agence d'évaluation de la recherche
et de l'enseignement supérieur

Department for the evaluation of research units

AERES report on unit:

Developmental Biology Laboratory

LBD

Under the supervision of the following institutions and research bodies:

Université Paris 6 - Pierre et Marie Curie

Centre National de la Recherche Scientifique

Institut National de la Santé Et de la Recherche Médicale

December 2012

agence d'évaluation de la recherche
et de l'enseignement supérieur

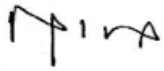
Research Units Department

President of AERES

Didier Houssin

Research Units Department

Department Head



Pierre Glaudes

The president of AERES "signs[...], the evaluation reports, [...]countersigned for each evaluation department by the relevant head of department (Article 9, paragraph 3, of french decree n°2006-1334 dated 3 november 2006, revised).

Grading

Once the visits for the 2012-2013 evaluation campaign had been co mpleted, the chairpersons of the expert committees, who met per disciplinary group, proceeded to attribute a score to the research units in their group (and, when necessary, for these units' in-house teams).
This score (A+, A, B, C) concerned each of the six criteria defined by the AERES.
NN (not-scored) attached to a criteria indicate that this one was not applicable to the particular case of this research unit or this team.

Criterion 1 - C1 : Scientific outputs and quality ;
Criterion 2 - C2 : Academic reputation and appeal ;
Criterion 3 - C3 : Interactions with the social, economic and cultural environment ;
Criterion 4 - C4 : Organisation and life of the institution (or of the team) ;
Criterion 5 - C5 : Involvement in training through research ;
Criterion 6 - C6 : Strategy and five-year plan.

With respect to this score, the research unit concerned by this report and, its in-house teams received the following grades:

- Grading table of the unit: Developmental Biology Laboratory

C1	C2	C3	C4	C5	C6
A	A	NN	A	A+	A

- Grading table of the team: Drosophila Genetics and Epigenetics

C1	C2	C3	C4	C5	C6
A+	A+	NN	A	A+	A+

- Grading table of the team: Muscle and tendon formation and repair

C1	C2	C3	C4	C5	C6
A	A	NN	A+	A+	A+

- Grading table of the team: Nuclear dynamics and development

C1	C2	C3	C4	C5	C6
A+	A	NN	B	A	A+

- Grading table of the team: Cell cyle and cell determination

C1	C2	C3	C4	C5	C6
A	B	NN	A	A+	A

- Grading table of the team: Migration and Differentiation of Hematopoietic Stem Cells

C1	C2	C3	C4	C5	C6
A	A+	NN	A	A	A

- Grading table of the team: Biology of the Oocyte

C1	C2	C3	C4	C5	C6
A	A	NN	A+	A+	A

- Grading table of the team: Epigenetic control of developmental homeostasis and plasticity

C1	C2	C3	C4	C5	C6
A	B	NN	A	A	A

- Grading table of the team: Epigenetic Repression and Mobile DNA

C1	C2	C3	C4	C5	C6
A+	B	NN	A+	A+	A+

- Grading table of the team: Morphogenesis of the vertebrate brain

C1	C2	C3	C4	C5	C6
A+	A+	NN	A+	A+	A+

- Grading table of the team: Induction and differentiation during vertebrate development

C1	C2	C3	C4	C5	C6
A	C	NN	A	B	B

- Grading table of the team: Signalling and Morphogenesis

C1	C2	C3	C4	C5	C6
A	B	NN	A	A+	A

- Grading table of the team: Cell Division and Associated Checkpoints in Oocytes

C1	C2	C3	C4	C5	C6
A+	A	NN	A	A	A+

- Grading table of the team: Seed Biology

C1	C2	C3	C4	C5	C6
A+	A	A	A	A+	A

- Grading table of the team: Compartmentation and intracellular traffic of mRNPs

C1	C2	C3	C4	C5	C6
A	B	NN	A	B	A

- Grading table of the team: Genetic and Epigenetic regulation of pancreas development

C1	C2	C3	C4	C5	C6
NN	NN	NN	NN	NN	A

Evaluation report

Unit name:	Laboratory of Developmental Biology
Unit acronym:	LBD
Label requested:	UMR
Present no.:	UMR 7622
Name of Director (2012-2013):	Ms. Catherine JESSUS
Name of Project Leader (2014-2018):	Ms. Sylvie SCHNEIDER-MAUNOURY

Expert committee members

Chair:

Mr Alain VINCENT, Toulouse university (representative of INSERM CSS)

Experts:

Ms Laure BAILLY-CUIF, CNRS (representative of CoNRS)

Mr Eric BELLEFROID, Université Libre de Bruxelles, Belgium

Ms Andrea BRAND, University of Cambridge, Great-Britain

Mr Michel CABOCHE, INRA

Ms Bénédicte DURAND, University of Lyon 1 (representative of CNU)

Ms Anne GRAPIN-BOTTON, University of Copenhagen, Denmark

Mr François KARCH, University of Geneva, Switzerland

Mr Jonathan PINES, University of Cambridge, Great-Britain

Mr Georg STOECKLIN, German Cancer Research Center, Germany

Scientific delegate representing the AERES:

Mr Jean-Antoine LEPESANT

Representative(s) of the unit's supervising institutions and bodies:

Mr Laurent KODJABACHIAN, CNRS

Ms Dominique DAEGELEN, INSERM

Mr Bertrand MEYER, University P. and M. Curie

1 • Introduction

History and geographical location of the unit:

LDB was created in January 1997 as a mixed unit between the CNRS and Université Pierre and Marie Curie (UPMC), by the merging of different UPMC embryology groups. LBD is presently affiliated with CNRS, and UPMC. From 2014, LBD will be part of IBPS, a UPMC institute which will be created in 2014 and regroup 5 different CNRS/UPMC biology units.

LBD is located on the Campus Jussieu of UPMC, in the Quai St Bernard building, which contains several other research units. LBD is scattered over the 5th, 6th and 7th floors of the building. It presently occupies a total of approximately 2.200 m^2 of laboratory space, not including the animal facility which is located on the roof of the building. Thanks to the efforts of the Director and the support from the unit, laboratory surfaces were refurbished in order to accommodate new research teams or improve common spaces. However, the building dates from the 50's and needs serious and extensive renovation.

LBD presently hosts 17 research teams, representing about 130 members. Two teams were created as ERL/Unité monothématique INSERM. Since 2007, LBD has created 4 new teams. One of the three junior teams was created with the support from the Avenir INSERM programme, one with support from the ATIPE-CNRS programme and the third one was an opportunistic decision. The 4th, senior team was selected after an international call. Beside, one Bio-informatics team is transiently hosted by LBD, waiting for joining the Platform department of the future IBPS. During the same period, one team has emigrated to Collège de France.

For the next period, five teams will leave LBD for different reasons (closure retirement,emigration), while two new teams will join the unit. In addition, one "internal" group has been proposed as a new team.

LBD concentrates a large part of its efforts on three major themes: Cell Cycle and reproduction; Tissue organogenesis and morphogenesis; Gene network regulation at the transcriptional, post-transcriptional and epigenetic levels. A 4th theme, Stem cells, cell determination and cell differentiation represents a strong transversal axis. The main model organisms are mouse, Xenopus, zebrafish, Drosophila and chicken. A few teams use chicken. The nematode model has been introduced in 2008 and the ascidian model in 2011. A new team will introduce in 2014 two plants models, the sunflower and Arabidopsis.

Management team:

LBD is headed by Ms Catherine JESSUS, director since 2005, and next director of IBPS.

It is managed by the Director, nominated by CNRS and UPMC. A chief administrative officer has assisted the director for 7 years but has left in september 2012 and this position has not been replaced. The director is presently assisted by a Deputy-Director who is candidate for the next term directorship. The director consults the group leaders (group leader's board) on scientific and strategic related issues, especially new team recruitments. The statutory Laboratory council is consulted on all main aspects of LBD life, including safety issues and gives an advice on the annual budget of the unit which is proposed by the director. The director also takes advice from an external committee (Scientific Advisory Board) on scientific matters. Recruitment of new teams has either been opportunistic, or followed an international open call. The criteria seem different in the two cases. Dedicated research scientists and technical staff bear scientific responsabilities for technological platforms and animal facilities. Platform management will likely evolve with the creation of IBPS, of which LBD is a founding unit.

AERES nomenclature:

SVE1, LS3

Unit workforce:

Unit workforce	**Number as at 30/06/2012**	**Number as at 01/01/2014**	2014-2018 **Number of project producers**
N1: Permanent professors and similar positions	33	35	34
N2: Permanent researchers from Institutions and similar positions	25	25	25
N3: Other permanent staff (without research duties)	33	37	20
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	1	1	1
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	8	5	5
N6: Other contractual staff (without research duties)	0	0	0
TOTAL N1 to N6	100	103	85

Percentage of producers	***98,5 %***

Unit workforce	**Number as at 30/06/2012**	**Number as at 01/01/2014**
Doctoral students	20	
Theses defended	34	
Postdoctoral students having spent at least 12 months in the unit*	19	
Number of Research Supervisor Qualifications (HDR) taken	5	
Qualified research supervisors (with an HDR) or similar positions	32	35

2 • Assessment of the unit

LBD groups a large number of De velopmental and Cell biology teams working on various animal models, *Drosophila*, chicken, mouse, Xenopus, zebrafish, and more recently nematodes and ascidians. While cell cycle w as historically a major theme, the LBD no w regroups most of the forces in the field of developmental biology on the UPMC campus, which gives it a strong visibility in this field at the national level. The scientific cohesion of LBD is implemented through the organisation of internal and external seminar series, scientific retreats, and the investement and sharing of common services and platforms and animal facilities. The overall quality of the research is high, with a few outstanding groups an d a very good working atm osphere in general. The committee therefore formulates a very positive opinion on the activities of L BD. The deputy director will succeed the current director, securing both thematic diversity and cohesion within the LBD as essential conditions for con tinued scientific excellence.

