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## SOPAM - Stress oxydant et pathologies métaboliques

Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

HCERES report on research unit:

Oxidative Stress and Metabolic Diseases

SOPAM

Under the supervision of  
the following institutions  
and research bodies:

Université d'Angers - UA

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

Evaluation Campaign 2015-2016 (Group B)

# 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>*

Rienk Nieuwland, chairman of the committee

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Under the decree N<sup>o</sup>.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:	Oxidative Stress and Metabolic Diseases
Unit acronym:	SOPAM
Label requested:	UMR_S
Current number:	UMR_S 1063
Name of Director (2015-2016):	Mr Ramaroson ANDRIANTSITOHAINA
Name of Project Leader (2017-2021):	Mr Ramaroson ANDRIANTSITOHAINA

## Expert committee members

Chair:	Mr Rienk NIEUWLAND, University of Amsterdam, The Netherlands
Experts:	Mr Serge ALFOS, Bordeaux INP (representative of ITA) Ms Chantal BOULANGER, Cardiovascular Research Center at HEGP, Paris Ms Agnès RIBEIRO-PILLET, Paris (representative of the INSERM)
Scientific delegate representing the HCERES:	Mr Jean ROSENBAUM
Representatives of supervising institutions and bodies:	Ms Meriem MAROUF-YORGOV, INSERM Mr Jean-Paul SAINT-ANDRE, Université d'Angers
Head of Doctoral School:	Mr Frank BOURY, Doctoral school n° 502, "Biologie-Santé"

## 1 • Introduction

### History and geographical location of the unit

UMR INSERM 1063 Oxidative Stress and Metabolic Diseases (SOPAM; “Stress Oxydant et Pathologies Métaboliques”) was created in 2012, and is one of the 11 groups of the pole of health of the University of Angers (Angers, France). SOPAM is a continuation of teams from INSERM U964 and UMR CNRS 6214-INSERM U771.

### Management team

The unit is under the direction of Mr Ramaroson ANDRIANTSITOHAINA.

### HCERES nomenclature

SVE1\_LS4 Physiologie, physiopathologie, biologie systémique médicale

### Scientific domains

Interaction between circulating (blood-borne) microparticles and their disease modifying effects - environmental toxins and mitochondrial regulations in association with metabolic pathologies - development of strategies against metabolic syndrome, involving microparticles and plant polyphenols.

## Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	9	5
N2: Permanent researchers from Institutions and similar positions	5	3
N3: Other permanent staff (technicians and administrative personnel)	3	5
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	3	
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	4	
N6: Other contractual staff (technicians and administrative personnel)	4	
N7: PhD students	9	
<b>TOTAL N1 to N7</b>	<b>37</b>	
Qualified research supervisors (HDR) or similar positions	12	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	11
Postdoctoral scientists having spent at least 12 months in the unit	1
Number of Research Supervisor Qualifications (HDR) obtained during the period	2

## 2 • Overall assessment of the unit

### Introduction

SOPAM has three several main areas of interest, which encompass (1) the interaction between circulating (blood-borne) microparticles (MPs) and their disease-modifying effects on the development of cardiovascular disease and metabolic syndrome, obstructive sleep apnea and endothelial dysfunction, (2) the effects of environmental toxins on the mitochondrial regulations and associated metabolic pathologies, and (3) investigations on the potential therapeutic applications and strategies against metabolic syndrome, involving translational studies on modified microparticles and plant polyphenols.

Compared to the last evaluation, SOPAM research has continued with the original lines of research, and the overall amount and overall quality of the scientific output of SOPAM has remained constant when compared to the results from the previous audit.

Clearly, SOPAM has developed a strong interaction with local clinicians and regional authorities. SOPAM will be re-organized in two lines of research, which are microparticles and metabolic dysfunction models. Therapeutic strategies to tackle metabolic dysfunctions are being developed in two models: microparticles and nutrition-derived polyphenols. SOPAM research comprises a wide range of *in vitro*, *ex vivo* and *in vivo* (animal, clinical) studies ranging from cell culture to proteomics and genomics.

SOPAM has a track record of 178 articles (2010-2016), and has produced 4 patents reflecting a strong technology transfer policy. Based on the number of invited lectures (39), SOPAM research is acknowledged and appreciated on the national and international levels. Finally, SOPAM participates actively in (inter)national scientific meetings and/or organization thereof, is strongly involved in education, has an excellent support from clinicians, as well as of both university and the region.

### Strengths and opportunities in the context

- the unit has a very good expertise in the field of extracellular vesicles/microparticles;
- the unit is attractive (2 researchers with permanent position joined during the past term);
- the unit has strong interaction with local clinicians;
- efforts in translational research are successful;
- local and national interactions are regular and productive;
- the unit is highly involved in the training of students;
- the technology transfer is excellent (4 patents);
- the unit has a very good network of collaborations (both on a national and European level).

### Weaknesses and threats in the context

- investigators with clinical or teaching duties have limited time for research;
- there is a potential risk of dispersion due to the high number of research projects;
- the number of researchers is insufficient for the large number of proposed translational studies.

### Recommendations

- focus research on project(s) with highest expertise and visibility;
- go more into mechanistic insights and mechanisms to publish in higher impact journals;
- more balanced effort between basic (mechanistic) and translational studies.