Université Paris-Saclay
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M2 Predictive and Integrative Animal Biology

Master's degree
Specialisation Biologie-AgroSciences
Enrolment type
Formation initiale
Formation continue
Language(s) of instruction
English

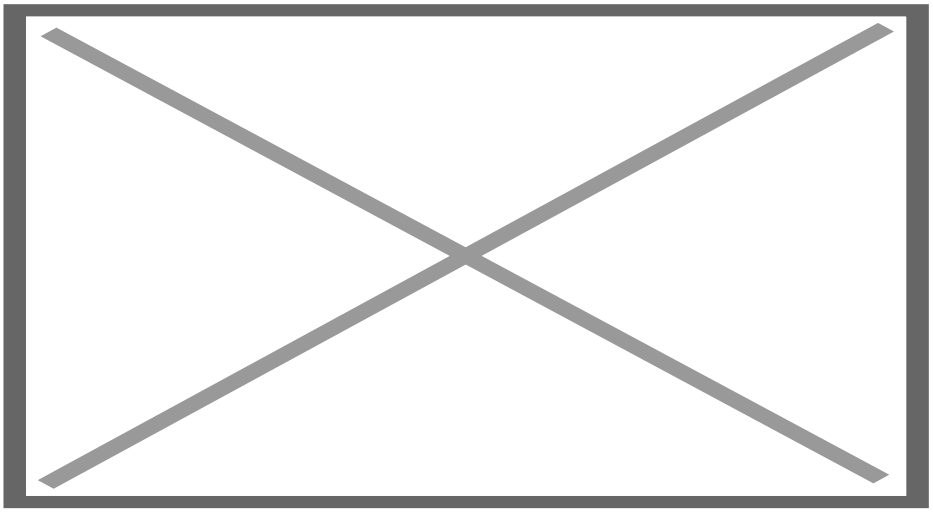
The PRIAM Master’s program trains specialists in animal genetics and physiology, capable of using modeling, bioinformatics, and statistical tools to understand, enhance, and support the development of animal populations (livestock, wildlife, companion animals).

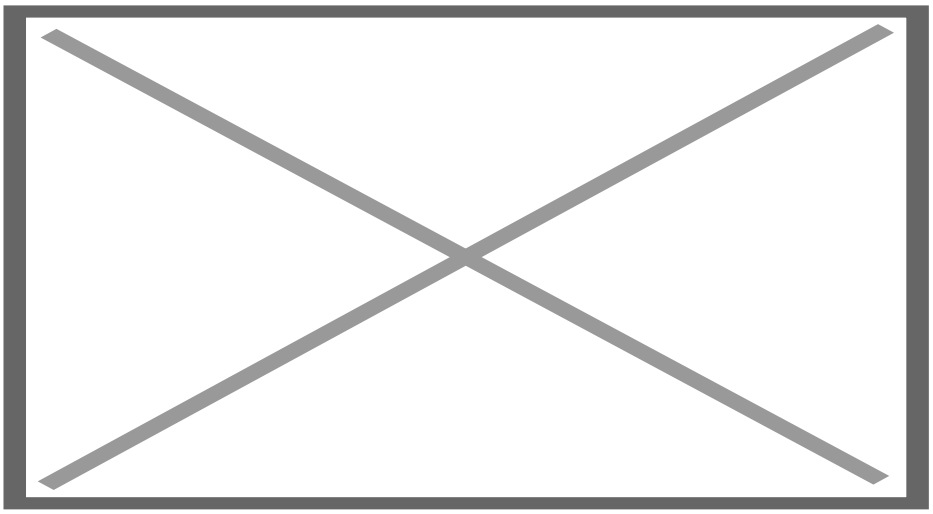
The PRIAM Master’s program offers training in applied animal sciences through an integrative approach to biology, encompassing all its components (genetics, physiology, animal welfare, etc.). The program is built on a strong common foundation that equips students with the necessary tools, particularly in statistics and modeling.

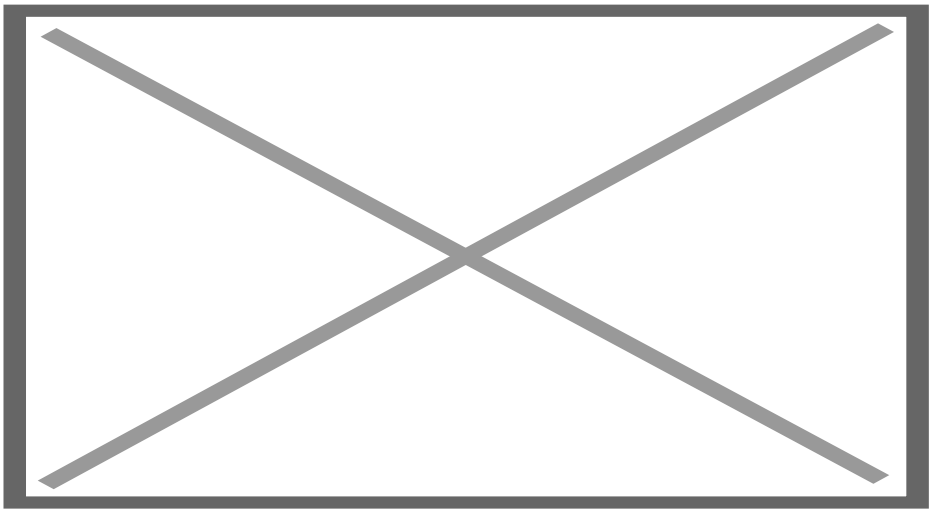
This training places special emphasis on genetics and its various branches (population, quantitative, molecular genetics, metagenomics, epigenetics). The second focus area concerns physiology, especially the nutritional and reproductive functions of livestock.

