Research evaluation

FINAL RESUME ON THE RESEARCH UNIT:

Hosts-Pathogens-Environments Interactions (IHPE)

Under the supervision of the following institutions and research bodies:

Université de Perpignan via Domitia - UPVD

Centre National de la Recherche Scientifique - CNRS

Institut français de recherche pour l'exploitation de la mer - Ifremer

Université de Montpellier

EVALUATION CAMPAIGN 2019-2020

GROUP A

Report published on May, 14 2020

High Council for evaluation of research and higher education

In the name of Hcéres[1]:	In the name of the experts committee[2]:
Nelly Dupin, Acting President	John MacKay, Chairman of the committee

Under the decree No.2014-1365 dated 14 November 2014,

[1] The president of Hcéres "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5);

[2] The evaluation reports "are signed by the chairman of the experts committee". (Article 11, paragraph 2).

Tables in this document were filled with data submitted by the supervising body on behalf the unit.

UNIT PRESENTATION

Unit name:	Hosts-Pathogens-Environments Interactions
Unit acronym:	IHPE
Current label and N°:	UMR 5244
ID RNSR:	
Application type:	Renewal
Head of the unit (2019-2020):	Mr Guillaume MITTA
Project leader (2021-2025):	Mr Christoph GRUNAU
Number of teams and/or themes:	3

EXPERTS COMMITEE MEMBERS

Chair:	Mr John MACKAY, University of Oxford, Royaume-Uni
Experts:	Mr Mohamed JEBBAR, Université de Bretagne Occidentale, Plouzané (representative of CoNRS)
	Mr Valentin LOUX, INRAE, Jouy en Josas (supporting personnel)
	Ms Christine PAILLARD, Université de Bretagne Occidentale, Plouzané
	Ms Geneviève PREVOST, Université de Picardie Jules Verne, Amiens (representative of CNU)
	Ms Joanne WEBSTER, University of London, Royaume-Uni

HCÉRES REPRESENTATIVE

Ms Pascale GARCIA

REPRESENTATIVES OF SUPERVISING BODIES

Mr Didier BOUCHON, CNRS

Mr Jacques MERCIER, Université de Montpellier

Mr Wilfried SANCHEZ, Ifremer

Mr Xavier PY, Université de Perpignan Via Domitia

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The Unit « Ecologie Evolution des Interactions » (2EI) was previously formed of a single Perpignan site and was composed of two teams with members from two institutions, the National Centre for Scientific Research (CNRS) and the University of Perpignan Via Domitia (UPVD) (2011-2014). The unit IHPE is the result of the merger of the "Ecologie Evolution des Interactions » (2EI) and the team « Réponse Immunitaire des Macroorganismes et Environnement, RIME » of the unit "Écologie des systèmes marins côtiers » (ECOSYM). For the current sexennial contract (2015-2020), it now includes two research teams, involving two other institutions, the University of Montpellier and Ifremer. This expansion has increased the permanent staff from 30 to 40 and the non-permanent staff from 18 to 24 (according to the latest data provided by the unit director) and widened the scope of research. The unit's research teams are: 1) "Ecology and Evolution of Interactions" and 2) Interaction mechanisms and adaptation in the marine environment.

The IHPE is part of a multidisciplinary thematic network of the CNRS (RTP) entitled "Epigenetics in Ecology and Evolution", which it initiated and became a GDR (January 2019). It leads a CNRS / UPVD FR project (FR "Energy Environment") aimed at promoting inter-laboratory and inter-disciplinary research and the development and management of research platforms. The unit joined the Steering Committee of the Sea & Coast Key Initiative of the Montpellier University of Excellence (I-site MUSE), which aims to promote the scientific diversity and to provide tools on themes related to the sea and the coast (since 2018).

At the UPVD site, the unit participates in a coordination structure (UPVD Scientific Bureau) and is affiliated with the Doctoral School "Energy Environment" (ED 305, E2). It has set up a platform (Bioenvironment) and technical facilities dedicated to omics approaches, working with the laboratory Genome and Plant Development (UMR 5096). The platform will move to a new dedicated building at the end of 2020.

