

FINAL RESUME ON THE RESEARCH UNIT
ITX-lab - The laboratory of l'Institut du Thorax

UNDER THE SUPERVISION OF THE
FOLLOWING INSTITUTIONS AND RESEARCH
BODIES:

Université de Nantes

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

Centre national de la recherche scientifique - CNRS

EVALUATION CAMPAIGN 2020-2021
GROUP B



In the name of Hcéres¹:

Mr Thierry Coulhon, President

In the name of the experts committee²:

Ms Marie-Christine Alessi, Chairwoman 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 laboratory of l'Institut du Thorax

Unit acronym:

ITX-lab

Current label and N°:

UMR_S 1087 / UMR C6291

ID RNSR:

201220396X

Application type:

Renewal

Head of the unit (2020-2021):

Mr Richard Redon

Project leader (2021-2025):

Mr Richard Redon

Number of teams and/or themes:

4

EXPERTS COMMITTEE MEMBERS

Chair:

Ms Marie-Christine Alessi, Aix-Marseille Université, Marseille

Experts:

Ms Claire Arnaud, Faculté de Médecine, Grenoble

Ms Eva Delpón, Universidad Complutense, Madrid, Spain

Ms Hélène Duez, Inserm, Lille (representative of CSS INSERM)

Mr Stéphane Germain, Collège de France, Paris

Mr Alain Lacampagne, CNRS, Montpellier (representative of CoNRS)

Mr Alexandre Reymond, University of Lausanne, Switzerland

Ms Teresa Maria Seccia, University Medical School of Padova, Italy

Mr Fabien Van Coppenolle, Université Claude Bernard Lyon 1, Bron (representative of CNU)

HCÉRES REPRESENTATIVE

Mr Claude Delcayre

REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Mr Karim Asehnoune, CHU de Nantes

Mr Raymond Bazin, ITMO Physiologie, Métabolisme, Nutrition

Mr Laurent Beck, École Doctorale de Nantes

Mr Christian Boitard, ITMO Physiologie, Métabolisme, Nutrition

Mr Yvan De Launoit, INSB, CNRS

Mr Frédéric Delaleu, INSERM

Mr Olivier Grasset, Université de Nantes

Ms Gabrielle Inguscio, CNRS

Ms Catherine Nguyen, ITMO Génétique, Génomique et Bioinformatique

Ms Carina Prip-Buus, INSB, CNRS

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

Following initial recognition by INSERM in 1996 (CJF 96-01), the INSERM unit 533 was created in 2000 under the direction of Mr Denis Escande. It was renewed in 2004 as the research unit of l'Institut du Thorax (the ITX-lab), the ITX-lab was recreated in 2008 under the direction of Mr Pierre Pacaud (INSERM UMR 915) and then became the UMR INSERM 1087 / CNRS 6291 in 2012, led by Mr Hervé Le Marec. It was renewed in 2017 under the direction of Mr Richard Redon.

Since 2009, this unit is located at the IRS-UN of Nantes, a university building dedicated to research. The unit occupies 2 300 m² spread over the two first levels, where all research teams and core facilities are housed.

RESEARCH ECOSYSTEM

The ITX-lab is part of the "Institut du Thorax (ITX)", a thematic center for research and healthcare devoted to patient care, research and training against cardiovascular, respiratory and metabolic diseases. It is supported by a corporate foundation (Genavie). The ITX unit includes the CIC INSERM 1413.

The ITX-lab hosts three technological platforms (Genomics, bioinformatics, Therassay (IBISA label)) recognized as national infrastructures, and affiliated to the SFR François Bonamy. The ITX-Lab will integrate the core facility Corsaire, giving it the opportunity to internalize key programs in proteomics/metabolomics.

The ITX-lab has benefited the support of the NExT program (PIA) notably through the SysMics project aiming to build a strong genomics and bioinformatics research community in Nantes.

The Nantes University takes part of the European University EUniWell that will provide new academic opportunities for ITX researchers.

Thanks to the Vacarme funds obtained from the regional council in 2013, the ITX-lab strengthened its capabilities in epidemiology, biobanking, genome screening, pathophysiology and new technologies.

The ITX-Lab participated to the LabEx Gen Med and ICST.

HCÉRES NOMENCLATURE AND THEMATICS OF THE UNIT

SVE-5, SVE-2

The scientific domains in the unit are genetics, bioinformatics, ion channels, cardiovascular and metabolic diseases, signaling in vascular and pulmonary pathophysiology, circadian rhythm.

