

FINAL RESUME ON THE RESEARCH UNIT
TENS - The Enteric Nervous System in gut and
brain disorders

UNDER THE SUPERVISION OF THE
FOLLOWING INSTITUTIONS AND
RESEARCH BODIES:

Université de Nantes

Institut national de la santé et de la recherche
médicale - INSERM

EVALUATION CAMPAIGN 2020-2022
GROUP B



In the name of Hcéres¹:

Mr Thierry Coulhon, President

In the name of the experts committee²:

Mr Pieter Vanden Berghe, Chairman of the
committee

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

¹ The president of Hcéres "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 experts committee". (Article 11, paragraph 2).

Tables in this document were filled with certified data submitted by the supervising body on behalf of the unit.

UNIT PRESENTATION

Unit name:	The Enteric Nervous System in gut and brain disorders
Unit acronym:	TENS
Current label and N:	UMR 1235
ID RNSR:	201722764Z
Application type:	Renewal
Head of the unit (2020-2021):	Mr Michel Neunlist
Project leader (2021-2025):	Mr Michel Neunlist
Number of teams:	Monoteam

EXPERTS COMMITTEE MEMBERS

Chair:	Mr Pieter Vanden Berghe, KU Leuven, Belgium
Experts :	Ms Alice Carrier, CNRS, Marseille (representative of CSS INSERM) Ms Joëlle Charby, INSERM, Valbonne Ms Claire Cherbuy, INRAE, Jouy-en-Josas (supporting personnel) Ms Siobhain O'Mahony, University College Cork, Ireland Mr Jean-Marc Sabaté, Hôpital Avicenne - Hôpitaux Universitaires Paris Seine-Saint-Denis, Bobigny (representative of CNU)

HCÉRES REPRESENTATIVE

Mr Jean Edouard Gairin

REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Mr Raymond Bazin, INSERM
Mr Bertrand Cariou, Université de Nantes
Mr Olivier Grasset, Université de Nantes
Ms Anne Royer-Moës, CHU de Nantes (partenaire)
Mr Sébastien Youinou, Université de Nantes

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The U1235-TENS unit (formerly UMR 913) was founded in 2008 by Mr Michel Neunlist. Its aim is to investigate the role of the enteric nervous system in gut and brain disorders from the molecular over the cellular to the patient level. TENS is part of the Faculty of Medicine of the University of Nantes and is physically located on the university's main campus. In this location, it is also physically close to the hospital, which houses several clinical departments with which it collaborates (Digestive diseases, Neurology, Biochemistry, Physical and Medical Rehabilitation).

RESEARCH ECOSYSTEM

The unit benefits from a strategic location, close to the hospital on the one hand and to other relevant INSERM units on the other hand, which provides an ideal environment for the execution of the translational research that the unit aims at. Within this setting, the unit has also access to associated core facilities, including imaging, flow cytometry, mass spectroscopy, sequencing and bioinformatic and small and large animal facilities. Noteworthy is that the unit not only benefits from this situation but actively engages in further expanding and organizing it, with an active role in establishing the Institute of Digestive Diseases (IMAD) and DHU 2020 (personalized medicine for chronic diseases). In their efforts to provide also knowledge and expertise to the community, the unit receives funding from academic (ANR-JCJC) and industrial (Bayer) sources to support an organoid core facility, which will be used in a large inter-regional project, Prolific.

HCÉRES NOMENCLATURE AND THEMATICS OF THE UNIT

SVE5

MANAGEMENT TEAM

Mr Michel Neunlist is the head of the unit for the current and next contracts.

UNIT WORKFORCE

TENS		
	Number 06/01/2020	Number 01/01/2022
Active staff		
Full professors and similar positions	7	7
Assistant professors and similar positions	6	6
Full time research directors (Directeurs de recherche) and similar positions	2	2
Full time research associates (Chargés de recherche) and similar positions	5	5
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	0	0
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	15	14
Permanent staff	35	34
Non-permanent professors and associate professors, including emeritus	0	
Non-permanent full time scientists, including emeritus, post-docs (except PhD students)	1	
PhD Students	10	
Non-permanent supporting personnel	6	

Non-permanent staff	17	
Total	52	34

GLOBAL ASSESSMENT OF THE UNIT

The U1235-TENS unit is a successful and well-performing unit that aims to understand how the enteric nervous system is involved in several different diseases of the gut and beyond. The overall objective is to provide scientific knowledge about the origin of diseases but also to suggest and explore innovative therapeutic and diagnostic strategies. The breadth of the research topics is impressive and supports the possibility of detecting links between different conditions related to disease onset or progression. With highly focused research, these links could remain elusive, but the broad scope of the unit also presents a danger that time and resources needed to investigate each of the sub-topics in depth might not be sufficient. Therefore, the unit might want to pay attention to a healthy balance between the big picture and more detailed approaches, an internal midterm evaluation may be a good plan. Throughout the subtopics, the unit emphasizes the role of the microbiome, a fascinating but complex topic that calls for caution in face of possible confounding factors.

The unit has published its results in a large number of research articles, in field-specific (e.g., *Gastroenterology*) and broad (e.g., *Nature Medicine*) journals and is internationally recognized for its work. Despite the importance of their research results, a strong strategy needs to be implemented to integrate their detailed molecular, in-depth cellular with thorough clinical work in order to increase the number of high-impact papers.

TENS has successfully secured funding from national sources (ANR, INCa) as well as from foundations and charities (e.g., Ligue nationale contre le Cancer). Attracting funding from European sources (e.g., Horizon Europe) should be a point of focus for the future.

In addition, they have several collaborations with industry, including pharmaceutical and nutrition-related companies (e.g., Bayer, Pileje) and are conducting multiple clinical trials.

The organization and integration of the unit within the university and the hospital is strong and the provision of their expertise through core facility efforts is commendable. Despite the strong support from the supervising bodies (INSERM and University of Nantes) and their visibility, it seems difficult for them to attract foreign researchers and postdoctoral fellows. In order to remain internationally competitive, the unit should implement a strategy to actively attract international researchers with compatible expertise.

The unit is extremely strong in communication of their topics to the lay public through radio and television interviews. The personnel of the unit are happy, enthusiastic and motivated to support the unit in its entirety, which is of very high value and should be fostered as much as possible. Finally, in the next phase of the project the unit will have to develop strategies to pass on scientific and management control to the next generation, so that this research unit remains at its high standards.

Their ambitious research plan for the future is centered around five different axes (Axis 1 "Gut and ENS remodelling in neurodevelopmental disorders", Axis 2 "Role of the enteric nervous system and gut microbiota in inflammatory bowel conditions", Axis 3 "Role of the enteric nervous system in colorectal cancer", Axis 4 "Role of the enteric nervous system and gut microbiota in neurodegenerative diseases", and Axis 5 "Organ barrier and microbiota dysfunctions in spinal cord injury"), each including projects that target specific subtopics of a disease that is related to the intestine. Some of the projects extend previous research while others embark on new themes like spinal cord injury and Alzheimer's disease. Limited funding and personnel involved is a potential threat, which may jeopardize the execution of all project aspects. There is a risk that confounding factors, such as diet, levels of physical activity will affect conclusions, therefore patient stratification will be of utmost importance.

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