PhenoPro is a CRO servicing pharmaceutical and biotechnology companies with advanced mouse phenotyping tools and expertise.

PhenoPro is a spin off from the institut Clinique de la Souris (iCS)

It is dedicated to provide high quality standard services for:
- Target identification / validation of mouse mutant models
- Characterization of mouse mutant models, functional genomics and understanding of the in vivo and disease mechanisms
- In vivo preclinical drug screening, efficiency / risk assessment, target reorientation

PhenoPro’s processes and expertise are based on the iCS know-how
Through its alliances, PhenoPro provides access to the latest innovation in its fields
PhenoPro’ services are based on Standardized Operational Procedures and quality system management and offers customized protocols
PhenoPro’ services help to accelerate the drug discovery process, optimize the research costs, and bring a go / no go step in your decision tree.
Organigram PhenoPro

CEO
Katell Morvan

COO
Tania Sorg

Business development
Eric Pelbois

Project manager & scientific support
Benoit Petit-Demoulière

Business development & scientific support
Elodie Bedu

Production
Technical teams: technicians & engineers for industrial projects,
Scientific support of ICS & IGBMC experts

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Project management

Request
Customer requirements

Consulting Technical and scientific feasibility
Scientific program & specifications
Offer Agreement

Realization
Project closing

Project management and realization

• Identify and record the request
• Material Reception & Control
• Project Realisation
• Data Analysis
delivery of a final report
• Shipment of requested biological material

Deliverables:
- Report
- Raw validated data
- Material

Customer satisfaction

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From Standardized to Customized protocols

Investigate all physiological systems and the related diseases

**Functional Exploration**
- Model characterization
  - Basal conditions
  - Challenges

**Disease focus approach**
- Preclinical drug screening:
  - Proof of concept
  - Side-effects

**Molecular Phenotyping**
- Model validation

- Cardiovascular
- Respiratory
- Metabolism
- CNS & Behavior
- Muscle function
- Bone metabolism
- Renal function

- Intestinal function
- Histopathology
- Imaging
- Clinical chemistry, Hematology, Immunology
- Information Technology

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More than 250 assays available for various functions

### Behavior, cognition & sensory system
- General health, sensory-motor function & pain
- Learning & memory
- Schizophrenia
- Circadian activity & biological rhythm
- Emotional behavior: Depression & Anxiety
- Epilepsy

### Cardiovascular system
- Blood pressure
- Cardiac electrophysiology
- Cardiac anatomy & function
- Hypertension models
- Hypertrophy models
- Heart failure models

### Nutrition & Metabolism
- Energy intake
- Energy expenditure
- Glucose homeostasis
- Bone & Muscle metabolism
- Intestinal and renal function

### Respiratory system
- Plethysmography
- Bronchoalveolar lavages
- Asthma models
- Airway inflammation models
- Lung fibrosis models

### Clinical chemistry
- Common serum chemistry
- Enzymatic activities
- Lipids & lipoproteins
- Hormones
- Hematology & Coagulation
- Immunology

### Anatomopathology
- Necropsy
- Tissue collection
- Histology H&E staining
- Specific stainings
- Immunohistochemistry
- Evaluation of early embryonic death
Disease or comprehensive approach
Mouse model characterization and compound evaluation

- Broad disease focused
  - Metabolic disorders
  - Neurologic disorders
  - Respiratory disorders

- Broad comprehensive

- Targeted phenotyping
Expanding the Phenotyping Services

Institut Clinique de la souris
Large scale facility for generation, phenotyping and pharmacology projects

Laboratoire «Transgénèse et Archivage d’Animaux Modèles»
Small animal imaging, archiving and distributing

Centre d’immunophénomique,
Designing mouse models to decipher immunity and infection- Immunophenotyping

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Immunophenotyping module

- **Scientific manager**
  - Marie Malissen
- **R&D manager**
  - Herve Luche
- **Instrument specialist**
  - Pierre Grenot

