CERMN - Centre d'études et de recherche sur le médicament de Normandie

Rapport Hcéres

HCERES

High Council for the Evaluation of Research and Higher Education

Research units

HCERES report on interdisciplinary research unit:

Centre d'Études et de Recherche sur le Médicament de Normandie

CERMN

Under the supervision of the following institutions and research bodies:

Université de Caen Basse-Normandie - UCBN

Institut National de la Santé Et de la Recherche Médicale - INSERM

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]

Alan Harvey, 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:	Centre d'Études et de Recherche sur le Médicament de Normandie
Unit acronym:	CERMN
Label requested:	UMR
Current number:	EA 4258
Name of Director (2015-2016):	Mr Patrick DALLEMAGNE
Name of Project Leader (2017-2021):	Mr Patrick DALLEMAGNE

Expert committee members

Chair:	Mr Alan HARVEY, Strathclyde University, UK
Experts:	Mr Hervé GALONS, Université Paris Descartes (representative of CNU)
	Mrs Anne GALY, INSERM (representative of INSERM)
	Mrs Virginie VIDAL, CNRS, ChimieParisTech
Scientific delegate representing the HCERES:	
	Mr Georges MASSIOT
Representatives of supervising institutions and bodies:	
	Mr Michel BOULOUARD, UNICAEN
	Mr Pierre DENISE, UNICAEN
	Mrs Anne GUESDON, UNICAEN
	Mrs Marie-Josèphe LEROY-ZAMIA, INSERM
Heads of Doctoral Schools:	
	Mr François DAUPHIN, Doctoral school n°497, BISE
	Mr Jacques ROUDEN, Doctoral school n°508, NC

1 • Introduction

History and geographical location of the unit

CERMN is part of the University of Caen. Initially founded by Mr Max ROBBA in 1974, this laboratory has, during four decades and under the guidance of three successive directors, regularly pursued its development and it has made important scientific contributions to Caen's faculty of pharmacy.

Management team

CERMN is led by its present director, Mr Patrick DALLEMAGNE, along with the deputy director, Mr Ronan BUREAU.

HCERES nomenclature

ST4

SVE1

Scientific domains

The scientific activities of CERMN are mainly dedicated to the design of compounds of biological interest as potential leads to new drugs, chemoinformatics (computer-aided drug design), organic and medicinal chemistry, and evaluation of the drug-like properties of new compounds. Oncology and neurosciences are the main therapeutic areas being developed in the unit.

Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	17	17
N2: Permanent researchers from Institutions and similar positions		
N3: Other permanent staff (technicians and administrative personnel)	9 (7.8)	9 (7.8)
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	2	
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	4	
N6: Other contractual staff (technicians and administrative personnel)	3	
N7: PhD students	9	
TOTAL N1 to N7	**44 (42.8)**	
Qualified research supervisors (HDR) or similar positions	14	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	17
Postdoctoral scientists having spent at least 12 months in the unit	17
Number of Research Supervisor Qualifications (HDR) obtained during the period	6

2 • Overall assessment of the interdisciplinary unit

Introduction

CERMN is essentially a strong and well-organized medicinal chemistry research unit which, in recent years, has begun to develop a screening and druggability platform. A new building with labs, offices and meeting rooms has been constructed on the campus close to the faculties of medicine and pharmacy, and this building is now fully occupied by CERMN.

There are 15 permanent academic staff plus nine permanent technical/engineering staff. Additionally, there are technical staff/engineers on contracts supported by industry. Currently, there are four post-doctoral researchers and nine PhD students.

CERMN has developed a library of ~15,000 organic compounds as a resource for drug discovery screening, and is the main contributor to the national library of compounds. CERMN is organised with four distinct technological platforms (the chemical collection, synthetic and medicinal chemistry, chemoinformatics, and screening and druggability), and expertise from these is combined to conduct two main thematic projects, one in cancer and the other one related to possible treatment of Alzheimer disease. A third theme relating to ecotoxicology is being wound down following a change in staff.

Global assessment of the unit

The PI is the former dean of the pharmacy faculty; he is also the previous head of the research unit since 2012. His ambition is to develop the unit from medicinal chemistry to have drugs on the market. The unit life is well organized, and the involvement and commitment of the engineers and technicians is notable. The environment is good, both within CERMN and locally, and the unit is present in several networks (GDR and European Interreg networks). The unit is very well integrated in the pharmacy and chemistry networks locally. CERMN has a substantial budget: €3.4 M in 2014, including funds from European contracts (€108K) and industry (€350K). In the review period, output is very good: ~100 publications, with many in top journals for the discipline (4 papers in J Med Chem which is no.1 in medicinal chemistry; 3 papers in Bioorg Med Chem which is no. 2; 13 papers in Eur J Med Chem which is no. 4), plus two papers in the highly ranked PNAS. They have also 10 patent applications since 2010. There are plans to create a company, Whizzomics around CERMN's chemoinformatics platform.

Strengths and opportunities in the context

CERMN is very strong in synthetic and medicinal chemistry, as well as in chemoinformatics and computer-aided drug design. The druggability assessment area is a developing strength, and the collection of screening compounds is a unique asset. The team of technicians and engineers is highly qualified and provides a very strong technical base for the work of the unit. The network of scientific collaborators is also a strength.

Two potential lead compounds have been identified in the main thematic areas (donecopride for Alzheimer's disease; pyridoclax for cancer), bringing opportunities to translate the basic research into clinical development programmes. External collaborators who have screened the CERMN compound collection have also identified hits that might form the basis for drug development projects as antibiotics and anti-parasitics.

Weaknesses and threats in the context

The amount of de novo drug discovery and drug design apparently being undertaken by CERMN is low. Given the attrition rate in drug development (as many as nine out of ten compounds drop out between preclinical development and marketing approval), there is a real threat that CERMN's ambition of having one of its compounds reach the market will not be achievable, based on only two promising preclinical compounds.

The current screening platform appears to be underpowered to support a substantial increase in drug discovery activity: the range of assays is narrow and critical elements (radioligand binding and cell-based studies) have to be provided by external collaborators. There appears to be little biological or disease-related expertise within CERMN, meaning that the unit depends on the quality of input from collaborators for its mission-critical translational research.

Although CERMN has a large and diverse collection of apparently drug-like chemicals available for testing for bioactivity, the unit does not appear to have the intention to use the compounds for novel in-house drug discovery. This weakness would appear to stem from the technical limitations of the screening platform and from the absence of biomedical expertise.

For a unit with 14 qualified research supervisors (HDRs), CERMN has few PhD students (9 at present), meaning that the quantity of research and the ability to expand the range of research will be limited.

CERMN is well-connected in regional networks but its international presence should be developed (through Horizon 2020 awards; Marie Skłodowska-Curie studentships or fellowships; by industrial collaborations outside of France; by academic collaborations outside of France). Given the growth of academic drug discovery groups in USA and in UK and other parts of Europe, CERMN may lose opportunities to participate in EU funding and may simply be invisible to non-French companies that are out-sourcing drug discovery and design projects.

Recommendations

The committee would like to encourage the unit to pursue ambitious scientific activities at the international level in the field of medicinal chemistry. To achieve this objective, the committee recommends that the unit reinforces its collaborations with local teams pursuing similar objectives and brings new researchers to the unit.

The committee recommends that the management unit re-evaluates the current plans for the next five years, taking into account the comments contained in the review and with the aim of agreeing explicit targets and goals, plus plans to reach those goals.