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# PhAN - Physiopathology des adaptations nutritionnelles

## Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

HCERES report on research unit:

Pathophysiology of Nutritional Adaptations

PhAN

Under the supervision of the following  
institutions and research bodies:

Université de Nantes

Institut National de la Recherche Agronomique – INRA

# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

*In the name of HCERES,<sup>1</sup>*

Michel Cosnard, president

*In the name of the experts committee,<sup>2</sup>*

Umberto Simeoni, chairman of the  
committee

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

<sup>1</sup> The president of HCERES "countersigns the evaluation reports set up by the experts 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)

## Evaluation report

This report is the sole result of 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 name:** Pathophysiology of Nutritional Adaptations

**Unit acronym:** PhAN

**Label requested:** UMR renewal

**Current number:** UMR 1280

**Name of Director (2015-2016):** Mr Dominique DARMAUN

**Name of Project Leader (2017-2021):** Ms Patricia PARNET

## Expert committee members

**Chair:** Mr Umberto SIMEONI, Université de Lausanne, Switzerland

**Experts:** Mr Jean-Louis BRESSON, Université Paris Descartes

Mr Christophe MAGNAN, Université Paris Diderot

Mr Gilles MITHIEUX, Université de Lyon

Mr Noël PERETTI, Université de Lyon (representative of CNU)

**Scientific delegate representing the HCERES:**

Mr Jean GIRARD

**Head of Doctoral School:**

Ms Corinne MIRAL, Doctoral school n°34 "Biologie et Santé"

## 1 • Introduction

### History and geographical location of the unit

UMR 1280 (Physiology of Nutritional Adaptations, PhAN), a joint research unit affiliated with INRA AlimH Department (Department of Human Alimentation, <http://www.alimh.INRA.fr/en>) and the University of Nantes (<http://www.univ-nantes.fr/english>), arose in 2006 from the merger of: 1) the former UFDNH (Digestive Functions and Human Nutrition), an INRA laboratory headed by Ms Martine CHAMP, a director of research (DR2) at INRA, which was focused on butyrate, a product of bacterial fermentation and the main fuel of colonic epithelial cells; 2) the group of Mr Dominique DARMAUN, a professor of nutrition with a pediatric background and an attending physician (PU-PH) in charge of the Nutrition Support Team at Nantes University Medical Center (CHU), who had worked on amino acid metabolism as a former DR2 at Inserm; 3) two senior Neuroscientists, Ms Patricia PARNET (DR2 at INRA) who was heading a team working on the action of pro-inflammatory cytokines on the central nervous system at INSERM UMR 394 in Bordeaux, and an INRA scientist from Nantes who worked on gustation; both joined the lab in 2005, another INRA scientist specialized in genetics from Limoges, joined the lab in 2006; and, finally, 4) the team of Mr Jean-Christophe ROZE, PU-PH in Pediatrics, who heads the Division of Neonatology at University Medical Center at Nantes.

In 2007, PhAN moved from the INRA campus in la Géraudière, a northern district of Nantes, to the medical campus of Nantes CHU, to facilitate its growing translational research. In 2010 and 2012 the UMR PhAN hired 2 new researchers from INRA, with expertise in gut physiology and neurophysiology, respectively). In 2014, PhAN expanded to include 2 professors of nutrition at the University of Nantes who have long-standing expertise on lipoprotein metabolism, with a dual objective: 1) to include the entire faculty in Nutrition teaching at the University of Nantes, and 2) to broaden the expertise on metabolism and atherosclerosis.

Locally, the UMR PhAN belongs to the IMAD (Institute for Diseases of Gastrointestinal Tract; <http://www.imad-nantes.org/>), a federation of several clinical units in gastroenterology, surgery, pediatrics and of 2 research labs (INRA UMR 1280 and INSERM UMR 913). IMAD itself, along with the Thorax Institute, belongs to the DHU 2020 (University Hospital Department), which gathers local clinical-research institutes in the Nantes University Hospital Center (CHU de Nantes, <http://www.chu-nantes.fr/about-the-nantes-university-hospital-27982.kjsp>). On a regional level, the UMR PhAN was a founding member of CRNH-West (Western Human Nutrition Research Center) formerly CRNH-Nantes, a Public Interest Group (GIP) founded in 1995 and which now gathers 50 scientists involved in human nutrition in various research units in Angers, Nantes, Rennes and Tours ([http://www.crnh-ouest.fr/crnh-ouest\\_eng/](http://www.crnh-ouest.fr/crnh-ouest_eng/)).

### Management team

Since 2012, the lab has been functioning as a single team unit with Mr Dominique DARMAUN as director and Ms Patricia PARNET as deputy director. The director and deputy director are assisted by a manager who is in charge of the administrative, financial and human resources. A senior scientist helps with the financial management of the UMR.

### HCERES nomenclature

SVE1\_LS4: Physiology, Pathophysiology, Medical system biology

### Scientific domains

Human and animal health

Key-words: Pediatrics, hepatogastroenterology, metabolic programming, feeding behaviour, omics

## Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	5	4
N2: Permanent researchers from Institutions and similar positions	10	10
N3: Other permanent staff (technicians and administrative personnel)	15	15
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	1	
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	4	
N6: Other contractual staff (technicians and administrative personnel)	2	
N7: PhD students	11	
TOTAL N1 to N7	48	
Qualified research supervisors (HDR) or similar positions	11	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	10
Postdoctoral scientists having spent at least 12 months in the unit	3
Number of Research Supervisor Qualifications (HDR) obtained during the period	1

## 2 • Overall assessment of the unit

## Introduction

The general theme of the research conducted at the PhAN Research Unit is developmental programming, and the developmental origins of health and disease (DOHaD), with a particular interest in early nutrition and metabolism.

The current scientific strategy is in line with the previous one, evaluated in the last report (2011).

## Global assessment of the unit

The quality of research conducted at the PhAN Research Unit on specific aspects of nutritional and metabolic developmental programming is very good. The PhAN unit is characterized by an excellent and fruitful cooperation between a strong clinical research group and a multidisciplinary team of basic scientists, organized as a unique team. In addition to a strong support from its supervising bodies, this research unit is ideally located within the university hospital.

### Strengths and opportunities in the context

The originality of the research theme adopted by the PhAN Unit is one of its major strengths. The array of expertise of its scientists and the wide set of methods and tools, including access to regional and national population cohorts, allow multi-disciplinary, translational and comprehensive approaches to the various research aims. Its location within the university hospital campus is optimal.

### Weaknesses and threats in the context

The theme of developmental programming is still insufficiently recognized and not easily readable given its transversal, inter-systems nature and its recent positioning between genomic and environmental influences. The multiple animal models and target organs studied may induce a risk of scientific dispersion and of decreased research performance.

This may also explain the still limited funding available to the unit.

The temporary problems in animal housing need a particular action to improve the dedicated technical human resources.

The planned re-location of some structures of the university hospital that are important for the research and the development of the PhAN unit may compromise the current synergies and collegiality between medical doctors and scientists and the cooperation with partner research units.

### Recommendations

Given the ambition of the new strategic plan of the research unit, the expert committee recommends to increase the focus and prioritize some of the aims within the planned research axes, to maximize the research performance, the level of publications, the international appeal, and the funding.

Develop international networking and apply to major national and international funding programs, including at the European level (e.g. H2020 program).

The PhAN Unit may develop relationships with other groups working within the country on developmental programming but on complementary models. This has been a recommendation issued by the AlimH scientific committee.