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PARIS-SACLAY



UMR1313

INRAE, AGROPARISTECH

Animal Genetics and Integrative Biology (GABI)

Management

Andrea RAU, Director
Fabienne LE PROVOST &
Jordi ESTELLE FABRELLAS,
Deputy Directors

Key Figures

- 45 researchers and faculty researchers
- 30 engineers
- 15 partner engineers
- 25 technicians and administrative staff
- 20 PhD students
- 15 fixed-term contract staff and postdoctoral researchers
- 6 research teams & 1 service platforms team
- Joint Technological Unit (UMT) eBIS (with Idele and Eliance)
- UMT ETTAP (with ITSAP-Institut de l'Abeille)
- International Associated Laboratory (LIA) GIMIC with India
- Associated Partnership Laboratory (LPA) with PAPPISO-INRAE and Excilone

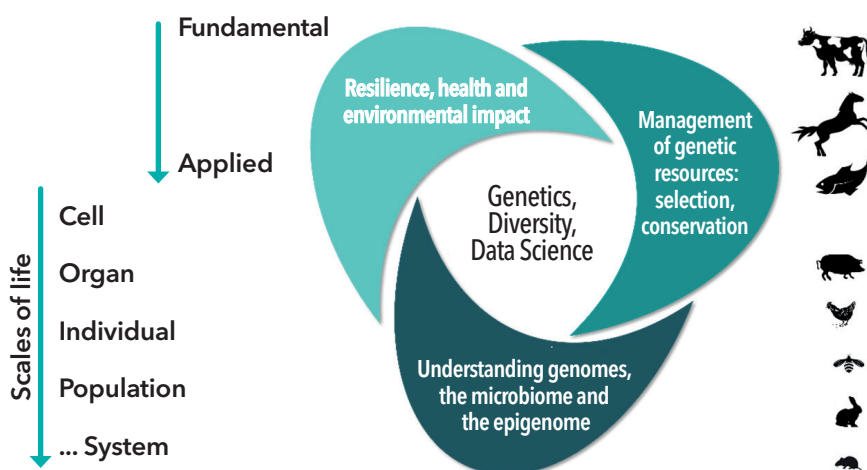
Our Teams

- **BIGE**: Integrative Biology and Equine Genetics – E. Barrey
- **EFISA**: Functional Studies and Innovative Models for Animal Health – H. Acloque & K. Moazami-Goudarzi
- **GBoS**: Genetics for Sustainable Cattle Breeding – P. Croiseau & M.-P. Sanchez
- **GeMS**: Genetics, Microbiota, Health – F. Blanc & M.-H. Pinard van der Laan
- **GiBBS**: Genomics, Biodiversity, Bioinformatics, Statistics – M. Bernard & T. Zerjal
- **Guppier**: Applied Genetics for Fish and Insects in Agroecology – D. Lallias & F. Phocas
- **Platforms**: C. Bevilacqua & D. Muller

Mission and objectives

The GABI Joint Research Unit (UMR) conducts research on the genetics of livestock species as part of a continuum of knowledge acquisition and the development of targeted approaches aimed at addressing the economic, environmental, and societal challenges of animal farming. To achieve this, GABI uses integrative, multi-scale approaches: *in vivo*, *ex vivo*, *in vitro*, *in silico*, from the cell to the population level, including the holobiont, within varied and fluctuating systems.

GABI is a founding member of the Paris-Saclay Institute of Animal Sciences (SAPS).



Research

We address two major scientific challenges:

- Envisioning the animals of tomorrow for diverse environments: animals with a reduced environmental footprint, improved adaptability and health, and whose welfare is fully respected.
- Mobilizing integrative biology to understand and predict, across the entire spectrum from genotype to phenotype.

To achieve this, we place genetics, genetic diversity, functional genomics, and data science at the core of our project, as these disciplines now underpin all of our research questions.

GABI is structured into six research teams and one service platforms team.



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UMR1313

IT

Animal Sciences, Diversity,
Adaptation & Health

IT

Digital Sciences &
Systems Modeling

IT

Microorganisms, Health
& Environment

Thematic Identifiers

Collaborations

The unit maintains numerous academic partnerships as well as collaborations with the private sector.

In France, GABI collaborates with other units in the Animal Genetics department, as well as with private research units and other departments, particularly PHASE (Animal Physiology and Livestock Systems) and MATHNUM (Mathematics and Digital Sciences). It also develops collaborations with various institutes, research organizations (CNRS, Institut Pasteur, INSERM, IFREMER, CIRAD), AgroParisTech, INRAE, and several universities.

Internationally, GABI collaborates with colleagues in many countries around the world. The unit is involved in major international consortia such as FAANG (Functional Annotation of Animal Genomes) and large-scale genome projects (1,000 bull genomes, 1,000 chicken genomes).

GABI maintains privileged collaborations with key stakeholders in animal production sectors, including the Livestock Institute (IDELE), breeding cooperatives (e.g., Eliance), the French Horse and Riding Institute (IFCE), GenEval, the French association for animal genetic improvement (SYSAAF), the French Pig Institute (IFIP), and the French Poultry Institute (ITAVI).

The unit also collaborates with private companies, mainly in the field of animal breeding.

Teaching

Researchers in the unit are strongly involved in teaching alongside AgroParisTech faculty members. They teach in various university programs, notably in the AgroParisTech engineering curriculum including the Master's in Integrative Biology and Physiology (BIP), especially the second-year Master's program PRIAM (Predictive and Integrative Animal Biology), which is integrated into the European Master in Animal Breeding and Genetics (EMABG).

The unit is affiliated with two doctoral schools at Université Paris-Saclay: ABIES (Agriculture, Food, Biology, Environment and Health) and SDSV (Structure and Dynamics of Living Systems). It is also a member of the Biosphera and LSH Graduate Schools at Université Paris-Saclay.

Resources and Facilities

GABI has specialized facilities and expertise.

Part of these resources is grouped within the service platforms team and made available to the broader scientific community:

- **The @BRIDGE platform**, which provides biobanking, (meta-)genomics, microgenomics, and functional morphological analyses at cellular and tissue levels.
The @BRIDGE biobank is integrated into the national RARE research infrastructure within its animal pillar (CRB-Anim).
- **The Cellular Ultrastructure Unit (PUC)**, a transmission electron microscopy service, is a partner of the EMERG'IN imaging infrastructure.

GABI also has an immunophenotyping platform and a mouse transgenesis facility.

The unit works closely with numerous INRAE experimental facilities.

Keywords

- Quantitative genetics • Functional genomics • Population genetics • Biodiversity • Microbiome
- Integrative biology • Bioinformatics • Biostatistics • Livestock species • Model animals • Breeding
- Experimentation • Agroecology



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