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## **LBFA - Laboratoire de bioénergétique fondamentale et appliquée**

Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

HCERES report on research unit:

Laboratory of Fundamental and Applied Bioenergetics

LBFA

Under the supervision of the following  
institutions and research bodies:

Université Joseph Fourier - Grenoble - UJF

Institut National de la Santé Et de la Recherche

Médicale - INSERM

# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

*Pour le HCERES, en vertu du décret  
du 14 novembre 2014<sup>1</sup>,*

Didier Houssin, président

*In the name of the experts committee,<sup>2</sup>*

Pascal FERRE, chairman of the committee

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<sup>1</sup> Le président du HCERES "contresigne les rapports d'évaluation établis par les comités d'experts et signés par leur président." (Article 8, alinéa 5 du décret n°2014-1365 du 14 novembre 2014).

<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 result of the evaluation by the experts committee, the composition of which is specified below.

The assessments contained herein are the expression of an independent and collegial deliberation of the committee.

Unit name: Laboratory of fundamental and applied bioenergetics

Unit acronym: LBFA

Label requested: UMR\_S

Present no.: UMR\_S1055

Name of Director  
(2014-2015): Mr Uwe SCHLATTNER

Name of Project Leader  
(2016-2020): Mr Uwe SCHLATTNER

## Expert committee members

Chair: Mr Pascal FERRE, Centre de Recherche des Cordeliers, Paris

Experts: Mr Andrew HALESTRAP, University of Bristol, United Kingdom

Mr Jean-François TANTI, Nice (representing of the CSS Inserm)

Scientific delegate representing the HCERES:

Mr Jean GIRARD

Representatives of the unit's supervising institutions and bodies:

Ms Christelle BRETON (representative of the ED n°218 "CSV")

Mr Eric DEFRANCO, Université Joseph Fourier

Ms Anne ROCHAT, Inserm

## 1 • Introduction

### History and geographical location of the unit

The laboratory of fundamental and applied bioenergetics (LBFA) is located at the Joseph Fourier University campus in Grenoble where it occupies the Biology B building. Created in 2002 under the supervision of both University Joseph Fourier and Inserm, it was recreated in 2011 as the UMR\_S 1055 with a new director and two teams. The main topic of the unit is the study of mitochondrial bioenergetics in physiological and pathological situations and LBFA has gained an international recognition in this field. The present proposal marks a turning point since LBFA should move in a new research building with up-to-date facilities and also since a number of the researchers/engineers/technicians initially associated with the unit have left or have unfortunately deceased. Some new staff will join the unit for the next contract but researchers will belong essentially to university with an absence of full-time researchers from Inserm, CNRS or INRA.

### Management team

The unit is presently directed by Mr Uwe SCHLATTNER who is also leading the project for the next contract.

### HCERES nomenclature

SVE1\_LS4

### Unit workforce

Unit workforce	Number as at 30/06/2014	Number as at 01/01/2016
<b>N1:</b> Permanent professors and similar positions	15	15
<b>N2:</b> Permanent researchers from Institutions and similar positions	1	1
<b>N3:</b> Other permanent staff (without research duties)	11	13
<b>N4:</b> Other professors (Emeritus Professor, on-contract Professor, etc.)	4	2
<b>N5:</b> Other researchers (Emeritus Research Director, Postdoctoral students, visitors, etc.)	4	1
<b>N6:</b> Other contractual staff (without research duties)	1	1
<b>TOTAL N1 to N6</b>	<b>36</b>	<b>33</b>

Unit workforce	Number as at 30/06/2014	Number as at 01/01/2016
Doctoral students	10	
Theses defended	19	
Postdoctoral students having spent at least 12 months in the unit	3	
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	13	11

