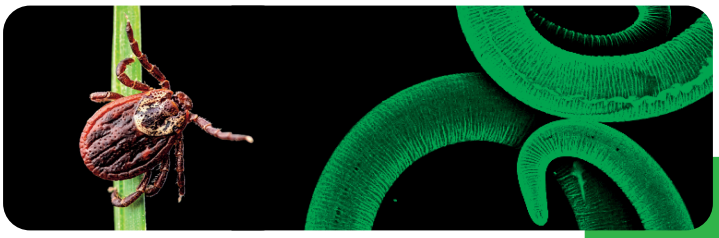
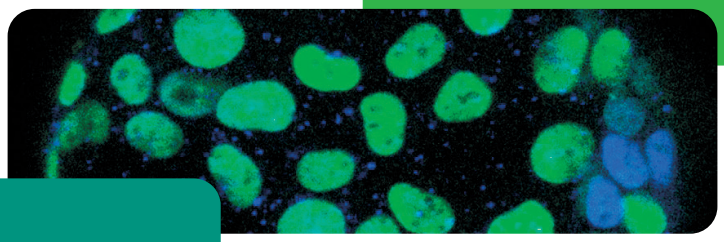
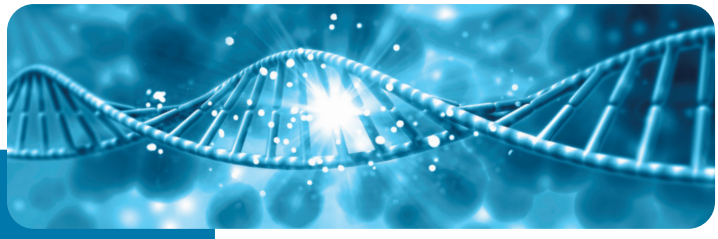
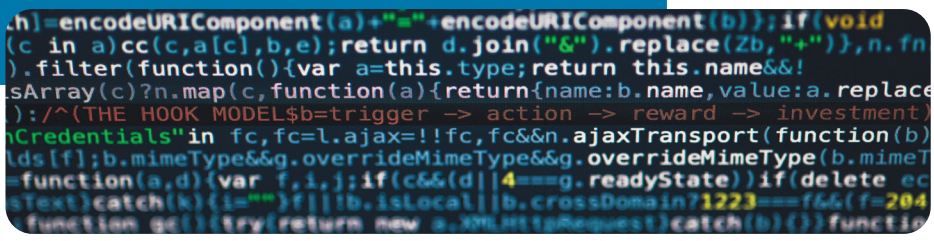
A MULTIDISCIPLINARY CLUSTER FOR RESEARCH, TRAINING AND INNOVATION IN ANIMAL SCIENCES AND HEALTH

SAPS
Sciences Animales
PARIS SACLAY



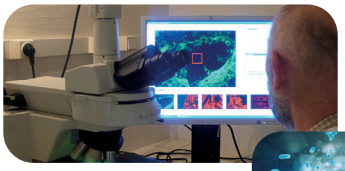
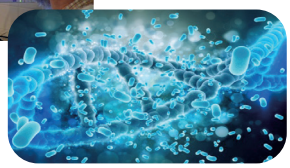