Strengths and opportunities:

The committee was unanimous to point out:

- The success of merging historical teams with newly recruited teams into a coherent assembly of research and teaching scientists addressing fundamental questions of developmental and stem cell biology, using relevant animal models. The essential role played by the current director, in securing this success, deserves to be praised;

- LBD restructuring since last evaluation, i n terms of scientific achievements and attractiveness, reflecting efficient management;

- The coheren ce and adde d value of LBD participation in the futu re IBPS, which will provide access to dedicated platforms and will help increase LBD visibility;

- The recent arrival of one team with excellent expert ise in computational biolog y, re-enforcing a rising scientific theme, gene regulation, chromatin, epigenetics;

- The ability of all groups to publish regularly in good to excellent journals;

- The diversity of methodologies and complementarity of available animal models;

- The uprising of several group leaders, among which some have acquired a very strong international visibility;

- The founding of the UPMC stem cell initiative by two LBD members;

- The contribution of LBD t o the André Picard network which led to coll aborations with UPMC marine stations and the DEVONET Labex proposal;

- The pro spects of new co llaborations of LBD gro ups with physicians and physicists, which constitute a real opportunity;

- An excellent internal cohesion, with a general feeling of the p ersonnel that they contrib ute to the LBD scientific life and reputation;

- The solidity of the training of the PhD students and involvement of LBD members in teachi ng at th e university level;

- The prospect of additional support from University for further renovation of the building;

- The funding that was secured by LBD to equip a state-of-the-art aquatic facility-provided refurbishment of the dedicated space, which is crucial to the competitiveness of many projects of the unit.

Weaknesses and threats:

The committee was concerned about:

- The lack of visibility of some groups and the moderate visibility of the unit as a whole,

- The difficulty of some groups with excellent research projects and ability to train P hD students, to obtain

supporting grants, calling for a mentoring program;

- The heterogeneity in the number of students/post-docs per team and the potential negative impact of a no-student situation on the future of a team;

- The difficulty of some groups to integrate less successful staff researchers or teams, without thematical adjustments and/or specific funds, during the LBD restructuration process;

- The recent installation of many assistant-professors, without parallel increase in the technical staff, resulting in a loss of research performance;

- The lack of sufficiently clear procedures for the internal promotion of new groups;

- The situation of animal facilities, especially, the capacity of the mouse husbandry and the calendar of future developments which are necessary to accommodate LBD research programs.

Recommendations:

The committee:

- fully supports the proposition for the next director. One of her tasks should be to continue restructuring and building a coherent unit,

- strongly supports the initiative taken by the current director to take advice from an external advisory board for selecting the best possible future groups at LBD, in the context of IBPS,

- recommends the reconduction and/or welcome into LBD for the next 5-years period of all but one proposed new team, which is a spin off from a pre-existing team. For this team , in order to take into account its abilility to obtain competitive grants, a re-examination within one year by the direction of LBD of its proposed creation is recommended,

- recommends that the LBD should keep clear and transparent procedures for the next recruitments, and avoid opportunistic recruitments,

- recommends that a specific effort be made to support teams in a difficult financial situation in spite of scientific excellence,

- suggests to intensify mentoring and specific discussions between the director and team leaders with the aim to strengthen research strategies, support team leaders facing difficult decisions, anticipate potential team problems and increase the rate of succesful grant applications,

- suggests working on a thematic « identity » that could be displayed by LBD to increase its visibility at national and international levels.

3 • Detailed assessments

Assessment of scientific quality and outputs:

With a total working force of around 100 research staff members, the LBD is one of the major French research units in Cellular and Developmental Bi ology, with relevance to b io-medicine through the develop ment of mous e models for human pathologies. Molecular and genetic studies in nematode, mouse, and zebrafish, coupled with state-of the art imaging, have led to major discoveries on gen e networks and signalling cues at the origin of ciliop athies, the initiation of aortic hematopoiesis, the control of sister chromatid segregation in meio sis, the initiation of nephrogenesis, and the autophagy process which prevents tr ansmission of p aternal mitochondrial DNA. Other very high impact research, using vertebrate models, inc ludes a new mo del of meiotic resumption and the d iscovery that fetal muscle progenitors constitute a heterogeneous population. In parallel, there has be en an uprising of the *Drosophila* model with the discovery of the paramutation phenomenon, novel studies of genetic and epigenetic control of developmental stability, and th e profiling of gene expression of neuronal precursor cells at a specific time of their life. Globally, the research performed at LBD is of high standard. A significant number (20%) of the primary articles have been published in leading jo urnals (IF>9) and in t he order of 100 publi cations have been published in highly recognized journals (IF>4), including articles issued from exte rnal collaborations. 6% of these publications have been co-signed by several LBD teams. There remains, however, some heterogeneity in quality among the teams, with some teams showing a productivity that could be i ncreased. Several senior teams have reached an excellent level of publication. Another young team has rece ived a prestigious award, attesting of the novelty of its projects. The two *Drosophila* teams installed during the last 4 years have very successfully achieved collaborative projects.

Assessment of the unit's academic reputation and appeal:

The ability of LBD to recruit high level young team leaders is attested by the number of applications received for the international call in 2010 an d the awarding o f competitive ATIPE/AVENIR grants to two junior teams. The recent welcoming of teams working on th e *Drosophila* and nemat ode systems has a v ery positive impact. It did not affect the coherence of the laboratory but pr omoted multidisciplinary aspects in the gene regulation/chromatin/epigenetics field. The next arrival of two other teams working on additional aspects of gen e regulation should further re-enforce LBD. The confrontation of several a nimal models is seen as an essential element of the appeal, dynamism and visibility of LBD. Whether the joining of a team working on plant mod els will positively impact on the team and/or LBD as a whole needs to be assessed in 5 years.

The LBD share s technological state of the art platforms with other resear ch units on campus (IFR 83, next Institute of Biology Paris-Sei ne, IBPS), including the i maging facility and the bio-informatics platform. In view of the increasing demand and the departure of the functiona l genomics team, the d evelopment of th e bio-informatics platform is crucial for the LBD future and must be considered as a priority.

Animal facilities are also ke y to the success of LBD, and IBPS as a whole. The urgent need to create the necessary mouse facility and refurbish the aquatic animal facility can only be re-emphasized here.

LBD teams are currently part ners of one in ternational ANR and 5 E U programs. Work performed by one team shows promising trans-disciplinary aspects, with a strong interface with surgeons.

The LBD is deeply involved in the founding of the new IBPS. Th is founding should further increase its international visibility and attractiveness.

The LBD activaly participates in the EU Erasmus program and creation of International Master programs.

Funding of the LBD team s is very variable among teams, with a minority of teams supported by ANR grants or equivalent. Both junior teams have b een well supported by starting grants. One has a lready succeeded to maintain excellent financing, past thi s period. So me senior teams are, however, in a diffi cult financial situation, in spite of very good to excellent science. Serious mentoring on the grant application aspect is recommended. The heterogeneity in the capacity of the groups to raise ex ternal grants is somewhat buffered by t he redistribution of 50%/60% of institutional funding (i.e. originating from the CNRS and UMPC) to teams and of 10% of grant's overhead to the general functioning of the unit, but it can only be a temporary solution.

Assessment of the unit's interaction with the social, economic and cultural environment:

LBD is primarily involved in fundamental re search. Yet, several groups are involved in collaborati ve projects with clinicians or human geneticists in different hospitals in Paris. Their work has applications in the understanding of mechanisms leading to human pathologies. Two grou ps develop in vitr o cell cultures allowing production of hematopoietic cells from endothelial cells, and mesenchymal cells for tendon cell repair, respectively.

The new "Seed Biology" group has strong ties and collaborative projects with private European companies in the seed indu stry. Another team is funde d to evaluate the opportunity of a s pin off company to provide "next generation" sequencing analysis to medical doctors and pharmaceutical companies.

It is clear that interactions with the medical and economic environment are seriously taken into consideration by the unit and its director.

Of note, a recently retired, former Professor of Gene tics and tea m leader at LBD, remains very actively involved in public diffusion of scienc e concepts and history of science. He recently published a new book, "Le gène: Un concept en évolution".

Assessment of the unit's organisation and life:

All members of the committee were very pleased wit h the quality of the research unit organisation and management. They congratulate the present director, for her intensive and successful work at the head of LBD since 8 years.

Although significant refurbishing of laboratory space, in order to welcome new groups, has been done by LBD during the la st five-year p eriod, the necessary renovation of the building remains a constrai nt, limiting full installation of new incoming groups.

In addition, the lasting reno vation degrades the work ing conditions. The committee strongly recommends that necessary interventions on the building be planified long in advance, and the personnel of the uni t kept informed of any changes in this timetable.

Discussions with personnel representatives have revealed consensual positive views regarding the scientific atmosphere and the general daily life at LBD. It was note d that the atmosphere of the laboratory was very good. One suggested improvement would be to tran sform a meeting room into a cafeteria for all the personnel of the unit, i n order to facilitate informal discussions and information sharing. Aside, the fu lfilling of the position of Executive Director, recently left vacant, is urgently needed.

Technical staff, PhD st udents/postdocs or staff scientists were globally satisfied wi th the organisation of the laboratory, the scientific animation, including scientific retreat s every 18 months, and the opportunities to f ollow training courses and attend conferences.

PhD students and postdocs considered that they would get good professional opportunities following their stay in the laboratory.

At the sta ff scientist level, a good balance betw een CNRS/Inserm (researchers) and UPMC (assistan t professors/professors) positions was no ted. However, some concern was raised that th is balance is n ot respected at the group leaders level (only one group lea der is a professor, all o thers being st aff scientists from Inserm or CNRS), which may lea d to the unbalanced evaluation of the nee ds, performance and/or career perspectives of these tw o categories of scientists, in particular regarding promotions. It was also stre ssed that the Laboratory Council, which includes representatives of all perso nnel categories, should be better consulted prior to important decisions e.g. pertaining to the recruitment of new groups and/or space allocations.

Some concerns were expressed by the technical staff that IBPS creation would lead to loss of autonomy of LBD in terms of technical staff r ecuitment/promotion and more mutualisation. These concerns need to be considere d by the next director. The UPMC technical s taff also expresse d the need for a closer follow-up of thei r carreers and a request for a "Director of Human resources" to help the di rectors of the units and IBPS, for this managerial aspect. The laboratory has adopted a financial policy including 40 to 50% of the institutional fin ancing and a 10% charge on all teams' contracts, except sala ries, to cover common equipment and maintain a low-cost usage of all services. 50% t o 60% of the inst itutional financing is red istributed to the t eams according to their size, no twithstanding their level of

financing, including by Inserm. A more modular redistribution offering the possibility of a punctual aid to groups in a difficult financial situation should be considered. The solidarity between groups is particularly important in a large and diverse laboratory such as LBD, at a time when fundamental research is becoming more difficult to fund. While it is necessary to protect the teams that encounter a transient decrease in their external support, the rules must make clear that it cannot work beyond a reasonable period of time. In this context, the possibility to help out teams undergoing financial difficulties should be taken into consideration by redistributing part of institutional grants attributed to two teams only for eligibility reasons. As noted above, mentoring of young as well as some senior team leaders could also help avoiding dangerous, no-grant or no-student situations.

The technological platforms are operational, perform adequately and have not reached saturation. However, as noted above, the situation of animal facilities in LBD/IPBS is extremely worrying.

