



Propose the latest advances
in high throughput genomics



Skills and cutting-edge technologies in genomics and transcriptomics

A multisite core facility in Toulouse for academic & private teams working on animals, plants, microbes or Human



Technological advising

Data Production and analyses

Watch and development

A diversity of Genomic Expertise

- Whole Genome Sequencing
- De Novo Sequencing
- RNA Sequencing
- Single cell Sequencing
- Targeted Sequencing
- Metagenome
- Metabarcoding
- Microarray
- Digital & Quantitative PCR
- Data analysis

Medium to very high throughput of short or long reads sequencers



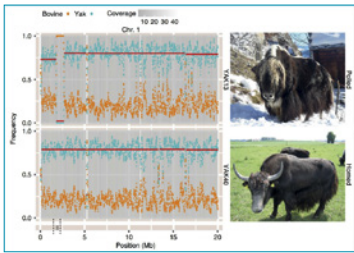
Key figures and publications



Annual key figures

- **300** teams
- **480** projects
- **50** publications

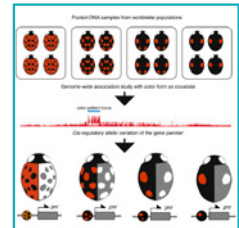
Some of our recent contributions



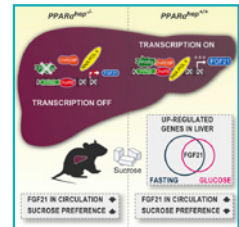
Whole-genome analysis of introgressive hybridization and characterization of the bovine legacy of Mongolian yaks.

Nature Genetics, 2017

The genomic basis of color pattern polymorphism in the Harlequin Ladybird.
Current Biology, 2018



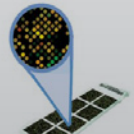
A specific ChREBP and PPAR α cross-talk is required for the glucose-mediated FGF21 response.
Cell Reports, 2017



And also...

- Caloric restriction and diet-induced weight loss do not induce browning of human subcutaneous white adipose tissue in women and men with obesity. **Cell Reports, 2018**
- One-step generation of multiple gene knock-outs in the diatom *Phaeodactylum tricornutum* by DNA-free genome editing. **Nature communications, 2018**
- The sunflower genome provides insights into oil metabolism, flowering and Asterid evolution. **Nature, 2017**

Linked Reads and single cell analyses, ddPCR, microarrays



CONTACTS

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Site Managers:


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GeT-Biopuces: Marie-Ange Teste


GeT-Santé: Jean-José Maoret

GeT-TRiX: Yannick Lippi

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: <https://get.genotoul.fr/en>

For more information about our supports you can visit our website

: [@get_genotoul](https://twitter.com/get_genotoul)

EDUCATION & TRAINING

Education:

Master, PhD programs

Training:

Workshops and theoretical and practical courses

QUALITY CERTIFICATIONS

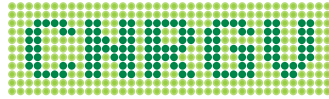


GeT-PlaGe & GeT-Biopuces

INFRASTRUCTURE & NETWORKS



IBISBA 1.0



PLANT GENOMIC CENTER

Innovate through
a better understanding of
plants' genome structure



Visit our website



A Biological Resource Center dedicated to plant genomes



 CNRGV's collaborators

A better understanding of plant behavior will lay the foundation for new agricultural systems. Structural genomic exploration is fundamental to discover how evolution impacts DNA organization and eventually plant diversity.

The French Plant Genomic Center (CNRGV) is a national infrastructure unique in France belonging to the French National Institute for Agricultural Research (INRA).

This Biological Resources Center (BRC) is dedicated to all plant genomic resources of model and crop plants.

The CNRGV provides innovative and efficient genomic tools to better characterize plant biodiversity and understand how plants evolve and adapt to their environment through the analysis of their genomes.

The CNRGV is largely opened to the international scientific community.

Large panel of services to decipher plant genome complexity



HMW DNA
EXTRACTION



GENOMIC
LIBRARY
CONSTRUCTION



TARGETED
GENOMIC LIBRARY
CONSTRUCTION



SCREENING
SERVICES



GENOME
OPTICAL MAPPING



SERVICES
ROBOTIQUES



GENOMIC SAMPLES
DISTRIBUTION

CONTACTS

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Communication: Elisa Prat

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🌐: <https://cnrgv.toulouse.inra.fr>

For more information about our supports you can visit our website

🐦: @CNRGV

SERVICES

For companies and academic laboratories

One-off services

Training for autonomy

Advice and expertise for a complete accompaniment

Technical development or adaptation to meet your needs

INFRASTRUCTURE & NETWORKS

CNRGV is a member of IBiSA, Genotoul and RARe networks: the guarantee to find an answer to all your problems





Genotoul
Bioinfo

Bioinformatics

Meet the needs of large-scale
treatment in life sciences



Visit our website



A powerful hardware and software infrastructure



A computer farm: Thousands of cores (INTEL-2014, INTEL-2017), providing several Tera Bytes of memory, including large scale memory servers (1-3TB), Infiniband interconnection (FDR), parallel file system (GPFS).

Several Peta Bytes of **storage capacity**.

WEB servers and virtual machines **hosting infrastructure**.

Open access and shared resources

Secure access (ssh) is provided to the Life Science community.

Redundant equipments and daily back-ups insure **data protection and security**.

Hundreds of public **databanks** are regularly updated.


Hundreds of **bioinformatic software** are installed.

A **Galaxy instance** is co-maintained with the Sigenae team (sigenae.org).



