HCERES

High Council for the Evaluation of Research and Higher Education

Research units

HCERES report on research unit:

Laboratory of Microbiology Signals and Microenvironment

LMSM

Under the supervision of the following institutions and research bodies:

Université de Rouen

Evaluation Campaign 2015-2016 (Group B)

HCERES

High Council for the Evaluation of Research and Higher Education

Research units

In the name of HCERES,[1]

Michel Cosnard, president

In the name of the experts committee,[2]

Jean-François Collet, chairman of the committee

Under the decree No.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:	Laboratoire de Microbiologie Signaux et Microenvironnement
Unit acronym:	LMSM
Label requested:	EA
Current number:	4312
Name of Director (2015-2016):	Mr Marc G.J. FEUILLOLEY
Name of Project Leader (2017-2021):	Mr Marc G.J. FEUILLOLEY

Expert committee members

Chair: Mr Jean-François COLLET, Institut de Duve, Bruxelles, Belgium

Experts: Mr Michael S. DUBOW, Université Paris-Sud (representative of the CNU)

Ms Françoise JACOB-DUBUISSON, Pasteur Institute of Lille

Scientific delegate representing the HCERES:

Ms Catherine SCHUSTER

Representatives of supervising institutions and bodies:

Mr Cafer ÖZKUL, University of Rouen

Mr Laurent YON, University of Rouen

Head of Doctoral School:

Mr Patrice LEROUGE, Doctoral School n°497, “Normandy's Doctoral School of Integrative Biology, Health and Environment”, NBISE

1 • Introduction

History and geographical location of the unit

A research team named "Microbiologie du froid" was started in Evreux in 1986 by N. ORANGE. At the beginning, this team was part of the Laboratory of Microbiology, which also included a team in Rouen. In 2008, the Evreux team became a "mono-équipe" (Laboratoire de Microbiologie du Froid – Signaux et Micro-Environnement – LMDF-SME) M. Marc FEUILLOLEY took the lead of the LMDF-SME in 2008 after N. ORANGE became vice-president of the University. In 2010, the team was renamed "Laboratoire de Microbiologie Signaux et Microenvironnement" (LMSM). In 2012, a small number of scientists localized in Rouen (Mont-Saint-Aignan) joined the LMSM. In Evreux, the LMSM will soon move to the new building of the "Centre de Sécurité Sanitaire de Normandie". The LMSM is closely linked to the "Institut Universitaire et Technologique (IUT) d'Evreux", where most LMSM scientists teach.

Management team

Head: Mr Marc G.J. FEUILLOLEY

Deputy head : Ms Sylvie CHEVALIER

HCERES nomenclature

SVE1_LS6 Immunologie, microbiologie, virologie, parasitologie

Scientific domains

The team studies the role of communication and of environmental/eukaryotic factors in bacterial adaptation and virulence (microbiology/molecular biology/genetics/biochemistry).

Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	16	20
N2: Permanent researchers from Institutions and similar positions		
N3: Other permanent staff (technicians and administrative personnel)	7	7
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	2	
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	9	
N6: Other contractual staff (technicians and administrative personnel)	4	
N7: PhD students	8	
TOTAL N1 to N7	**46**	
Qualified research supervisors (HDR) or similar positions	12	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	16
Postdoctoral scientists having spent at least 12 months in the unit	13
Number of Research Supervisor Qualifications (HDR) obtained during the period	2

2 • Overall assessment of the unit

Introduction

The unit, known as the "Laboratoire de Microbiologie des Signaux et Microenvironnement" (LMSM), is the largest microbiology unit of Rouen University. Most unit members are located in Evreux, but a few are localized in Mont-St-Aignan (Rouen). The major focus of the team is the study of the role played by communication with environmental/eukaryotic factors in bacterial adaptation and virulence. During the past 5 years, 6 partially overlapping research topics have been conducted (membrane sensors and signal transduction, mechanisms of virulence expression, intestine-microbiota interactions, skin-microbiota interactions, lung-bacteria interactions, and interactions within the rhizosphere).

The team uses several bacterial model organisms, including Pseudomonas aeruginosa, Pseudomonas fluorescens, Streptococci, Rhodococcus and Bacillus. The unit has grown significantly since the last evaluation (2011), the total number of scientists increasing from 18 to 34. In 2011, the team was very nicely evaluated. The team has done a good job in trying to follow the recommendations of the previous report, in particular regarding the number and quality of scientific publications.

