



# Intéractions cellulaires et applications thérapeutiques

## Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

## HCERES report on Federative structure:

Interactions Cellulaires et Applications Thérapeutiques  
ICAT

Under the supervision of  
the following institutions  
and research bodies:

Université d'Angers - UA

Centre Hospitalier Universitaire - CHU Angers

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>*

Jean-Édouard GAIRIN, chairman 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)

## Federation

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.

**Federation name:** Interactions Cellulaires et Applications Thérapeutiques

**Federation acronym:** ICAT

**Label requested:** SFR

**Present no:** 4208

**Name of Director  
(2015-2016):** Mr Vincent PROCACCIO

**Name of Project Leader  
(2017-2021):** Mr Pierre ABRAHAM

## Expert committee members

**Chair:** Mr Jean-Édouard GAIRIN, University of Toulouse

**Experts:** Mr Adam GREENSTEIN, University of Manchester, United Kingdom

**Scientific delegate representing the HCERES:**

Mr Georges MASSIOT

**Representatives of supervising institutions and bodies:**

Mr Yann BUBIEN, CHU of Angers

Ms Elsa LIVONNET, CHU of Angers

Ms Isabelle RICHARD, CHU of Angers

Ms Alexa ROUEZ, University of Angers

Mr Jean-Paul SAINT ANDRE, University of Angers

## 1 • Introduction

**History and geographical location of the federative structure and its member research units and brief description of its activities.**

The Research Federative Structure (SFR) FED4208 “Interactions Cellulaires et Applications Thérapeutiques” (ICAT) was created in 2012, as a continuation of the federative institute IFR132 which had the same title, had been created in 2004 and renewed in 2008. The SFR ICAT belongs to the University of Angers and has also a partnership with the CHU (“Centre Hospitalier Universitaire”) of Angers.

The SFR groups 10 research units: 2 UMR INSERM (INSERM 1063 SOPAM, INSERM 1066 MINT), 2 UMR INSERM / CNRS (INSERM 1083/CNRS 6214 BNMI, INSERM 692/CNRS 6299 CRCNA) and 6 EA university labs (EA 3859 HIFIH, EA 3142 GEIHP, EA 3143 LNBT, EA 4658 GEROM, EA 3860 CRT, EA 4336 LEEST). One unit (INSERM 692/CNRS 6299 CRCNA) has a dual geographical location (Angers as one site, and Nantes as the other). The nine other units are geographically located on one single site (Angers). In terms of human resources, all these different research units represent about 300 researchers supported by 70 technicians and administrative staff. All the 10 research units are members of the “pôle de compétitivité atlantique biothérapies” and 2 of them are integrated in a “Laboratoires d’Excellence” (LabEx).

The research units share scientific equipment, available through 4 technological platforms and 2 common service facilities. These facilities are dedicated to imaging and microscopy (SCIAM, Service Commun d’Imagerie et d’Analyse Microscopique), molecular and cellular analysis (PACEM, “Plateforme d’Analyse Cellulaire Et Moléculaire”), radiobiology and experimental imaging (PRIMEX, “Plateforme de Radiobiologie et d’Imagerie EXpérimentale”), production of lentiviral vectors (lentivec, “plateforme de production de vecteurs lentiviraux”), functional imaging applied to biology and medicine (CIFAB, “Centre d’Imagerie Fonctionnelle Appliquée en Biologie et médecine”), and animal housing and availability for experiments (SCAHU, “Service Commun Animalerie Hospitalier Universitaire”).

The research programs coordinated by the SFR ICAT have been developed along 3 axes: - i) cardiovascular and metabolism, - ii) nanomedicine and biomaterials, and - iii) immunology/infectiology & cancerology.

### Management team

The management team is composed of Mr Vincent PROCACCIO, the current director, and Mr Pierre ABRAHAM, the project leader and the future director. Both are PU-PH, and members of the research unit “Biologie Neurovasculaire et Mitochondriale Intégrée » (BNMI), one of the research units of the SFR and of the CHU of Angers. The director is appointed by the University of Angers. The management team is assisted by a board of officers. In addition, an operational unit is proposed to be created to further strengthen the role of support and service of the structure.

