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## EPCH - Infections cardiovasculaires virales et réponse inflammatoire en pathologie humaine

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:

Viral cardiovascular infections and inflammatory  
response in human pathologies

CardioVir

Under the supervision of  
the following institutions  
and research bodies:

Université de Reims Champagne-Ardenne

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>*

Jean-Luc Bailly, 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:	Viral cardiovascular infections and inflammatory response in human pathologies
Unit acronym:	CardioVir
Label requested:	INSERM
Current number:	EA 4684
Name of Director (2016-2017):	Mr Laurent ANDREOLETTI
Name of Project Leader (2018-2022):	Mr Laurent ANDREOLETTI

## Expert committee members

Chair:	Mr Jean-Luc BAILLY, Université d'Auvergne
Experts:	Ms Constance DELAUGERRE, Hôpital Saint-Louis (representative of the CSS INSERM)
	Mr Francis DELPEYROUX, Institut Pasteur
	Ms Sylvie DI FILIPPO, Hospices Civils de Lyon
	Ms Claire MONTPELLIER, Centre d'Infection et d'Immunité de Lille (representative supporting personnel)
	Mr Patrice MORAND, CHU Grenoble (representative of the CNU)

### Scientific delegate representing the HCERES:

Mr Théophile OHLMANN

### Representatives of supervising institutions and bodies:

Mr Gaëtan DESLÉE, CHU

Mr Guillaume GELLE, Université de Reims

Mr Damien JOUET, Université de Reims

Ms Anna LAZAR, INSERM

Ms Meriem MAROUF, INSERM

Mr Simon RAOUL, CHU

### Heads of Doctoral Schools:

Ms Sandrine BOUQUILLON, Doctoral school n°547, "Sciences Technologie Santé"

Mr Jean-Claude MONBOISSE, Doctoral school n°547, "Sciences Technologie Santé"

## 1 • Introduction

### History and geographical location of the unit

The unit EA 4684 (CardioVir) was created in 2012 with members of the former unit EA 4303 (team 4), which was shut down. The CardioVir unit is under the supervision of the University Champagne-Ardenne - Department of Medicine and also the University hospital (CHU) of Reims. It is located in the Faculty of Medicine in close vicinity of the University hospital.

### Management team

The unit is headed by Mr Laurent ANDREOLETTI.

### HCERES nomenclature

- main scientific domain: P3 (Life and environmental sciences);
- secondary scientific domain 1: SVE3 (Microbiology, Immunity);
- secondary scientific domain 2: SVE2 (Cellular biology, Imaging, Molecular biology, etc.);
- secondary scientific domain 3: SVE5 (Physiology, Pathophysiology, Cardiology, etc.).

### Scientific domains

The domain of activity of the unit corresponds to the disciplinary areas of virology and pathophysiology. The scientific research is related to human health, infectious diseases of the heart caused by viruses, and the study of host-pathogen interactions at the molecular and cellular levels.

### Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	5 (1.5 FTE)	5
N2: Permanent researchers from Institutions and similar positions	9 (3.1 FTE)	8 (2.8 FTE)
N3: Other permanent staff (technicians and administrative personnel)	2 (0.7 FTE)	2
N4: Other researchers (Postdoctoral students, visitors, etc.)		
N5: Emeritus		
N6: Other contractual staff (technicians and administrative personnel)		
N7: PhD students	3	
TOTAL N1 to N7	19 (8.3 FTE)	
Qualified research supervisors (HDR) or similar positions	5	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	2
Postdoctoral scientists having spent at least 12 months in the unit	1
Number of Research Supervisor Qualifications (HDR) obtained during the period	5

## 2 • Assessment of the unit

### Global assessment of the unit

CardioVir is a mono-thematic unit, which develops a research in virology aimed at understanding the pathophysiologic processes involved in virus-induced chronic cardiomyopathies, using chronic enterovirus infection as a model. Other etiological agents, i.e. herpes viruses and parvovirus B19, involved in acute myocarditis, are also studied.

The CardioVir unit is based on a fruitful local multidisciplinary collaboration between 4 disciplines (virology, anatomopathology, cardiology, and infectious diseases). The positive environment (scientific focus, facilities, and equipment) was favourable to risk-taking research investigating the role of viruses (notably enteroviruses) in chronic cardiomyopathy. The milestones in the research activity of the unit were: (1) the development of quantitative and qualitative molecular tools to detect enterovirus genomes and their replicative forms in human cardiac tissues; (2) the use of these molecular tools as diagnostic techniques in fulminant myocarditis and sudden cardiac death cases; (3) the comparison of molecular markers (CD3, CD68 and HLR-DR) expression in patients with enterovirus or parvovirus B19 infections; (4) the construction of a chimeric coxsackievirus B3 harbouring em-GFP to study genome replication in human cardiomyocytes; (5) the biobanking of peripheral blood and cardiac tissue samples for healthy subjects and patients; and (6) the contribution for virology expertise in clinical multicentric trials and registries for acute myocarditis, chronic dilated cardiomyopathy and cardiac sudden death.

The unit has good scientific track records. The members have authored original publications in peer-reviewed scientific journals covering different disciplinary fields (clinical microbiology, infectious diseases, and cardiovascular research). The leading journals were *Circulation*, *Emerging Infectious Diseases*, *Heart Rhythm*, and the *Journal of Clinical Microbiology*.

The unit staff is reduced and includes only members (PU-PH) with regular teaching duties and hospital activities. However, there is active training through research.

The unit is recognized at the international level for its contributions on the border between clinical virology and basic virology in the field of heart chronic infections. The unit is the only french group studying human cardiac diseases caused by enteroviruses.

CardioVir develops a unique and original niche of excellence in virology. In the future, the strategy of the unit is to investigate viral cardiovascular infections and the inflammatory responses in human pathologies.