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BIOSIT - Biologie, santé et innovation, technologique

Rapport Hcéres

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Rapport d'évaluation d'une entité de recherche. BIOSIT - Biologie, santé et innovation, technologique. 2016, Université de Rennes 1, Centre national de la recherche scientifique - CNRS, Institut national de la santé et de la recherche médicale - INSERM. hceres-02035038

HAL Id: hceres-02035038

<https://hal-hceres.archives-ouvertes.fr/hceres-02035038>

Submitted on 20 Feb 2019

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HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

HCERES report on
Federative structure:

Biologie, Santé et Innovation Technologique

BIOSIT

Under the supervision of
the following institutions
and research bodies:

Université de Rennes 1

Centre National de la Recherche Scientifique - CNRS

Institut National de la Santé et de la Recherche

Médicale - INSERM

HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

In the name of HCERES,¹

Michel Cosnard, president

In the name of the experts committee,²

Guillaume Pinna, chairman of the committee

Under the decree N^o.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)

Federation

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.

Federation name:	Biologie, Santé et Innovation, Technologique
Federation acronym:	BIOSIT
Label requested:	SFR
Present no:	SF 4206
Name of Director (2015-2016):	Mr Thierry GUILLAUMEUX
Name of Project Leader (2017-2021):	Mr Thierry GUILLAUMEUX

Expert committee members

Chair: Mr Guillaume PINNA, CEA SACLAY, Gif-sur-Yvette

Experts: Mr Vincent DIVE, SIMOPRO, Gif-sur-Yvette
Mr Benjamin GILLET, IGFL, ENS-Lyon

Scientific delegate representing the HCERES:

Mr Pierre COUBLE

Representative of supervising institutions and bodies:

Mr Claude LABIT, University Rennes 1

1 • Introduction

History and geographical location of the federative structure and its member research units and brief description of its activities.

Located in Rennes, BIOSIT is a Biology and Health Federative Research Structure (SFR). It is also a joint unit of services recognized by the University Rennes 1, CNRS (UMS 3480) and Inserm (US 018). Managed by Mr Thierry GUILLAUMEUX (Associate Professor, University Rennes 1) since the 1st of January 2012, BIOSIT brings together 12 research units corresponding to 54 research teams and nearly 750 people. All the BIOSIT member units belong to the University Rennes 1 and/or Inserm, CNRS, INRA, the French School of Public Health (EHESP) and the French Blood service (EFS). Moreover, BIOSIT has other partners such as the Centre de Lutte Contre le Cancer, the Rennes University Hospital and the University Rennes 2.

BIOSIT mutualises high-end equipments and staff within 14 technology platforms providing a broad range of scientific and technical expertises. These platforms are grouped in four core facilities:

- Resources core facilities: Biological Resources Center (CRB)-Health, Zebrafish and Mice transgenesis platform, EFS National Laboratory of Monoclonal Reactive Production (NLMRP).
- Tissular, cellular and molecular analysis core facilities: Microscopy Rennes Imaging Center - MRic, Bio-RMN and Bio-SCANS (PRISM), High Precision Histopathology (H²P²), Flow cytometry and cell sorting, Spectroscopies.
- High-throughput core facilities: Health genomics, Expert annotation of gene and genome - Amadeus, Imaging for cell content analysis - ImPACcell.
- Protected areas experiment core facilities: Animal housing facility A1, A2, A3 -ARCHE, and L3 cell culture facility.

The majority of the scientific equipment has recently been purchased, ensuring state-of-the-art analytical capabilities.

BIOSIT pursues a triple mission consisting in the federation of the research teams, the management and development of high-tech core facilities and the establishment of partnerships with the local economic network. To realize this mission, BIOSIT actions are:

- to share, manage and develop state-of-the-art technological platforms;
- to support and develop Research & Development projects on platforms in relation to the research units;
- to develop industrial partnerships in relation to the units;
- to insure a scientific coordination within the transversal themes;
- to promote support for research;
- to develop international collaborations.

These missions and actions are carried out for the benefit, in priority, of the research units and teams that contribute to the federative structure, and are aimed to promote excellence in research and provide national and international visibility to Rennes laboratories.

Most of the facilities are developing R&D programs in their field of competence to expand their know-how and provide innovative services to their collaborators. Several of these developments have been patented (notably by the MRic, NLMRP & H²P² facilities).

Altogether, BIOSIT is a comprehensive structure providing mutualised scientific technologies and services, with locally and, for some platforms, nationally & internationally recognized know-how.

BIOSIT was evaluated by a committee of three experts. Each was a member of the visiting committees of three unit members of the SFR. The selected research units were 1) the Chemistry Oncogenesis, Stress, Signaling laboratory (COSS, Inserm), 2) the Institute of Genetics and Development of Rennes (IGDR, CNRS and the University Rennes 1) and 3) the Research Institute for Environmental and Occupational Health (IRSET, Inserm, EHESP, University Rennes 1, University of Angers).