## 2 • Overall assessment of the unit

### Global assessment of the unit

The unit (36 permanent staff) is composed of two teams and works on an important although not widely studied topic, cell bioenergetics. The studies range from molecular to more integrated physiological and physiopathological approaches with an emphasis on system biology. The unit has a real expertise and reputation in the field and has produced interesting findings concerning for instance the role of specific mitochondrial kinases. The production in the last five years (since 2009) is important (150 papers) and competitive although there are no top-ranking publications originating directly from the unit and a lack of common publications between the 2 teams. The unit has obtained a steady flow of funding and has attracted numerous students. Its academic reputation is very good although it could be improved at the international level. The unit Leader has achieved an excellent internal organization, with established common resources and a dynamic scientific life. Concerning the future, the movement to new facilities and the belonging to a federative structure of system biology present great opportunities. The projects are clear and credible for one team but less defined and integrated for the other with a range of rather different projects. One major challenge for the next contract is the necessity to recruit full-time scientists since the work force has been reduced even though new university staff and a researcher from the "Commissariat à l'énergie atomique" are part of the project. In this context, one might ask whether a more unified project should be set up which would allow the unit to concentrate on the most promising topics.

### Strengths and opportunities in relation to the context

The unit has a long-standing know-how and reputation in the field of bioenergetics. A key aspect is the multidisciplinary approach ranging from chemistry, biophysics, structural studies, cellular and molecular biology and human physiology. The scientific production is very good (around 150 papers since 2009) with some important findings and many collaborative studies as well as the production of innovative tools. There is a steady flow of funding from national, european and industrial sources. There are close collaborations with some industrial partners leading to clinical trials in the field of diabetes, reflecting the possibilities for translational work with clinicians.

The unit is very attractive for PhD students with about 19 theses for the contract period.

The director had a very active policy for the development of a system biology approach, resulting in a federative structure with other laboratories (BEeSY).

The director has set up an efficient intra-unit organisation with technical facilities and a quality approach which should lead to an "ISO 9001" recognition.

In the context of the "Plan Campus", a new building is presently under construction (with the present director being the scientist in charge) next to the present building and the unit will move to this building in 2016. It will offer a range of extended facilities such as a large animal house, culture rooms, technical facilities for "omics" approaches and so on. A mass spec- proteomics group is joining the unit which should extend the analytic capacity of the unit.

### Weaknesses and threats related to the context

Although the production is very good, the number of top-ranking publications is modest and no very major breakthrough is reported.

Except for the director, the number of internationally recognized members is rather low as seen from congress invitations and reviews.

The unit has suffered unfortunately due to the loss of key members and this has not been fully compensated. The major weakness here is probably the absence of full-time researchers who could give an impetus to the ongoing research.

Some of the projects are ill-defined and address a wide range of fields, a fact that in the present staff context is questionable. In addition, there seem to be very few collaborations between the two teams leading to common publications, although this should be easily feasible.

Finally although the relocation to a new building is certainly an opportunity, it will require large amounts of funding which could be difficult to raise in the present economical context.

## Recommendations

A key to the longer term success of the unit is the recruitment of new highly-talented and well-motivated researchers, allowing the enhancement of the international impact of the work, but without introducing new topics, poorly related to the unit core subjects. Although recruitment is a difficult task, this must be the main priority of the unit, together with attracting good quality post-doctoral fellows. The same kind of recommendation was already given in the last evaluation.

The experts committee also recommends that the number of topics is decreased in order to enhance the work force on each, focusing on what represents the core activity of the unit, and thus allowing more visible outputs to be achieved. The existence of two different teams with very few interactions might also be questionable and an integration into a single well-defined project could be an interesting alternative.

Among the different projects presented, team 1 should focus on project 1 (Energy signalling via oligomeric kinase complexes) and the first 2 topics (energy homeostasis, iron homeostasis) of project 2 (System bioenergetics studied in cellular model systems). The experts committee further recommends the merger of project 1 of team 2 (Mitochondria and cell death) into a single team project in team 1 which could then be very competitive with a more defined focus. Among the other projects on nutrition of team 2, the one on citrulline is probably the most likely to yield interesting and translatable results. The experts committee is not convinced that other nutritional / toxicology projects could be internationally competitive without very significant investments.