CONTACTS

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For more information about our supports you can visit our website

: @BioinfoGenotoul

R&D SERVICES

For companies and academic laboratories

One-off services with or without assistance

Training for autonomy

Advice and expertise for data analysis

Software development or adaptation to meet your needs

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INFRASTRUCTURE & NETWORKS

Bioinfo is a member of IBISA, IFB and France Génomique networks,
the guarantee to find an answer to your questions

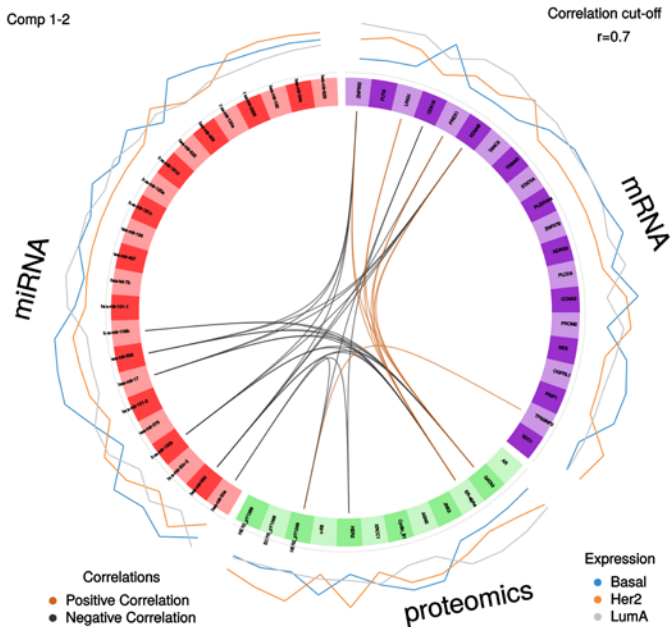




A crossroads of skills
in Statistics for Biology



Support analysis of data from new bio-technologies

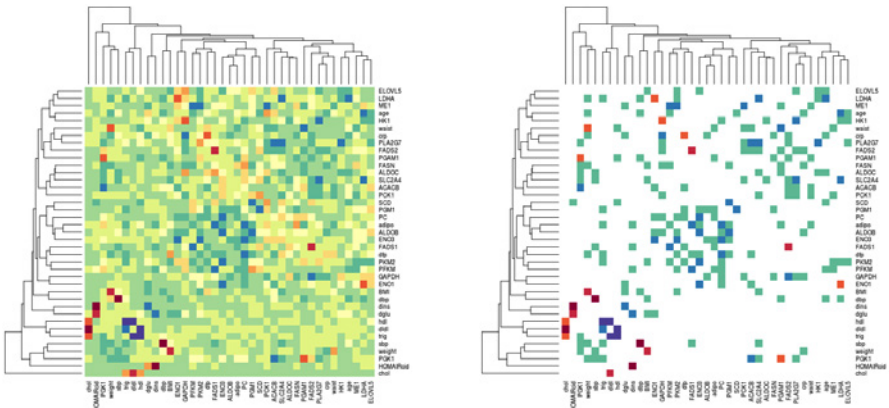


Circosplot representation from the mixOmics R package. It displays relationships between variables among different blocks of omics data (here, mRNA, miRNA and proteomics).

The best term to describe the activities of the biostatistics platform is a crossroads of skills in statistics for biology.

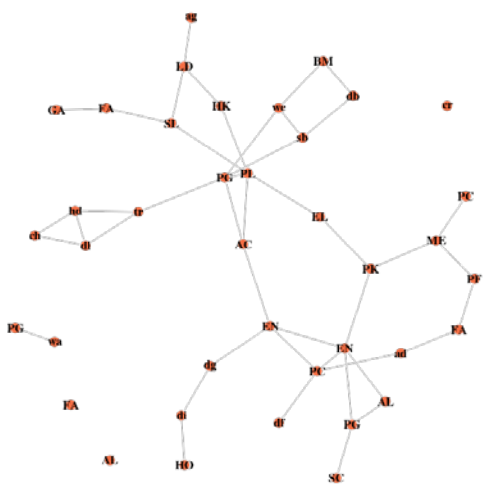
The activities of the platform are organized around: training, co-supervision of internships and tutored projects, research and organization of scientific workshops.

Collaborate with us



Three representations of correlations between gene expression and clinical variables. Top left : as an heatmap ; top right : as an heatmap considering only correlations above a threshold ; bottom right as a relevance network.


- **DOMAINS** – We interact with all the domains of biology related to projects that generate huge amounts of data.
- **METHODS** – We are familiar with the statistical analysis of biological data and we have developed expertise in omics data integration.




NETWORK – The Genotoul Biostatistics platform relies on contacts disseminated inside bio labs in Toulouse : Marion Aguirrebengoa at Center for Integrative Biology, Jason Iacovoni at Institute of Cardiovascular and Metabolic Diseases, Sandrine Laquerre at *Laboratoire d'Ingénierie des Systèmes et des Bio-Procédés* and David Rengel at Laboratory of Plant-Microbe Interactions. It has also strong relationships with the Bioinformatics platform.

CONTACTS

Animators: Sébastien Déjean, Nathalie Vialaneix

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: <http://math.univ-toulouse.fr/biostat/>

For more information about our supports you can visit our website

PARTNER IN RESEARCH PROJECTS

For companies and academic laboratories

Advice and expertise for a complete accompaniment
from experimental design to data analysis

Technical development or adaptation to meet your needs

EDUCATION & TRAINING

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Master, PhD programs

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CO-SUPERVISION OF STUDENTS

Students in applied mathematics, statistics, computer science or bioinformatics are highly welcomed to accomplish their internship in biostatistics co-supervised by a biologist and a member of the platform



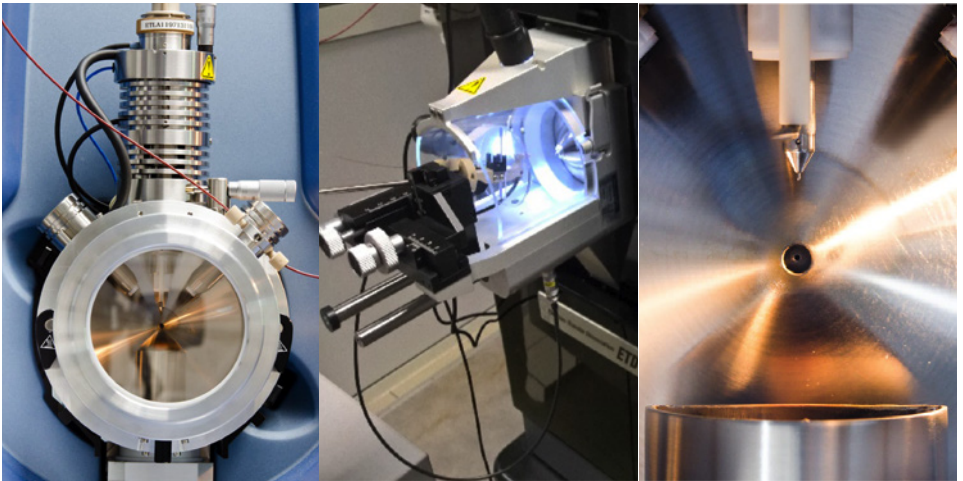
Proteomics & mass spectrometry:
high performance technologies to
explore the world of proteins



Proteomics at a glance

The Toulouse Proteomics Infrastructure is equipped with state-of-the-art instrumentation in mass spectrometry and bioinformatics tools. It offers a wide range of services for protein analysis from various types of samples: cell cultures, tissues, biological fluids, plants...