Management team

Since 2012, Mr Thierry GUILLAUMEUX is the director of the BIOSIT SFR. He is assisted by an executive board composed of Mr Michel SAMSON (DR2, IRSET), Ms Christelle CHAPRON (executive secretary, UMS/US BIOSIT) and Mr Alain FAUTREL (Engineer Staff Representative, INSERM UMR 991). For the next 5-year period, Ms Nathalie DEJUCQ-RAINSFORD (IRSET) will be proposed as vice-director in replacement of Mr Michel SAMSON who will become co-director of IRSET in 2017

Specific workforce allocated to the federative structure

The managerial, administrative, scientific and technical staff represents 30 people, mainly from the Rennes 1 University. Sixteen people benefit from a permanent position (1 permanent lecturer, 1 permanent researcher, 18 engineers, technicians and supporting staff) and 14 are employed with limited duration contracts. Additionally, member units provide BIOSIT with 38 people.

2 • Overall assessment of the federative structure

Global assessment of the federative structure

The BIOSIT SFR has emerged as a highly performing scientific and technical pole, providing a broad range of techniques to a large community of researchers. It initiated successful scientific and technical interactions between the member units, and plays a key role in connecting platforms and academic laboratories with industrial partners. As such, BIOSIT strongly contributes to promote excellence in research, and confers national and international visibility to the Rennes laboratories.

BIOSIT is remarkably well funded, allowing maintenance and renewal of the scientific equipment. It has a federative role for private and academic research groups, but also with other partners involved in the Health & Biology sector. BIOSIT's positive impact on research has been demonstrated by the quality of the scientific output of the contributors that benefited for the structure's support.

The training of students and research personnel is satisfactory and guarantees a facilitated access to the proposed techniques and services. Seminars on topics of general interest are regularly organised throughout the year to present the impact of BIOSIT - or to introduce emerging technologies to the scientific community.

Yet, BIOSIT is today at a critical step in its development. Despite most of the equipment being state-of-the art, some specific facilities have aging machines, and show difficulties in stabilizing their technical staff. The Committee feels that, at mid-term, these issues could challenge the continuity of BIOSIT development.

Strengths and opportunities in the context

BIOSIT has grown as a scientific and technical pole of excellence that answers a broad range of regional and national technological needs in biology. It also has very strong interdisciplinary interactions with the academic and private sectors in the French west region. As an illustration, during the last 5-year period, BIOSIT is behind the creation of a joint Laboratory between a private company (Biotrial Pharmacology) and a research laboratory funded by ANR (LabCom). Also, BIOSIT offers facilities for emerging start-ups and innovative companies.

BIOSIT's facilities have highly skilled and specialized scientific and technical staff, who are involved in the daily running of the platforms, but also in research and innovative technological developments in their field. These are attractive assets to interact with the local & national private sector, and establish long-term partnerships that would help sustain the structure's funding.

Also, many research teams in biology, and notably in cancer research, are located in Rennes, and the existence of a shared federative structure of core facilities could be an additional mean to consolidate the scientific exchanges between these various groups.

A sustainable financial and strategic support from the involved partners should provide to BIOSIT a proper environment to thrive and maintain a technological offer of the highest standards, given that a critical mass of permanent personnel is achieved in a near future.

Weaknesses and threats in to the context

The impressive size of BIOSIT may lead to inadequate decisions with regard to the scientific needs of local teams. Also, sustainment of an appropriate funding for all the platforms is highly dependent on external partners and on the economical context. Therefore, the directing board should be able to secure funds to anticipate any potential budgetary failure in the short and medium run.

A major threat, already identified by the BIOSIT board, concerns the human resources of the facilities: most of the technical personnel are recruited on short-term contracts, and few permanent people are fully affected to the facilities. At very short term, the high turnover level of the technical staff (as attested by the amount of departures & arrivals in the past 5 years) could impact the viability of the affected facilities, or, at least, their capability to maintain a high degree of specialization and/or answer to ambitious projects. Additionally, the BIOSIT total staff comprises 68 personnel with 38 persons who are provided by member units: although it's an essential contribution, this can lead to a human resources management major problem.

Two other main threats may be the disengagement of trustees (INSERM, CNRS) and the obsolescence of expensive equipments with the need to renew them.

Another concern relates to bioinformatics needs: BIOSIT concentrates a significant amount of high-throughput and imaging platforms that probably generate heavy weighted files and/or large datasets as outputs. As most of these platforms expect an increase in their activity in the 5-year plan, either by acquiring new equipment or by broadening their service offer, important data storage and analysis needs may arise in the near future. Some platforms have dedicated bioinformaticians, but not all of them (e.g. ImPACcell), which may pose a threat to the efficient running of these facilities.

The valorisation of the scientific and technical results obtained by the platforms could be enhanced. As such, one concern of Thierry Guillaudoux is to raise member units' awareness of the importance for BIOSIT members / platforms to be cited in publications (co-authors, acknowledgments).

Recommendations

The BIOSIT SFR has succeeded in the structuring and the development of 14 high-level platforms by mutualising human resources and equipments with the support of member units. The excellence of BIOSIT core facilities and their profound impact on the research programs of the partner laboratories, the adequacy of the offer with the team's needs, the (so far) sustained funding and BIOSIT staff mobilization justify to support this federative structure in every way possible for the years to come. This support should be both financial and strategic, to conduct a sustainable and active policy in order to ensure BIOSIT development in three main areas: recruitment and perpetuation of its own staff, infrastructure development and investment in state-of-the-art equipments.

Attributing full time permanent positions to the facilities with the highest personnel turnover, and/or anticipating long-term technological developments, should be considered as a priority.