### Specific workforce allocated to the federative structure

Nine people are employed in the SFR: two technicians and three engineers involved in running the platforms and training new users, two secretaries for administration and budget management, a biostatistician to help in the analysis of biological data, and a project engineer devoted to technology transfer. Six of them are employed by the University of Angers, two by INSERM and one by the CHU of Angers. It must be noted that a person was recruited in 2012 and that four new positions were opened in 2013 (2) and 2015 (2) in the structure (a technician, an engineer, a biostatistician, a project engineer)

## 2 • Overall assessment of the federative structure

### Global assessment of the federative structure

The overall assessment of the federative structure ICAT is very positive. With no doubt, the SFR ICAT represents a key element for the University of Angers, providing strength, visibility and leadership to the local biomedical research. Overall, the majority of the challenging objectives set for the period 2010-2015 in the frame of the last contract have been, or are in a good way to be, reached. Among the successfully reached objectives, one may cite the identification of federative research thematics, which resulted in the consolidation of existing teams - or allowed the emergence of new ones - grouped together inside a common geographic cluster, as well as the development of the technological platforms and common services and their inclusion into a defined strategy, and facilitated the regional structuring of research and integration of two units (MINT and CRCNA) into a LabEx. All these efforts are strongly supported locally, by both the university and the CHU of Angers, notably through the improvement of laboratory space (a new building being under construction) and a clear administrative investment to strengthen the personnel assigned to the SFR.

### Strengths and opportunities in the context

During the last five years, the SFR ICAT has developed and amplified the strengths that had emerged during the previous contract. Three of them can be cited. First, and most representative, is the effective federation of high quality scientific teams. Of note is the important structuring role played by the SFR in the efforts undertaken in 2013 to regroup and concentrate the research projects developed by the research teams into three axes, leading to a better visibility and an increased scientific dynamic (1246 publications, 36 patents, 3 start-ups, 10 M€ of funding). In this regard, the scientific animation is also an essential component of the activity of the SFR. The second strength is the set up and sharing of modern technological platforms and of efficient common facilities. For example, a platform (CIFAB) dedicated to *in vivo* small animal imaging was created; and in another one, (PACEM), the offer of molecular and cellular analyses was improved and has integrated in addition the production of lentiviral vectors and the analysis of mitochondrial physiology. The activity of these two platforms resulted in at least 20 publications. The existing common services SCIAM and SCAHU were also improved and their activity has resulted in their participation in 26 publications. Finally, the third representative strength is the strong interaction of the SFR with the regional socio-economic environment.

### Weaknesses and threats in to the context

No significant major weaknesses or threats are immediately apparent. However, a possible threat could come from the limited number of human resources specifically allocated to the SFR. This may notably affect the optimal functioning of the platforms and, in the mid- or long term, make the ambitious goals proposed for the next five years, difficult to reach.

### Recommendations

Given the successful results obtained during the last five years, which come from the optimal efficiency of the SFR, care must be taken not to break the impetus and continue the efforts. The visibility gained at the local level should be confirmed at a regional level and extended, if possible, nationally and internationally. This would contribute to the attractivity, and help to recruit talented researchers or new units from around the world. Regarding platforms and common services, their improvement, both in terms of instruments and of management, should be considered as a priority. Specifically pertaining to the federative activity, the SFR should now put sustained efforts to reinforce the interactions between the different partners (University of Angers, CHU of Angers *inter alia*) with the aim of setting up transdisciplinary programs. Last but not least, regarding the evolution of the SFR toward a status of UMS, the pros and cons of each type of structure (SFR vs UMS) should be carefully evaluated and compared, notably with keeping in mind the distinct missions and objectives attributed to each of this type of research support structure. The committee is concerned that switching from an SFR to an UMS label will, *per se*, destabilize or even stop the federative dynamics, and considerably reduce the current and the future ambitious missions attributed to the SFR, by restricting them mostly to only technological and common services.