Global assessment of the unit

The LMSM is the largest microbiology unit of Rouen University. Most of the team members are localized in Evreux, but a few are localized in Mont-St-Aignan (Rouen). The unit has grown significantly since the beginning of the current contract (2010-2015), the total number of scientists increasing from 18 to 34. The involvement of most of the unit members in the academic and scientific life of the Evreux IUT is remarkable. The major research topic of the unit is the study of the role of environmental factors and of communication in bacterial adaptation and virulence. Although the unit scientists use mostly Gram-Negative bacteria as experimental models, Pseudomonas aeruginosa being the major one, they also have begun to work on other microorganisms including Streptococcus and Bacillus. The unit is well structured and organized. There is a common focus between the different research projects carried out in the unit, which reinforces the unit and increases its national visibility. The complementary expertise of the unit scientists is also an important asset. The unit is extremely well established in Normandy, playing an important scientific and societal role in the western part of France. It did a great job in attracting funding, in particular from the region. It is also well connected to local companies as well as to the "Cosmetic Valley" network and is involved in several other networks ("Grand réseau"). The unit has been outstandingly successful in transferring its expertise to the private sector, having established collaborations with several industrial companies. The scientific production of the unit is very good. The number of papers published in international journals has significantly increased during the last 5 years, compared to the previous evaluated period. Key interesting discoveries have been made, highlighting the quality of the on-going research. It is also important to note here that members of the LMSM play a crucial role in the operations of the IUT.

Strengths and opportunities in the context

The unit has a number of important assets. First, it benefits from a well-thought-out and solid organization, allowing to a relatively large group of scientists to work efficiently and to experience scientific freedom while pursuing common objectives. The fact that the team will soon move to a brand new building specifically designed to host microbiology research and having a modern equipment of high quality is definitely a plus. In addition, the new building will offer the opportunity to fundamental scientists to share the workspace with start-up companies.

Over the years, the unit has been extremely good in building strong connections with a number of research networks and major industrial partners. The local network of the LMSM is really outstanding, providing strong scientific and economical support. The level of funding and the fact that it originates from a variety of sources (regional, national, European and industrial) is also remarkable.

The research topics of the unit are very interesting. Studying the interactions taking place between bacteria and the host (skin, gut and lung) and between bacteria and the rhizosphere is of great importance. The expertise of the lab in the study of the human microbiota, a major emerging research field, should help the unit attract further funding.

The scientific production of the unit is very good, several articles having been published in nice international journals.

Weaknesses and threats in the context

The scientific production of the unit is very good. However, the unit would benefit from more clearly identifying the most ambitious research projects among all the research projects currently carried out and fearlessly pursue them. Sufficient manpower should also be granted to these projects. The unit would also benefit from a greater international exposure. Inviting more high-level foreign scientists to work in and visit the unit could be of help.

The unit has done an outstanding job in finding industrial and regional support. However, it is often difficult to combine ground-breaking research with industrial collaboration. The unit has published a large number of articles, but most of them were published in specialized to very specialized journals. Focusing more on high impact research is required to publish in top scientific journals.

An informal meeting gathering all the unit members is organized every week. However, a more formal, weekly scientific “lab meeting” during which the unit members, and particularly the PhD students, could present their data in a more structured way is missing.

As already mentioned in the previous review report, there is an imbalance between the size of the technical staff and the amount of technical work required, for instance to run the different pieces of equipment of the unit. There is also a lack of bioinformatic resources to analyze the data generated by high-throughput approaches. The lack of technical staff might become an even greater threat if the unit keeps growing.

If the growth of the unit continues, which is likely given the current momentum, it will be important to pay attention to unit cohesion, to the quality of recruitment (attracting international scientists would be a plus) and to prepare the transition. New structures will need to be put in place to maintain an efficient organization. Managing growth and clearly identifying the goals of the unit for the future will be particularly important.

Recommendations

The unit has been extremely good in attracting money from a variety of sources. They are extremely well integrated in the region of Normandy, playing an important societal, academic and economical role. They should continue doing what they have been doing so successfully so far.

The scientific production of the unit is very good. In order to further increase the overall quality of the research carried out by the LMSM and become even more competitive at the international level, special attention should be given to the most scientifically ambitious projects. The training of the PhD students could also be further improved by encouraging them to benefit from the courses offered by the university and by organizing formal scientific meetings.

The unit should also carefully prepare the upcoming transition in LMSM leadership and make sure that the solid network built over the years does not suffer from it and, in fact, continues to grow and prosper.