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## LCPB - Laboratoire de chimie des processus biologiques

Rapport Hcéres

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REPORT ON THE RESEARCH UNIT:  
Laboratory of Chemistry of Biological Processes  
(LCPB)

UNDER THE SUPERVISION OF THE  
FOLLOWING INSTITUTIONS AND  
RESEARCH BODIES:

Collège de France

Université Pierre et Marie Curie

Centre national de la recherche scientifique -  
CNRS

**ÉVALUATION CAMPAIGN 2017-2018**  
GROUP D



In the name of Hcéres<sup>1</sup>:

Michel Cosnard, President

In the name of the expert committee<sup>2</sup>:

Jean-Pierre Mahy, Chairman of the  
committee

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

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

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:** Laboratory of Chemistry of Biological Processes

**Unit acronym:** LCPB

**Requested label:** UMR

**Application type:** Renewal

**Current number:** 8229

**Head of the unit  
(2017-2018):** Mr Marc FONTECAVE

**Project leader  
(2019-2023):** Mr Marc FONTECAVE

**Number of teams or themes:** 0

## COMMITTEE MEMBERS

**Chair:** Mr Jean-Pierre MAHY, universit  Paris-Sud (representative of CNU)

**Experts:** Mr Fraser ARMSTRONG, university of Oxford, Royaume-Uni  
Mr Cyril BOURGOGNE, universit  de Montpellier (supporting personnel)  
Mr Gilles LABESSE, universit  de Montpellier (representative of CoNRS)

**HCERES scientific officer:**  
Mr Georges MASSIOT

**Representatives of supervising institutions and bodies:**  
Mr  rick DUFOURC, CNRS  
Mr Bertrand MEYER, UPMC  
Mr Alain PROCHIANTZ, Coll ge de France  
Mr Marius REGLIER, CNRS

## INTRODUCTION

### HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

In the recent years, the Collège de France (CDF) has engaged in an active policy of research through the renovation of its research laboratories and support for the installation of research units on the site Marcelin Berthelot in Paris. Within this frame, an ambitious scientific policy in chemistry was developed based on the creation of three chemistry chairs, to constitute the new Institute of Chemistry of Collège de France. They rely on an important activity of synthesis, elaboration and characterization, using modern tools of chemical analysis and theoretical chemistry, of original molecules, macromolecules and materials, to carry out original projects in the fields of homogeneous and heterogeneous catalysis, biocatalysis, in particular in the context of new energy technologies, starting from basic research to applications.

The Laboratory of Chemistry of Biological Processes (LCPB), headed by Mr Marc FONTECAVE, is one of these three recently created research laboratories. This totally new research unit was launched as FRE 3488 in 2012 and then labelled as UMR 8229 that was set up in April 2014 at the Marcelin Berthelot site in the renovated premises allocated to the Institute of Chemistry (Building E shared with the Institute of Physics), under the administrative supervision of Collège de France, CNRS and in partnership with UPMC. The second laboratory, the Solid Chemistry-Energy Laboratory headed by Mr Jean-Marie TARASCON (UMR 8260 in January 2016) is also present on the site M. Berthelot, whereas the third research unit, the Chemistry of Hybrid Materials Laboratory, UMR 7574 headed by Ms Florence BABONNEAU since January 1<sup>st</sup>, 2014 was first located at the Collège de France at the beginning of the five-year contract, and then moved entirely to the Campus Jussieu in April 2016.

### MANAGEMENT TEAM

The team is relatively small (12 permanent including 1 professor CDF, 5 CNRS researchers, and 6 engineers and technicians CNRS and CDF), the management team consists of the director (Mr Marc FONTECAVE) assisted by an assistant-director and a secretary/administrator, who is in charge of all administrative issues and is also responsible for all orders and finally, is in charge of establishing the statement of account of UMR 8229 every first month and presenting it to the director.

### HCERES NOMENCLATURE

ST4: chemistry.

### SCIENTIFIC DOMAIN

The originality of the Laboratory of Chemistry of Biological Processes resides in the multidisciplinary approach used to study catalysis and biocatalysis, at the interface between chemistry and biology. The general research project aims at combining the concepts and methods of protein biochemistry, on the one hand, and synthetic chemistry, on the other hand, in order to better understand key aspects of biocatalysis and homogeneous/heterogeneous catalysis along two general directions: structural and mechanistic enzymology and bioinspired catalysis for energy storage.

### UNIT WORKFORCE

Unit workforce	Number 30/06/2017	Number 01/01/2019
<b>Permanent staff</b>		
Full professors and similar positions	1	1
Assistant professors and similar positions	0	0
Full time research directors (Directeurs de recherche) and similar positions	2	2

Full time research associates (Chargés de recherche) and similar positions	3	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)	6	7
<b>TOTAL permanent staff</b>	<b>12</b>	<b>13</b>
<b>Non-permanent staff</b>		
Non-permanent professors and associate professors, including emeritus	0	
Non-permanent full time scientists, including emeritus, post-docs	5	
Non-permanent supporting personnel	1	
PhD Students	10	
<b>TOTAL non-permanent staff</b>	<b>16</b>	
<b>TOTAL unit</b>		
	<b>28</b>	

## GLOBAL ASSESSMENT OF THE UNIT

The LCPB is a well-structured unit with strong governance headed by a well renowned director, and it is very well inserted in the remarkable scientific context of the College de France and in an environment including many prestigious laboratories, where it develops ambitious research themes at the interface between chemistry and biology, based on an original multidisciplinary approach used to study catalysis and biocatalysis,

Though it is very young, this research unit is already locally and internationally well recognized, with some outstanding outputs along the three main themes that its members have developed at the highly competitive interface between biochemistry, inorganic chemistry and material science. Indeed, it appears as a leading actor in various topics of research, within the fields of bio-inspired catalysis and energy storage, such as hydrogenase maturation and mechanism and scope of recently discovered flavin-mediated methylation reactions. This recognition is based both on the individual influence and dynamism of its members and on the outstanding publication record, including numerous articles in high-impact factor journals, that has been produced in the last 5-year period.

Such a success is related first, to a scientific organization in thematics, in which everyone can be involved, that is particularly appropriate for the development of multidisciplinary projects, and can guarantee a collective state of mind. Second, it benefits from optimal premises and from extensive experimental facilities, managed by qualified permanent technical staff who have the appropriate skills to conduct the developing research. The Director has demonstrated extraordinary vision in bringing together several different fields that have a strong underlying connection.

Finally, helped by a very high success level in grant applications (ANR, Labex, charities), it is highly successful in attracting talented and skilled students from many countries with a large palette of scientific backgrounds to match the best international standard.

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2 rue Albert Einstein  
75013 Paris, France  
T. 33 (0)1 55 55 60 10

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