The equipment and space for aquatic animals is presently suboptimal and dispersed in different IBPS units. This is worrysome since LBD has identified a single 350m2 space which would regroup the aquatic animals and secured the financing for the equipment. It is now imperious that prior commitments to renovate this space be fulfilled.

The situation of the mouse facility, which should be relocated in a new building within the next two years, is critical. The financing of the necessary equipments is crucial not to delay further the availability of a new, appropriately sized and legally acceptable, rodent facility "on site" at IBPS. A commitment for renovation and building construction is awaited to start the fund raising process.

Maintenance of the informatics network and software is of the quality expected to ensure the conservation of rapidly expanding, precious data.

Assessment of the unit's involvement in training through research:

The involvement of the laboratory in teaching activities is excellent. More than half of the permanent research staff has teaching duties. More than half of the permanent research and teaching staff has an HDR. The flow of PhD students is very good. The number of post-docs has remained low, however, and is mainly contributed by ANR grants awarded to just a few teams. Very few foreign post-docs are supported by European fellowships. The recruitement of post-docs suffers from the lack of competiveness in the offered financial support, a general problem in France that is not specific to LBD. In case of LBD, it is accentuated, however, by the competition with other developmental biology units such as Institut Curie and Pasteur, which have more flexible financial supports to attract the best PhD students and post-docs. Most students registered at LBD obtained their PhD within four years. A significant fraction of students have joined industry after completion of their PhD. Very few students have left the lab without a first-authored publication, although a publication may happen later, which attests of the quality of students and their tutoring by team leaders.

Assessment of the five-year plan and strategy:

One strategic aim of the LBD over the last five years was to 1) re-enforce previously existing teams on the historic themes Cell cycle, patterning, morphogenesis and organogenesis; 2) enrich the diversity of the classical animal models; and 3) gather a critical mass in the field of gene regulation/chromatin/epigenetics in order to improve the multidisciplinarity and attractiveness of the unit. The 2nd and 3rd objectives have been largely fulfilled. New decisions for 2014 – closing teams and regrouping others - should contribute to reach the first objective and position LBD as an important player in the expanding field of stem cell biology. A visible effort has been made to restructure the unit as a coherent entity, following SAB recommendations. The designation of Ms Sylvie SCHNEIDER-MAUNOURY, as next director of LBD, while Ms Catherine JESSUS will be director of IBPS, is a strong sign directed towards both the University and CNRS, and LBD members, that the LBD strategy will be maintained. The emergence of transversal themes between existing groups is already on the way.

During the past 4-year period, there has been a significant turn-over with 6 new teams, three closings, and one team departure. At the start of the next period, five of the groups will stop their activity within LBD, one due to retirement of the team leader. The other two result from the merging of two teams in one. The recruitment policy constitutes a major level for modeling the future of a laboratory of this size and ambition.

The proposed creation of one team from a pre-existing group raised serious concerns within the committee. Along this line, the possibility for a permanent scientist to start a new team at LBD, if stemmed from a pre-existing team, is a matter of debate: it is a possible source of frustration among scientists with HDR who are not given this opportunity, and creates difficulty for the new PI to justify his or her legitimity internally. The advice from the external SAB is seen as very positive in these conditions, although it cannot replace an open selection procedure.

The committee generally discourages opportunistic recruitments. One "stem cell" recruitment is pending. The committee suggests that LBD takes advantage of this recruitment to increase its specific positioning relative to other Developmental Biology/Stem cell laboratories in Paris. A pause is probably needed in the recruitment policy of teaching personnel, unless sufficient technical staff and increased number of PhD students can be recruited in parallel.

The departure of the functional genomics team to IBPS, at a time when this field is exploding, could be of some concern. The new director will pay particular attention to maintain ties between LBD and this team as well as full access of LBD teams to the IBPS bio-informatics platform.

On the medium-term, the recruitment of new teams should be the occasion to reinforce systems biology/modeling in the unit.

In conclusion, the committee was favorably impressed with the quality of the science at LBD. The committee has no doubt that the new direction is fully committed to sustain and strengthen the quality of research at the LBD and thereby ensure its status as an excellent research unit in developmental and stem cell biology.

4 • Team-by-team analysis

Team E1 : Drosophila Genetics and Epigenetics

Name of team leader: Mr Christophe ANTONIEWSKI

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions		1	1
N2: Permanent researchers from Institutions and similar positions	2	2	2
N3: Other permanent staff (without research duties)		1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1	1	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	3	5	5

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	2	
Postdoctoral students having spent at least 12 months in the unit*	2	
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	1	1

• Detailed assessments

Assessment of scientific quality and outputs:

The team of Mr. Christophe ANTONIEWSKI has joined LBD two years ago after being selected through an international call. This team studies the functions of small double stranded (ds) RNA. dsRNAs are involved in the regulation of numerous cellular processes, including post-transcriptional regulation, resistance to infection by RNA viruses and the silencing of transposons. Insect RNA viruses encode viral suppressor proteins that interfere with the RNAi machinery, thereby inactivating the host's defense mechanisms. This team has characterized a number of these viral suppressor proteins and showed that they are able to interfere with the endogenous RNAi machinery. Interestingly, the expression of these viral suppressors interferes with gene silencing in the proximity of heterochromatin. In a context of an intense and ongoing debate, these observations in *Drosophila* are the most convincing evidence for role of dsRNA in establishment of heterochromatin in metazoans. The team has more recently created original, very powerful tools to identify new suppressor mutations that interfere with microRNA silencing. In a very competitive field, the outcome of this screen is extremely promising. The same tools appear also very promising in a screen to identify small compounds able to modulate the RNAi response and/or the microRNA machinery. Finally, this team has developed a number of informatics tools aimed at analyzing the large amount of small RNA data generated by high throughput RNA sequencing. Some of this software has been installed onto "Galaxy", a user-friendly server platform available to the public. These tools are very useful for the large community working on small RNAs and were very instrumental in the recent collaboration of this team with the neighboring laboratory. They also add a new bio-informatics dimension to the LBD. In summary, this is a very strong team.

Assessment of the unit's academic reputation and appeal:

The team has published a number of scientific articles in highly rated journals (Nature, Nature Structural and Molecular Biology, PNAS). The bioinformatics tools that the team has developed places it at the forefront of the field working on small RNA regulation. This is an impressive achievement considering the fierce competition in this field. Many members of the team have given talks at international meetings. The team leader has also been in charge of co-organizing a workshop on small RNA biology at the "Fundation Les Treilles". This illustrates the high reputation that this team has acquired in this field.

Assessment of the unit's interaction with the social, economic and cultural environment:

The team has made important contributions to software packages that are open to public access on the "Galaxy" server. In addition, the team is evaluating the opportunity of a spin off company to provide "next generation" sequencing analysis to medical doctors and pharmaceutical companies.

Assesment of the unit's organisation and life:

The team is relatively small, being composed of 5-6 research scientists and 1 technician. On the one end, the production of the last 5 years emanating from this small group is impressive. This is indicative of an efficient working group.

On the other hand, the proposed projects for the next 5 years are very ambitious and will require personnel reinforcement of the team. The intense and productive collaboration with another LBD team is a very positive aspect.

Assessment of the unit's involvement in training through research:

3 Ph.D students have graduated during the evaluation period, which is a strong achievement. The team leader participates in the teaching in different Masters in France, at Pasteur, Toulouse, Lyon, Dijon and Clermont-Ferrand.

Assessment of the five-year plan and strategy:

The team has developed very powerful tools to study the role of small dsRNA in the formation of heterochromatin. They also identified 17 new loci potentially involved in RNAi and microRNA regulation. Their original GFP-based reporter system also appears powerful to screen for small compounds able to regulate the RNAi and microRNA machinery, with the prospect of opening new lines of research. Finally, the strong expertise in bioinformatics opens up interesting possibilities of collaborations. In summary, these projects have very high potential to bring new important insights into the frontline small dsRNA field.

Conclusion:

- Strengths and opportunities:

The team is in a unique position by having developped both powerful tools to study the role of small dsRNA in the formation of heterochromatin and a strong expertise in small RNA bio-informatics. The preliminary results from screens for new regulators of small RNA processing are very promising. The collaboration with another LBD team is very profitable.

- Weaknesses and threats:

The team has to expand its size in order to be able to fully exploit the ongoing screens and remain competitive on all aspects of the project. The team has to make sure it can further develop both the bio-informatics aspect and the biological questions.

- Recommendations:

The size of the project needs to remain adapted to the size of the team. This team needs to be fully supported: Hiring a bio-informatician is a priority and would be extremely positive for the LBD as a whole.

Team E2 : Muscle and tendon formation and repair

Name of team leader: Ms Delphine DUPREZ

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	1	2	2
N2: Permanent researchers from Institutions and similar positions	2	2	2
N3: Other permanent staff (without research duties)	1	2	2
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1	1	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	5	7	7

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	2	
Theses defended	3	
Postdoctoral students having spent at least 12 months in the unit*	4	
Number of Research Supervisor Qualifications (HDR) taken	1	
Qualified research supervisors (with an HDR) or similar positions	1	2

• Detailed assessments

Assessment of scientific quality and outputs:

This, so far, relatively small group of 6 -7 people maintains a good balance between technical positions, permanent positions and more junior PhD students and post docs. The production of the team is of a very good level in number and quality, with nine articles were the team members hold first or last author position in the last 5 years. This includes one outstanding publication in Dev Cell, 3 in excellent journals (Development and JBC) and 5 in lower impact journals. Other publications reflect collaborations, either with other teams of the unit, other national teams or to some extent, international teams. A niche has been carved making use of the chick system to study muscle and tendon development, complemented by some mouse work and more recently the development of in vitro models. The development of projects focusing on the interactions between muscle and tendon is quite unique. The group is currently setting new, ambitious programs involving collaborations in the engineering field, and with chemists, making use of in vitro systems to study the impact of mechanical tension on tendon development and generate tendons or tendon matrices. Collaborations with surgeons, to study tendon repair are also being developed, with expected bio-medical outreach. This is a very strong team.

Assessment of the unit's academic reputation and appeal:

The team is well implanted in national networks (it includes leadership in some) and to some extent in international ones (6FP NoE, MyoGrad PhD program). The team is progressively expanding, with 10 members expected next year and attracts students and post-docs. A talented research associate, recently recruited by CNRS, has joined the team, demonstrating its attractiveness.

Assessment of the unit's interaction with the social, economic and cultural environment:

The team has taken leadership in initiating interactions with other disciplines, including medical doctors in order to explore tendon repair following surgery. This initiative should impact the socio-economical environment in the near future.