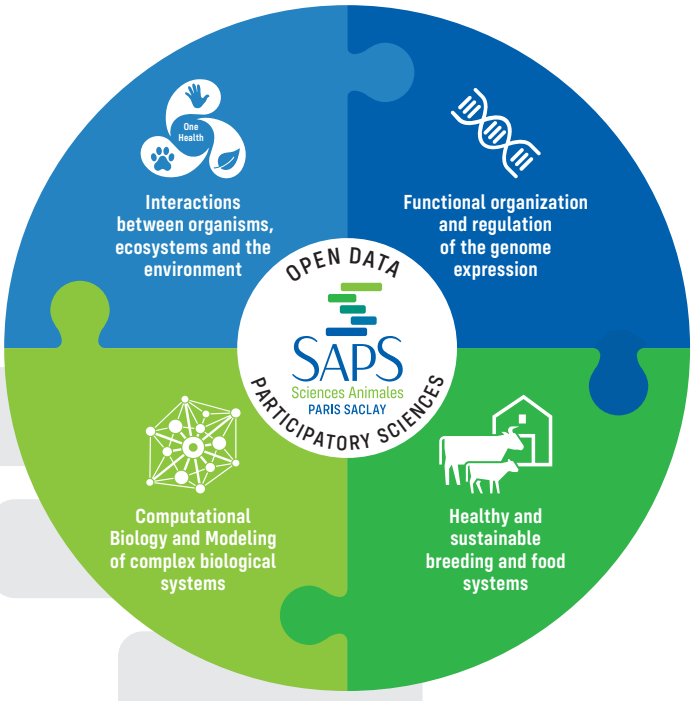
SAPS is a research collective of international scope devoted to animal biology and health, in close relation with breeding. Created in 2015, SAPS federates nine research units, two experimental units, and seven scientific core facilities co-administered by the French National Institute for Agriculture, Food and Environment (INRAE), AgroParisTech, the National Center for Scientific Research (CNRS), the National Veterinary School at Maisons-Alfort (ENVA) and The French Agency for Food, Environmental and Occupational Health & Safety (ANSES). SAPS is anchored in University Paris-Saclay, notably as part of the Biosphera and Life Science and Health Graduate Schools and also in the University Paris-East Creteil (UPEC) via its partnerships with ENVA and ANSES.



OUR OBJECTIVES

- To develop new scientific knowledge in biology and animal health
- To promote interactions between research on livestock or model animals and research on animal or human health
- To strengthen links between animal and human health (One Health, zoonoses, environmental effects)
- To develop predictive approaches and "data science" in biology and animal health
- To promote efficient farming systems that respect the environment
- To contribute to the science-society dialogue and to fulfill society's various expectations



RESEARCH

The multidisciplinary research developed by SAPS is based on fundamental knowledge within four fields:

1. Genetics, genomics and animal epigenetics;
2. Reproductive and developmental biology and cell differentiation;
3. Animal and human health; immunology, infectiology, virology ;
4. Computational biology associating mathematical modeling, computer programming, statistics and Artificial Intelligence.

Research on the fundamental mechanisms of living organisms, major biological functions in animals and the associated data analyses are gathered along two cross-cutting axes of research:

Axis 1 : Functional organization and regulation of the genome expression.

Axis 2 : Computational biology and modeling of complex biological systems.

The knowledge and methods acquired within these axes contribute to meeting two major societal challenges, i.e., the agro-ecological transition of livestock breeding and the implementation of the "One Health" concept, thus defining two more operational axes:

Axis 3 : Healthy and sustainable breeding and food systems.

Axis 4 : Interactions between organisms, ecosystems and the environment.

TRAINING OF TOMORROW'S SCIENTISTS

All internships and PhD subjects as well as job offers (post-doctoral positions, internal and external job exams) can be consulted on the SAPS web site.

PHD STUDENTS

- SAPS units host approximately 70 PhD students every year.
- Over 70 scientists in University Paris-Saclay Graduate Schools (Biosphera and Life Sciences and Health) and Paris-Est University are habilitated to supervise PhD programs, mainly within the following doctoral schools: Agriculture, Foods, Biology, Environment, Health (ABIES); Signaling and integrative networks in Biology (BioSigNE); Structure and Dynamics of Living Systems (SDSV); Life Sciences and Health (SVS).

POST-DOCTORAL FELLOWS

Approximately 20 positions are open every year.

