Research evaluation

FINAL RESUME ON THE RESEARCH UNIT

GGB - Génétique, Génomique fonctionnelle et Biotechnologies

UNDER THE SUPERVISION OF THE FOLLOWING INSTITUTIONS AND RESEARCH BODIES:

Université de Bretagne Occidentale - UBO
Institut national de la santé et de la recherche médicale - INSERM
Etablissement français de Sang - EFS

EVALUATION CAMPAIGN 2020-2021
GROUP B

Report published on July, 12 2021

In the name of Hcéres[1]:	In the name of the experts committee[2]:
Mr Thierry Coulhon, President	Ms Christiane Branlant, 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:
Génétique, Génomique fonctionnelle et Biotechnologies
Unit acronym:
GGB
Current label and N°:
1078
ID RNSR:
201220082F
Application type:
Renewal
Head of the unit (2020-2021):
Ms Emmanuelle Génin
Project leader (2021-2025):
Ms Emmanuelle Génin
Number of teams and/or themes:
3

EXPERTS COMMITTEE MEMBERS

Chair:	Ms Christiane Branlant, University of Lorraine
Experts:	Ms Geneviève Gourdon, Institute of Myology, The Pitié-Salpêtrière Hospital, Paris Mr Michael Ladomery University of the West of England, Bristol, UK Mr Cédric Le Caignec, CHU Toulouse Ms Elisabeth Scheer, IGBMC, Strasbourg-Illkirch

HCÉRES REPRESENTATIVE

Mr Hinrich Gronemeyer

REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Mr Christian Berthou, University of Brest
Mr Christian Brosseau, University of Brest
Mr Bruno Danic, EFS
Mr Gregory March, EFS
Ms Catherine Nguyen, INSERM

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The unit is located in Brest. Its recognition by INSERM started in 1996, with an INSERM Research contract CRI awarded to Mr Claude Ferrec to develop human molecular genetics. At that time, the research was mainly devoted to the *CFTR* gene, which when mutated causes Cystic Fibrosis. In 2001, a joint team, associating INSERM to the "University of Occidental Brittany" (UBO) and the French Blood Agency (ESF) was created. Several engineers and researchers were recruited in this period and new thematics related to somatic genetics were developed, as well as cancer research. Translational research was also started with the development of yeast-based chemobiological approaches for various human diseases. The research unit was reconducted in 2017, with Ms Emmanuelle Génin as the new director and Mr Marc Blondel as deputy director. At that time, former members of the EA 3882/LUBEM involved in the study of the pulmonary microbiota of Cystic Fibrosis joined the unit.

In May 2017, all members of the unit could be located together in the new building of the "Institut Brestois de Recherche en Biologie et en Santé".

RESEARCH ECOSYSTEM

The unit is affiliated to the "Université de Bretagne Occidentale", INSERM and the "Etablissement Français du Sang". The unit belongs to the "Faculté de Médecine de Brest". It is located in the "Institut de Recherche en Bio-Santé" together with another INSERM unit (LATIM-UMR 1101). It also makes part of the "Institut Brestois Santé Agro Matière" (IBSAM), gathering eleven teams from the Brest University, working in the fields of health, agronomy and chemistry. IBSAM includes three INSERM units, one CNRS unit in organic chemistry and a Clinical Investigation Center. The head of this Institute is a member of the GGB unit, so that the unit is largely involved in the scientific animation activities of this institute.

Several members of the unit have hospital duties leading to strong interactions with the Brest CHRU, and in particular, with the genetic diagnostic laboratory.

Collaborations have been developed with two INSERM units of the site: LATIM and LBAI.

The unit is involved in two LabEx, the Laboratory of Excellence in Medical Genomics GENMED and the Laboratory of Excellence GR-Ex on red blood cells.

The unit is involved in the national POPGEN project (Investment for the Future, IA project) aimed at describing the genetic diversity in France and at providing tools to help filter out neutral variants from patient genomes. The unit is in charge of analyzing these data from a population genetic point of view. The unit also has a central role in the INSERM Genome Variability Cross Cutting Program including seventeen French teams. The unit director is in charge of the coordination of this program and the unit participates in various work packages.

One member of the unit is in charge of the SynNanoVect (Synthetic NanoVectors) platform, a national core facility the Biogenouest "Génopole" (one of the six French "Génopoles"). SynNanoVect is labelled and funded by IBiSA and has been certified ISO:9001 since 2013.

Members of the unit are also involved in collaborative projects funded by ANR, INCA, FRM and AFM. Finally, members of the unit also belong to the European GRAMMY project on cancer.

The Laboratory benefits from international collaborations with US, China, India and UK that have already led to co-authored publications.