Assesment of the unit's organisation and life:

The project is very coherent. A good balance between traditional and exploratory projects, appears to have been found. The SWOT analysis pointed out difficulties regarding a proximity mouse facility which is absolutely essential for this team's project.

Assessment of the unit's involvement in training through research:

Several PhD students and post-docs have been trained during the last period, each of which has published a first-authored paper. A French post doc and several PhD students are currently in the team, attesting of its attractiveness. The group is involved in an international training network with Germany.

One group member is invested in a Master program which has done extremely well at attracting outstanding international speakers and very good international students, many of whom work in labs in France during and after their master.

Assessment of the five-year plan and strategy:

The team continues classical functional approaches on selected genes involved in muscle and tendon development and has used profiling to identify new genes for future investigations. The initial validation of the expression pattern of these genes shows that new markers and players in tendon development have been identified. This is one important step since very few were previously known. The team has developed a new methodology to interfere with gene expression and explore specific gene functions in the late developing fetal muscles in chick. While the team established its niche in muscle and tendon development and their interactions, it constantly seeks innovation.

The new direction of tissue mechanics to study a tissue specialized in elasticity with chemists and physicists, is an exciting follow up of the te am's studies on tend on and muscle interaction. Interactio ns with surgeons on tend on repair show the excellent scientific vision of the long-term.

Conclusion:

- Strengths and opportunities:

This is a very strong team that demonstrated clear intellectual and methodological innovations along the evaluation period. It is a proactive group with excellent vis ion, ongoing evolut ion of research, and good balance of activities. It follows and proposes a very coherent project.

- Weaknesses and threats:

The animal facility is limiting for the project size and ambition.

- Recommendations:

The group should capitalize on an outstanding recent article and very good multi-dimensional projects to reach out more internationally.

Team E3 : Nuclear dynamics and development

Name of team leader: Mr Vincent GALY

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions			
N2: Permanent researchers from Institutions and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1		
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1	1	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	3	2	2

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	1	
Postdoctoral students having spent at least 12 months in the unit*	2	
Number of Research Supervisor Qualifications (HDR) taken	1	
Qualified research supervisors (with an HDR) or similar positions	1	

• Detailed assessments

Assessment of scientific quality and outputs:

The project initially developed by this team at LBD focused on understanding the functional implication of the nuclear envelope during development in *C. elegans* embryos. The project addressed important questions regarding how components of the nuclear envelope control chromatin organization in development. It led the team to develop new tools to understand chromatin assembly during embryogenesis and make important observations on X chromosome compaction that still have to be extrapolated to autosomes and be published.

Most importantly, while trying to understand how autophagy could impact on nuclear envelope dynamics and homeostasis, the team discovered that autophagy is involved in eliminating paternal mitochondria from the zygote after fertilization. This is a very exciting discovery, which for the first time explains how paternal mitochondria are not transmitted to progeny. Observations made in mouse embryos suggest that a similar mechanism could be acting in mammals. This new process was called allophagy and the work was published in Science in 2011.

The team was created only three years ago, but has already published one major publication. This Science publication gives the team a very good visibility. It already helped the team leader to successfully raise a major funding and establish important collaborations to pursue on this novel direction.

Assessment of the unit's academic reputation and appeal:

The team leader has an excellent track record of publication during all stages of his career. The recent work led to a successful cooperative ANR funding with another leading team, which is coordinated by the team leader. The team also recently obtained a highly selective grant ("Coup d'élan pour la recherche") from the Schueller-Bettencourt foundation.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The team is still small but will benefit from recruitment of at least one additional staff scientist in a nearby future supported by team grants.

Assessment of the unit's involvement in training through research:

Young team: not applicable.

Assessment of the five-year plan and strategy:

The proposed project is now fully oriented towards understanding the fascinating question of how paternal mitochondria are specifically recognized and targeted for degradation at fertilisation. It also aims to evaluate the stake of eliminating paternal mitochondria for worm development and what functions could play paternal mitochondria in oocyte activation.

Several hypotheses that could explain how paternal mitochondria are targeted will be tested, such as the impact of mitochondrial genome alterations, changes in mitochondrial membrane potential, the requirement for mitochondria fragmentation and the possible involvement of sumoylation. The molecular pathways that activate allophagy will be addressed by a candidate-based strategy and by searching for specific partners of two key (LC3) proteins for allophagy in worms. In a second objective, the team wants to understand the consequences of maintaining paternal mitochondria and proposes to address this question by inactivating autophagy in the germline. Last, the team aims at revisiting the ancient observation of paternal mitochondria swelling upon fertilization.

They wish to address the hypothesis that mitochondrial swelling is in turn responsible for oocyte activation. In addition to a genetic approach in *C. elegans*, the ascidian model will be used to visualize mitochondrial behavior during oocyte fertilization by sperm. The project is very well conceived and designed.

The team made the critical strategic decision to invest on this project for the future, which demonstrates the capacity of the team leader to adapt quickly to new perspectives. The size of the project must remain compatible with the size of the team.

Conclusion:

- Strengths and opportunities:

The project is built on one original, fundamental observation made by the team, of specific paternal mitophagy at fertilisation. The team has secured two important grants for the next three years. Two necessary collaborations have been established, one with a team at CNRS, Gif sur Yvette, leader in the field of autophagy in *C. elegans* and the second with a team of UMR 7009, Villefranche sur mer, specialist of ascidian oocyte activation.

- Weaknesses and threats:

The team is small and the team leader has not yet stabilized a core of permanent scientists. Even though a PhD student and one postdoc are already actively involved in the project, the team needs to increase its manpower by recruiting other scientists in order to develop all aspects of its project.

- Recommendations:

We recommend the PI to be mentored and trained in team management to help in coordinating confirmed scientific and technical staff around this very promising project. The team should be supported by a full time technical engineer.

Team E4 : Cell cyle and cell determination

Name of team leader: Mr Michel GHO

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	2	2	2
N2: Permanent researchers from Institutions and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	4	4	4

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	2	
Postdoctoral students having spent at least 12 months in the unit*	1	
Number of Research Supervisor Qualifications (HDR) taken	1	
Qualified research supervisors (with an HDR) or similar positions	3	3

• Detailed assessments

Assessment of scientific quality and outputs:

This team is interested in the mechanisms that couple (or uncouple) cell division and cell fate decisions during development. They are using as a model system the sensory bristle lineage of *Drosophila*, which Mr Michel GHO extensively characterized earlier in his career, and which permits combining genetics with cellular observations in real time through live imaging.

In the past, including during the current evaluation period, the team consistently managed to contribute new and original findings to this highly competitive field. Although the number of resulting publications is moderate (4 for the reporting period), it is remarkable in view of the small size of the team and its very limited funds, and all of this work was published at very good to excellent level (e.g. PLoS Genet. 2009, Development 2012, 2x PLoS One in 2008 and 2010) and with team members in first and last authorships.

The conceptual impact of this work in the field is important. In particular it contributed an important line of thoughts on how key molecules can act as "nodes" linking cell fate and cell cycle decisions. The recent development of a laser microdissection procedure permitting the transcriptional profiling of rigourously identified progenitor cell states is also a real technological advance, and will permit moving from candidate to larger-scale approaches.

Assessment of the unit's academic reputation and appeal:

The team leader is undeniably an internationally recognized scientist in the field of *Drosophila* Development and Genetics. He, as well as team members, including PhD students, have presented their work in several international meetings or conferences during the reporting period.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The team is of small size and the scientific supervision of the specific sub-projects is shared by the team leader and a professor. That the different subprojects are intimately connected is attested by their joined authorships on the team publications. How a newly joined professor will contribute the team organization and projects needs to be better explicated.

Assessment of the unit's involvement in training through research:

Two current team members have University positions and are heavily involved in teaching. This ensures , however, a direct link between the theoretical training of students and the practical and conceptual questions addressed in the group. During the last period, two PhD students defended their PhD with each a first-authored paper, and one is still in the PhD process. The recent "Habilitation" of one team member will increase the capacity of the team to welcome students for the next period.

Assessment of the five-year plan and strategy:

The proposed project will build on existing data and extend it to larger-scale transcriptomic approaches to integrate new molecular partners in the control of cell fate and cell division. Primary emphasis will be placed on the role of candidate Transcription Factors. In parallel, the team plans to analyse the functional impact and regulation of the asymmetrical localization of Cyclin A between daughter cells during division. A long-term effort will be to transcriptionally profile neural progenitors at different steps along the sensory organ lineage. This approach, based on laser-microdissected cells, will be invaluable in characterizing in an unbiased manner the molecular changes that accompany changes in cell state. It will be done in collaboration with a team at Pasteur Institute to circumvent the lack of funds, but with a real risk of loss of primacy on the data.

Overall, the project relies on novel, original and solid findings, and includes a balanced mix of short-term and long-term plans. It also leaves space to technological developments and the generation of a relevant transcriptomic resource, which can feed future projects.

Conclusion:

● Strengths and opportunities:

- original projects and solid and novel preliminary findings;

- coherence of the research line;

- very strong expertise of the group members in the field, and a history of excellent publications;

- appropriate collaborations with other academic partners for technological issues.

● Weaknesses and threats:

- very limited funds and student/postdoc manpower;

- the team leader should be last author on the papers, except for exceptional reasons;

- isolation: there are very few collaborative manuscripts at present. Technological collaborations are planned for the coming period, which could help to open up the team, but wish a risk of loss of primacy on the outcome;

- Opening up towards other model systems may not be wise at this stage.

● Recommendations:

Mentoring seems necessary to increase the success of grant application. In the meantime, institutional support is recommended. It is important to open up the team to internal and external, balanced collaborations.

Team E5 : Migration and Differentiation of Hematopoietic Stem Cells.