Its expert staff will guide you in your research and development projects by proposing solutions that fit your needs from a single analysis to more ambitious projects. It is open to academia and private companies.



Diversity of approaches

Several complementary instruments allow a wide variety of scientific offers

Expertise

Highly skilled staff trained in the latest innovations in the field

Versatility

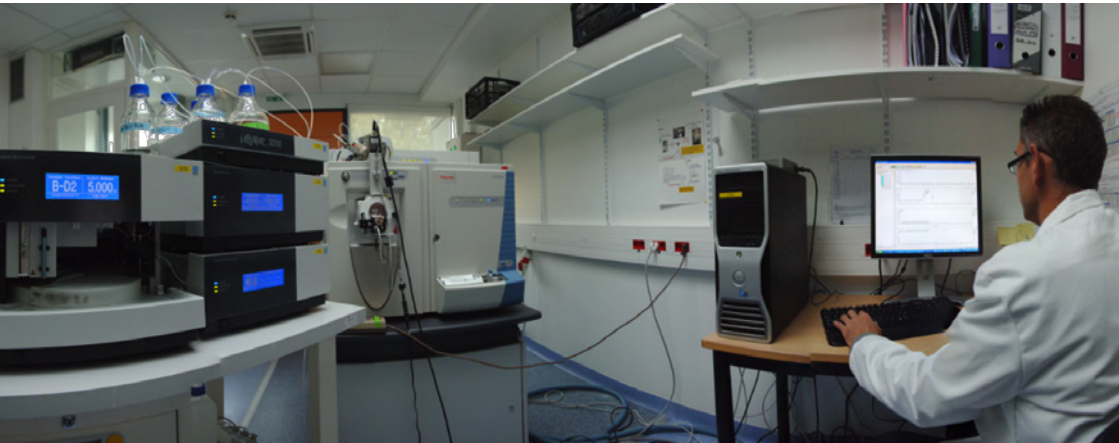
Researchers and engineers working together to develop innovative strategies



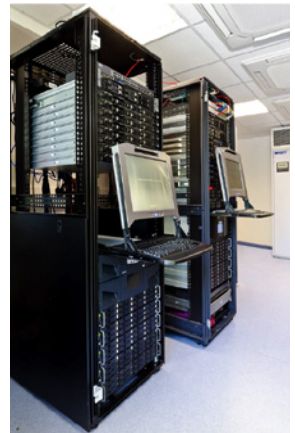
More than just the analysis

Consulting, advice, follow-up of results, data interpretation, and discussions

From Proteins to Function



- Identification and quantification of proteins in complex samples
- Analysis of post-translational modifications
- Identification and dynamics of interacting proteins
- Stoichiometry and architecture of protein assemblies
- Quantification of targeted proteins
- Bioinformatics data analysis



CONTACTS

Scientific Director: Odile Schiltz

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R&D SERVICES

For companies and academic laboratories

Advice and expertise for a complete accompaniment

Technical optimization to meet your needs

State of the art techniques and strategies for the community

Development of methodologies in proteomics

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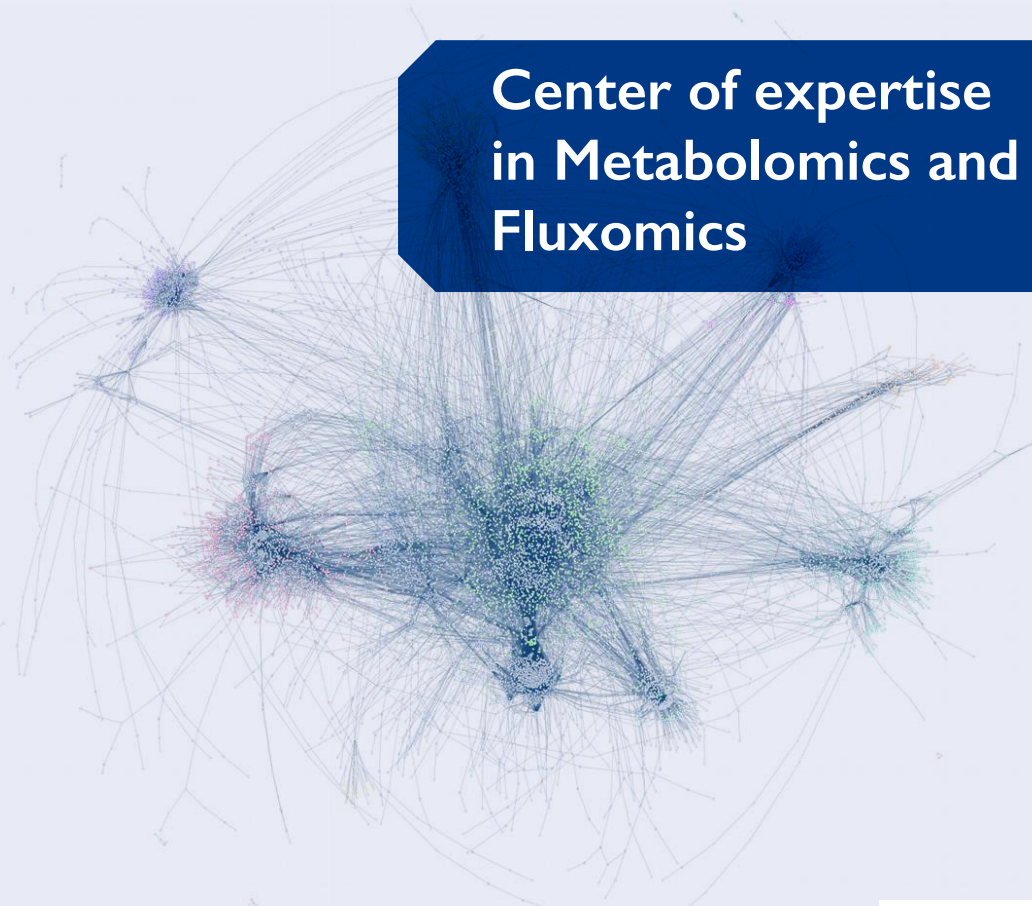
INFRASTRUCTURE & NETWORKS

National IBiSA label

(coordination of technological and research platforms in life sciences)

