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UNIS - Unité de neurobiologie des canaux ioniques et de la synapse

Rapport Hcéres

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HCERES

High Council for the Evaluation of Research
and Higher Education

Department of Research Evaluation

report on research unit:

Ion Channel & Synaptic Neurobiology

UNIS

under the supervision of
the following institutions
and research bodies:

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

Aix-Marseille Université

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

Ole Paulsen, 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:	Ion Channel & Synaptic Neurobiology
Unit acronym:	UNIS
Label requested:	Renewal with no change
Current number:	1072
Name of Director (2016-2017):	Mr Dominique DEBANNE
Name of Project Leader (2018-2022):	Mr Dominique DEBANNE

Expert committee members

Chair:	Mr Ole PAULSEN, University of Cambridge, UK
Experts:	Ms Ann LOHOF, Université Pierre et Marie Curie (representative of the CNU) Ms Christine LONJOU, Université Pierre et Marie Curie (representative of supporting personnel) Ms Susanne Schoch MCGOVERN, University of Bonn, Germany Mr Jean Christophe PONCER, Institut du Fer à Moulin (representative of the CSS INSERM)
Scientific delegate representing the HCERES:	Mr Christian GIAUME
Representatives of supervising institutions and bodies:	Mr Pierre CHIAPPETTA, Université Aix-Marseille Ms Dominique NOBILE, INSERM
Head of Doctoral School:	Mr Jean Louis MÈGE, ED n° 62, “Sciences de la Vie et de la Santé”

1 • Introduction

History and geographical location of the unit

The Ion Channel & Synaptic Neurobiology Unit (Unité de Neurobiologie des canaux Ioniques et de la Synapse) (UNIS, UMR_S 1072, director: Mr Dominique DEBANNE) is one of the three cellular neuroscience units located on the north campus of the Faculty of Medicine of Marseille. It is derived from the UMR_S 641 (ion channel neurobiology) that was led by Mr Michael SEAGAR from 1997 to 2011. Whilst it is currently located on the north campus of the faculty of Medicine, the unit will be relocated during the next contract period in 2020-2021 to the Luminy campus in an INSERM building named TPR2.

Management team

The director of the unit is Mr Dominique DEBANNE since 2011 and will remain so for the next contract.

HCERES nomenclature

Domaine principal: SVE4 Neurologie.

Domaine secondaire: SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale; SVE5 Physiologie, Physiopathologie, Cardiologie, Pharmacologie, Endocrinologie, Cancer, Technologies Médicales.

Scientific domains

The mission of UNIS is the study of ion channels in neuronal communication, plasticity and in brain diseases. Specifically, their three main research topics are molecular mechanisms of neurotransmitter release, plasticity of neuronal excitability, and mechanisms underlying robustness of neuronal excitability.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	2	6
N2: Permanent researchers from Institutions and similar positions	6	5
N3: Other permanent staff (technicians and administrative personnel)	11	11
N4: Other researchers (Postdoctoral students, visitors, etc.)	3	
N5: Emeritus	1	
N6: Other contractual staff (technicians and administrative personnel)	3	
N7: PhD students	5	
TOTAL N1 to N7	31	
Qualified research supervisors (HDR) or similar positions	6	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	4
Postdoctoral scientists having spent at least 12 months in the unit	6
Number of Research Supervisor Qualifications (HDR) obtained during the period	2

2 • Assessment of the unit

Global assessment of the unit

The UNIS unit is composed of three research groups (team leaders: Mr Oussama EL FAR, Mr Dominique DEBANNE and Mr Jean-Marc GOAILLARD), complemented by a support team.

The objectives of the UMR1072 during the 2018-2022 period will be to pursue their research on the role of ion channels and synaptic proteins in brain function and brain pathology. To address these aims, they will use a wide range of innovative tools and methods in biochemistry (surface plasmonic resonance, *in vitro* membrane fusion assays), molecular biology (microfluidic qPCR), neurophysiology (paired whole-cell recordings and soma-axon recordings), imaging (voltage and sodium imaging, chromophore-assisted light inactivation), modelling (protein-lipid interaction and electrical activity in neurons) and mathematics (algebraic topology and mutual information analysis).

The major development of the organisation of the unit consists of several elements. Team 1 will be reinforced with the arrival of three researchers, who will increase the expertise in lipid/protein interactions and molecular modelling. Team 3 will host an electrophysiologist who will reinforce the group by bringing skills in computer simulations of neuronal activity. Finally, the links with the group of Mr Juan José GARRIDO (Cajal Institute, Madrid) will be strengthened through a European Associated Laboratory (EAL), which is being evaluated by INSERM. This will add further value to the unit by bringing in more expertise in cellular neurobiology, which was recommended by the AERES committee of experts in 2011.

The added value of the unit arises principally from the synergy between the research groups and the multi-scale analysis of basic neuronal functions combining molecular, functional and modelling tools. The transfer of skills within and between groups has led in the recent past to high standard publications. The added value will be further enhanced with the joint projects they propose (role of LGI1 in Kv1 channel down-regulation; co-translational association of Kv1 and LGI1; role of miR132 in intrinsic excitability).