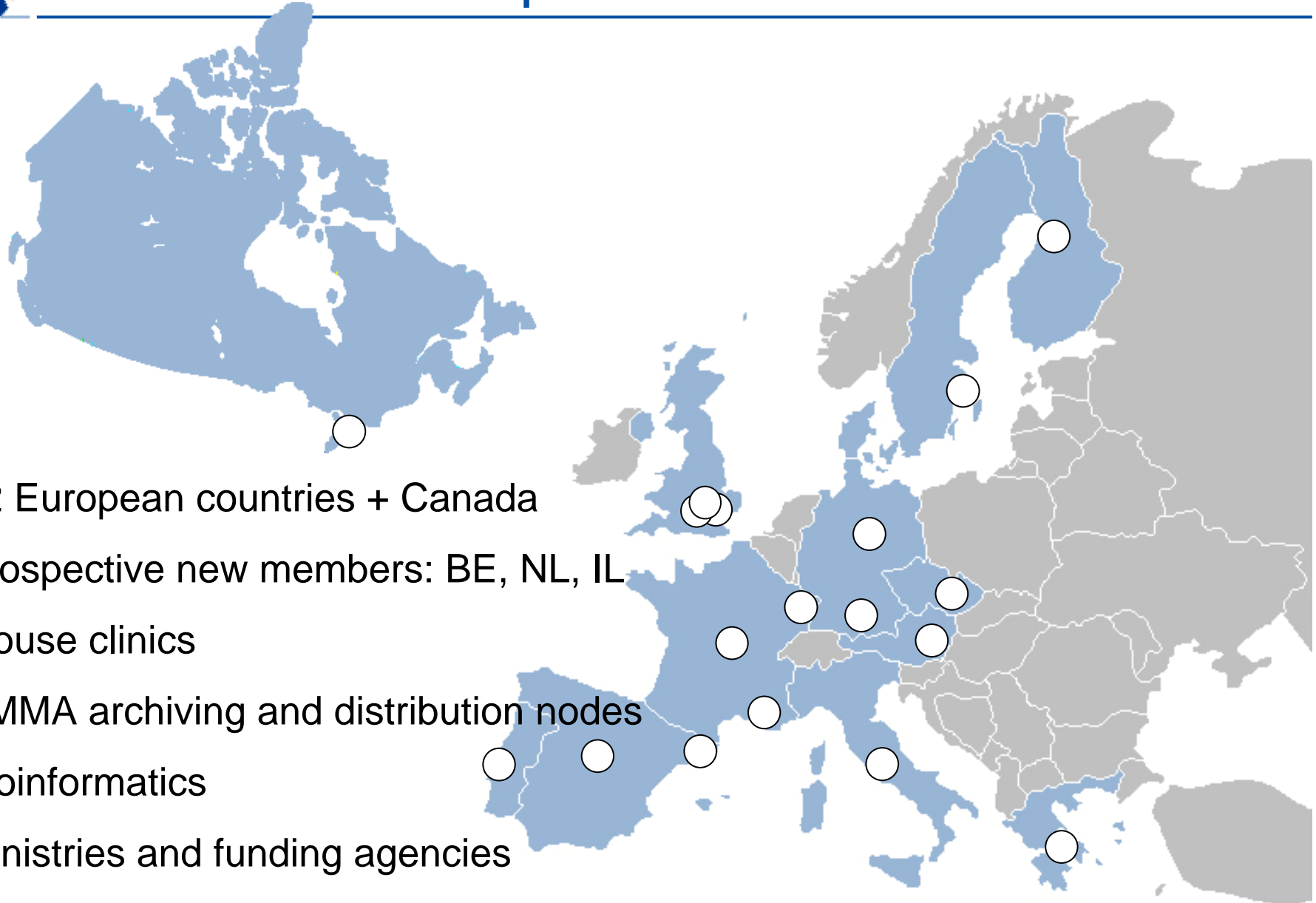


# Infrafrontier: Two main parts





# The Infrafrontier partner network



- 12 European countries + Canada
- Prospective new members: BE, NL, IL
- Mouse clinics
- EMMA archiving and distribution nodes
- Bioinformatics
- Ministries and funding agencies