MANAGEMENT TEAM

The unit is currently headed by Mr Richard Redon and Ms Gervaise Loirand as deputy director. For the next five years, the unit will be led by the same pair.

UNIT WORKFORCE

Name of the unit:

Research unit of 'l'Institut du Thorax'

Active staff	Number 06/01/2020	Number 01/01/2022
Full professors and similar positions	17	20
Assistant professors and similar positions	12	10
Full time research directors (Directeurs de recherche) and similar positions	8	8
Full time research associates (Chargés de recherche) and similar positions	10	11
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)	49	48

Permanent staff	96	97
Non-permanent professors and associate professors, including emeritus	4	
Non-permanent full time scientists, including emeritus, post-docs (except PhD students)	10	
PhD Students	27	
Non-permanent supporting personnel	17	
Non-permanent staff	58	
Total	154	97

GLOBAL ASSESSMENT OF THE UNIT

The 'Institut du Thorax' Laboratory (ITX-Lab) is a research unit with 96 permanent staff. It has acquired a renowned expertise on cardiovascular genetics, ion channels, hyperlipidemia and PCSK9 and the Rac1 GTPases in vascular diseases. Based on a seven-team frame, the unit will develop its research in a four-team frame for the next contract. Important results have been acquired on identification and functional characterization of gene variants involved in arrhythmias and metabolic disease and notably predisposing to cerebral aneurysm.

A major strength of the unit is the strong record of scientific output. Since 2015, the team has co-authored 868 articles, half of them, are a direct result of the laboratory activity, twice as much as the previous contract, of which 46 % are in first/senior position. Twenty % are in journals of high profile with a significant number in journals like *Nature Genetics*, *Journal of the American College of Cardiology*, *European Heart Journal*, *JAMA Cardiology*, *American Journal of Human Genetics*, *Science Translational Medicine*, *Blood*, *Journal of Allergy and Clinical Immunology*, *Journal of Clinical Investigation*, *Cell Metabolism*. Additionally, they published 91 reviews in the best specialty journals.

An outstanding portfolio of grants has been secured throughout the last five years, with notably eleven European grants (7 in coordination, among which three H2020, one FEDER program and one ERA-CVD), 23 national public grants (12 coordination in ANR grants), the RHU Chopin coordinated by team IV, PHRC, and eighteen PIA grants mostly attributed by the I-SITE NExT from the Nantes university. However, formalized European collaboration is restricted to some of the research areas of the ITX-Lab.

Some members have been guest lecturers at prestigious conferences such as Gordon Conference, the FASEB Science research conference, the Wellcome Trust Scientific conference. Several researchers were regularly invited to present their work during European (European Society of Cardiology, European heart rhythm association, European congress of endocrinology...) and international (heart rhythm society, international school on ion channel) congresses, highlighting ITX-Lab international recognition with a good balance between teams. This can be further improved by obtaining (Teams 3 and 4) or reinforcing the leadership in (Team 1) European or international grants and publishing more in high profile journals as leading authors (Team 2).

Interactions with the non-academic world are strong with nine filed patents, industrial collaborations with numerous industrial partners (Syte Capital GmbH, Bamboo Therapeutics Inc./Pfizer, OSE Immunotherapeutics, Novartis, Baxter, Inflectis Bioscience, GSK, AMGEN, Lesieur, Pileje...) including five CIFRE contracts.

Dynamism of the structure is illustrated by the recruitment of three permanent CR and six professors or associate professors since 2018 and seventeen postdoctoral researchers. Amongst the CR, 80 % are under 45 years old.

The unit is strongly committed to training. During the current contract 40 PhD students defended their thesis. For the future contract the unit will have seven more HDR holders, thus reinforcing the supervision capacities of the unit.

Innovative and groundbreaking projects will be carried out including the demonstration that disease threshold is reached by contributions of rare variants and common risk alleles. The identification of new pathways in lipoprotein metabolism, the involvement of posttranslational regulation in target systems and the development of new tools and drugs.

Overall, the ITX-Lab is a remarkable unit which has been in constant progression since its creation. Its dynamism allows to envisage outstanding perspectives. The efforts made to develop mechanistic research have to be underlined, however the diversity of the themes developed, some of which are emerging, far from the cardiovascular field and carried out by junior researchers will need to be supported and guided. Furthermore, the performance of this unit should enable it to increase its leadership in Europe.

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