IGE PCV - Interactions gène-environnement en physiopathologie cardio-vasculaire

Rapport Hcéres

HCERES

High Council for the Evaluation of Research and Higher Education

Department of Research Evaluation

report on research unit:

Gene environment interactions in cardio-vascular pathophysiology

IGE-PCV

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,[1]

Michel Cosnard, president

In the name of the experts committee,[2]

Panagiotis Deloukas, chairman of the committee

Under the decree N°.2014-1365 dated 14 november 2014,

[1] The president of HCERES "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5)

[2] 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:	Gene environment interactions in cardio-vascular pathophysiology
Unit acronym:	IGE-PCV
Label requested:	UMR
Current number:	1122
Name of Director (2016-2017):	Ms Sofia SIEST
Name of Project Leader (2018-2022):	Ms Sofia SIEST

Expert committee members

Chair:	Mr Panagiotis DELOUKAS, Queen Mary University of London, United Kingdom
Experts:	Mr Étienne GAYAT, Université Paris Diderot (representative of the CSS INSERM)
	Mr Benjamin GRENIER-BOLEY, Université Lille Nord de France
	Ms Aline MEIRHAGHE, Université Lille Nord de France
Scientific delegate representing the HCERES:	
	Ms Florence PINET
Representatives of supervising institutions and bodies:	
	Ms Chantal LASSERE, INSERM
	Mr Frederic VILLERAS, Université de Lorraine
Head of Doctoral School:	
	Mr Patrick MENU, Doctoral school n° 266, “Biology, health, environment”

1 • Introduction

History and geographical location of the unit

The mixed INSERM/university research unit INSERM-UMR U 1122 "Gene-Environment Interactions in Cardiovascular Physiopathology" was established on the 1st of January 2013 following a favourable evaluation of the EA 4373 unit on "Cardiovascular Genetics". It is located in Nancy and is part of the "Université de Lorraine". The formation of the EA unit was the result of over 10 years of work on the genetic epidemiology of cardiovascular diseases directed by its founder Ms Sophie SIEST.

Over the years, the unit assembled an inter-disciplinary team of researchers (genetic epidemiology, molecular biology, immunology, pharmacology/pharmacogenomics, bioinformatics, biobanking) to study gene-environment interactions involved in cardiovascular pathophysiology.

Following the recommendations of the AERES evaluation panel in 2012, the unit, building on their previous scientific strengths, has further focused their research around four themes:

- Inflammation: a central process in relation to other metabolic pathways implicated in CV disease;
- Dynamic Analysis of polymorphisms;
- Intermediate phenotypes in the circulation and in the lymphocyte as a target cell;
- Pharmacogenomic applications.

The unit has a long term investment on a longitudinal family cohort, the STANISLAS cohort (STANISLAS Family Study, SFS) in which was set up in 1993 and monitored for over 15 years. This has been complemented with paediatric and adult hypertensive cohorts as well as through collaborations with major international consortia with access to a large number of cohorts.

The unit allows deploying a battery of "omics" approaches to study intermediate CV phenotypes to identify their underlying genetic components and then test them in gene-gene and gene-environment interaction analyses to determine impact on cardio-vascular disease. This approach is exemplified in the unit's work on vascular endothelial growth factor A (VEGF-A), which is leading the transition from the discovery of genetic factors affecting levels of this peptide that plays an important role in angiogenesis, to developing new biomarkers for CV prevention.

The unit is requesting a renewal of their mandate to continue its work in the same direction as before, focused on the themes outlined above.

Management team

The director of the unit is Ms Sophie SIEST.

HCERES nomenclature

Life and environmental sciences (SVE): disciplinary field Biology/Health (sub-fields: molecular biology; genetics, genomics, bio-informatics, systems biology; physiopathology, endocrinology; immunology; clinical research, public health).

Scientific domains

The unit works in the area of cardiovascular disease looking at gene-environment interactions, biomarkers and their application to public health including pharmacogenomic studies.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	2	2
N2: Permanent researchers from Institutions and similar positions	4	3
N3: Other permanent staff (technicians and administrative personnel)	2	2
N4: Other researchers (Postdoctoral students, visitors, etc.)	4	
N5: Emeritus		
N6: Other contractual staff (technicians and administrative personnel)	2	
N7: PhD students	3	
TOTAL N1 to N7	**17**	
Qualified research supervisors (HDR) or similar positions	3	

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	4
Number of Research Supervisor Qualifications (HDR) obtained during the period	0

2 • Assessment of the unit

Global assessment of the unit

The long-standing interest of the unit is the use of genetic epidemiology coupled with “omics” profiling linked to intermediate phenotypes to understand the pathophysiology of cardiovascular diseases and apply this knowledge to preventive medicine.

The unit has focused and coherent research activities with solid scientific output. The unit has established a good national and international network of academic and industrial partners and continuity on the same research line has led to improved quality of scientific output.

There are good analytical capabilities within the unit and access to well phenotyped cohorts. The quality of postdoctoral fellows attracted by the unit is a clear strength. Within the campus the unit appears to not interact sufficiently with some of the common platforms although all experimental requirements are well covered through external partners.

The unit has a strong track record in cardiovascular genetics and a sound scientific strategy that has led to 77 publications, 2 patents, securing of external funding and a solid network of external collaborators including industry. The unit has clearly enlarged their access to human biological resources with good quality phenotype data. The unit has made considerable progress in embracing new generation sequencing technologies and continues to build in house analytical capabilities. The choice of the two intermediate CV phenotypes, VEGF-A and LTL is appropriate and well-focused as previously advised and should allow the unit to determine underlying genetic components and then test them in gene-gene and gene-environment interaction analyses to determine impact on cardio-vascular disease.