AFMB - Architecture et fonction des macromolécules biologiques

Rapport Hcéres

HCERES

High Council for the Evaluation of Research and Higher Education

Department of Research Evaluation

report on research unit:

Architecture and Function of Biological Macromolecules

AFMB

under the supervision of the following institutions and research bodies:

Aix-Marseille Université

Centre National de la Recherche Scientifique - CNRS

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]

Imre Berger, 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:	Architecture and Function of Biological Macromolecules
Unit acronym:	AFMB
Label requested:	Unité Mixte de Recherche (UMR)
Current number:	UMR 6098
Name of Director (2016-2017):	Mr Yves BOURNE
Name of Project Leader (2018-2022):	Mr Yves BOURNE

Expert committee members

Chair: Mr Imre BERGER, University of Bristol, United Kingdom

Experts:

Mr Philippe DELANNOY, UGSF, Université de Lille

Mr Yves GAUDIN, UPR-CNRS, Gif-sur-Yvette (representative of the CoNRS)

Mr Bernard OFFMANN, UFIP, Nantes

Mr Gérard PEHAU-ARNAUDET, Pasteur Paris (representative of supporting personnel)

Ms Catherine VENIEN-BRYAN, IMPMC, Paris, UPMC (representative of the CNU)

Scientific delegate representing the HCERES:

Mr Alexandre DE BREVERN

Representatives of supervising institutions and bodies:

Ms Sophie BARBE, INRA

Mr Hugues LORTAT-JACOB, CNRS

Mr Marc SENTIS, AMU

1 • Introduction

History and geographical location of the unit

The laboratory "Architecture and Function of Biological Macromolecules" (AFMB) is a Mixed Research Unit (UMR) affiliated to the CNRS and the Aix-Marseille Université. The laboratory is located on the Marseille Luminy Campus. Since 2008, the laboratory has occupied around 1800 m^2, which are distributed over two buildings. The AFMB hosts about 80 persons, of which 38 are permanent staff (researchers, academics, engineers and technicians). In the next period, one research team (antiviral and medicinal chemistry) will be merged with the virology team. A new team, supported by the ATIP/Avenir programme has recently been added (2016) to analyse the structure and mechanism of viral macromolecular complexes. Assets include three shared facilities, a biobank resource of viral proteins and a nanobody service platform that provide access to state-of-the-art equipment and expertise for in-house and external projects, promoting collaborations, teaching and training activities.

Management team

Director: Mr Yves BOURNE; deputy director: Mr Bruno CANARD and Mr Alain ROUSSEL as an additional deputy director.

HCERES nomenclature

SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale.

Scientific domains

Structural Biology, Glycobiology, Virology, Protein Biochemistry, Bioinformatics, Medicinal Chemistry, Biotechnology. AFMB is structured into six research teams researching a range of topics comprising glycobiology, host-pathogen interactions, protein structure and function and virology.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	6	7
N2: Permanent researchers from Institutions and similar positions	15	16
N3: Other permanent staff (technicians and administrative personnel)	20	21
N4: Other researchers (Postdoctoral students, visitors, etc.)	12	
N5: Emeritus	0	
N6: Other contractual staff (technicians and administrative personnel)	10	
N7: PhD students	16	
TOTAL N1 to N7	**79**	
Qualified research supervisors (HDR) or similar positions	19	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	18
Postdoctoral scientists having spent at least 12 months in the unit	21
Number of Research Supervisor Qualifications (HDR) obtained during the period	4

2 • Assessment of the unit

Global assessment of the unit

Since its establishment, the AFMB has succeeded in setting up an excellent and renowned unit for investigating the structure and mechanism of biomolecules, with focus on virology, glycobiology and host-pathogen interactions. The AFMB has successfully mastered the shift from structural genomics approaches to the integrative approach that now dominates structural biology. Research carried out at the unit has yielded significant and internationally competitive advances in glycobiology and infectious agents. The expertise at the AFMB, in particular in glycogenomics, is world-leading. Under the present director, the AFMB has continued its high level of reactivity and established a number of core facilities with the unit which have fostered collaborations and accelerated research programs within the unit and beyond, contributing significantly to the high level of visibility of AFMB nationally and internationally. The shift of activities towards more integrated studies in the fields of glycobiology, virology and immunology, which has been vigorously pursued since the last evaluation, has benefited all areas of research at AFMB. It has been accompanied by a successful restructuring of the unit with the establishment of a neurobiology team led by a senior researcher and the recent recruitment of a promising new junior research group engaging in structural and mechanistic research on viral macromolecular complexes.

The AFMB has answered the more recent challenges with regards to funding allocation by exceptional activity and remarkable success in obtaining research grants from national and international funding sources including ANR and European projects, national and international partnerships, non-profit organizations and industrial partnerships. These successful exploits have been complemented by obtaining regional funding for the unit and accommodating a small start-up enterprise to mutual benefit. The AFMB has demonstrated remarkable strength in this area which is indicative of its excellent scientific standing, and the management is aware of the necessity to devote adequate attention to pursuing a similarly vigorous funding acquisition regimen in the next evaluation period.

The AFMB has performed remarkably well in terms of scientific output of their research programs, more than 360 international peer-reviewed publications including an impressive number of high impact paper and highly cited contributions over a diverse range of scientific fields testify to this excellence in research and technology. Through consolidation of the current groups and the recruitment of a promising new team, this trend is poised to continue in the next evaluation period.

Regarding organization and management, the AFMB has seen in the present evaluation period the retirement of its charismatic founding director. This transition has been exceptionally well managed with the merging of the outgoing team into an established and productive team with reasonable thematic overlap. Thus, in this regard, the AFMB is poised to continue unperturbed into the next reporting period under its current director. Answering the diversification of tasks that have to be coped with by the directorate in the next evaluation period, the AFMB will establish a second deputy director to manage the unit. The turnover at AFMB is continuing into the next reporting period posing certain challenges in the field of glycogenomics, and the management will establish a road map for a smooth transition to maintain these assets in the future.

In the next reporting period, the AFMB will also strive to finally accomplish the unification of the currently two sites into neighbouring buildings on the campus. This is a high priority task and will remove considerable current constraints, which the unit currently has to deal with, notably in terms of logistics and safety regulations. Support for this endeavour has been largely secured from the managing bodies (CNRS and AMU).

Importantly, the AFMB strives to install a high-end state-of-the-art regional platform for cryo-electron microscopy, answering to a present global trend in the imaging of biomolecules (the “cryo-EM revolution”). This ambitious endeavour is of paramount, critical importance for maintaining the internationally competitive posture of AFMB, and the Aix-Marseille Region as a whole, in the future.