HCÉRES NOMENCLATURE AND THEMATICS OF THE UNIT

SVE2

MANAGEMENT TEAM

Head of the unit: Ms Emmanuelle Génin

Deputy Head: Mr Marc Blondel

UNIT WORKFORCE

Active staff	**Number 06/01/2020**	**Number 01/01/2022**
Full professors and similar positions	12	13
Assistant professors and similar positions	12	10
Full time research directors (Directeurs de recherche) and similar positions	2	2
Full time research associates (Chargés de recherche) and similar positions	4	4
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	2	2
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	24	24
Permanent staff	**56**	**55**
Non-permanent professors and associate professors, including emeritus	1	
Non-permanent full time scientists, including emeritus, post-docs (except PhD students)	12	
PhD Students	23	
Non-permanent supporting personnel	18	
Non-permanent staff	**54**	
Total	**110**	**55**

GLOBAL ASSESSMENT OF THE UNIT

GGB for "Génétique, Génomique fonctionnelle et Biotechnologies », organized as a mono-team unit for the evaluation period, is a well-established multidisciplinary unit dedicated to human diseases, under the supervising bodies INSERM, University of Occidental Brittany and the French Blood Establishment. While, initially, focused on Cystic Fibrosis with a remaining prominent international recognition on this disease, overtime, in particular during the evaluation period, researches were successfully extended to other genetic diseases, (iron overload diseases, chronic pancreatitis, polycystic kidney disease, congenital hip dislocation …) some of them being prevalent in Brittany. Research on cancer is also developed and is reinforced by a leading position in the "Institut Brestois Santé Agro Matière" (IBSAM). The common goal of members of the unit is to understand mechanisms of pathology and on this basis to develop new treatments. The unit is therefore embracing researches going from gene defect identification, to the search for innovative diagnosis, prognosis and therapeutic approaches. Study of the influence of the microbiota on some of the pathologies was also successfully included during the evaluation period. This wide scope enlarged the unit visibility, however, the GGB direction will have to pay attention to the risk of dispersion on too many diseases, which might limit competitiveness.

Since several years, the unit very actively participates to the national effort to identify mutations in the French population, in the view to facilitate the search for disease causative mutations. The unit has developed computer and statistic tools to facilitate this search and has a national leading position in the INSERM and PIA initiatives in this field (INSERM GOLD cross-cutting program, France Médecine Génomique). The unit is involved in two LabEx, GENMED on medical genomics and GR-Ex on red blood cells. The unit starts to be involved in international initiative in this field (French-German ANR project and GRAMMY European Grant). Its international visibility illustrated by long-term international collaborations with USA, China, India and UK, would deserve to be reinforced through participation in high-level international consortia, in particular, consortia supported by European grants, which could substantially increase the number of foreign visiting scientists including postdoctoral fellows.

The overall unit scientific production is very good to excellent with 126 publications in leading positions, some of which in high-level medical journals and a very good capacity to obtain funding from charitable organizations and from government funding agencies (IA, ANR, INCA). However, only few European grants were obtained.
The data obtained had important impacts in the diagnostic and prognosis fields, with a rapid application in clinics through the strong connection with the CHRUs. Through this connection, GGB members have established very useful well-phenotyped cohorts of patients. Data of the unit opened new perspectives in terms of therapies, some are already applied in clinics. GGB made important effort in terms of valorization with several filed patents. However, contacts with pharmaceutical companies could be improved.

GGB has a very good participation in training through research as illustrated by the 47 PhD students trained during the last five years. However, only 21 PhDs were defended because of the rather long duration of the PhD training (43 months). Most of the PhDs are authors of at least two publications. Interestingly, there is a strong training commitment with a total of 137 Master 1 and Master 2 students trained since 2015.

The mono-team unit is going to evolve in a three-team frame unit for the next contract (Biomedicine and Integrative Genetics and Genomics (BIGG), Alternative Splicing and Translation Regulation (ASTRE) and Gene Transfer & Combined therapeutic Approaches (GTCA)). Team BIGG will exploit its leading position in large-scale genome analysis of the French population and on several human genetic diseases. Team ASTRE will take advantage of its key discovery on the Epstein Barr virus evasion, its development of original drug screening approach for mitochondrial inherited diseases, and its important discoveries on the role of alternative splicing in cancer. Team GTCA will improve its innovative non-viral gene delivery approaches and therapeutic approaches. Altogether, the scientific strategies of the BIGG and GTCA Teams, in direct line with those of the last contract should be productive and their productivity may be increased through the collaboration with Team ASTRE. The solid project of Team ASTRE has a large avenue of new possible developments, especially, if some young PIs bringing additional expertise in the RNA field (ncRNAs and/or translation) can be recruited.

One strength for the future of GGB is its large number of motivated young PIs and the evolution of the unit organization probably did not reach its final structure.

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2 rue Albert Einstein
75013 Paris, France
T. 33 (0)1 55 55 60 10