Name of team leader: Mr Thierry JAFFREDO

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	3	4	4
N2: Permanent researchers from Institutions and similar positions	2	2	2
N3: Other permanent staff (without research duties)	3	3	3
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1	2	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	9	11	10

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	2	
Theses defended	4	
Postdoctoral students having spent at least 12 months in the unit*	1	
Number of Research Supervisor Qualifications (HDR) taken	0	
Qualified research supervisors (with an HDR) or similar positions	4	5

• Detailed assessments

Assessment of scientific quality and outputs:

At the beginning of the period, this group was co-directed by the present team leader and a University Professor who left LBD for other functions. The same year, one Inserm researcher and one Inserm engineer joined the team. The group is presently of medium size, with about 10 persons. It is dominated by permanent researchers (6), 3 technicians/engineers and 2 post-docs/PhDs. The team leader is a recognised specialist in the development of hematopoietic stem cells (HSC) in the mouse and avian embryo. He contributed seminal work showing the endothelial-to-hematopoietic transition in the embryonic aorta and the contribution of the somite to aortic homeostasis. Two other main topics of the team during the last period, were the functions of Melanoma cell adhesion molecule (MCAM/CD146), in endothelial progenitors and lymphocyte-endothelium interactions (now on hold), and the first steps of HSC commitment into T cells. The productivity of the lab, 7 publications involving first or last authorship from the lab in 5 years is modest, considering the size of the group. However there was a notable PNAS paper and very recently a publication in the leading journal Dev. Cell. Most of the others are in more specialist journals of good level. It should be stressed that 4 of the permanent researchers are professors and have teaching duties, which probably decreases productivity. The group has 3 main topics: embryonic hematopoietic stem cell emergence, liver hematopoietic stem cell amplification and T-cell receptor evolution, combining expertise in chick, mouse and human development. The field of hematopoietic stem cells in the aorta is small, with a lot of international competition but since few teams use the chick system, this delineates a unique niche for the JAFFREDO team. The evo-devo project has been well developed considering that it is often difficult to reach high impact journals in this field and this has nevertheless been achieved.

Assessment of the unit's academic reputation and appeal:

This well funded team has very good visibility in the scientific community, in a very competitive domain. The team leader and INSERM member have each coordinated projects financed by national charity trusts. They work in collaboration with several labs (US, Scotland, France).

2 PhD students currently in the lab, attesting of the team's attractivity. There is only one post-doctoral fellow, from France.

The team leader has received several invitations to high profile, international meetings. He coordinates the UPMC Stem Cell initiative which links several labs at UPMC. The group has also been very recently awarded with a joint ANR/CIRM (Californian Institute of Regenerative Medecine) grant.

The PI is member of the Editorial Board of several specialized journals (IF around 3) since 2011.

Assessment of the unit's interaction with the social, economic and cultural environment:

Two members of the team have been interviewed by the french parliament for revision of the bioethics laws.

Assesment of the unit's organisation and life:

The connecting thread of the team is hematopoietic stem cells but the themes appear rather dispersed in this axis. Many sites and steps of hematopoiesis are investigated. The different members nevertheless interact well as there are joint publications. The decision-making tree in a team with 5 senior investigators needs to be made clear. The laser microdissection platform, for which the team leader collected funds, already laid benefit to the team and will benefit other teams in the unit.

Assessment of the unit's involvement in training through research:

Several PhD students have been trained during the last period, at the rate of roughly one new student per year, which is a strong achievement. Students generally leave the lab with a good first-authored publication. Two team members actively participate in university teaching programmes in Cell and Stem cell biology, Immunology and Biotechniologies including the setting up of competitive international Master programmes. The team leader and one team member contributed recently to the creation of a training programme in the biology of stem cells.

Assessment of the five-year plan and strategy:

This is overall a good project in the line of very good previous work in the group, but now going in the direction of large scale profiling. Although there are many competing groups most of which involved in profiling experiments, the originality of the project resides in the use of laser capture to isolate specific cell types based on their location rather than purely the surface markers they do express. The project is quite heavy in profiling but how much functional assessment can be achieved in 5 years is unclear. Many validation methods have been developed but their organization into a pipeline could be strengthened. The collaboration with an external zebrafish group, although of potential interest, presents a risk of letting the most interesting hits escape to the collaborators. It is likely that the project would benefit from being narrowed down (less sites of hematopoiesis analysed). Justifications of why some of the projects are important need to be better explained. For example, the rationale to generate new endothelial cell lines (there are already quite a few) is not clear. Why it is important to focus on PTCRA canopy should be discussed. The strengths are well delineated in the SWOT analysis. The animal facility seems to be limiting for this group as well as for other groups.

Conclusion:

- Strengths and opportunities:

Excellent know-how and reputation of the team, good complementarity of skills shared by different team's members.

- Weaknesses and threats:

The project is not only time- but also money-consuming. Unless big grants are obtained, narrowing down the research lines will be necessary. The animal facility seems to be limiting for this group as well as for other groups.

- Recommendations:

Develop a functional validation pipeline including the chick model for fast functional screening after profiling.

Team E6 : Biology of the Oocyte

Name of team leader: Mr Olivier HACCARD & Ms Catherine JESSUS

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	1	1	1
N2: Permanent researchers from Institutions and similar positions	3	3	3
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	1	1	1
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	6	6	6

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	2	
Theses defended	1	
Postdoctoral students having spent at least 12 months in the unit*	2	
Number of Research Supervisor Qualifications (HDR) taken	2	
Qualified research supervisors (with an HDR) or similar positions	3	3

• Detailed assessments

Assessment of scientific quality and outputs:

This team is very well respected in the field. The work is characterized by the rigor of the biochemical analyses. In the last 5 years, the output has been a little low but the team has made substantial contributions to our understanding of how meiosis is regulated by cyclin-Cdk and mos kinases. Through collaboration, the team has also made important contributions to the discovery that entry to meiosis is regulated by the Greatwall kinase generating a PP2A inhibitor.

The results have been published in very good to excellent journals, (Development, Mol. Biol. Cell) with some output in more specialized journals (Plos ONE, Mol. Cell. Endocr. Mol. Cell Proteomics, Cell cycle, Dev. Growth Differ).

Assessment of the unit's academic reputation and appeal:

Ms Catherine JESSUS has a very good reputation in the field, as evidenced by her invitations to speak at international meetings. She has made major contributions to the scientific evaluation of CNRS research units and programs, and structuring of biology at UPMC. A great deal of her time and effort has been devoted to running the Unit and preparing for the potential formation of the Institute of Biology Paris-Seine. Clearly, this major distraction from research is likely to have impacted on the research in her laboratory. Yet, it was noticeable that she gave an excellent presentation of her new data and research aims. Dr Haccard is increasing in visibility. We judge that the team will further enhance its reputation in the next 5 years.

Assessment of the unit's interaction with the social, economic and cultural environment:

Ms Catherine JESSUS has made important contributions to science in France at different levels, from her implication in National science committees, to planning for a new Institute of Biology, Paris Seine, of which she will be the first director.

Assesment of the unit's organisation and life:

The two PI have established a very good team with strong complementary skills in biochemistry and embryology.

Assessment of the unit's involvement in training through research:

The two PI have successfully trained a large number of PhD students.

Ms Catherine JESSUS has set up an inter-laboratory training network in embryology and established an excellent framework to manage and mentor students in the unit as a whole.

Assessment of the five-year plan and strategy:

The team focuses its projects on several important questions remaining on what drives and controls meiotic maturation of the oocyte, including the repression of DNA replication between the two meiotic divisions.

The pilot data underlying the research projected for the next 5 years are very exciting. The plans to follow up on these pilot observations are rational and well focused, and the research aims are feasible.

Conclusion:

- Strengths and opportunities:

Ms Catherine JESSUS has reduced her outside commitments to enable her to devote more time to her research. She displayed an impressive command of her subject and clarity in her objectives for the next period. This and the gaining momentum of Mr HACCARD bode very well for the future.

- Weaknesses and threats:

Too much involvement of Ms Catherine JESSUS in setting up and acting as executive director of IBPS could negatively impact the team's attractivness.

- Recommendations:

It is imperious that the group concentrates on obtaining the financial support it needs to exploit in the next 5 year period their recent important and exciting findings.

Team E7 : Epigenetic control of developmental homeostasis and plasticity.

Name of team leader: Ms Frédérique PERONNET

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	2	2	2
N2: Permanent researchers from Institutions and similar positions	3	3	3
N3: Other permanent staff (without research duties)	3	2	2
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	1		
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	9	7	7

Percentage of producers	*100.00 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	3	
Postdoctoral students having spent at least 12 months in the unit*	1	
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	3	3

• Detailed assessments

Assessment of scientific quality and outputs:

This team has had a long-term interest in the process of epigenetic memory, which maintains gene expression patterns throughout development. The *Pc-G* and *trx-G* genes form large chromatin proteins complexes that modify the histones, thereby establishing chromatin environment that are permissive or refractive to transcription. Through her detailed analysis of *corto* in *Drosophila,* an ETP gene that works in concert with the *Polycomb-* and *trithorax-group* or genes, this team has made a number of original observations. While these observations lie a bit outside of the main stream of the research in this competitive field, she has managed to publish them in international journals that have excellent (PLos Genetics) to good impact in genetics and molecular biology (Plos One, Cell cycle, BMC Dev Biol). Some of these observations led this team to propose that ETPs could be key factors of phenotypic plasticity, a possibility which is now explored by a recently recruited research scientist. The team is also involved in a screen for factors of developmental stability, using morphometric analysis of the adult wing, in collaboration with a group at the Museum of Natural History. This is a rather new area of investigations that are very original and promising, where the team could establish a niche, and somewhat escape from the fierce competition in the fields of epigenetics and transcriptional regulation. This is a solid team with original projects of high potential.

Assessment of the unit's academic reputation and appeal:

Through its publications in well recognized journals in the field of genetics and molecular biology, this team has gained a good international reputation. The team leader has been invited at a few national and international epigenetic events. Team members often travel to international meeting where they display posters or give talks. The team leader has also managed to establish local and international scientific collaborations, including with a prominent laboratory in the field of Pc-G/trx-G genes in British Columbia.

Assessment of the unit's interaction with the social, economic and cultural environment:

The team participates at public events aimed at communicating science to the large public. The team also organises an epigenetics training course in the context of professional learning, that is funded by international companies selling scientific equipment, giving visibility to the team, outside the academic frame.

Assesment of the unit's organisation and life:

The team is relatively large, comprising 9 members. The average of about one Ph.D student graduating almost every second year is entirely satisfactory. Two members will have left the group by 2014 and there are plans to recruit a Ph.D student. From the feedback of scientists of the team, the life of the group is highly convivial and the team leader is a very present, enthusiastic and lively principal investigator.

Assessment of the unit's involvement in training through research:

Students of the laboratory are well integrated in the team and supervised by competent permanent staff. 3 students have completed their Ph.Ds in the past 5 years. In addition to train Ph.D students, the team leader also contributes to the training of students at the master levels. She is member of the steering committee of a doctoral school entitled “Complexité du vivant”. A member of the team participates in an international epigenetic course organized by the Curie Institute.

Assessment of the five-year plan and strategy:

As mentioned above, the Pc-G/trx-G epigenetic regulation field is highly competitive. By studying the processes in which corto participates into Pc-G/trx-G regulation, the team has made interesting and original observation that put itself in a nest, protecting it from the fierce competition. The team will focus on 1) the epigenetic control of growth homeostasis and developmental stability, and 2) the analysis of phenotypic plasticity. The preliminary data they have gathered in these 2 projects are strong, and give confidence that the planned experiments will allow the team to make important observations within the next 5 years.