One of the three nodes of the National Infrastructure in Proteomics, ProFI





Center of expertise
in Metabolomics and
Fluxomics

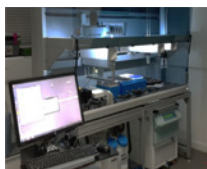


Skills and cutting-edge technologies for your projects in metabolomics and fluxomics

3 NMR Spectrometers : NMR 500, 600 and 800 MHz with cryprobes



4 sample preparation robots



15 Mass Spectrometers coupled to 12 LC and 3 GC



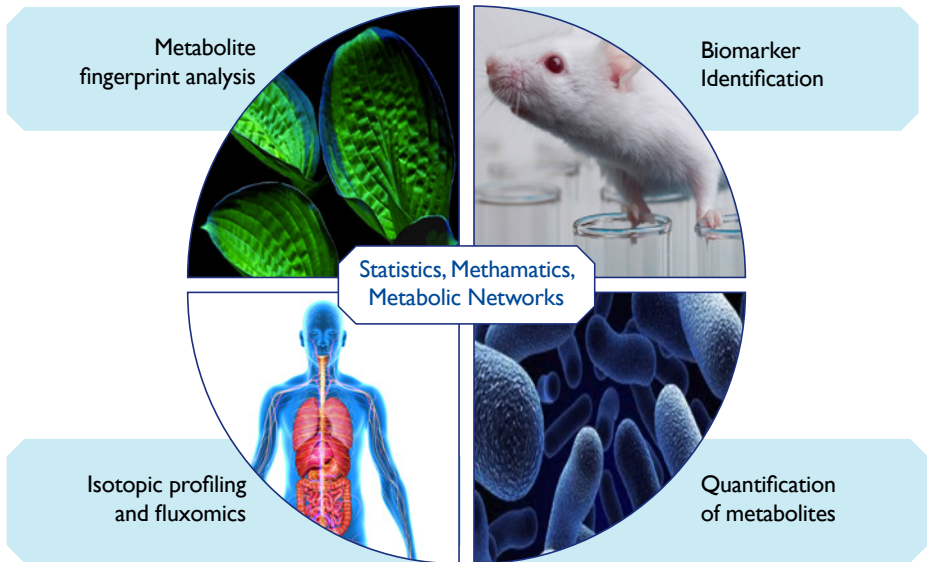
Specific softwares



Multidisciplinary expertise :

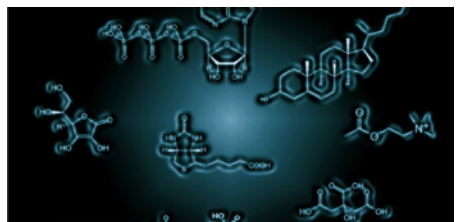
NMR, Mass spectrometry, bioinformatics, statistics, robotic, biochemistry and metabolism.

Exploring metabolism



The Metabolomics and Fluxomics Core Facility of Toulouse (MetaToul) brings together expertise (researchers, engineers, technicians) and state-of-the-art equipment (NMR, MS, robots) for the global analysis of metabolism.

It provides the scientific community with the concepts, tools and methods to investigate metabolism at the level of a biological system (cell, tissue, organism).



CONTACTS

Scientific Director: Jean-Charles Portais

Co-Directors:

Justine Bertrand-Michel, Laurent Debrauwer

: <https://mama-webapp.metabohub.fr/>

: https://www6.toulouse.inra.fr/metatoul_eng/

For more information about our supports you can visit our website

: @metatoul

SERVICES

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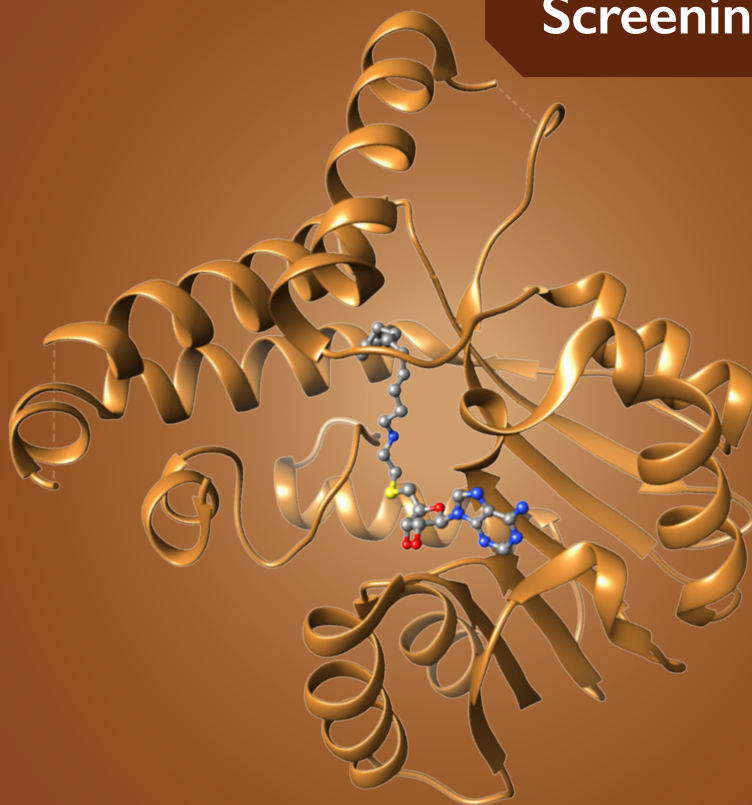
Workshops, theoretical and practical courses

INFRASTRUCTURE & NETWORKS

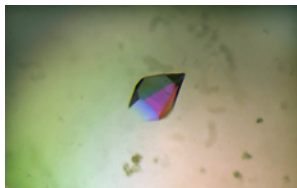
MetaToul is one of the initiators of MetaboHUB : the French National Infrastructure for Metabolomics & Fluxomics. It has been awarded the IBISA & CNOC labels and it is very active in the *Réseau Francophone de Métabolomique et Fluxomique (RFMF)* and in the *Lipidomysts Network*



Ligand & Protein Screening Facility



Multidisciplinary Services



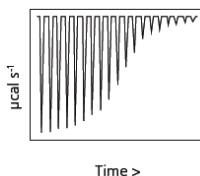
Crystallography:

- Crystallization and structure determination
- In crystallo screening



NMR:

- Liquid and solid state NMR
- Structure determination and ligand screening



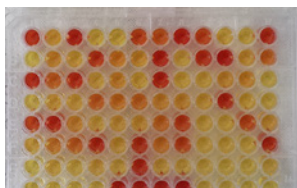
Biophysics:

