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## SIMPA - Stress immunité pathogènes

Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Department of Research Evaluation

report on research unit:

Stress, IMMunity, PAtHogens

SIMPA

under the supervision of  
the following institutions  
and research bodies:

Université de Lorraine

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>*

Oliver Ullrich, 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:** Stress, IMmunity, PAtrogens

**Unit acronym:** SIMPA

**Label requested:** Université de Lorraine

**Current number:** EA 7300

**Name of Director (2016-2017):** Mr Jean-Pol FRIPPIAT

**Name of Project Leader (2018-2022):** Mr Jean-Pol FRIPPIAT

## Expert committee members

**Chair:** Mr Oliver ULLRICH, University of Zurich, Switzerland

**Experts:** Ms Valérie GABORIAU-ROUTHIAU, Université Paris Descartes

Mr Michel SALZET, Université de Lille 1 (representative of the CNU)

Mr Niclas SETTERBLAD, University Paris-Diderot (representative of the supporting personnel)

**Scientific delegate representing the HCERES:**

Ms Sophie EZINE

**Representatives of supervising institutions and bodies:**

Mr Bruno CHARPENTIER, Université de Lorraine-Nancy

Mr Frédéric VILLIERAS, Université de Lorraine-Nancy

**Head of Doctoral School:**

Mr Patrick MENU, Doctoral school n° 266 « Biologie, Santé et Environnement »

## 1 • Introduction

### History and geographical location of the unit

EA7300 is a single-team unit created in 2013 by the merging of the “Young Team JE2537” (created in 2009 by Mr Jean-Pol FRIPPIAT) with the microbiologists from the former EA4369 unit and a medical professor working in neurosciences. The unit is located on the campus of the Faculty of Medicine in Nancy and is part of the Biology, Medicine, Health (BMS) pole.

### Management team

The current director (2011-2016) is Mr Jean-Pol FRIPPIAT who is applying for a second period as a director. The director is assisted by a deputy director, Ms Marie-Claire MACHOUART.

### HCERES nomenclature

SVE1\_LS6 Immunologie, Infectiologie; SVE1\_LS5 Neurosciences;

ST3 Sciences de la terre et de l'univers.

### Scientific domains

The scientific issues addressed by the team are related to the effects of a microgravity model on B lymphopoiesis and of chronic gravitational or mild socio-environmental stresses on the immune system and gut microbiota.

## Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	15	14
N2: Permanent researchers from Institutions and similar positions		
N3: Other permanent staff (technicians and administrative personnel)	4	4
N4: Other researchers (Postdoctoral students, visitors, etc.)		
N5: Emeritus		
N6: Other contractual staff (technicians and administrative personnel)	1	
N7: PhD students	4	
TOTAL N1 to N7	24	
Qualified research supervisors (HDR) or similar positions	8	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	5
Postdoctoral scientists having spent at least 12 months in the unit	1
Number of Research Supervisor Qualifications (HDR) obtained during the period	1

## 2 • Assessment of the unit

### Global assessment of the unit

Over the past years, the unit has been working on the implementation of technologies and new models for investigating the impact of spaceflight on the organism in terms of mechanical and socio-environmental stresses.

Major achievements of the unit were the identification of the disturbed B lymphopoiesis during spaceflight, similar to the one observed in aged mice, the modification of T lymphocyte antigen receptor repertoire following gravitational changes, and the development of hypotheses for the responsible mechanisms. The development of the structure has been promoted by a real boost given by the scientific strategy and is based on the complementarity of knowledge and skills between immunologists, microbiologists and neurobiologists. The research strategy will therefore not only contribute to risk assessment and control for future long-duration space missions, but is of larger societal interest due to the omnipresence of chronic socio-environmental stresses in our society.

The works carried out are original and innovative. The research is widely valued by publications, books chapters and invited conferences giving the structure an international visibility. Overall, the research conducted by the unit is highly productive and visible in the scientific community and the general public, and clearly influenced the work of other scientists, as evidenced by high citation rates.

The strengths of the unit reside in its unique expertise on the effects of chronic gravitational stresses on the adaptive immune response, which is internationally recognized, in setting up a technological platform for immune response and gravity monitoring. The committee of experts also noted the good ability of the unit to rise funding from national and international sources for collaborative research projects.

The complementarity of the two themes of the unit and the relevance of the links developed between fundamental research and clinical research open the door for therapeutic applications to treat immune depression in general.

The unit is member of three ESA Topical Teams and part of the CNES Development network. The unit clearly belongs to the top research teams in the Space Life Sciences at the international level. In terms of research, the unit presents original and novelties in term of results in the field of space immunology.

The management essentially relies on the director's shoulders. Moreover, the role of the clinicians as well as their input in the scientific project needs to be more clearly defined.

The committee of experts recommends developments of *in vivo* and functional studies in order to go deeper in the mechanisms involved by the gravity stress on brain, immune, gut axis. In this context, *in vitro* experiments with (new) collaboration partners are encouraged in order to go more into details in some selected aspects. The operational and technical constraints and limitations of challenging space flight experiments are acknowledged in this context.

The outstanding success of the unit in five highly competitive ESA reviews is a clear indication of the international reputation and scientific excellence in the field of space life science, which represents a large and highly competitive international research community.