Conclusion:

- Strengths and opportunities:

Shifting from hard core epigenetics to the issues of developmental stability/plasticity put this team in a niche with high potential. Several published papers in good to excellent journals place it in a favorable situation for competitive granting.

- Weaknesses and threats:

The present lack of long term funding is worrisome, especially in view of the ambition of the projects. The outpout from large ongoing screens remains uncertain. Teaching epignetics contributes to the team visibility but takes its load of energy and manpower outside the main projects.

- Recommendations:

The team needs to improve its rate of successful grant applications. Particular attention should be given to the feasibility aspects of the different projects.

Team E8 : Epigenetic Repression and Mobile DNA

Name of team leader: Mr Stéphane RONSSERAY

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	2	2	2
N2: Permanent researchers from Institutions and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	4	4	4

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	1	
Postdoctoral students having spent at least 12 months in the unit*	1	
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	1	2

• Detailed assessments

Assessment of scientific quality and outputs:

Throughout his scientific career, the team leader has studied the mechanisms that restrict transposition of transposable elements. The effect of the presence of transposable elements for their host genome has 2 sides. On the one hand, they cause mutations upon transposition into existing genes, threatening viability of their hosts. On the other hand, their ability to cause genome rearrangement is thought to have played an instrumental role during evolution, by providing plasticity to the genomes. Hence, the accumulation of transposable elements within genomes points to the existence of powerful mechanisms to control their mobilization and transposition. Because of their mutagenic effect, "Genetics" is THE technique of choice to analyze transposable elements. It is therefore not surprising that the biology of transposable elements is best known in bacteria, plants and flies. The team leader has devoted most of his scientific career to the analysis of the P-element, a particular transposon that is used as transformation vector in *Drosophila*. He is one of very few world experts in P-element biology and publishes on this subject in leading or very good journals on a regular basis (Nature, Plos Genet, Plos One, …). Sophisticated and elegant genetic studies of a particular strain of flies that suppresses P-element transposition in the germline led the team to discover the first example of a "paramutation" in metazoans. In collaboration with team 1, they showed that the inhibition of P-element transposition in the germline is mediated by the piRNA silencing pathway. Their recent joint publication in "Nature" constitutes an important breakthrough, the result of a timely synergism between the classical genetic approach of this team and the expertise acquired by team 1 in analyzing large datasets of small RNA sequences. The collaboration of the two teams is a very strong plus for each team and the LBD as a whole.

Assessment of the unit's academic reputation and appeal:

Regular publication - in highly rated journals - contributes to the international visibility of this team. The team leader has been invited to give talks at international meetings. His participation as invited speaker in the Gordon conference on "Epigenetics" in 2007 illustrates his international recognition. A present, the small size team does not include postdocs. However, the recent breakthrough paper in Nature should enable the team to attract excellent postdocs at the international level. Increasing the size of the team will be necessary to stand the competition that will arise following this recent publication.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The team is relatively small, being composed of 1 research scientist, two assistant-professors (with the corresponding load of teaching), 1 technician, and PhD and master students. The outstanding productivity is indicative of a very well organized and motivated team.

Assessment of the unit's involvement in training through research:

The team hosts a regular flow of PhD students, attesting of its attractivity and excellent reputation in student training. PhD students and post-docs of the team publish first-authored papers.

Assessment of the five-year plan and strategy:

The project of the team, in direct continuation of recent publications, is to investigate the molecular mechanism of trans-silencing during germ line development. The hypothesis is that piRNAS produced by a silencer transgene can repress expression of a homologous gene. A candidate approach will be used to identify the components involved in this trans-silencing effect. A side project, which needs importing a technique from an external lab, is to perform a 3D analysis of the paramutation mechanism. A second project is to study the developmental somatic impact of paramutation, which involves ChiP and RNA-SEQ anlyses,in collaboration with team 1. Finally, an assistant professor is building his own project in the team, which is to test if telomeric associated sequences (TAS) dispersed in the genome are included in genes, and if so if these genes are regulated by a mechanism of TSE. This could represent a novel gene regulation network in the germ line.

The paramutation mechanism is new in *Drosophila* and will certainly become a hot topic. The team should consider concentrating on the first two aspects, TSE "somatic targets" and the role of endo-siRNAs. The exceptional mastering of the genetics aspect of TSE, a trademark of the team, might soon become insufficient to face the inevitable competition on all aspects. The collaboration with Mr Christophe ANTONIEWSKI's team is essential.

Conclusion:

- Strengths and opportunities:

The paramutation discovery is a milestone in the research on shaping of genome expression by transposable elements. Studying the somatic in addition to germ line impact of paramutation and transgenerational effects is of very high potential. The team has a worldwide unique expertise in genetic of TSE and is able to attract excellent PhD students. The ongoing collaboration with team 1 at LBD brings recognition to both teams and LBD as a whole.

- Weaknesses and threats:

Breakthrough discoveries stimulate international competition and the TSE/paramutation topic might soon become very competitive. The team needs collaborations with external teams to achieve some of its goals. While it could be a way to reach a more international profile, it also has some risks of loss of primacy.

- Recommendations:

Surfing on the recent Nature paper to :

- Attract new collaborators, especially post-docs, and increase the size and multidisplinarity of the team;

- Secure the funding necessary for molecular biology aspects of the project;

- Concentrate on major objectives.

Team E9 : Morphogenesis of the vertebrate brain

Name of team leader: Ms Sylvie SCHNEIDER-MAUNOURY

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	2	2	2
N2: Permanent researchers from Institutions and similar positions	3	3	3
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	2	2	2
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	8	8	8

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	2	
Theses defended	2	
Postdoctoral students having spent at least 12 months in the unit*	2	
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	2	3

• Detailed assessments

Assessment of scientific quality and outputs:

The team addresses the molecular and cellular processes controlling vertebrate brain development, taking advantage of both the mouse and zebrafish model systems. From a "historical" focus on hindbrain patterning, it shifted during the last period towards two new specific interests, the functional analysis of the primary cilium and of axonal mRNA transport. Both topics deal with the specialized sub-cellular localization of proteins/mRNAs in link with polarized cellular functions in neural cells. Related defects are associated with brain developmental abnormalities, as found in ciliopathies or mental retardation, respectively.

On the topic of cilia formation and function, the team has been at the forefront of research, asking innovative questions and bringing novel and mechanistic insights into the processes involved. The team's work supported the novel concept of the dual regulation of Dishevelled by ciliary proteins in planar cell polarity control and revealed for the first time that a particular class of ciliopathy-associated proteins, NPHP proteins, are involved in this control. These findings were all published in very high to excellent journals, in a majority of cases with the team in last authorship (J. Cell. Biol., Development, Human Molec. Genet. Nature Genetics). The team demonstrated a high capacity to establish key collaborations, to choose experimental advantages from complementary model and cellular systems, and to dissect to the sub-cellular level the mechanisms integrating cell specification, proliferation, patterning and morphogenesis. The project on mRNA transport in axons should for the first time bring information on the mechanisms and function of this process in vivo in the context of a developing vertebrate. It is still in an exploratory phase but the necessary tools have been developed that should permit functional assays shortly.

Assessment of the unit's academic reputation and appeal:

The team leader has been involved in coordinating several scientific collaborations and is very successful at raising national funds for the projects of the team. She is playing a major structural role on-site, being at the origin of competitive fund-raising and project planning for an improvement of the aquatic facility of the LBD, volunteering for the directorship of the LBD for the coming period, and investing in shaping its future structure and scientific objectives. She is or has been involved in several national evaluation committees and SABs. She is internationally recognized as a prominent scientist in brain development and more recently in ciliopathies, and she and team members are regularly invited to organize international meetings and to present seminars abroad. The team has been very successful at recruiting students, and currently hosts two postdocs, both on external funds (ANR, FRM). Finally, the team recently obtained recognition from the Neuroscience School of Paris (ENP), involving a very competitive evaluation by an international committee. Overall the recognition of the team, both for its scientific achievements and its implication in the national and international management and evaluation of science is outstanding.

Assessment of the unit's interaction with the social, economic and cultural environment:

The team has been at the origin of very fruitful collaborations with clinical groups focusing on ciliopathies at Necker Hospital, leading to the identification of Ftm/Rpgrip1l as a ciliopathy gene (joined publication in Nature Genetics 2007), to the elucidation of the mechanism of action of this protein on Dishevelled (joined publication in JCB 2012), and to the functional analysis of nephrocystin-4 (joined publication in Human Mol. Genet. 2011).

Assesment of the unit's organisation and life:

The team's activities are efficiently organized around a core of senior staff scientists.

Assessment of the unit's involvement in training through research:

Several team members are actively involved in teaching at University UPMC and at ENS.

Two PhD students defended their PhD during the evaluation period. Both published one first author article during their PhD (Dev. Biol., Development). The team is regularly hosting Master students. The students of the team are also invited to present their work orally at national and international meetings.

Assessment of the five-year plan and strategy:

The proposed projects for the coming period aim to further dissect the molecular and cellular processes involving Ftm/Rpgrip1l in brain development, and the mechanism and function of axonal mRNA localization. The first topic will rely on conditional invalidation in mouse and live imaging in zebrafish morphants and mutants. It is very important in the context of ciliopathies where patients suffer form various brain development defects and neuronal disorders. Only a few mouse models are available to address such a question and the *rpgrip1l* floxed model developed by this team will be particularly informative in this respect. The zebrafish approaches appear particularly original to monitor in real time the basal body positioning and PCP signalling events that drive localized primary cilium organization. This project as a whole has been judged outstanding: it is a coherent and logical continuation of the most exciting results obtained by the team during the last period, and builds on solid published and preliminary results to extend them towards a fine mechanistic dissection and a real-time analysis of cell signalling and polarization processes during brain construction. It perfectly fits the scientific expertise and the technological know-how of the team. The mRNA localization project aims to identify the zipcode controlling axonal mRNA transport in vivo, and the function of this transport, through the invalidation of a zipcode-binding protein. In addition to being the first in vivo analysis of this kind in a vertebrate embryo, it will lead to technological innovations for real time monitoring of local mRNA localization and translation in vivo. At this exploratory stage, care should be taken to raise the appropriate funds on this topic to permit its continuation and development with the appropriate critical mass of researchers.

Conclusion:

- Strengths and opportunities:

This is a very strong team that demonstrated clear intellectual and conceptual innovations along the evaluation period. It has now pioneered two original avenues of research, and concretized this leading position through a number of senior publications in high profile journals. Teamwork is organized around a solid core of staff scientists that provide efficient supervision. Funding has been secured for the coming years, and some ongoing key collaborations add a translational dimension to the projects. Overall, the team's achievements and scientific strategies have been judged outstanding.