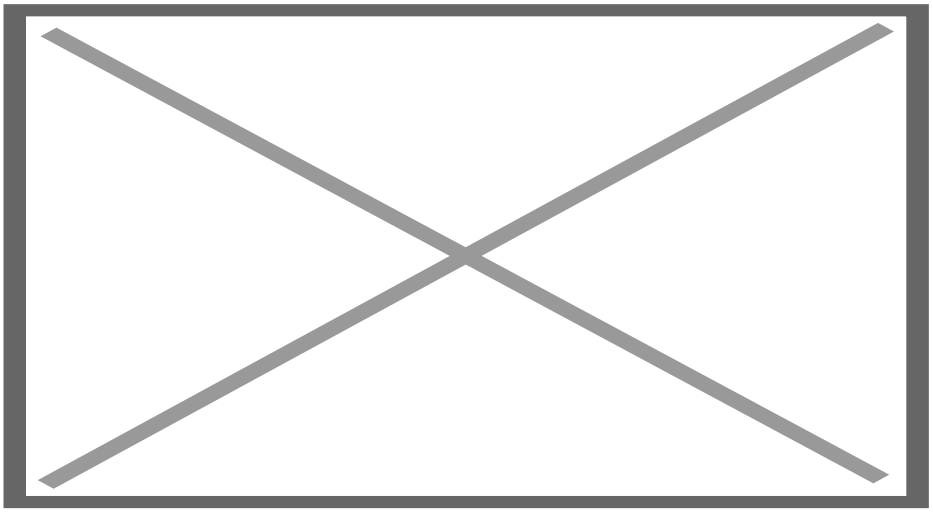
The PRIAM Master’s program includes group projects as well as a six-month internship, and it maintains close connections with academic (INRAE) and socio-economic partners (companies and technical institutes).

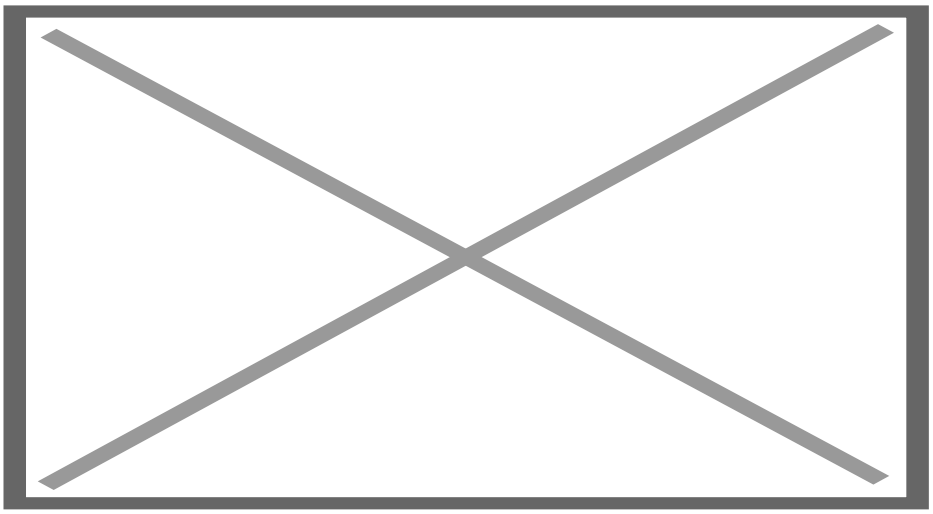
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Information

- Overview
- Application requirements
- Schedule

Présentation

Skills

Block 1: Foundations for Animal Sciences and Transversal Tools

- Acquire an understanding of the fundamentals of genetics, physiology, and integrative animal biology.
- Use biostatistics, bioinformatics, and modeling tools to analyze and interpret complex data.
- Master concepts in population genetics, quantitative genetics, and genomics.
- Understand and apply emerging approaches related to holobionts, metagenomics, and epigenetics.
- Identify and integrate principles of animal experimentation, welfare, and ethics into research and breeding practices.

Block 2: Advanced Approaches in Animal Sciences

- Design and evaluate breeding, improvement, and conservation programs for animal populations.
- Model physiological and metabolic processes in nutrition and reproduction to better assess performance and anticipate animal responses to changing environments.
- Develop skills in precision livestock farming, adaptation, conservation genetics, rumen physiology, epidemiology, and omics data integration.
- Connect a mechanistic understanding of animal metabolism to innovation challenges in production, health, and sustainability.

