

# Physiopathologie et pharmacotoxicologie placentaire humaine

## Rapport Hcéres

► **To cite this version:**

Rapport d'évaluation d'une entité de recherche. Physiopathologie et pharmacotoxicologie placentaire humaine. 2018, Université Paris Descartes, Institut national de la santé et de la recherche médicale - INSERM. hceres-02031599

**HAL Id: hceres-02031599**

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Submitted on 20 Feb 2019

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REPORT ON THE RESEARCH UNIT:  
Pathophysiology & Pharmacotoxicology of the  
Human Placenta, pre & postnatal Microbiota  
(3 PHM)

UNDER THE SUPERVISION OF THE  
FOLLOWING INSTITUTIONS AND  
RESEARCH BODIES:  
Université Paris Descartes  
Institut National de la Santé et de la Recherche  
Médicale - INSERM

**EVALUATION CAMPAIGN 2017-2018**  
GROUP D



In the name of Hcéres<sup>1</sup>:

Michel Cosnard, President

In the name of the expert committee<sup>2</sup>:

Graham Burton, Chairman of the  
committee

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

<sup>1</sup> The president of Hcéres "countersigns the evaluation reports set up by the expert committees and signed by their chairman." (Article 8, paragraph 5);

<sup>2</sup> The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2).

This report is the sole result of the unit's evaluation by the expert committee, the composition of which is specified below. The assessments contained herein are the expression of an independent and collegial reviewing by the committee.

## UNIT PRESENTATION

<b>Unit name:</b>	Pathophysiology & Pharmacotoxicology of the Human Placenta, pre & postnatal Microbiota
<b>Unit acronym:</b>	3 PHM
<b>Requested label:</b>	Inserm and Université Paris Descartes
<b>Application type:</b>	Restructuring
<b>Current number:</b>	UMR-S 1139
<b>Head of the unit (2017-2018):</b>	Mr Thierry FOURNIER
<b>Project leader (2019-2023):</b>	Mr Thierry FOURNIER
<b>Number of teams or themes:</b>	1

## COMMITTEE MEMBERS

<b>Chair:</b>	Mr Graham BURTON, University of Cambridge, UK
<b>Experts:</b>	Mr Loic BLANCHON, Université de Clermont Auvergne Ms Joelle DUPONT, Inra de Tours (representative of INSERM CSS) Mr Loic FAVENNEC, Université de Rouen Mr Laurent GALIO, INRA, Jouy-en-Josas (supporting personnel) Ms Vassilia THEODOROU, Université de Toulouse
<b>HCERES scientific officer:</b>	Mr Jean Edouard GAIRIN
<b>Representatives of supervising institutions and bodies:</b>	Mr Stefano MARULLO, Université Paris Descartes Ms Sylvie ROBINE, Inserm Mr Michel VIDAL, Faculté de Pharmacie

## INTRODUCTION

### HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The proposed new unit named UMR-S 1139 "Pathophysiology & Pharmacotoxicology of the Human Placenta; pre & postnatal Microbiota" (3 PHM) will result from the merger of two units: the UMR-S1139 "Pathophysiology & Pharmacotoxicology of the Human Placenta", created in January 2014 under the direction of Mr Thierry Fournier, and the EA 4065 "Intestinal ecosystem, probiotics, antibiotics" created in 2006, renewed in 2010, and again in 2014 and currently headed by Ms Marie-José Butel. The new unit will be located at the Faculty of Pharmacy of Paris, 4, avenue de l'Observatoire, 75006 PARIS (the same location as the current units).

### MANAGEMENT TEAM

The proposed director and deputy director are respectively Mr Thierry Fournier (DR Inserm) and Mr Frédéric Barbut (PUPH, Biologiste).

### HCERES NOMENCLATURE

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### SCIENTIFIC DOMAIN

The focus of the future 3-PHM unit's research is an evaluation of how two biological systems, the placenta and its placenta, and the neonate's intestinal microbiota, influence short term and life-long health of the mother and its child.

The placental research programme comprises basic science and translational axes. The former involve i) the regulation of placental development by environmental cues and the molecular signalling networks involved, and ii) the role of the placenta as a protective barrier through selective transfer and metabolism of drugs and toxins. The latter involve: i) an investigation of blood flow through the placenta using new imaging techniques and computational modelling, and ii) the identification of maternal biomarkers of placental dysfunction and their correlation with cell biological models of abnormal trophoblast differentiation.

The microbiota programme focuses on how the intestinal microbiome is established in the neonate, how it is related to maturation of the newborn's immune system and associated to enteropathies and future health of the child, and how it may be manipulated therapeutically.

A new integrated project arising from the merger is to explore the maternal and placental microbiota, and its relationship to that of the neonate.

### UNIT WORKFORCE

Unit workforce	Number 30/06/2017		Number 01/01/2019
	U1139	EA4065	
<b>Permanent staff</b>			
Full professors and similar positions	5	3	6
Assistant professors and similar positions	3	5	10
Full time research directors (Directeurs de recherche) and similar positions	1	0	1
Full time research associates (Chargés de recherche) and similar positions	1	0	0

Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	0	3	0
High school teachers	0	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	5	6	10
<b>TOTAL permanent staff</b>	<b>15</b>	<b>17</b>	<b>27</b>
<b>Non-permanent staff</b>			
Non-permanent professors and associate professors, including emeritus	0	1	
Non-permanent full time scientists, including emeritus, post-docs	3	2	
Non-permanent supporting personnel	0	0	
PhD Students	7	4	
<b>TOTAL non-permanent staff</b>	<b>10</b>	<b>7</b>	
<b>TOTAL unit</b>			
	<b>25</b>	<b>24</b>	

## GLOBAL ASSESSMENT OF THE UNIT

The proposed merger brings together complementary expertise that opens new opportunities to explore topical issues such as the characterisation and metabolic activity of the placental microbiota, and its involvement in health and disease.

The combined research output of the units U1139 and EA4065 is very good, and there are strong translational links to clinical obstetrics and perinatology, including the role of the placenta in protecting the fetus against environmental toxins, the development of diagnostic test and therapeutics for pre-eclampsia, and the involvement of the microbiome in neonatal health and disease.

Both U1139 and EA4065 have an excellent record in the training of young researchers, and very good public engagement with their research activities.

With the restructuring merger, it is anticipated that unique cross-disciplinary research will lead to high-profile research outputs that will enhance the international profile of the 3-PHM Unit.

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