- Macromolecule characterization in solution
- Screening of ligands and complex characterization



Chemistry:

- Liquid, supercritical and ionic chromatography
- Small organic molecule and peptide synthesis

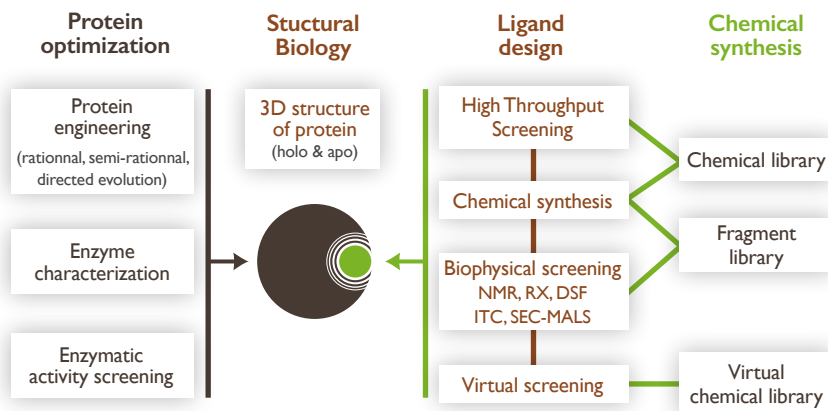


Discovery of original enzymes:

- Functional metagenomics; protein engineering
- Enzyme purification and characterization

**PICT will adapt to your needs
in structural biology, screening and characterization
of target-ligand interaction**

From screening to molecular design




**A complete package of technologies
for the identification and design of inhibitors/effectors
and the discovery and design of enzymes...**


PICT combines the expertise of 3 facilities, all located in Toulouse (France):

- Institut de Pharmacologie et de Biologie Structurale (IPBS)
Biophysics, structural biology and bioinformatics
- Laboratoire de Synthèse et Physico-Chimie de Molécules d'Intérêt Biologique (LSPCMIB)
Chemical synthesis, analysis and purification
- Laboratoire d'Ingénierie des Systèmes Biologiques et des Procédés (LISBP)
Enzyme discovery and optimization

CONTACTS

Directors: Laurent Maveyraud, Virginie Nahoum

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: <http://cribligand.ipbs.fr/>

For more information about our supports you can visit our website

SERVICES R&D

For companies and academic laboratories

One-off services with or without assistance

Training for autonomy

Advice and expertise for a complete accompaniment

Technical development or adaptation to meet your needs

EDUCATION & TRAINING

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INFRASTRUCTURE & NETWORKS

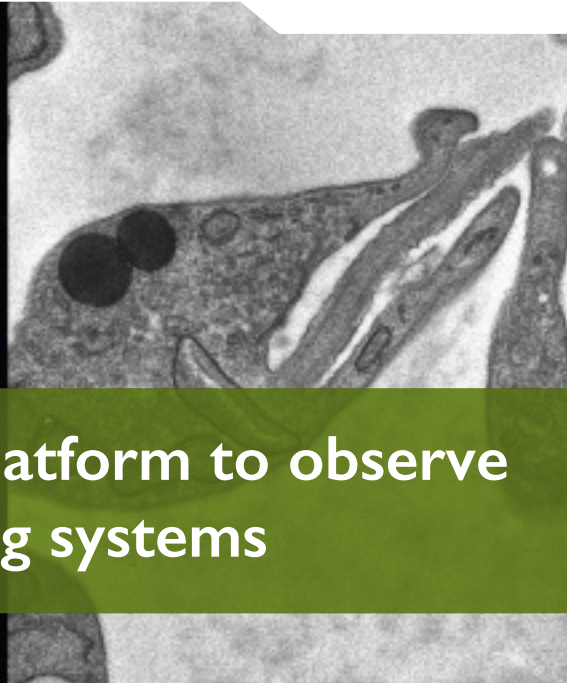
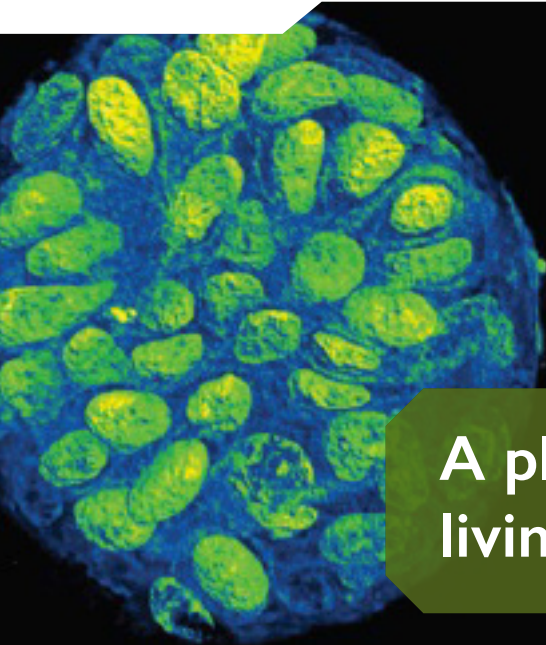
PICT has been recognized at the national level (IBiSA, ChemBioFrance, IBISBA) and is integrated in GenoToul (i.e. the Toulouse Genopole)



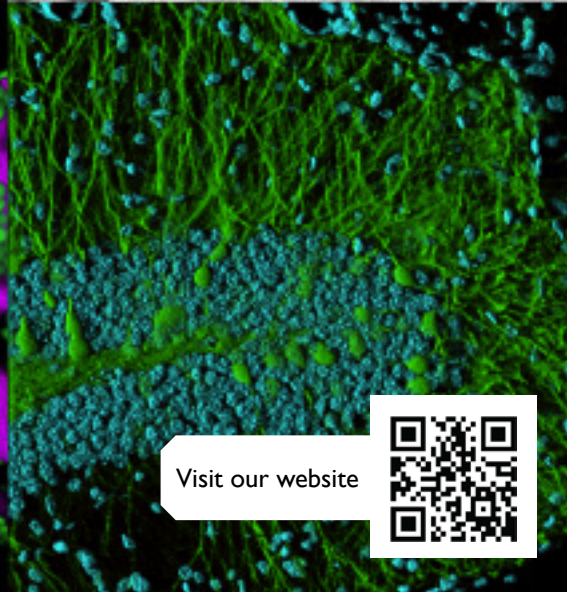
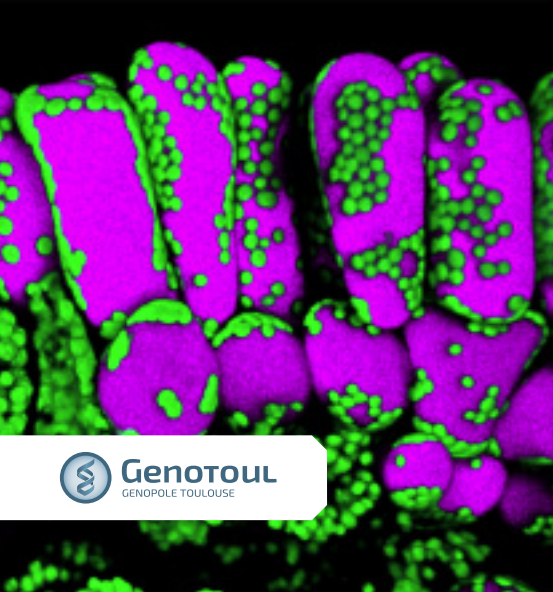


