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CBD - Centre de Biologie du Développement

Rapport Hcéres

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HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

HCERES report on research unit:

Center of Developmental Biology

CBD

Under the supervision of
the following institutions
and research bodies:

Université Toulouse 3 - Paul Sabatier - UPS

Centre National de la Recherche Scientifique - CNRS

HCERES

High Council for the Evaluation of Research
and Higher Education

Research units

In the name of HCERES,¹

Didier HOUSSIN, president

In the name of the experts committee,²

Philippe VERNIER, 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)

Evaluation report

This report is the result of the evaluation by the experts committee, the composition of which is specified below.

The assessments contained herein are the expression of an independent and collegial deliberation of the committee.

| | |
|--|---------------------------------|
| Unit name: | Center of Developmental Biology |
| Unit acronym: | CBD |
| Label requested: | UMR |
| Present no.: | UMR 5547 |
| Name of Director (2014-2015): | Mr Marc HAENLIN |
| Name of Project Leader (2016-2020): | Ms Fabienne PITUELLO |

Expert committee members

| | |
|----------|--|
| Chair: | Mr Philippe VERNIER, CNRS, Gif-sur-Yvette |
| Experts: | Ms Anarosa ARCANGELI, University of Florence, Italy |
| | Ms Paola BOVOLENTA, Universidad Autónoma de Madrid, Spain |
| | Ms Sarah BRAY, University of Cambridge, United Kingdom |
| | Mr Michel GHO, IBPS Université Pierre et Marie Curie, Paris |
| | Mr Bernard MIGNOTTE, University of Versailles Saint-Quentin (representative of the CNU) |
| | Ms Michèle STUDER, University of Nice Sophia-Antipolis |
| | Mr Pascal THEROND, University of Nice Sophia-Antipolis (representative of the CoNRS) |
| | Mr Jean-Paul VINCENT, National Institute of Medical Research, United Kingdom |

Scientific delegate representing the HCERES:

Mr Pierre COUBLE

Representatives of the unit's supervising institutions and bodies:

Mr Laurent KODJABACHIAN, CNRS

Mr Alexis VALENTIN, University Toulouse 3

Mr Philippe VALET (representative of the Doctoral School "Biologie
Santé, Biotechnologies" N° 151)

1 • Introduction

The Committee visited the *Centre de Biologie du Développement* (CBD) the 4th and 5th November 2014, in the building of the CBD. The visit was well organized, and took place in very good working conditions. The present and future directors and their collaborators should be complimented for having rendered life of the Committee easier and having facilitated the work of the Committee during the visit. The time reserved for listening at the group's project and interviewing the group leaders was appropriate and the Committee had the feeling that most of the important aspects of the research projects, as well as of the unit's present and future organization were discussed in a frank and open manner. The report on the CBD past activities and project, provided prior to the visit was adequate, and the team oral presentation was a very useful complement. The discussions with the director alone and together with the three department directors, as well as the discussion with the funding bodies occurred in front of the entire experts committee. For the discussions involving the technical staff, the PhD students/postdocs and the staff researchers, the experts committee splits into three separate groups. The unit presentation by present and future directors was open to all unit members. Each team was given one hour of presentation and questions with the entire experts committee in presence of all team members, who were all free to answer both scientific and organizational questions. The committee had also interviews with the present and future director alone, for about one hour. The final report presented here is based on the reports that were sent in and was approved by all the experts of the committee.

History and geographical location of the unit

The *Centre of Developmental Biology* is a Research entity (UMR 5547) affiliated to both the CNRS and the University Paul Sabatier - Toulouse 3. It has already a long history for such a research unit, having been created in 1992 and headed successively by three directors, Ms Anne-Marie DUPRAT (1992-1998), Mr Alain VINCENT (1999-2006) and Mr Marc HAENLIN (2007-2015). The proposed director for the next five years is Ms Fabienne PITUELLO.

The Research unit is located in a building of the University Paul Sabatier, on the campus at the South end of the city of Toulouse, where many scientific and medical institutions are gathered. The building where the CBD is located also houses two other Research units, the Research Centre for Animal Cognition (*Centre de Recherche sur la Cognition Animale*, UMR 5169, Dir. Martin GIURFA) and the Laboratory of Cellular and Molecular Biology of the Cell Division (*Laboratoire de Biologie Cellulaire et Moléculaire de la Division Cellulaire*; UMR5088, dir. Didier TROUCHE). With other closely located research units, they constitute a federation of research units in Biology (the *Fédération de Recherche en Biologie de Toulouse*). In this respect, the scientific environment of the CBD is rich, both in its close vicinity and in its surroundings, making a significant critical mass of researchers. This is clearly a factor of vitality and attractiveness for the CBD. On this strong basis, a new research center is proposed for creation, the Center for Integrative Biology (CBI) fostered by a new building expected for the end of 2018.

Management team

The CBD comprised about 120 researchers, a well-balanced combination of engineers/technicians and post-doctoral fellows/students grouped in 13 teams. Mr Marc HAENLIN headed the CBD for these last 8 years, with a board made of all the group leaders and which meet once a month. The mandatory Council of the unit, comprising elected representative of the different categories of personal, met 3-4 times a year to discuss the main organizational and strategic issues of the research unit. The future director of the CBD, appointed with a general agreement of the personal, will essentially repeat this simple and efficient organization in the renewed unit. Reorganization of the unit has been helped and fostered by an international Scientific Advisory Board, leading to propose 11 teams to be part of the new version of the CBD, including an entirely new group recruited in 2012 by an International Hiring Committee.