1ST AND 2ND YEAR MASTERS

- AHosting of approximately 60 Masters' students per year.
- Special 2nd year Master training grants are available for some SAPS projects.
- Main Masters:
  - 1st year Master on Integrative Biology and Physiology (BIP) leading to 2nd year Master "Predictive & integrative animal biology" (PRIAM) (in english)
  - Participation to the 2nd year Master "Reproduction and Development" (ReproDev)
  - 2 years Master course: "Animal Breeding and Genetics" (EMABG) (in english)
- SAPS holds a yearly Masters student's seminar.

OTHER STUDENTS

BTS degree, UVSQ and University Paris-Saclay Licence degrees.

BTS DEGREE, UVSQ AND UNIVERSITY PARIS-SACLAY LICENCE DEGREES.

- AgroParisTech engineering program: Breeding and Sustainable and Innovative Sectors (EDEN)
- Training and hosting of veterinary students for research internships
- Erasmus plus Program: Innovirology (ENVA)
- Training and hosting of animal care technicians

CONTINUING EDUCTATION

- Course on Genetic Improvement of Domestic Animals (CSAGAD AgroParisTech)
- Continuing education at ENVA
- Hosting of visits organized by ENVA as part of the mandatory training on animal experimentation at the experimenter's level.
- Animal Experimentation (welfare, ethics, regulations)
- Occasional training courses on technical issues

PARTNERSHIPS, INNOVATION AND TRANSFER

SAPS is involved in a variety of partnership arrangements to innovate in the fields of animal breeding, nutrition, animal feed, animal breeding, animal nutrition, animal feed biotechnologies and health.

FIELDS OF APPLICATION

- Genetic resources, sustainable animal production, precision breeding, animal selection.
- Predictive diagnosis and prognostic tools of the physiological and sanatory status of animals and of human physiopathologies.
- Pharmacology, medical imaging, veterinary and therapeutic human vaccinology, cosmetology and eco-toxicology.
- Nutritional recommendations in animals and man.
- Animal reproductive biotechnologies and Assisted Reproductive Technologies (ART).

Partnership support:
CIFRE grants, Joint Technological Units (UMT eBIS: INRAE, IDELE, ELIANCE ; UMT PROTORISK2: Anses, Université de Reims Champagne-Ardennes, ACTALIA), technical institutes in the animal sector, Interprofessional groups (CNIEL, SIMV, etc.), International Associate Laboratory (LIA GIMIC), Groups of Scientific Interest (Agenae, etc.), competitiveness clusters (Vitagora, Valorial, Hippolia), Institut Carnot Santé Animale, Institut Carnot France Futur Elevage, DIM One-Health 2.0, Associated Partnership Laboratory (LPA) with ELIANCE and Excilone.

SAPS KEY FIGURES

A research collective including:

