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## NICN - Neurobiologie des interactions cellulaires et neurophysiopathologie

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:

Institut de Neurophysiopathologie

INP

under the supervision of  
the following institutions  
and research bodies:

Aix-Marseille Université

Centre National de la Recherche Scientifique – CNRS

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,<sup>1</sup>*

Michel Cosnard, president

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

Myriam Bernaudin, chairwoman 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:	Institut de Neurophysiopathologie
Unit acronym:	INP
Label requested:	UMR
Current number:	7259
Name of Director (2016-2017):	Mr Michel KRESTCHATISKY
Name of Project Leader (2018-2022):	Mr Michel KRESTCHATISKY

## Expert committee members

Chair:	Ms Myriam BERNAUDIN, Université de Caen
Experts:	Mr Emmanuel BROUILLET, Université Paris-Sud, Paris-Saclay (representative of the CoNRS) Mr Alain BUISSON, Université Grenoble Alpes Mr Pascal EZAN, Université Paris 5 (representative of supporting personnel) Mr Jean-Philippe HUGNOT, Université de Montpellier Ms Brigitte MALGRANGE, Université de Liège, GIGA-Neurosciences, Belgium Ms Claire RAMPON, Université de Toulouse 3 Mr Cédric RAOUL, Université de Montpellier Ms Rachel SHERRARD, Université Pierre et Marie Curie, Paris 6 (representative of the CNU)
Scientific delegate representing the HCERES:	Mr Christian GIAUME
Representatives of supervising institutions and bodies:	Mr Pierre CHIAPPETTA, Aix-Marseille Université Mr Bernard POULAIN, CNRS
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 INP project is a multi-team project proposing to regroup around 130 people in eleven teams from three existing units (UMR7259, UMR7286, UMR\_S911). Seven teams are already existing (4) or emerged (3) from the NICN-UMR7259 laboratory headed by Mr Michel KHRESTCHATISKY and affiliated with the CNRS and AMU (created *ex nihilo* in 2002 as a FRE2533, and then became UMR6184 for the 2004-2007 period and UMR7259 for the 2012-2017 period; three teams originated from the CRO2-UMR\_S911 laboratory, headed by Mr Dominique LOMBARDO and affiliated with Inserm and AMU and one team is an ATIP team hosted presently in the CRN2M-UMR7286 laboratory, headed by Mr Alain ENJALBERT and affiliated with the CNRS and AMU. One of these eleven teams, VECT-HORUS, is a spin-off of the NICN leading to the creation project of a Laboratoire Commun de Recherche, LCR (Joint Research Laboratory).

As part as the “Neuro-Timone opération” (CPER funding of 18,5M€), the teams presently located at the site Nord of the Medical Faculty or the Medical and Pharmacy Faculties of the Timone Campus will be regrouped in the Medical Faculty at the Timone campus by creating a new laboratory dedicated to the study of Central Nervous System (CNS) diseases and the development of therapeutic strategies.

### Management team

The institute will be headed by Mr Michel KHRESTCHATISKY.

### HCERES nomenclature

Principal: SVE4 Neurologie.

Secondary:

- SVE5 Physiologie, Physiopathologie, Cardiologie, Pharmacologie, Endocrinologie, Cancer, Technologies Médicales;
- SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale;
- SVE6 Santé Publique, Epidémiologie, Recherche Clinique.

### Scientific domains

The project is focused on neuroinflammatory and neurodegenerative processes, tumorigenesis (neuro-oncology), neurocytoskeleton, and modification of the blood-brain barrier (BBB) in different pathological conditions including Alzheimer disease, multiple sclerosis, autism and glioma with molecular, cellular and animal models, cellular imaging, chemistry as well as clinical approaches.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	5	10
N2: Permanent researchers from Institutions and similar positions	10	28
N3: Other permanent staff (technicians and administrative personnel)	9	39
N4: Other researchers (Postdoctoral students, visitors, etc.)	5	
N5: Emeritus	1	
N6: Other contractual staff (technicians and administrative personnel)	1	
N7: PhD students	10	
<b>TOTAL N1 to N7</b>	<b>41</b>	
Qualified research supervisors (HDR) or similar positions	13	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	8
Postdoctoral scientists having spent at least 12 months in the unit	10
Number of Research Supervisor Qualifications (HDR) obtained during the period	0

## 2 • Assessment of the unit

### Global assessment of the unit

The INP project is focused on the understanding of the pathophysiological processes in diseases and disorders of the central nervous system (CNS). Collaborative efforts will be centered on neuroinflammatory and neurodegenerative processes, tumorigenesis (neuro-oncology) and alteration/modification of the blood-brain-barrier (BBB) in different pathological conditions including Alzheimer disease, multiple sclerosis, autism and glioma. The development of new diagnostics and therapeutics, based in particular on cellular (stem cell/inducible-Pluripotent Stem Cell, iPSC) and molecular (vectors targeting drugs to the CNS) strategies, is also a main objective of the unit project. INP will address these objectives with complementary basic and applied approaches from molecular, cellular and animal models to translational approaches thanks to a strong partnership with pharmaceutical industries and interactions with clinical teams of the regional and other medical institutions. Indeed, current restructuring to include 3 teams from the CRO2 unit (from the UMR\_S911 Center for Research in Oncobiology and Oncopharmacology), and the recruitment of a young CNRS researcher allows the INP project to expand its research domain of cellular therapy (iPSC) and to broaden its application to include neuro-oncology.

INP will include around 130 persons with 35 permanent researchers including 10 full-time researchers (7 CNRS and 3 Inserm) and 28 professors, assistant professors or PH (AMU, AP-HM). The INP project will benefit of a strong technicians/engineers/administrative support with 39 permanent technicians/engineers/administrative staff (28 AMU, 9 CNRS, 2 INSERM) with 12 involved in common services of the unit. Moreover, 33 non-permanent staff is already identified for the start of the contract (2018) with 10 post-docs; 17 PhD and other students.

Overall, the unit has an excellent and original scientific activity, which is competitive regarding the national and international community.

Moreover, the creation of a start-up company by the NICN laboratory, VECT-HORUS, more than 10 years ago represents a unique platform in Europe for the vector molecules development to facilitate drug delivery into the brain and allowing transfer and exploitation of the unit researches. The unit activity at the social, economic and cultural environment is outstanding.

Thanks to the “NeuroTimone Opération”, all the INP teams and members will be hosted in a unique site and fully renovated laboratory that therefore answers to a weak point mentioned in the previous report. In addition, this operation will allow the INP to be located on the same site as two other neuroscience institutes (INT and INS) that will favour the creation of conjoint platforms (animal care facility, cellular imaging platform, etc.) and reinforce the visibility, already well achieved, of the Timone site in neurosciences and the future INP unit in a several research areas: Alzheimer disease, BBB vectorisation, cell therapy, neurodegeneration and glioma. The achievement of the excellent scientific projects of the unit will strongly depend on the ability of all the unit members to be regrouped, in a short time, in this unique NeuroTimone site.

The unit has a very good involvement in training through research in particular at the PhD level.

The project of creation of the INP has been strongly/dynamically conducted by the future director, in a collegial and federative manner. As a consequence, all members of the INP are very enthusiastic not only by their physical regrouping on a single site but also by new scientific projects that emerge from their discussions. Strong transversal axes, which encompass several different research teams, have already been identified on neurodegeneration, neuroinflammation, cytoskeleton and neuro-oncology.