GICC - Groupe innovation et ciblage cellulaire

Rapport Hcéres

HCERES

High Council for the Evaluation of Research and Higher Education

Department of Research Evaluation

report on research unit:

Genetics, Immunotherapy, Chemistry and Cancer

GICC

under the supervision of
the following institutions
and research bodies:

Université François-Rabelais de Tours

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,[1]

Michel Cosnard, president

In the name of the experts committee,[2]

Josée Golay, chairwoman of the committee

Under the decree N°.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:	Genetics, Immunotherapy, Chemistry and Cancer
Unit acronym:	GICC
Label requested:	UMR
Current number:	UMR 7292
Name of Director (2016-2017):	Mr Gilles PAINTAUD
Name of Project Leader (2018-2022):	Mr Gilles THIBAULT

Expert committee members

Chair: Ms Josée GOLAY, Hôpital ASST Papa Giovanni XXIII, Bergamo, Italie

Experts: Mr Pierre BRUHNS, Institut Pasteur, Paris

Mr Étienne CHATELUT, Institut Universitaire du Cancer Oncopole, Toulouse

Ms Nathalie DONCESCU, CNRS, Toulouse (representative of the supporting personnel)

Ms Marie-Caroline LE BOUSSE-KERDILES, Inserm, Villejuif

Mr Nicolas MARIE, CNRS, Paris (representative of the CoNRS)

Mr Frédéric SCHMIDT, Institut Marie Curie, Paris

Ms Éric TARTOUR, Université Paris Descartes et Hôpital Européen George Pompidou, Paris

Scientific delegate representing the HCERES:

Mr Bohdan WASYLYK

Representatives of supervising institutions and bodies:

Mr Emmanuel LESIGNE, Université François-Rabelais de Tours

Ms Violaine MIZZI, CHRU, Tours

Ms Florence NOBLE, INSB, CNRS

Mr Philippe VENDRIX, Université François-Rabelais de Tours

Head of Doctoral School:

Mr Thierry MOREAU, ED n°549, “Santé, Sciences Biologique et Chimie du Vivant” (SSBCV)

1 • Introduction

History and geographical location of the unit

The unit Genetics Immunotherapy Chemistry and Cancer (GICC) is a joint research unit of CNRS and François-Rabelais University of Tours. It is organised into 4 teams with a multidisciplinary approach.

GICC was founded in 2008 with the objective to study the pathophysiological mechanisms of oncological and immuno-inflammatory diseases in order to optimise current treatments as well as develop novel treatment approaches and new drugs. Under the first contract (2008-2011), UMR 6239 (under the direction of Mr Yves BIGOT and then Ms Marie-Claude VIAUD-MASSUARD) brought together molecular biologists and geneticists, immunologists, pharmacologists and gastroenterologists.

After the assessment carried out by AERES and CNRS in 2011, the unit was reiterated in 2012 (contract 2012-2017) with major changes and under the direction of Mr Gilles PAINTAUD (UMR 7292). In 2012, the unit was composed of 3 teams (A2RC, LNOx, Telomeres and Genome Stability), joined later by a fourth one (Molecular and Therapeutic Innovation, IMT). Therefore, the present teams have actually worked together only from 2012.

The UMR 7292 GICC unit is presently distributed in 4 different sites in Tours (Faculty of Medicine, Pharmacy, and University Hospital (Trousseau and Bretonneau sites)). Teams 1 and 2 are themselves split between the Faculty of Medicine and two hospital sites.

Management team

Director: Mr Gilles THIBAULT, with Mr Fabrice GOUILLEUX as vice-director.

HCERES nomenclature

Principal: SVE5 Physiologie, Physiopathologie, Cardiologie, Pharmacologie, Endocrinologie, Cancer, Technologies Médicales.

Secondary: SVE2 Biologie Cellulaire, Imagerie, Biologie Moléculaire, Biochimie, Génomique, Biologie Systémique, Développement, Biologie Structurale; SVE3 Microbiologie, Immunité; ST4 Chimie.

