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CBMCT - Chimie et biologie de la cellule

Rapport Hcéres

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REPORT ON THE RESEARCH UNIT:
Cellular and Chemical Biology (CellChemBiol)

UNDER THE SUPERVISION OF THE
FOLLOWING INSTITUTIONS AND
RESEARCH BODIES:

Institut Curie

Centre National de la Recherche Scientifique -
CNRS

Institut national de la santé et de la recherche
médicale - Inserm

ÉVALUATION CAMPAIGN 2017-2018
GROUP D



In the name of Hcéres¹:

Michel Cosnard, President

In the name of the expert committee²:

Bruno Antony, Chairman of the committee

Under the decree No.2014-1365 dated 14 November 2014,

¹ The president of Hcéres "countersigns the evaluation reports set up by the expert 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).

This report is the sole result of the unit's 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 PRESENTATION

| | |
|--------------------------------------|-------------------------------|
| Unit name: | Cellular and Chemical Biology |
| Unit acronym: | CellChemBiol |
| Requested label: | UMR |
| Application type: | Renewal |
| Current number: | UMR3666-U1143 |
| Head of the unit (2017-2018): | Mr Ludger JOHANNES |
| Project leader (2019-2023): | Mr Ludger JOHANNES |
| Number of teams: | 4 |

COMMITTEE MEMBERS

| | |
|--|--|
| Chair: | Mr Bruno ANTONNY, CNRS de Valbonne |
| Experts: | Ms Delphine DEBAYLE, CNRS de Valbonne (supporting personnel) Mr Beat FIERZ, EPFL de Lausanne, Suisse Mr Renaud LEGOUIS, I2BC Gif-sur-Yvette (representative of Inserm CSS) Mr Boris VAUZEILLES, ICMMO, Université Paris-Sud (representative of CoNRS) |
| Hcéres scientific officer: | Mr Olivier BERTEAU |
| Representatives of supervising institutions and bodies: | Mr Érick DUFOURC, CNRS Ms Carine GIOVANNANGELI, Inserm Ms Geneviève ALMOUZNI, Institut Curie Mr Marius REGLIER, CNRS |

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

A few years ago, the Research Center of the Institut Curie, in coordination with CNRS and Inserm, decided to foster interactions between biologists and chemists by building a new research unit on the topics of chemical biology. This field of research has been very creative worldwide over the last decade and it was rationale for a research institute of such size and ambition as Curie, with a long tradition in trans-disciplinary studies, to make this choice. This project started in 2014 with two teams in biology around Ludger Johannes and Christophe Lamaze direction and one team in chemistry with Frédéric Schmidt, all from Curie. In 2015, Raphael Rodriguez joined the unit to start a junior group. The resulting new unit is one of the 12 research entities of the research center of the Institut Curie, which are grouped according to four domains. This unit belongs to domain 4 'Multiscale Physics-Biology-Chemistry and cancer', with which a Labex is associated.

The unit occupies space in two separate buildings (bâtiment Burg / bâtiment Rossignol, respectively), which are at walking distance. Information was given during the visit about future plans to optimize the limited space allocated to the unit both in terms of experimental benches and offices.

MANAGEMENT TEAM

Mr Ludger Johannes has been heading this unit since its creation in 2014. He will remain the director for the next term, but will team up with Mr Christophe Lamaze, another group leader, as deputy director.

HCERES NOMENCLATURE

SVE2_3; ST4_4.

SCIENTIFIC DOMAIN

Wider than pharmacology or medicinal chemistry, chemical biology consists in designing and developing chemical tools, and using them to better unravel the functioning of biological systems, should it be an organism, a cell, or a biochemical reaction, and without the need or the aim of an immediate medical application. In the case of this unit, chemical biology has been used to study various processes that occur in biological membranes, including signal transduction, cell response to mechanical stress, and membrane traffic. The arrival of the Rodriguez team has expanded the expertise of the unit to the field of cancer biology. To better acknowledge this change, the previous unit's name 'chemical biology of membranes' will change to 'cellular and chemical biology'. A more detailed list of the research lines is as follows:

- glycosphingolipid functions in endocytosis and intracellular sorting;
- caveolae in mechanoprotection, signaling and transduction;
- intracellular signalling from endosomes;
- small molecule lead discovery in membrane trafficking, signal transduction and epigenetics;
- targeted delivery of therapeutic compounds to tumors and to dendritic cells for immunotherapy;
- identification of chromatin binding sites of chemical compounds (click-seq) and therapeutic principles for personalized medicine.

UNIT WORKFORCE

| Unit workforce | Number 30/06/2017 | Number 01/01/2019 |
|---------------------------------------|----------------------|----------------------|
| Permanent staff | | |
| Full professors and similar positions | 1 | 0 |

| | | |
|---|-----------|-----------|
| Assistant professors and similar positions | 0 | 0 |
| Full time research directors (Directeurs de recherche) and similar positions | 4 | 4 |
| Full time research associates (Chargés de recherche) and similar positions | 4 | 3 |
| Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.") | 0 | 0 |
| High school teachers | 0 | 0 |
| Supporting personnel (ITAs, BIATSSs and others, notably of EPICs) | 7 | 6 |
| TOTAL permanent staff | 16 | 13 |
| Non-permanent staff | | |
| Non-permanent professors and associate professors, including emeritus | 0 | |
| Non-permanent full time scientists, including emeritus, post-docs | 14 | |
| Non-permanent supporting personnel | 11 | |
| PhD Students | 10 | |
| TOTAL non-permanent staff | 35 | |
| TOTAL unit | | |
| | 51 | |

GLOBAL ASSESSMENT OF THE UNIT

This evaluation covers the first years of this research unit, which was created in 2014 following a previous very positive evaluation by the AERES. Some of the current team leaders were already well established scientists in different research units of Curie. Thus, rather than a pure de novo creation, this unit initially corresponded to a strong reorganisation within the Curie Research Center to promote the interface between chemistry and biology. These historical teams have continued their outstanding work in the field of membrane biology, membrane signalling and inventive chemical biology. In addition, they have succeeded in attracting a remarkable junior team with a strong chemical biology expertise. Thanks to these efforts, the unit has reached both a critical mass and level of quality that allow its recognition at the best international standards. The publication record, as before, covers a large spectrum, from the best general journals (Nature, Science and Cell) to some more specialized but highly recognized journals in chemistry and cell biology. The quality spreads over all teams, which are also very active in translational activities and in training through research. In conclusion, these years of reorganization and creation have been rewarded by success and have led to an exceptional unit. The strategy for the next years consists in (i) attracting a new junior group in the field of chemical biology; (ii) keeping the expertise in chemistry despite the mobility and retirement of several engineers and researchers in this field; (iii) fostering a creative, ambitious and collaborative environment between students, post-docs and all personnel with different expertise both across the teams of the unit and beyond (Curie Research Center and others initiatives in the Paris area); (iv) optimizing lab space.

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