- **Immunophenotyping Bioassay**
  - Marielle Mello
  - Lillia Hadjem
  - Camille Santa Maria

- **CyTOF Operator**
  - Emilie Gregori

[Image: Ciphe logo and team photo]

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# Profiling Immunity

**Flow and mass cytometry**

## Mouse Innate and Adaptive Immune System

<table>
<thead>
<tr>
<th>Immune Organs</th>
<th>Cell Types</th>
<th>High Content Panels</th>
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<td>Blood</td>
<td>Lymphocytes</td>
<td>Flow cytometry</td>
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<td>Thymus</td>
<td>T cells</td>
<td>&gt;20 parameters</td>
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<tr>
<td>Spleen / LN</td>
<td>B cells</td>
<td>Quantitative analysis of hematopoietic cells</td>
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<td>Bone Marrow</td>
<td>NK cells</td>
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<tr>
<td>Lungs</td>
<td>Myeloid cells</td>
<td>17 parameters</td>
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<td>Peritoneum</td>
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<td>Intestine</td>
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<td>16 parameters</td>
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<td></td>
<td>Eosinophils/Mast</td>
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<td></td>
<td>Macrophages</td>
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<tr>
<td></td>
<td>DC, pDC</td>
<td></td>
</tr>
</tbody>
</table>

**Design Panel and Consulting**

[Phenopro website](www.phenopro.fr)
**In vitro and in vivo Functional assays**

**CELL TYPES**
- **Lymphocytes**
  - T cells
  - B cells
  - NK cells
- **Myeloid cells**
  - Monocytes
  - Neutrophiles
  - Eosinophils
  - Macrophages
  - DC, pDC

**ACTIVATION / DIFFERENTIATION**
- Surface markers
- Proliferation assays
- Cytokines, chemokines production

**DIFFERENTIATION EFECTOR T CELLS**
- Th1, Th2, Th17, Treg
- Cytotoxicity, Lytic granules

**B CELL RESPONSE IMMUNISATION**
- T-cell dependent
- T-cell independent

**BONE MARROW CHIMERAs**

**INFLAMMATION MODELS**
- Peritonitis
- IBD model

**TUMOR MODEL**
- Melanoma cell line

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**Areas of expertise:** Oncology, infectiology, Inflammation and vectorisation of medicinal products.

**Services:**
- Fusion of pictures in order to associate the anatomic information with functional molecular imaging methods such as bioluminescence, Infra Red fluorescence, Positron Emission Tomography (PET) et tomoscintigraphy (SPECT)

- Xenograft: pancreas, colon, prostate, lungs, bone
  - Human cell lines
  - Murine cell lines: melanome B16, breath cancer 4T1, lymphome EL4
Opto-Acoustic Tomography: Echography and Fluorescence coupling

application: hypoxia, angiogenesis, nanoparticles

Orthotopic model of pancreatic adenocarcinoma bioluminescence and hypoxia

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Partnership with Genoway

- One-stop shop: a complete range of services from creation to phenotyping of genetically modified models, integrating design, generation, delivery and phenotypic characterization of mouse models.

- Substantial time and cost savings from integrated offers (from line creation to phenotyping).

- Customized breeding plans in order to reduce development time and cost of experimental cohorts.

- Centralized project management & administrative work / agreement.

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PhenoPro’ Services: a tool box company

- Design of phenotyping or pharmacological flow schemes including validated assays & protocols: standardized or customized
- Planning and management of phenotyping and pre-clinical projects
- Flexibility to adjust protocols to the partner demand
- Data recording & processing
- Data validation & analysis
- Reporting
- Delivery of raw data and of biological samples
- Access to the Phenomin iCS / CIPHE / CIPA experts network

Partnering with PhenoPro:
- Academic experts and team network: facilitates access to expertise and innovation
- Access to the Phenomin Infrastructure
- Report & Analysis: full data integration leading to a comprehensive view of your model, recommendations and go-no go decision

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Contacts

EXCELLENCE IN MOUSE PHENOTYPING

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