Genotoul
TRI

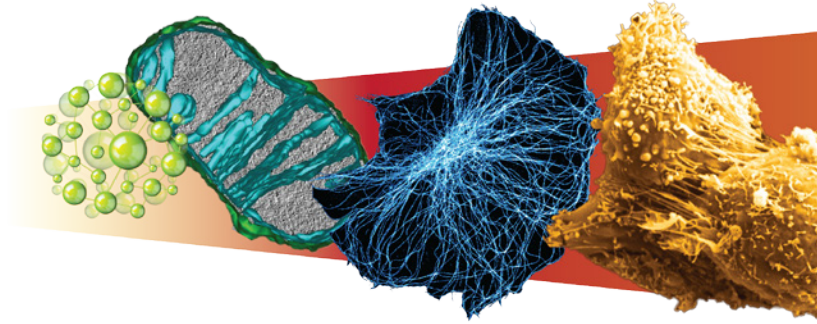
Toulouse Réseau Imagerie



A platform to observe
living systems



3 fields of shared skills



Molecular imaging

Cellular imaging

T

ELECTRON MICROSCOPY – Tomography, Cryo-methodology, CEMOV

MICROSCOPY / ANALYSIS – Molecular interactions, FLIM, AFM, Microspectrofluorimetry

SUPER-RESOLUTION – STORM, STED, PALM, SIM, TIRF

MACROSCOPY/MICROSCOPY

CYTOMETRY, CELL SORTING & CYTO-IMAGING

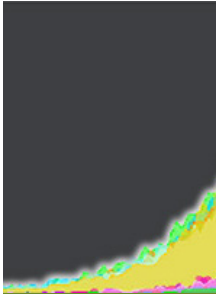
2D to 4D LIGHT MICROSCOPY

IMAGING PROCESSING & MODELING



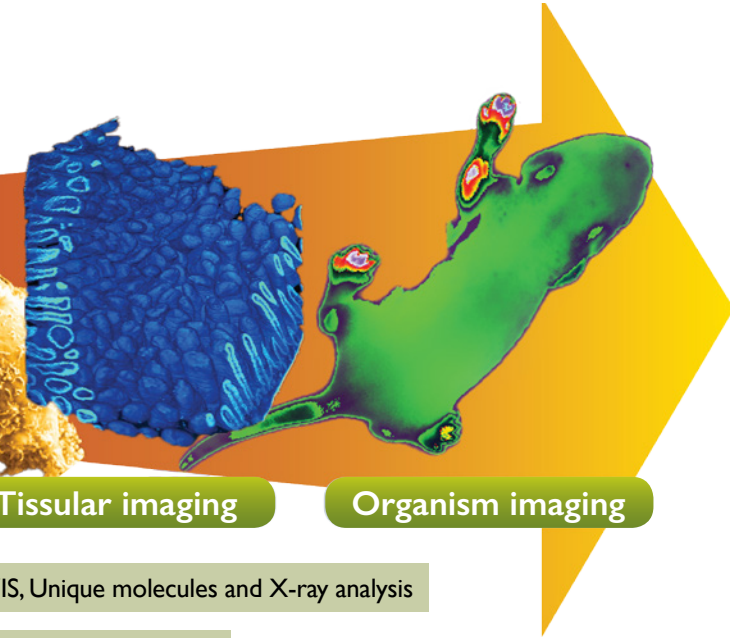
ELECTRON MICROSCOPY

The platforms of the TRI Genotoul imaging network combine skills and facilities to accompany you in developing your scientific project in life sciences.



CYTOMETRY AND CELL ANALYSIS

From molecule to organism



Tissular imaging

Organism imaging

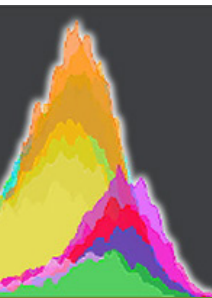
IS, Unique molecules and X-ray analysis

try, Optical tweezers

ROSCOPY – MacroSPIM, Intravital, Fluorescence and non-invasive luminescence

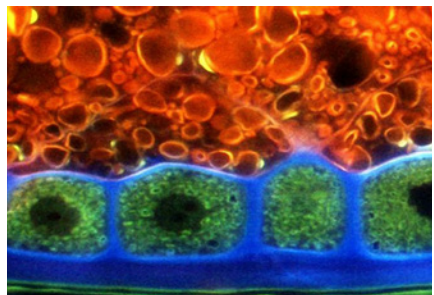
MICROSCOPY – Wide-field, SPIM, Confocal, Spinning disk, Multiphoton, Laser micro-dissection

ELING



METRY
SORTING

Using electronic, light or cytometry imaging techniques, our services range from occasional helps to the most comprehensive support.