Scientific domains

The domain of study is the pathophysiological mechanisms of oncological and immune-inflammatory diseases, with the aim of optimizing therapy, especially antibody based therapy, taking into account inter-individual differences, biomarkers and microenvironmental factors.

Keywords: cancer, inflammatory disease, therapeutic antibodies, Antibody-Drug Conjugates (ADC), Fc receptors, tumor microenvironment, redox metabolism, pharmacodynamics and pharmacokinetics, biomarkers.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	20	20
N2: Permanent researchers from Institutions and similar positions	6	3
N3: Other permanent staff (technicians and administrative personnel)	15 (14)	15 (14)
N4: Other researchers (Postdoctoral students, visitors, etc.)	9	
N5: Emeritus	0	
N6: Other contractual staff (technicians and administrative personnel)	12 (11.2)	
N7: PhD students	15	
TOTAL N1 to N7	**77 (75.2)**	
Qualified research supervisors (HDR) or similar positions	23	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	17
Postdoctoral scientists having spent at least 12 months in the unit	17
Number of Research Supervisor Qualifications (HDR) obtained during the period	3

2 • Assessment of the unit

Global assessment of the unit

The main scientific interest of the UMR 7292 GICC unit is the therapy of cancer and of immunoinflammatory diseases and its optimisation. The major, but not sole drugs investigated in these clinical contexts are monoclonal antibodies, either unconjugated, or optimised through conjugation with small molecules. Other small drugs, in particular heterocyclic compounds, are developed and characterised, alone or in conjugation with antibodies. The resistance mechanisms, including those related to pharmacokinetics, genetic variability and to microenvironmental factors, are being investigated by the different teams, in vitro, in mouse models and in patients in the context of clinical trials. These studies have the common aim of proposing novel more effective treatments, either through optimisation of drug delivery or regimen, through the modification of the drugs themselves, through the introduction of new drugs, and finally through the identification of significant biomarkers for improved therapy.

The quality of the GICC unit's scientific production is demonstrated in particular by the numerous publications, both total and as first/last authors, etc., their capacity to produce patents the start-up that was created and the capacity of the unit to attract funds.

The unit as a whole is participating in several national scientific networks, some of which are also coordinated by a GICC unit member. These networks enhance the intra-unit as well as external collaborative potential of the unit. Furthermore, the coordination of the CePiBAc platform ("Monitoring Center and Biological Follow up of Therapeutic Antibodies") and membership of the national "chimiothèque" should offer a competitive advantage and significantly facilitate the unit's research activities.

The different teams bring together very different expertise (know-how of antibody structure and their receptors and assays to evaluate them, platforms for PK/PD analyses, mathematical modelling, chemical synthesis technologies, models of tumour microenvironment, platforms for metabolic analyses, etc.). Therefore, the collaboration of quite diverse and complementary expertise by different team members allows a synergistic effect if used towards common scientifically relevant goals.

Furthermore, the unit has a strong connection with the clinic, with 14 team members with different grade/functions located in the CHRU of Tours. This strong connection with the hospital has allowed the execution of biological studies in the context of several clinical trials, giving a strong specificity and translational aspect of several studies performed within the unit. The clinic also greatly facilitates access to patient material for in vitro studies. This strong connection with the clinic and its good organisation is of no doubt an important advantage for UMR 7292 as a whole, since this provides a significant originality to the research performed and competitiveness, both nationally and internationally.

The UMR 7292 unit has a very strong commitment to teaching through research, with 17 PhDs defended. Several team members are involved in teaching activities to students within the university and hospital, but also to a broader public, for example in schools or in patient associations. Some team members also teach at the international level especially, in developing countries (Benin). All these activities are highly relevant to place research in a wider and even global context.

The weakness of the unit in the last period has been the relatively lack of focus, with too many and sometimes poorly interconnected research themes, as well as the physical dispersion of the teams in different locations. However, the scientific strategy of the unit has moved during the last 2-3 years towards more homogeneity in the scientific questions addressed overall, and towards a reduction in the number of different projects within each team. The increased focus, the scientific networks in place, the acquisition of specialised instrumentation and the regrouping of all teams within the same building in 2019, favouring collaboration and efficiency, should help further improve the scientific output overall.