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## DC2N - Différenciation et communication neuronale et neuroendocrine

Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

HCERES report on research unit:

Neuronal and Neuroendocrine Differentiation and  
Communication

DC2N

Under the supervision of  
the following institutions  
and research bodies:

Université de Rouen

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

# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

*In the name of HCERES,<sup>1</sup>*

Michel Cosnard, president

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

Angelo Corti, chairman of the committee

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Under the decree No.2014-1365 dated 14 november 2014,

<sup>1</sup> The president of HCERES "countersigns the evaluation reports set up by the experts 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)

## 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:** Neuronal and Neuroendocrine Differentiation and Communication

**Unit acronym:** DC2N

**Label requested:** INSERM

**Current number:** INSERM U982

**Name of Director (2015-2016):** Mr Youssef ANOUAR

**Name of Project Leader (2017-2021):** Mr Youssef ANOUAR

## Expert committee members

**Chair:** Mr Angelo CORTI, San Raffaele Scientific Institute, Milan, Italy

**Experts:** Ms Marie-France BADER, INCI, Strasbourg

Ms Marie-Bernadette DELISLE, CHU, CMEAB, faculté de Médecine de Rangueil, Toulouse (representative of the INSERM CSS)

Ms Sylvie THIRION, CNRS, Université Aix-Marseille (representative of the CNU)

**Scientific delegate representing the HCERES:**

Mr Jean-Marie ZAJAC

**Representatives of supervising institutions and bodies:**

Mr Samir OULD ALI, INSERM

Mr Cafer ÖZKUL, Université de Rouen

**Head of Doctoral School:**

Mr Patrice LEROUGE, EdNBISE, ED 497 "Normandy's Doctoral School of Integrative Biology, Health and Environment"

## 1 • Introduction

### History and geographical location of the unit

The INSERM unit 982, directed by Dr Youssef ANOUAR, was opened in 2010 as a joint INSERM-University of Rouen laboratory, after the restructuration of unit 413 (Molecular and Cellular Neuroendocrinology, directed by Dr Hubert VAUDRY between 1995 and 2007). The unit was evaluated by the AERES at mid-term, and started this quinquennial in 2012 (to synchronize the new Unit 982 with the quinquennial contract of Rouen University).

The unit is located in the campus of the Faculty of Sciences, University of Rouen Mont Saint Aignan. The unit will move in January 2016 to a new building next to its current located, the "Centre Universitaire de Recherche et d'Innovation en Biologie (CURIB) - Ms Marianne GRUNBERG-MANAGO". This building has a useful area of 8700 m<sup>2</sup>. The unit will occupy 1800 m<sup>2</sup> and will be grouped with 3 other laboratories, 2 technological platforms and an animal facility.

### Management team

The unit is composed of four teams (Team 1, Functional genomics and neuronal neuroendocrine pathophysiology; Team 2, Neuropeptides, neuronal death and cell plasticity; Team 3, Astrocytes and vascular niche; Team 4, Neuroendocrinology and pathophysiology of the adrenal cortex).

The unit general management is conducted by Mr Youssef ANOUAR (Director). Team coordinators are Mr Youssef ANOUAR (Team 1), Mr David VAUDRY (Team 2) Mrs Hélène CASTEL (Team 3), and Mr Nicolas CHARTREL and Mr Hervé LEFEBVRE (Team 4).

### HCERES nomenclature

SVE1 LS5

SVE1 LS4

### Scientific domains

The unit has gained a high international reputation in peptide research, neuroendocrinology and neuroscience. This reputation relies on its work on the involvement of peptides and neuropeptides in neuroendocrine mechanisms, and on their roles in certain diseases (neuroendocrine tumors, brain tumors, and brain damage following ischemia).

## Unit workforce

Unit workforce	Number on 30/06/2015	Number on 01/01/2017
N1: Permanent professors and similar positions	11	10
N2: Permanent researchers from Institutions and similar positions	28	28
N3: Other permanent staff (technicians and administrative personnel)	13	12
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)		
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1	
N6: Other contractual staff (technicians and administrative personnel)	5	
N7: PhD students	18	
TOTAL N1 to N7	76	
Qualified research supervisors (HDR) or similar positions	19	

Unit record	From 01/01/2010 to 30/06/2015
PhD theses defended	19
Postdoctoral scientists having spent at least 12 months in the unit	11
Number of Research Supervisor Qualifications (HDR) obtained during the period	4

## 2 • Overall assessment of the unit

### Introduction

The main scientific interest of the unit is to elucidate the cellular and molecular mechanisms of neuronal/neuroendocrine differentiation and cell-to-cell communication involving neuropeptides, and to transfer the results toward medical and biotechnological applications. In particular, the objectives of the unit are: a) to contribute to understand the mechanisms of neuronal and neuroendocrine differentiation and the pathophysiological cell-to-cell communications in the nervous and endocrine systems; b) to identify new diagnostic/prognostic markers and therapeutic targets in neurodegenerative diseases and in cancer; and c) to develop new treatments for neurodegenerative diseases, brain tumors, neuroendocrine tumors, cardiovascular and metabolic pathologies.