The UM site is part of the department of "Biology-Ecology-Evolution-Environment-Sciences of the Earth and Water" (B3ESTE) and the Doctoral School "Biodiversity, Agriculture, Food, Environment, Earth, Water" (ED 584, GAIA). It also participates in the "Montpellier University of Excellence" project (I-Site MUSE), which has provided project funding and supports impact creation in the fields of agriculture, environment and health. It has integrated two LabEx: 1) "Mediterranean Centre for the Environment and Biodiversity" (LabEx CeMEB, based in Montpellier; from 2015, funding renewed in 2019), which enabled the formation of an "Environmental epigenomics" platform for the CeMEB community; and; 2) "Towards a Unified Theory of Biotic Interactions" (LabEx TULIP, based in Toulouse, from 2019), which spans functional Biology and Ecology and Evolution.

Management team

Mr Guillaume MITTA

HCÉRES NOMENCLATURE

SVE1_2 (Ecology)

THEMATICS

The scientific activities focus on host pathogen interactions and specifically emphasize invertebrates. The primary thematics are: schistosomiasis in humans and animals, including its role in an epidemic outbreak in southern Corsica; research into pathogens affecting mollusks, including that applied to understanding the Pacific Oyster Mortality Syndrome in aquaculture. Molecular and cellular investigations have shown the diversification of immune receptors and immune memory in invertebrates.

The research approaches across these systems span evolution, ecology, population and functional biology, and genomics, including dual transcriptomics. The unit has also set up two cross-cutting challenges as means to encourage forward thinking collaboration and cohesion across its teams and sites including: i) Holobiont dynamics and fitness; and ii) Relative weight of genetics and epigenetics/epigenomics in adaptive evolution.

UNIT WORKFORCE

Hosts-Pathogens-Environments Interactions (IHPE)		
Active staff	**Number 06/30/2019**	**Number 01/01/2021**
Full professors and similar positions	3	3
Assistant professors and similar positions	9	10
Full time research directors (Directeurs de recherche) and similar positions	2	2
Full time research associates (Chargés de recherche) and similar positions	1	1
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	5	8
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	14	14
Permanent staff	**34**	**38**
Non-permanent professors and associate professors, including emeritus	0	
Non-permanent full time scientists, including emeritus, post-docs (except PhD students)	2	
PhD Students	17	
Non-permanent supporting personnel	8	
Non-permanent staff	**27**	
Total	**61**	**38**

GLOBAL ASSESSMENT OF THE UNIT

The IHPE scientific activities on host pathogen interactions are wide-ranging but emphasize invertebrates including a parasite responsible for schistosomiasis in humans and parasites/pathogens affecting mollusks such as oysters in aquaculture. The research spans evolution, ecology, population and functional biology, and genomics.
In response to the last HCERES evaluation, IHPE set up its own epigenomics platform and developed capacity in bioinformatics and NGS data processing. Two transversal scientific challenges were developed to strengthen the collaboration and cohesion across teams and sites.

The scientific outputs are diverse, original, and impactful with many articles in high quartile and multidisciplinary journals, and an increasing quality. Increases are noted in funding, scientific leadership (for example re schistosomiasis epidemic in Corsica), links with renowned institutes, new scientists recruited, and platforms development. Potential for growth of outputs is significant.

Non-academic interactions are very positive and increasing, such as coverage in mainstream media, providing advises to the World Health Organisation and to commercial oyster aquaculture. The unit spun out a start-up biotechnology company to produce parasite (antigen) detection kits. Potential for growth is seen in public outreach activities.

IHPE staff scientists supervised numerous PhDs that all published well indicating the high level of performance in training. Almost half of the IHPE's academic staff are habilitated to supervise PhDs, which should be increased.
For the next five-year plan, it is proposed to strengthen the scientific questions and approaches, to broaden the scope and objectives through ambitious activities in integrative and systems biology, and to develop the already ongoing research in corals. A major restructuring of the unit's teams is proposed and a clear roadmap to implementation is in place.

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2 rue Albert Einstein
75013 Paris, France
T. 33 (0)1 55 55 60 10

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