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# NGERE - Nutrition-génétique et exposition aux risques environnementaux

Rapport Hcéres

► **To cite this version:**

Rapport d'évaluation d'une entité de recherche. NGERE - Nutrition-génétique et exposition aux risques environnementaux. 2017, Université de Lorraine, Institut national de la santé et de la recherche médicale - INSERM. hceres-02029961

**HAL Id: hceres-02029961**

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Submitted on 20 Feb 2019

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Department of Research evaluation

report on research unit:

Nutrition-Genetics and Exposure to Environmental Risks

NGERE

under the supervision of  
the following institutions  
and research bodies:

Université de Lorraine

Institut National de la Santé et de la Recherche  
Médicale - INSERM

Evaluation Campaign 2016-2017 (Group C)

# HCERES

High Council for the Evaluation of Research  
and Higher Education

Department of Research Evaluation

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

Michel Cosnard, president

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

Michelle Murphy, chairwoman of the  
committee

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Under the decree N°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:** Nutrition-Genetics and Exposure to Environmental Risks

**Unit acronym:** NGERE

**Label requested:** UMRS\_

**Current number:** 954

**Name of Director  
(2016-2017):** Mr Jean-Louis GUÉANT

**Name of Project Leader  
(2018-2022):** Mr Jean-Louis GUÉANT

## Expert committee members

**Chair:** Ms Michelle MURPHY, Universitat Rovira i Virgili, Spain

**Experts:**

- Mr Ramaroson ANDRIANTSITOHAINA, Université d'Angers (representative of INSERM)
- Mr Robert BENAMOUZIG, Hôpital Avicenne, INRA-Agroparistech, Paris
- Mr Nicholas GREENE, University College London, United Kingdom
- Ms Sophie LE GONIDEC, Université de Toulouse, INSERM (representative of supporting personnel)
- Mr Hervé PUY, Université Paris-Diderot (representative of CNU)

**Scientific delegate representing the HCERES:**  
Mr Jean-Paul LALLÈS

**Representatives of supervising institutions and bodies:**

- Ms Stéphanie POMMIER, INSERM
- Mr Frédéric VILLIERAS, Université de Lorraine

**Head of Doctoral School:**  
Mr Patrick MENU, ED n° 266, « Biologie Santé, Environnement (BioSE) »

## 1 • Introduction

### History and geographical location of the unit

The UMRS\_954 N-GERE “Nutrition-Génétiques et Exposition aux Riques Environnementaux” research unit was created in 2009 (stemming from the EMI INSERM in 1999).

It is based in the “Faculté de médecine” of the University of Lorraine in Vandœuvre-Lès-Nancy. It also acts as a research facility for CNRS and INSERM, hosting a platform in genomics and functional genetics.

### Management team

The team is managed by Mr Jean-Louis GUÉANT.

### HCERES nomenclature

Principal : SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale.

Secondaire : SVE6 Santé Publique, Épidémiologie, Recherche Clinique ; SVE5 Physiologie, Physiopathologie, Cardiologie, Pharmacologie, Endocrinologie, Cancer, Technologies Médicales.

### Scientific domains

The main scientific interests of the unit revolve around unravelling the mechanisms by which one Carbon (1C) metabolism contributes to development and health during foetal life and to chronic diseases during ageing. Clinical research is also an important feature of the unit.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	33	31
N2: Permanent researchers from Institutions and similar positions	3	3
N3: Other permanent staff (technicians and administrative personnel)	15	20
N4: Other researchers (Postdoctoral students, visitors, etc.)	3	
N5: Emeritus	1	
N6: Other contractual staff (technicians and administrative personnel)		
N7: PhD students	14	
TOTAL N1 to N7	69	
Qualified research supervisors (HDR) or similar positions	23	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	23
Postdoctoral scientists having spent at least 12 months in the unit	8
Number of Research Supervisor Qualifications (HDR) obtained during the period	3

2 • Assessment of the unit

Global assessment of the unit

The scientific interest of the unit during the last 5 years was defined along 4 principle research lines that globally studied the genetic-metabolic-environmental regulation of development and health from the earliest stages of life and physiopathological mechanisms of diseases. The approach is to unravel the epigenomic-metabolic-epigenetic mechanisms by which environmental exposures such as imbalances/deficiencies in the components of the complex 1C metabolic network affect very early development and pregnancy outcome in animal and cellular models and to test these in human studies. As well as hosting a CNRS-INSERM platform in genomics and functional genetics, the unit is very well equipped to run animal and in vitro studies and clinical research. The unit plays a prominent role in the coordination of the Fédération Hospitalo-Universitaire (FHU) ARRIMAGE collaborative network between local INSERM units and clinical research of the University Regional Hospital Center of Nancy.

The excellent reputation and international prestige of the unit is evident from its publication record, regularly leading contributions to numerous top ranked international journals (including New England Journal of Medicine, Nature

Genetics, Cell) and high profile activity in international conferences as organisers, session chairs and invited speakers. Its involvement in numerous international collaborations is reflected in joint publications as well as both coordination of and participation in international grant applications from the EU, USA and Mexico among others. It is strongly involved in education and evidences a true integration between basic and clinical research.

The solid team from cross-disciplinary backgrounds, which can tackle an ambitious global line of research from foetal programming through to postnatal outcomes and disease in adult life, is a strength of the unit. Most team members are permanent staff (51/69) and the others are researchers, postdocs, PhD students and an emeritus professor. The unit has strengthened its human resource potential with the recruitment of 2 full time researchers, an engineer and a technician since the last evaluation. Key researchers and principal investigators (PIs) in the unit, or affiliated with it, are coordinators of the Centre Hospitalo-Universitaire (CHU) Nancy national reference centre for inherited metabolic diseases, Centres de Ressources Biologiques (CRB) INSERM/CHU bio bank, national and international patient cohorts and large-scale European clinical networks, providing access to biological data and samples as well as to clinical trials. The expertise, resources and scientific evolution of the unit enable it to restructure the existing 4 axes into 2 teams and to create a new team (team 3) that will provide an innovative approach to the unit's global line of research.

It now proposes to investigate the role of 1C metabolism and epigenomics in biological lesion initiation and progression to disease and its application in the prevention and treatment of disease. The new bioinformatic team (team 3) will provide a valuable resource for complex data analysis, gene and biomarker discovery in the proposed project and essential integration and coordination between the teams will be important for the population and methylome studies.

Some areas to improve are success in securing funding from international grants and increasing the PhD student to HDR-qualified researcher ratio for a unit of its capacity and prestige. The number of proposed translational studies appears rather large for the number of researchers in the unit. Numerous projects will form part of the new research strategy of which 1C metabolism is a common feature that enhances coherence and connection between the 3 new teams.