- Weaknesses and threats:

The committee is concerned about the fact that the team leader's time devoted to the organization of her research will significantly decrease once she takes the lead of LBD, and it is crucial that an Executive Director is appointed to help her in this task.

- Recommendations:

Care should be taken to secure funds on project 2 (mRNA localization in axons in vivo) so as to be able to push this promising but competitive topic to the level of internationally competing groups.

Team E10 : Induction and differentiation during vertebrate development

Name of team leader: Mr De-Li SHI

Workforce:

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	4	2	2
N2: Permanent researchers from Institutions and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	6	4	4

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	2	
Postdoctoral students having spent at least 12 months in the unit*	2	
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	2	1

• Detailed assessments

Assessment of scientific quality and outputs:

In the last five years, this team has made significant contributions to the mechanisms that regulate the Wnt/PCP pathway and underlie morphogenetic movements and myogenesis in vertebrates. A new team member associated with the team since 2009 has demonstrated the importance of dystroglycans in kidney and skin morphogenesis and during pronephros development. He has also analysed the effect of hypoxia on embryonic myotomal cells demonstrating the importance of the translational repressor 4E-BP in this process.

The team's work led to 8 articles in excellent to good journals in Developmental or Cell biology (Development, Dev. Biol., Mech. of Dev., Int. J. Dev. Biol., Mol. Biol. Cell, J. Cell Sci.) and 7 articles in collaboration with other groups.

Assessment of the unit's academic reputation and appeal:

The team leader and the other PI are both well known nationally in their respective field and have significantly contributed to the understanding of the early events of embryonic development and of myogenesis in vertebrates using the Xenopus model. Their strong knowledge of this model organism leads them to be involved in several productive collaborations. The team leader has been enrolled in an ANR grant with several French teams on the evolution of blastula patterning in chordates.

Assessment of the unit's interaction with the social, economic and cultural environment:

This team collaborates with a Pharmaceutical company for the identification of small molecules and novel proteins modulating the Wnt pathway. A small molecule inhibitor of the PDZ domain of Dsh has been identified that may help in the development of novel therapeutic agents in human diseases.

Assesment of the unit's organisation and life:

The association between these two PI, since 2009, followed a suggestion by the previous AERES committee. For the next period, the two groups will work independently. It is important that the team leader regains control of all aspects of research done in the team.

Assessment of the unit's involvement in training through research:

One researcher and 3 associate professors of the team have been teaching in several courses at Master level and in the international master "From molecular developmental biology to biomedecine, evolution and system biology". Only one PhD student, despite the presence of several University members in the team.

Assessment of the five-year plan and strategy:

The team leader has established a small, efficient working team. Its proposed project focuses on Wnt signaling and its implication in the control of morphogenetic movements, and myogenesis in vertebrates in collaboration with other teams at LBD. Based on previous work that has shown that RNA-binding Seb4 is required for myogenesis and that the C-terminal region of Dsh may play a role in PCP signaling, the objectives of the project is to understand 1) the molecular mechanisms of action of Seb4 in myogenesis and 2) how the C-terminal region of Dsh helps to distinguish canonical and PCP pathways. Both questions addressed in the project are original and the methodologies proposed are adequate. The project is solidly planned and, based on the experience of the team, feasible.

Conclusion:

- Strengths and opportunities:

The proposed project relies on a strong expertise in Wnt signalling and myogenesis in Xenopus. It takes advantage of both well established and novel collaborations inside and outside the unit.

- Weaknesses and threats:

Recognition at the international level remains limited. The team is small sized and addresses two independent but fundamental questions. Attracting dynamic PhD students to work with the two associate professors would optimize team's performance.

- Recommendations:

The committee recommends to avoid following parallel tracks and to try to converge to one central question in the future to optimize publications and secure funding.

Team E11 : Signalling and Morphogenesis

Name of team leader: Ms Muriel UMBHAUER – Mr Jean-François RIOU

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	2	4	4
N2: Permanent researchers from Institutions and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	4	6	6

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	2	
Theses defended	2	
Postdoctoral students having spent at least 12 months in the unit*		
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions	2	3

• Detailed assessments

Assessment of scientific quality and outputs:

The two PI's work addresses important questions in the field of kidney formation and is of very good quality. In the last five years, the output has, however, been a little low (2 accepted publications with corresponding authorship for the team, Dev. Biol. 2008 and Biol. Cell. 2012), although it reports significant contributions to the mechanisms that drive mesodermal cells to adopt a renal fate. In particular, they h ave clearly demonstrated the importance of RA, FGF and calcium signalling in renal specification and of Pax8 in the orientation of the kidney field towards a renal fate rather than a hemangioblast fate. In collaboration, they have also made significant contribution to the field by showing that *hnf1b* is essential for the patterning of the pronephr os primordium through the Notch p athway and the transcription factors Irx1/2. Results originating from this collaborative work (co-last authorship from the team) has recently been accepted in the excellent journal *Development.*

The questions addressed during the previous period were largely approached at the level of cell field patterning, using gene candidates and genetic invalidations in whole embryos. The proposed project for the coming period choses to refocus on one of the m ost relevant candidates (Pax8), and shows a clear opening towards more unbiased and larger-scale approaches (eg transcriptom es) as well as analyses of gene networks (eg analyses of regulatory elements). It will also solidify one of the most original directions of the previous period, i.e. the effect of calcium, by proposing to dissect the mechanism of gene regulation involved (DREAM project). It could still expand further in this innovative direction, as well as on the question of clonal cell fate decisions to confront to the behavior of the kidney field as a whole with single cell events.

Assessment of the unit's academic reputation and appeal:

The two PI are well known in their field and have significantly contributed to the und erstanding of *Xenopus* early pronephros development. The repres entation of th e group in coordinating collaborative scientific projects at national and international levels is however moderate, and so is their visibility. This however has to be put in relation with the relatively small size of the team and the intense involvement of all members in very heavy teaching duties and organizational duties within the university.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The new proposed team relies on a critical mass of staff scientists/professors (5) + 1 staff technician. This will certainly offer flexibility in terms of engaging into more risky projects, such as those based on large-scale approaches.

Assessment of the unit's involvement in training through research:

One of the te am leaders is highly involved in traini ng. She is the head of an i mportant doctoral scho ol "Complexité du vivant" from UMPC and the Ecole Normale Supérieure Ulm, that comprises 160 research units an d more than 450 researchers. In addit ion, she is co -organizer of the UMPC international master "From molecular developmental biology to bi omedecine, evolution and s ystem biology" and of the "International Developmental Biology Course" that takes place at UMPC every year since 2010. As evident from the quality of the invited spe akers, this international 5 week course is a top l evel one that provides the participants a comprehensive coverage of the paradigms, problems and technologies of modern developmental biology. Only one PhD student presently in the team.

Assessment of the five-year plan and strategy:

The work of the team leaders focuses on the mechanisms driving mesodermal cells to adopt a renal fate. Based on their previous work that has shown that Pax8 was a key component of early renal development, their project focuses on upstream regulators of Pax8 and on the identification of its downstream mesodermal targets and partners. This is an original, interesting and well-focused project. There are no doubts regarding the ability of these investigators to carry out the proposed studies.

Conclusion:

- Strengths and opportunities:

The two PI have a great deal of experience in their field. There are no doubts regarding the ability of these investigators to carry out the proposed studies.

- Weaknesses and threats:

The team needs to attract dynamic PhD students in order to optimize the team's performance. This is especially important since a UPMC emergence grant has been awarded to the team. The granting situation is preoccupying.

- Recommendations:

The committee considers that it is a good strategy for the new team to focus on one central question to optimize publication and funding.

Team E12 : Cell Division and Associated Checkpoints in Oocytes

Name of team leader: Ms Katja WASSMANN

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	2	1	1
N2: Permanent researchers from Institutions and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)		1	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	4	4	4

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	1	
Postdoctoral students having spent at least 12 months in the unit*	1	
Number of Research Supervisor Qualifications (HDR) taken	1	
Qualified research supervisors (with an HDR) or similar positions	1	1

• Detailed assessments

Assessment of scientific quality and outputs:

In the period 2007 to 2012 this team has established itself as an important member of the meiosis field. The research output has been impressive given the small size of the team and the exacting conditions under which the members had to work. The quality of the research from this team is very high.

The team has tackled important questions in the field and has both clarified puzzling contradictions and uncovered new aspects of the control of meiosis. It has also been an important collaborator for other, well-established laboratories by providing valuable expertise in the mouse ovocyte system.

The team has published its results in leading to excellent journals, (Cell Reports, Nature Cell. Biol , Development, Plos Genet., PNAS), as either the principal contributor or in collaboration.

Assessment of the unit's academic reputation and appeal:

The team leader has emerged as a respected member of the cell division field as evidenced by numerous invitations to give talks at international meetings. She has also been successful in attracting substantial external funding.

She has successfully attracted both students and post-docs to her team.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The team has a clear focus on understanding the control of meiosis. That most of her team will move with her to her new position in Montpellier is evidence of the attractive environment of her team.

Assessment of the unit's involvement in training through research:

The team leader instigated a number of training programmes as part of the Masters course in the UPMC. The team has trained one PhD student during the period (several publications among which one first-authored in Development) and one is presently in the team. This is a satisfactory situation.

Assessment of the five-year plan and strategy:

Although in a competitive field, the team has carved out a recognizable niche in performing high quality cell biology on the mouse oocyte. Their recent discovery of an inhibitor of PP2A required to remove centromeric cohesion is important, and the involvement of cyclin A2 is intriguing. Both projects are original to the team.

The plan to study the spindle assembly checkpoint using specific genetic mutants may be in competition with other laboratories, although the cell biology expertise of the team may give them an advantage.

The plan for the next 5 years is both consistent and credible. It matches exciting avenues of research with feasible aims.

Conclusion:

- Strengths and opportunities:

Ms Katja WASSMANN has applied to an international open call as a senior group leader at the IGGM in Montpellier and has been selected, which speaks to the high regard in which she and her research are now held. However, considering all conditions, she decided to pursue her activity at LBD. The team is well established in the meiosis field and addresses important questions in a very competitive way. It also collaborates with other laboratories by bringing its expertise in cell biology of the mouse oocyte. Ms Katja WASSMANN made excellent progress in her time at the unit.

- Weaknesses and threats:

The team may face harsh competition in its plan to study the spindle assembly checkpoint using specific mouse genetic mutants.

