

# MCAM - Molécules de communication et adaptation des microorganismes

Rapport Hcéres

► **To cite this version:**

Rapport d'évaluation d'une entité de recherche. MCAM - Molécules de communication et adaptation des microorganismes. 2018, Museum national d'histoire naturelle - MNHN, Centre national de la recherche scientifique - CNRS. hceres-02031291

**HAL Id: hceres-02031291**

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Submitted on 20 Feb 2019

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REPORT ON THE RESEARCH UNIT:  
Molecules of Communication and Adaptation  
of Microorganisms (MCAM)

UNDER THE SUPERVISION OF THE  
FOLLOWING INSTITUTIONS AND  
RESEARCH BODIES:

Muséum National d'Histoire Naturelle  
Centre National de la Recherche Scientifique -  
CNRS

**EVALUATION 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>:

Craig Faulds, 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

<b>Unit name:</b>	Molecules of Communication and Adaptation of Microorganisms
<b>Unit acronym:</b>	MCAM
<b>Requested label:</b>	UMR
<b>Application type:</b>	Renewal
<b>Current number:</b>	7245
<b>Head of the unit (2017-2018):</b>	Mr Philippe GRELLIER
<b>Project leader (2019-2023):</b>	Mr Philippe GRELLIER
<b>Number of teams:</b>	4

## COMMITTEE MEMBERS

<b>Chair:</b>	Mr Craig FAULDS, Aix Marseille Université
<b>Experts:</b>	Ms Corinne BURE, Centre de Génomique Fonctionnelle de Bordeaux (supporting personnel) Ms Marie-France DELAUW-CESBRON, Université Grenoble Alpes Mr Paul DENNY, Durham University, United Kingdom Mr Marcel JASPARS, University of Aberdeen, United Kingdom Mr Pierre LABADIE, Université de Bordeaux (representative of CoNRS) Ms Amel LATIFI, Aix Marseille Université Ms Anna-Maria ROVERO-PAPINI, Université de Cergy-Pontoise (representative of CNU)
<b>HCERES scientific officer:</b>	Mr Steven BALL
<b>Representatives of supervising institutions and bodies:</b>	Ms Martine HOSSAERT, CNRS – INEE Mr Jean-Denis VIGNE, MNHN

## INTRODUCTION

### HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The Joint Research Unit N° 7245 of CNRS and the National Museum of Natural History (MNHN) Molecules of Communication and Adaptation of Microorganisms (MCAM) was established in 2009 in Paris after a period of restructuring and merging of laboratories, and was labelled a UMR of CNRS in 2011. The unit is spread across 5 buildings around the garden and the "Îlot Poliveau" of MNHN.

The unit is composed of a staff of 58 permanents, with 7 professors, 14 lecturers (MCF), 8 researchers, 29 technicians and administrators, and shared 5 analytical platforms and 3 mutualized technical services. The unit is responsible of 6 collections, not only culture but also ancient and patrimonial collections.

### MANAGEMENT TEAM

The MCAM Unit is headed by Mr Philippe GRELLIER, advised by the ex-Head of unit Ms Sylvie REBUFFAT.

### HCERES NOMENCLATURE

Principal: SVE1 Agronomie, Biologie Végétale, Ecologie, Environnement, Evolution

Secondary: SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale

SVE3 Microbiologie, Immunité

ST4 Chimie

### SCIENTIFIC DOMAIN

MCAM constitutes a unique pluridisciplinary scientific pole at MNHN devoted to the molecular mechanisms of communication and adaptation of microorganisms to their environment based on chemical, biochemical, biological, ecological and genomic approaches with the common objectives to study the role of microorganisms in the maintenance, the balance and the evolution of microbial systems. MCAM is organised into 4 research teams investigating: (1) the role, mechanism of action, and ecological roles of microbial proteins/peptides and metabolites; (2) the natural and chemical synthesis of fungal secondary metabolites and their role in the interaction of fungi with plants and algae; (3) the biodiversity of protists and nematodes and the mechanism of their adaptation to the environment; and (4) the biodiversity of cyanobacteria and their toxins having an impact in their aquatic environment.

### UNIT WORKFORCE

Unit workforce	Number 30/06/2017	Number 01/01/2019
<b>Permanent staff</b>		
Full professors and similar positions	7	8
Assistant professors and similar positions	14	12
Full time research directors (Directeurs de recherche) and similar positions	2	2
Full time research associates (Chargés de recherche) and similar positions	6	5
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)	29	26
<b>TOTAL permanent staff</b>	<b>58</b>	<b>53</b>
<b>Non-permanent staff</b>		
Non-permanent professors and associate professors, including emeritus	4	
Non-permanent full time scientists, including emeritus, post-docs	11	
Non-permanent supporting personnel	1	
PhD Students	14	
<b>TOTAL non-permanent staff</b>	<b>30</b>	
<b>TOTAL unit</b>		
	<b>88</b>	

## GLOBAL ASSESSMENT OF THE UNIT

MNHN organisation enables MCAM to promote a unique national and international pluridisciplinary configuration in the communication between microorganisms and their adaption to different environments. The unit also hosts 6 enriched collections providing reference and environmental strains for fundamental and applied studies.

The unit has adopted such a pluridisciplinary approach within their research at the interface of biology and chemistry to address key questions involving the role of the different organisms in the global stability and evolution of ecosystems, and how these adaptations address important societal challenges related to the environment and health, and in providing innovation through bio-inspired novel molecules.

Members of MCAM have developed strong recognition and expertise in their areas, being highly involved in non-research activities as well as in a number of national and international publishing, evaluating and consultative activities. They have taken leading roles in the dissemination of their science to the public and to the academic community through high impact reviews and a very good publication record.

It is proposed to evolve the current research into four themes which will underpin the focus of each research team, adopting specific model organisms and an integrated comparative –omics approach in order to further increase the national and international visibility of the unit in the coming period. While this approach will lead to much more in-depth understanding of these organisms in their respective ecosystems, the challenge will be to further exploit the natural diversity of the collection. By undertaking a sharpening of focus and inter-team collaboration within the unit, this will lead to much more inspired discoveries in areas of high environmental and commercial importance, and place the unit at the forefront of their research and future socio-economic needs.

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