# Implementation of Infrafrontier - Milestones

## Preparatory Phase (2008-2012)

### Infrafrontier Project

- ★ Draft Strategic Plan
- ★ Identification of best legal form
- ★ Germany confirms national leadership
- ★ Draft Business Plan, Draft Statutes
- ★ Infrafrontier Inter-Ministry Working Group
- ★ Memorandum of Understanding

## Implementation and Operation (from 2012)

### Infrafrontier Research Infrastructure

Infrafrontier Legal  
Entity

National Infrafrontier  
Partners



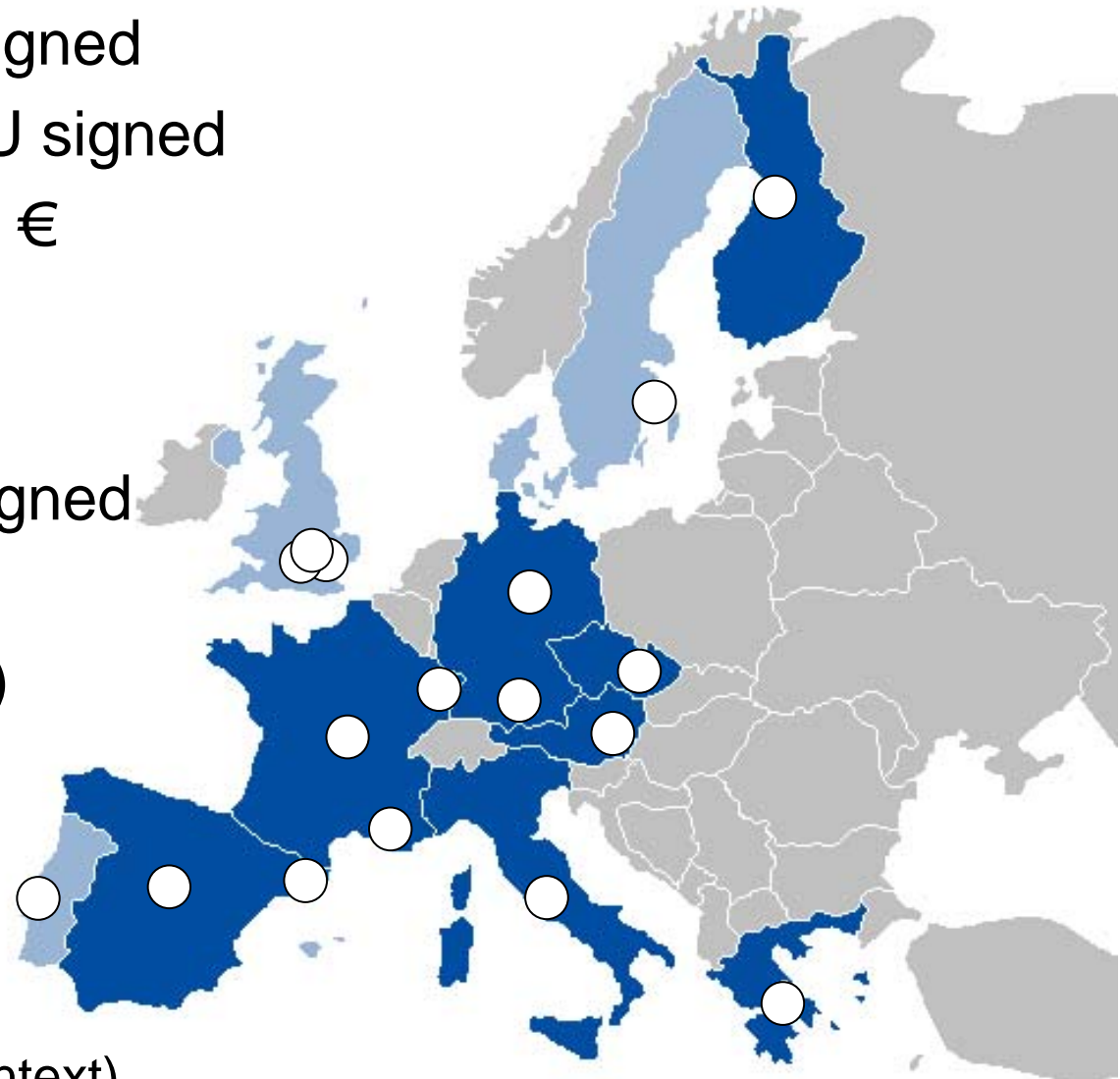
# Capacity building - National commitments