LIGHT MICROSCOPY

CONTACTS

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For more information about our supports you can visit our website

SERVICES R&D

For companies and academic laboratories

One-off services with or without assistance

Training for autonomy

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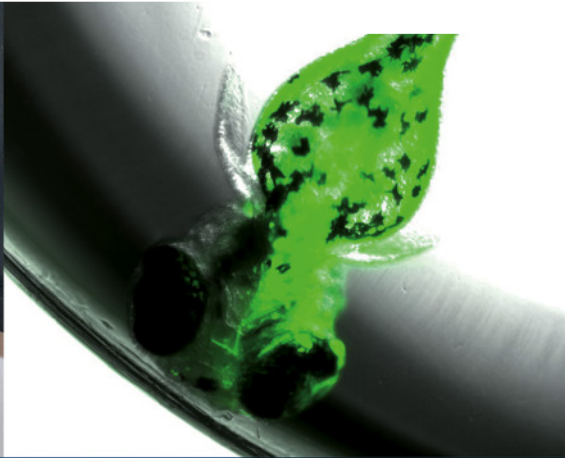
INFRASTRUCTURE & NETWORKS

ECellFrance infrastructure

ImaBio, RCCM & AFC Networks

RT MFM





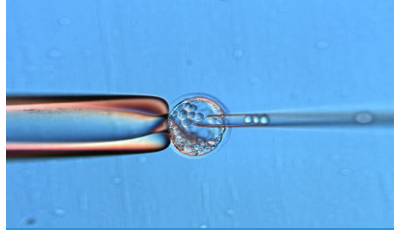
Explore pathophysiology
in vivo



Develop and explore integrated models to understand pathophysiologies



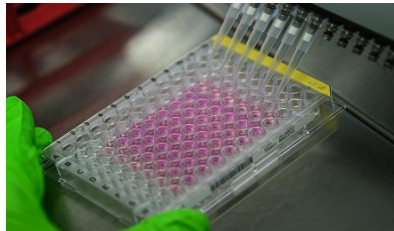
ANIMAL FACILITY



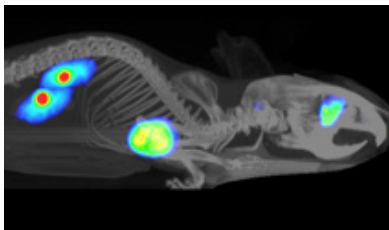
CREATION
OF ANIMAL MODELS



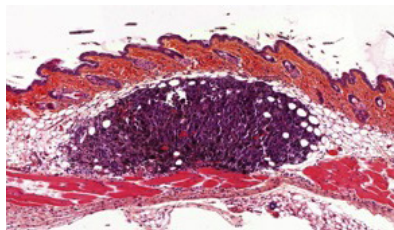
EXPERIMENTAL
MICROSURGERY



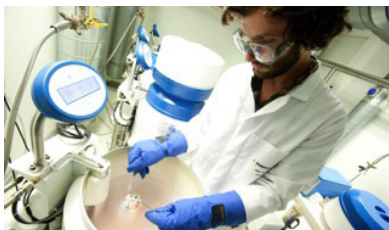
PHENOTYPING



SMALL ANIMAL IMAGING



HISTOPATHOLOGY



CRYOPRESERVATION
DECONTAMINATION



BEHAVIOR / COGNITION

Reasons to choose us


Anexpla's technical platforms provide the public and private scientific communities with state-of-the-art equipment and the necessary expertise to accompany you in the generation, development and functional exploration of integrated animal models to understand living organisms in their normal or pathological functioning.

- **VARIOUS THEMES** – Our expertise is in the areas of cardiovascular biology, metabolism, neuroscience, immunology, vaccinology, host-pathogen interactions and infectious diseases.
- **BIOLOGICAL SECURITY** – Our hosting and experimentation infrastructures make it possible to work in security levels 1,2 and 3.
- **MANY MODELS** – Rodents (mice and rats), lagomorphs (rabbits), sheep, cattle and birds (hens, ducks and turkeys).
- **MULTIPLE TECHNICAL PLATFORMS:**
 - CRISPR-Cas9
 - Orthotopic organ transplantations
 - Biochemical, hematological analysis
 - In vivo calorimetric and metabolic measurements
 - Non invasive in vivo imaging of small animals (Echography, IRM, TEP Spect, CT, bioluminescence)
 - Behavioral screening (Locomotor activity & fatigability, Anxiety, Coordination)
 - Cognitive Functions (Spatial and contextual Memory, social behavior and learning)
- **PERMANENT IMPROVEMENT**– Backed by public research laboratories, we conduct a continuous R & D activity. Our equipment remains at the forefront of non-invasive exploration and in vivo imaging.
- **ANIMAL WELLBEING** - Understanding human diseases, developing new drugs requires animal models. We ensure animal welfare by optimizing the conditions of stabling and experimentation according to national and international ethical rules.

CONTACTS

Scientific Directors: Sylvie Guerder,
Olivier Neyrolles, Éric Oswald

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For more information about our supports you can visit our website

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Anexplo is a member of Equipex Aninimip and Celpedia
and RefBio networks: the guarantee to find an answer
to all your problems





**Human Biological
Resource Center**



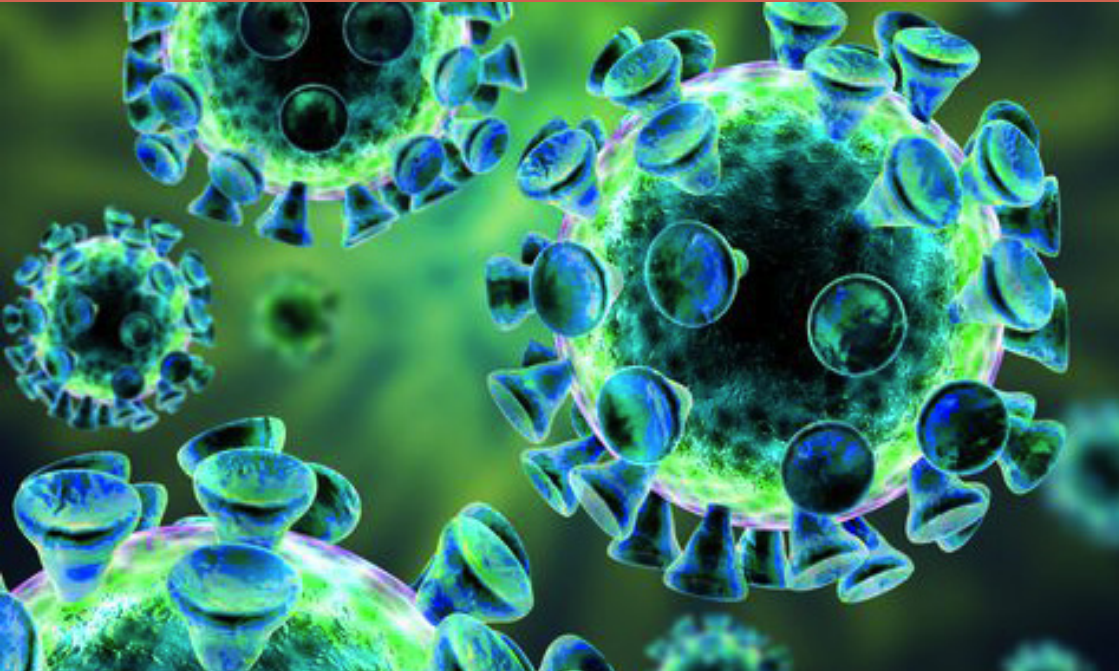
Develop and explore integrated models to understand pathophysiologies



The CRBh platform, a center for human biological resources, brings together the 3 biobanks implemented by the Toulouse University Hospital (TUH): Toulouse Bio-Resources, CRB-Cancer, Germethèque.