To achieve these goals, in the last quinquennial, the unit has recruited 4 assistant professors (from outside the unit), 3 INSERM or University engineers, 4 professors, 1 INSERM investigator and 6 assistant professors (from other laboratories). Two assistant professors were promoted full professors. Such a growth allows the 4 teams to develop ambitious programs on basic, preclinical and clinical research in the above-mentioned fields. The majority of the projects received important funding from different agencies and organizations. Some of these funds were used to recruit 30 people - post-docs (9), qualified technicians and administrative staff, which will further facilitate addressing the above-mentioned aims.

### Global assessment of the unit

The unit has now the necessary critical mass for making competitive basic and translational research. Furthermore, taking into account the long-standing experience in peptide research, neuroendocrinology and neuroscience, the internationally recognized expertise of the scientists of the Unit and the recent development of animal models and novel genomic, proteomic, physiological approaches for addressing the proposed objectives, this unit is well positioned in the international competition to make significant contributions in these fields. This is also favoured by the location within the University of Rouen (with various platforms, services and facilities available), the good collaborations at national and international level, the scientific networks, and the important connections/collaborations with clinicians of the Rouen CHU, CIC and other clinical research networks (COMETE, REHOS, PGL.EVA, Cancerpole Nord-Ouest clinical).

Considering the potential impact, the overall productivity, the international visibility of the director and of the team coordinators/members, the international collaborations, the interaction with local partners, and the intense training activity, the global assessment of this unit is excellent.

### Strengths and opportunities in the context

The unit has a deep and well-documented expertise in neuroscience, neuroendocrinology, and in the identification and characterization of neuropeptides, their receptors and their functions. This expertise is well recognized by the scientific community and by socio-economic actors, as documented by the high quality scientific publications, the patent applications, and the successful fundraising activity of this unit.

Each team of the unit is structured in a balanced manner in terms of human and financial resources, and has specific complementary scientific competences. The integration of clinicians and pharmaceutical specialists with experience in formulation, intellectual property and start-up management, is an important asset, as this may facilitate the development of new drugs derived from the peptides discovered by the unit.

The unit has an excellent publication track record in the field of neuroscience and neuroendocrinology: on average, the unit has published around 40 peer-reviewed articles each year since 2010, including 70 articles published in peer-reviewed scientific journals with impact factor above 4.3, and 8 patent applications.

Visibility and notoriety at national and international levels are undoubtedly points of strength of the unit, considering the impressive number of scientific networks involving staff members, the numerous worldwide collaborations, the high number of invitations to present their work at conferences, and the large number of national and International scientific meetings, symposia, and conferences organized in the last five years. This may increase the appeal of the unit and facilitate further collaborations and preparation of joint projects.

Attractiveness for researchers, post-docs and students is another point of strength considering that, during the last contract, the unit has attracted 12 researchers and hosted 9 post-docs and 37 PhD students. Furthermore, during the last term, the unit has recruited 4 assistant professors, and 3 engineers to support the different teams.

The unit benefits from high-tech platforms located in the same building, such as the “Plateforme Régionale de Recherche en Imagerie Cellulaire de Normandie” (PRIMACEN) and the proteomic facility (PISSARO), which are powerful technological supports for the success of the projects.

The unit has a proven ability to raise private and public contracts, in addition to recurrent funding by INSERM and the University of Rouen, for running costs and salaries.

### Weaknesses and threats in the context

The unit is currently pursuing many interesting and ambitious projects, including studies aimed at identifying new diagnostic/prognostic markers and therapeutic targets and at developing new treatments for neurodegenerative diseases, brain tumors, neuroendocrine tumors, cardiovascular diseases and metabolic pathologies. Pursuing innovative, high risk and diversified projects could be a good management strategy for a large unit with many different independent investigators. However, excessive diversification in too many (different) pathophysiological fields risks to be dispersive for small teams.

Several staff members have important teaching loads and administrative duties, and the unit has relatively restricted funding to support some aspects of the projects. The low ratio of qualified technicians in the lab represents a point of weakness.

### Recommendations

- project prioritization is recommended;
- the scientific productivity of this unit is of very high quality. The unit members should pursue their efforts, initiated during the last contract, to increase the number of articles published in high profile journals;
- the four teams have been organized based on scientific grounds and equilibrated resources. The Lab organization could benefit from increasing the ratio of qualified technicians/researchers and from increasing the collaborations and the interactions between teams;
- the web site should be updated, as this is important for the visibility of the unit.