2010 – 2015

- **Finland:** 7 Mio €; MoU signed
- **Germany:** 42 Mio €; MoU signed
- **Czech Republic:** 33 Mio €
- **Austria:** 2 Mio €
- **Italy:** 20 Mio €
- **Greece:** 4 Mio €; MoU signed
- **France:** 27 Mio €
- **Spain:** 1 Mio € (for 2012)

• **Total: 136 Mio €**

(UK: Funding in the IMPC context)





doranth **post** architekten

# HelmholtzZentrum Munich – German Mouse Clinic II/III

new construction laboratory building



# Infrafrontier-I3 project (2013-2016, 9.9 Mill€)

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- **Resource development: Archiving of 1215 mouse mutant lines**
- **Free of charge mouse production and 1st line phenotyping services**
- **Axenic service**
- **Informatics and data curation**
- **Technology development: Phenotyping and cryopreservation**
- **Innovation: Refine metabolic phenotyping cages**
- **Outreach: User meeting, industry liaison workshop**
- **Cryopreservation and phenotyping training courses**
- **Benchmark Infrafrontier services**





# More Information ....

# www.infracontier.eu

Contact Imprint



Welcome to **Infracontier**



- Home
- Mouse Models
  - Systemic Phenotyping
  - Archiving and Distribution
- Towards Infracontier RI
  - Infracontier PP
  - Infracontier RI
- Partners
- ESFRI
  - National Roadmaps
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- Meeting Registration
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## Our Vision

*"To build a world-class research infrastructure that provides the biomedical research community with the tools needed to unravel the role of gene function in human disease."*

**Mouse models have become a central tool** for the study of the functional basis of human diseases. Infracontier Project will lead to the establishment of a sustainable research infrastructure for systemic phenotyping, archiving and distribution of mouse models. [Read more about Systemic Phenotyping, Archiving and Distribution of mouse models for human diseases ...](#)

**Towards the Infracontier Research Infrastructure:** The increasing demand of the biomedical researchers for systemic phenotyping, archiving and distribution of mouse models cannot be accommodated with the capacities currently existing in Europe. Infracontier Project is funded by the European Commission to set the stage for the implementation of an infrastructure that addresses these needs. [Read more about the Infracontier Preparatory Phase and the implementation of the Infracontier Research Infrastructure ...](#)

**Infracontier Project brings together partners** from twelve European countries and Canada. Our scientific partners are the leading research facilities in the field of systemic phenotyping, archiving and distribution of mouse models. Our administrative partners represent national research ministries and funding agencies. [Read more about the Infracontier Consortium ...](#)

**The European Strategy Forum on Research Infrastructures (ESFRI)** was established to support a coherent and strategy-led approach to policy-making on research infrastructures in Europe. The ESFRI Roadmap identifies new research infrastructure of pan-European

## Latest News

19-December-2012  
**EuroMouse meeting 2012 - Joint Infracontier / EUMODIC Symposium**  
[read more](#)

07-December-2012  
**Third Infracontier Training Session on Primary Mouse Phenotyping**  
[read more](#)

04-October-2011  
**InfraCoMP Kick-Off Meeting: 14-15 November 2011**  
[read more](#)

## Event Calendar:

January 2012						
Mo	Tu	We	Th	Fr	Sa	Su
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22



**EMMA**  
*Mutant mice for the scientific community*

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