260 Scientists and engineers | **110** Technical staff

35 **Administrative staff**
With >50% involved in international partnerships

OVER 400 publications per year

OVER 150 research contracts

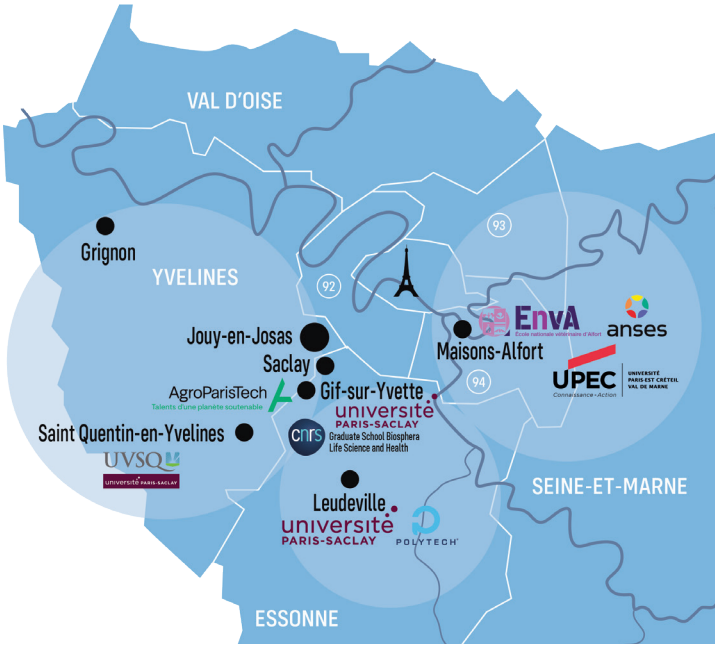
RESOURCES

SEVEN RESEARCH UNITS

- Animal Genetics and Integrative Biology **(UMR 1313-GABI INRAE-AgroParisTech)**
- Biology of Reproduction, Environment, Epigenetics and Development **(UMR 1198-BREED INRAE-ENVA-UVSQ)**
- Parasite and Fungal Molecular Biology and Immunology **(UMR956 BIPAR ANSES-INRAE-ENVA)**
- Systemic Modeling Applied to Ruminants **(UMR 791-MoSAR INRAE-AgroParisTech)**
- Molecular Virology and Immunology **(UMR 0892-VIM INRAE-UVSQ)**
- Virology **(UMR 1161 VIROLOGIE ANSES-ENVA—INRAE)**
- Bacterial Zoonoses, Laboratory for Animal Health **(UZB ANSES)**

TWO EXPERIMENTAL UNITS

- Jouy Animal Sciences and Feed Unit **(UE 1298 SAAJ - INRAE)**: Rabbits, sheep and goats. Manufacturing of specific diets for animal experimentation (rodents).
- Experimental Unit of Rodents and Fish **(UE 0907 IERP - INRAE)**: rats, mice, trout, zebrafish and carp.



INVESTMENTS FOR THE FUTURE

SAPS units participate actively in the Priority Research Programme and Infrastructure (PEPR) as part of France's Investissements d'Avenir Program and Plan France Relance.

INNOVATIVE AND SHARED CORE FACILITIES

- Multi-scale imaging, electronic microscopy and photonics, in vivo imaging and image analysis **(INRAE-MIMA2, IBISA label)**
- Biological Resources Center, histology, genomics and microgenomics **(INRAE-@BRIDGe, IBiSA label)**
- Dedicated Technical Platform: a P3 confinement laboratory that meets international standards for biosecurity and biosafety.

NATIONAL AND INTERNATIONAL REFERENCE INFRASTRUCTURES

- **OMSA** Collaborative Center for food-borne zoonotic parasites
- National Observatory for Bovine Anomalies **(ONAB)**
- INRAE Infrastructure **(ISC INRAE)** Animal Biological Resources Center **(CRB-Anim)**
- **RARe** National Infrastructure: animal, plant, microbe, forest and environmental biological resources
- **TEFOR** Infrastructure: genome editing, transgenesis, 3D imaging and genomic annotations on zebrafish and drosophila
- **EMERG'IN** Infrastructure: Infectiology, livestock and animal models, wild animals, surgery, in vivo imaging and tissue clearing
- European Union Reference Laboratories for animal brucellosis, equine pathologies, foot and mouth disease and related diseases
- World Organization for Animal Health (WOAH)

  Reference Laboratories for: brucellosis, tuberculosis, foot and mouth disease, epizootic hemorrhagic disease, avian and small ruminant chlamydiosis, glanders, dourine and contagious equine metritis.

MANAGEMENT

- ***Pascale Chavatte-Palmer,*** *Senior Research Scientist, Université Paris-Saclay, INRAE, Head of BREED unit, Jouy-en-Josas, France.*
- ***Grégory Karadjian,*** *Cat 1 Project Leader, ANSES, Deputy Head of BIPAR unit, Maisons-Alfort, France.*
- ***Eric Barrey,*** *Senior Research Scientist, Université Paris-Saclay, AgroParisTech, GABI, BIGE Team leader, Jouy-en-Josas, France.*

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