The administration of the CBD has been supported by a financial advisor and an administrative manager shared with the unit LBCMCP (dir. Mr Didier TROUCHE, UMR 5088). The number of administrative and financial officers remains really low (3, 6 Full Time Equivalent), which clearly does not allow properly managing an ensemble of about 200 people. The administrative manager is also taking care of some of the technical facilities of the Centre. Such facilities include a lab store and a delivery service, facilities for terrestrial and aquatic vertebrates but also insects, an imaging platform (TRI) and a single-channel recording facility.

HCERES nomenclature

SVE1-LS3 Cell biology, Animal developmental biology;

SVE1-LS3 Genetics, genomics, bioinformatics;

SVE1-LS1 Molecular and structural biology, biochemistry;

Unit workforce

| Unit workforce | Number as at 30/06/2014 | Number as at 01/01/2016 |
|--|-------------------------|-------------------------|
| N1: Permanent professors and similar positions | 12 | 7 |
| N2: Permanent researchers from Institutions and similar positions | 36 | 34 |
| N3: Other permanent staff (without research duties) | 33 | 31 |
| N4: Other professors (Emeritus Professor, on-contract Professor, etc.) | 1 | 1 |
| N5: Other researchers (Emeritus Research Director, Postdoctoral students, visitors, etc.) | | 4 |
| N6: Other contractual staff (without research duties) | 7 | |
| TOTAL N1 to N6 | 89 | 77 |

| Unit workforce | Number as at 30/06/2014 | Number as at 01/01/2016 |
|---|-------------------------|-------------------------|
| Doctoral students | 19 | |
| Theses defended | 29 | |
| Postdoctoral students having spent at least 12 months in the unit | 8 | |
| Number of Research Supervisor Qualifications (HDR) taken | 6 | |
| Qualified research supervisors (with an HDR) or similar positions | 29 | 26 |

2 • Overall assessment of the unit

Global assessment of the unit

CBD is committed to decipher the cellular and molecular mechanisms underlying the elaboration of proper tissue architecture and corresponding functions in animal development and evolution. Research at CBD combines concepts and approaches from genetics and from molecular and cellular biology to analyze fundamental mechanisms regulating the development of bilaterian animals, how dysregulation of such mechanisms can lead to cancer or neurodegenerative diseases. Techniques range from structural biology and molecular biology to sophisticated live imaging and bioinformatics and theoretical modeling. Animal models are also diverse, including mouse, zebrafish,

xenopus, chicken and a strong emphasis on Drosophila. As a whole, the scientific outcome of the CBD is excellent and internationally recognized. It has produced a wealth of firm data, published in more than 90 publications for the last 5 years, including some remarkable discoveries, which reflect the originality of works, generally carried out in “scientific niches” outside the scientific mainstream. Although there is some heterogeneity in the quality and efficiency of team efforts, going from outstanding to very good, the research entity is following on a positive slope and is encouraged to move forward with the new director. This is reflected in the active scientific life of the CBD, and even more, in the “common culture” of most of the CBD researchers who are able to share means and personal in a very efficient fashion. Involvement of the CBD members into University education and research training is strong and highly significant, as it is in outreach activities. They also significantly contribute to develop scientific platforms including imaging and animal facilities, which are mandatory to carry-out the renewed, well-elaborated research program. The CBD teams have developed strong partnerships with other groups in the Toulouse University campus. Overall, the CBD constitutes a solid nucleus on which the future Centre of Integrative Biology could continue to be build, a strongly encouraged endeavor.

Strengths and opportunities in relation to the context

- an excellent ensemble of research groups, with strong skills, developing a well-balanced diversity of scientific topics, committed to make an attractive project;
- CBD is very well considered and supported by the funding bodies, within the limits of the current economic crisis;
- highly dedicated and well organized engineer and technical staff;
- a common culture of mutual support and sharing means and personal;
- CBD is able to attract very good PhD students, certainly owing to a strong involvement in teaching and training;
- a quite remarkable scientific environment, which set the ground to more ambitious plan such as the CBI;
- the construction of a new building in which most of the units of the future CBI will be gathered.

Weaknesses and threats related to the context

- some heterogeneity in the scientific outcome of the teams, going from outstanding to very good;
- some teams are very small, which is a threat to the development of more ambitious projects;
- lack of financial support from national and european grant agencies in many groups;
- the technical platforms are efficient and of high quality, but they are very fragile, relying on too few dedicated personal;
- administration and accounting is really not of the size expected for such a good and large research entity, and hardly support the research teams, which could be a threat for the best of them.

Recommendations

- most research groups have found their niche in otherwise competitive topics, and this should be pushed a step forward in the next future;
- many teams could certainly be more ambitious in their research program and scientific outcome, which could be reached through collaborations and team management;
- many groups should increase their international visibility through more international collaborations and attending international meetings;
- development of multidisciplinary approaches, including interfaces with mathematics, physics, chemistry and engineering is strongly encouraged and should be even better structured and formalized in a next future;
- maintaining a mix of young and more experienced teams, and a certain degree of diversity in the research themes, in order to foster the interactions and synergies among groups;

- continue professionalizing the technical platforms and facilities, which need stronger support and manpower. In particular, the development of the fish facility, and its opening to other teams, the development of new techniques in the mice facility (CrispR) requires a new organization and permanent staff;
- it is mandatory to strengthen the administration and financial services, and this will become even more important in the context of the creation of the CBI;
- the transition between the current and future directors in heading the unit should be speed up or tighten up to avoid any gap and uncertainty in the management of the research entity;
- it is wise mentoring the group leaders, especially the youngest ones, who are less successful in getting large grants;
- the construction of a new building should be the opportunity for hiring new groups and developing imaginative plan of research management, with the help of the SAB.