- Missions of CRBh:
 - preparation, packaging, storage of human biological resources and provision to investigators
 - management of samples as part of clinical investigation projects
 - central laboratory for multi-center programs: preparation and shipping of sampling kits
 - interface with the analytical platforms of the TUH's laboratory
- CRBh operates according to a specific quality standard (standard NF 96-900), ensuring strict regulatory compliance, storage safety, computerized management of resources and associated data.

Reasons to choose us




- Toulouse Bio-Resources (CRB – TBR) includes over 40 collections developed around 3 major fields: 1 °) Ageing process: cognitive, neurological, cardiovascular, bone and metabolic disturbances; 2 °) Development and childhood diseases; 3 °) Infectious diseases. CRB-TBR manages and provides a variety of samples: blood and derivatives, genomic DNA, cerebrospinal fluid, urine, faeces, tissue biopsies, cultured cells.
- CRB-Cancer is dedicated to cancer diseases. CRB-Cancer has tumor tissue and non-tumoral / tumor-associated samples collected in 12 major areas: lymphomas, melanomas, tumors from brain, breast, lung, skin, bone, and soft tissues, urological, colorectal, gynaecological and neuroendocrine tumors. An associated histopathology platform is dedicated to research and develops immuno-histochemistry, in situ hybridization and tissue microarrays (TMA).
- GERMETHÈQUE – Biological resources concern fertility, procreation and human development. Among the specific resources are oocytes, spermatozoa, follicular fluid, seminal plasma, germinal tissues, culture media from embryos...


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 <https://www.chu-toulouse.fr/-centre-de-ressources-biologiques-toulouse-bio->

For more information about our supports you can visit our website

SERVICES R&D

For companies and academic laboratories

Management of biological samples for clinical investigation

Central lab in multi-centre projects

Advice and expertise for a complete accompaniment

Technical development or adaptation to meet your needs

EDUCATION & TRAINING

Education:

Masters, technicians

Training:

Workshops and seminars for

Investigators, clinical research Assistants and Nurses

INFRASTRUCTURE & NETWORKS

CRBh is a member of 3c.R, a club bringing together French biobanks of human resources


CRBh is associated to GIRCI-SOOM, the interregional grouping on clinical investigation in Southwestern France and overseas





A high throughput plant phenotyping facility





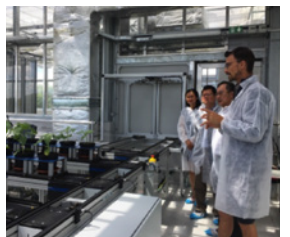
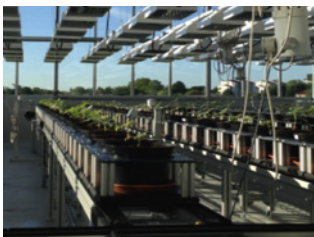
A purpose-built construction with glasshouses, robots & instruments for phenotyping whole plants in interaction with their environment (biotic/abiotic)

The TPMP platform is dedicated to automated, high throughput phenotyping of model and agronomic plants and their associated microorganisms, in controlled conditions. It allows a non-invasive monitoring of plants in simulated climatic and environmental conditions. With S2 security conditions, it can be used with GMOs and quarantine organisms.

TPMP Phenotyping offer




- High throughput phenotyping in dedicated growth-room
- High throughput phenotyping in greenhouse
- Microbial phenotyping – Biolog System
- RGB, infrared and fluorescence imaging
- Plant-microbe interactions
- S2 and quarantine conditions
- Image analyse



CONTACTS

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For more information about our supports you can visit our website

R&D SERVICES

For companies and academic laboratories

One-off services with or without assistance

Training for autonomy

Advice and expertise for a complete accompaniment

Technical development or adaptation to meet your needs

EDUCATION & TRAINING

Education:

Master, PhD programs

Training:

Workshops and theoretical and practical courses

INFRASTRUCTURE & NETWORKS

TPMP is part of the PHENOME/Emphasis

France national phenotyping network

Specialised in ethical,
legal and social issues



A support for responsible research and innovation in life sciences

The Genotoul Societal Platform is a multidisciplinary team, bringing its expertise on the ethical, legal and societal aspects associated with biosciences, in particular with regard to genomics and biotechnologies.



PUBLICS



- Researchers and Health Professionals
- Public institutions
- Private companies
- Teachers, doctoral students and students
- Associations
- General public

- Research involving humans, animals, plants and in robotics
- Genomic research, modification, editing and genetic testing
- Synthetic biology research and applications
- Informed consent in biomedical research
- Collection, storage and use of biological samples (eg embryonic stem cells), and associated data
- Innovative therapies (eg cell / gene therapies)

AREAS



Expertise on the ethical, legal and societal issues associated with life sciences



SERVICES*

- Personalised support on the ethical and regulatory aspects for the submission of health research projects (ANR, H2020...)
- Targeted expertise on specific questions

TRAINING

Addressed to PhD students and professionals on the ethical and societal aspects of scientific research



WORKSHOPS

Scientific animation open to everyone on issues related to genomics and biotechnologies

MONITORING

Publication of news on the platform's website on several topics related to ethics of health research and innovation



* Prices and quotation on request

CONTACTS

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For more information about our supports you can visit our website

R&D SERVICES

For research companies and academic laboratories
Expertise for one-off services or complete accompaniment
Operational adaptation and counselling to meet your needs
Training for enhancing skills

EDUCATION & TRAINING

Education:

Master, PhD programs

Training:

Workshops and theoretical and practical courses

INFRASTRUCTURE & NETWORKS

Societal is integrated in several Networks and Infrastructures:

French Clinical Research Infrastructure Network (F-Crin)

Federative Institute of Interdisciplinary Studies and Research on Health and Society (IFERISS)

UNESCO Chair Science Ethics and Society



IFERISS
FEDERATIVE INSTITUTE OF INTERDISCIPLINARY STUDIES AND RESEARCH ON HEALTH AND SOCIETY