Block 3: Practical Work Experiences and Soft Skills

- Conduct a scientific project autonomously, rigorously, and in an interdisciplinary manner.
- Apply animal sciences in the context of agroecological transitions and sustainable development goals.
- Develop skills in scientific communication, collaborative work, and intercultural competence.
- Build and refine a professional project related to academic research (PhD) or professional insertion.
- Highlight an internship experience and a research thesis related to current challenges in animal sciences.

Objectives

- Train specialists capable of using prediction and modeling tools in animal genetics and physiology, as well as cross-disciplinary tools (bioinformatics and biostatistics) to study and enhance animal populations.
- Develop advanced scientific expertise in quantitative genetics, genomics, epigenetics, metagenomics, reproduction, and animal physiology, among others.
- Design and evaluate programs for the selection, conservation, and adaptation of animals in various contexts (livestock, wildlife, domestic animals).
- Provide training in modeling and precision approaches (precision livestock farming, physiology, epidemiology, big data integration).
- Support agroecological transitions and promote the sustainability of systems.
- Promote understanding of ethical and responsible scientific practices, with respect for animal welfare and environmental challenges.
- Prepare students for research and the international professional world through the management of scientific projects, communication, intercultural experience, and the development of their career plans (PhD or qualified employment).

Débouchés

Career prospects

After a Master's + PhD: researcher or lecturer
R&D Engineer

Private-sector companies, including agricultural production
Research or Design Engineer
Data scientist

Further Study Opportunities

PhD

Calendar

Start of programme (indicative date)
01/09/2026
End of programme (indicative date)
30/06/2027
Admission

Capacity

Available Places

16

Target Audience and Entry Requirements

- First year of an accredited Master's degree in biology or equivalent at Master's level (Bac +4) or accredited veterinary studies diploma.
- Entry profile: undergraduate studies in general biology, preferably including elements of academic training in animal biology.
- Keen interest in animal science and motivation to work in the discipline.

Période(s) de candidature

Inception Platform

From 15/02/2026 to 15/04/2026

Supporting documents

Compulsory supporting documents

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Curriculum Vitae.

Detailed description and hourly volume of courses taken since the beginning of the university program.

Additional supporting documents

Referring contact information (compulsory for non-international applicants).

Letter of recommendation from a trainee.

Letter of recommendation from an internship supervisor

Certificate of English level (compulsory for non-English speakers).

English language level certificate B2 : IELTS score 5.5/6.5 ; TOEIC > 785 (C1>945) ; TOEFL IBT score 72/94 ; Cambridge FCE A or B grade ; or any equivalent official test.

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Recommendation letters.

Document indicating the list of local M2 choices available here : https://urlz.fr/i3Lo.

Supporting documents :
- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le
Advanced genetics and Omics data integration (elective courses C - option 2)	1	Semestre 1	20	7					

Charger le détail

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le
Application of Modelling to animal Physiology	4	Semester 1	27	9					
Charger le détail									
Adaptation (elective courses A - option 1)	1	Semestre 1	15	6					
Charger le détail									
Conservation Genetics (elective courses B - option 1)	1	Semestre 1	21	6					
Charger le détail									
Rumen physiology: in vitro studies for nutritional evaluation (elective courses B - option 2)	1	Semestre 1	21		6				
Charger le détail									
Epidemiology and Health (elective courses C - option 1)	1	Semestre 1	27						
Charger le détail									
Animal breeding: genetics, selection and conservation	3	Semestre 1	27	15					
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le
Livestock Precision Farming (elective courses A - option 2)	1	Semester 1	10	10					
Charger le détail									
Physiology and Genetics of Animal Reproduction	2	Semestre 1	8	6	4				
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learni cours
Research thesis	30	Semestre 2							
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	c l
Concept of holobiont in animal breeding: Metagenomics	1	Semestre 1	6	3					
Charger le détail									
Environmental regulation of genes expression in animal breeding and reproduction: Epigenetics	1	Semestre 1	12						
Charger le détail									
Concepts in Populations and Quantitative Genetics	3	Semestre 1	19.5						
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	d
Tools : Biostatistics, Bioinformatics and Modelling	5	Semestre 1	36	22.5					
Charger le détail									
Animal Epistemology, Experiments, Ethics and Welfare	3	Semestre 1	21	6					
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	dis le c
Intercultural module	0	Semestre 1	15						
Charger le détail									
Personal Professional Project	1	Semestre 1	9						
Charger le détail									
Sustainable Development Goals	1	Semestre 1	3						
Charger le détail									
Scientific Project	3	Semestre 1	6						
Charger le détail									

Teaching Location(s)

PALAISEAU

Contact

- **Pascal CROISEAU**

  CR
-

Gwendal Restoux

CR

- ### Anaïs Cazals

  MCF

http://www.universite-paris-saclay.fr/formation/master/biologie-agrosciences/m2-predictive-and-integrative-animal-biology