- Recommendations:

While in a competitive field, the team has established itself as a leader in the field in performing high quality cell biology of the mouse oocyte. The committee recommends to fully evaluate the advantages and practicality of the ascidian model, and which fraction of team efforts should de devoted to this system.

Team E19 : Seed Biology

Name of team leader: Mr Christophe BAILLY

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions	6	8	8
N2: Permanent researchers from Institutions and similar positions			
N3: Other permanent staff (without research duties)	1.5	2	2
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)		4	4
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	7.5	14	14

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended	4	
Postdoctoral students having spent at least 12 months in the unit*		
Number of Research Supervisor Qualifications (HDR) taken	2	
Qualified research supervisors (with an HDR) or similar positions	2	5

• Detailed assessments

Assessment of scientific quality and outputs:

The goal of th is project is t o study the control of dormancy in se eds. This is a spectacular aspect of plant biology where embryo s, protected by sev eral layers o f dead tissues, are desiccated before being released i n the environment. Upon the detection of specific signals (water, light, temperature) a process of reactivation (dormancy breakage) triggers germination. From an evolutionary point of view a timely germination is critical for the survival of all plant species. The pres ent team has gained internat ional reputation for its work on seed dorm ancy, using physiological as well as biochemical approaches to investigate Arabidopsis, barley and sunflower seeds.

The team made two major discoveries:

A) Evidence for the role of Reactive Oxygen Species in dormancy alleviation: A progressive accumulation of ROS, (namely superoxide anions and hydrogen peroxide) occurs during ripening storage of sunflower seeds concomitantly with lipid peroxidation and o xidation (carbonylation) of s pecific embryo proteins. Incubation of dormant seeds in the presence of methylviologen (a ROS-generating compound) also released dormancy;

B) Evidence for the role of targeted mRNA degradation in dormancy alleviation. The team identified 24 mRNAs stored in seed s that became highly oxidized during see d storage. Oxidized transcript s mainly correspond to genes involved in responses to stress and in cell signaling. This process could play a role in dormancy breakage.

Numerous publications have been made by the tea m: 24 in peer reviewed journals, including many in specialized journals, but also three in excellent journals, Plant Physiology, Plant Journal and Plant Cell.

Assessment of the unit's academic reputation and appeal:

The team has a long standing reputation in seed biology. It had five invited lectures at international meetings during the five past years. The team had 10 international collaborati ons and 7 collaborations with other labs in France. It is a partner in 7 networks. T he team also received 6 v isiting professors from other countries. T he committee anticipates that close collabora tions with teams in the LBD working on RNA m etabolism will foster other interesting discoveries.

Assessment of the unit's interaction with the social, economic and cultural environment:

On the ba sis of its expertise on dormancy breakage, numerous private companies have asked the team for markers and protocols of dormancy break age in see ds. The team has numerous collaborations with several seed companies *such as Gautier semences, Benary, Clause Tezier, Rijk Zwan, SES, BASF, Syngenta, Bayer*. This is an exceptional success, unique in the LBD.

Assesment of the unit's organisation and life:

The seed biology team emerges f rom a major reorganization in 2014 of 5 gro ups formerly belonging to the UPMC research unit "Physio logie cellulaire et moléculaire des plantes". Mr Christophe BAILLY has further reorganize d the plant seed team. Two major projects have been pursued (ROS and mRNA degrad ation), whereas the cell cycle project was term inated. This reorganiza tion was an i mportant step in the im provement of the quality of science performed in the team. One point is still worrisome: the absence of full time CNRS scientists in the team (6 maitres de conference and one full professor).

Assessment of the unit's involvement in training through research:

The team has an exception al training record: 27 master degree students and 9 PhD students in the past 5 years.

Assessment of the five-year plan and strategy:

The objective to concentrate on two projects (role of ROS in dormancy alleviation and role of targeted mRNA degradation in dormancy alleviation) is a good decision. It builds on the core competence of the team and allows it to explore their intriguing hypothesis based on their recent discoveries. Regarding the mechanism by which ROS serves as a signal in dormancy alleviation, the committee feels that the research plan remains too vague. Given that ROS production oxidizes almost every biomolecule in the cell (proteins, RNA, DNA, lipids), more thought should be given as to experimental approaches by which key oxidation events can be identified and verified.

Conclusion:

- Strengths and opportunities:

This is a very original project on seed dormancy on which the team has gained international reputation. With the recent publication of two excellent papers in Plant Cell and Plant Journal, and the reorganization of research along these successful discoveries, the team has a very promising perspective. The size of the team, its international reputation, innovative research plan and very solid funding are ideal conditions for the successful continuation of this project. Furthermore, the area of research is of major importance for the seed industry sector.

- Weaknesses and threats:

The team would gain efficiency by attracting full-time CNRS or INRA research scientists. The identification of the exact role of mRNA modification during the release from dormancy is a serious challenge for a team who is new in the field of molecular genetics.

- Recommendations:

The research plan of the team regarding the molecular pathway by which ROS serves as a signal in dormancy alleviation needs to be optimised.

Team E20 : Compartmentation and intracellular traffic of mRNPs

Name of team leader: Ms Dominique WEIL

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions		4	3
N2: Permanent researchers from Institutions and similar positions		3	3
N3: Other permanent staff (without research duties)		1	
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)		1	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6		9	7

Percentage of producers	*87,5%* *(100% for previous Weil team members)*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students		
Theses defended		
Postdoctoral students having spent at least 12 months in the unit*		
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions		3

• Detailed assessments

Assessment of scientific quality and outputs:

This team headed by Ms Dominique WEIL will join the LBD in January 2014. The team has been part of the CNRS-UPMC research unit FRE 3402 on the Jussieu campus since January 2011; it was previously part of CNRS FRE unit 2937 in Villejuif.

The PI is an expert in the cell biology of cytoplasmic RNA granules (stress granules and processing bodies). She uses a combination of challenging imaging techniques (EM, FRAP, labelling of RNA) and biochemical methods to address fundamental questions about the role of cytoplasmic RNA granules in the trafficking and posttranscriptional regulation of mRNAs. The group has recently made two intriguing findings: the association of P-bodies with mitochondria (J Biol Chem 2011), and the description of the RNA helicase Rck as a highly abundant protein that binds translationally suppressed mRNAs in multiple copies in P-bodies, and induces mRNA relaxation (RNA 2012).

The team has a steady and solid publication record of about two first/last author research article per year in very good and highly respected journals. Additional publications arise from a long standing collaboration with a group at University of Cambridge, UK and other collaborations. The team should intensify future efforts to publish their results in higher impact journals by moving beyond descriptive studies and addressing more functional questions, and/or considering single molecule approaches.

Assessment of the unit's academic reputation and appeal:

The PI has a long standing collaboration with one lab in the UK and in addition collaborates with several labs in France. The PI is active in committees and the organization of meetings at the national level (SFBBM, SifrARN), attesting of its recognition in the field.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The team should consolidate forces and focus on a common topic.

Assessment of the unit's involvement in training through research:

One PhD student has been trained during the last period and successfully graduated with three first or co-first author publications. The joining to LBD should provide new opportunities for this team to attract PhD students and contribute to master programs.

Assessment of the five-year plan and strategy:

The PI contributes work of very high quality to the field, including thorough quantification approaches. The proposed work on the role and formation of P-bodies during mitosis is innovative and supported by preliminary data. This research line will help the team to integrate into the overall research direction of the LBD. The studies on Rck oligomerization including cryo-EM analysis are straightforward and very promising. While tethering of Rck to reporter mRNAs will provide only limited information on the function of Rck, the proposed experiments to identify specific mRNAs regulated by Rck are very important, innovative and physiologically relevant. Analysis of RNA-Seq data from RNA-IPs and polysome profiling experiments will be challenging and may require collaboration with bioinformaticians. In general, the research plan in aims 1-3 shows good continuity and consistency. However, the future direction of research would benefit from more hypothesis-driven approaches. Special attention should be given to the overall biological question, the choice of model systems and the use of functional approaches.

The proposed research on posttranslational modifications of Ilf3/NF90 (aim 4) remains vague with regard to the function and physiological relevance of these proteins and, we strongly recommend that work on posttranslational modifications of Ilf3/NF90 be terminated. We recommend that all activities should focus on the main research topic (aims 1-3) of the group.

Conclusion:

- Strengths and opportunities:

Good productivity, expertise in imaging including quantitative approaches.

- Weaknesses and threats:

Two lines of research that are not connected.

The team has operated through several grants during the last years. It will require additional support through a major grant to accomplish its goals, which includes cost intensive deep sequencing and mass spectrometry approaches.

- Recommendations:

Focus on the main research topic and inclusion of functional approaches.

Secure funding.

Team E21 : Genetic and Epigenetic regulation of pancreas development

Name of team leader: Ms Cecile HAUMAITRE

Workforce

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014	2014-2018 Number of project producers
N1: Permanent professors and similar positions			
N2: Permanent researchers from Institutions and similar positions		1	1
N3: Other permanent staff (without research duties)		1	1
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)			
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6		2	2

Percentage of producers	*100 %*

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	
Theses defended		
Postdoctoral students having spent at least 12 months in the unit*		
Number of Research Supervisor Qualifications (HDR) taken		
Qualified research supervisors (with an HDR) or similar positions		

• Detailed assessments

Assessment of scientific quality and outputs:

The team is emerging from a departing team, with one CR as team leader, a technician and one PhD student. It is a good size for a starting group. The project is in an a rea with excellent potential. Wi th its links to diabetes, the funding should be easier. Although the dom ain is crowded, the team leader has done u nique work on different Hnf1 b mutants (tetraploid chimeras, conditional knock-out and a mutation mimicking a human mutation leading to kidne y cyst and diabe tes syndrome). As a second project stemming from her p ost-doc, she is surfing on a promising wave (epigenetic control of pancreas development) to which she was one of the first to con tribute. In this respect, instead of doing what m ost groups do (profiling of epigenetics marks), her fun ctional approach is very inte resting. She has published well during her PhD and post-doc, with some papers in excellent journals (PNAS, Human Molec. Genet., Mol. Cell Biol.), but not yet in the highest impact or more general journals since postdoc.

Assessment of the unit's academic reputation and appeal:

The team leader has been exposed to international networks, both European and American which should make her better known to the community but her training was completely done in France and she will need to make efforts to reach ou t internationally. At this st ep, recruitment of new PhD students has gone well but this will need to be sustained once the former team leader has left.

Assessment of the unit's interaction with the social, economic and cultural environment:

Not applicable.

Assesment of the unit's organisation and life:

The team project is coheren t, focusing on one organ (the pancreas); it benefits fr om technological platforms and requires solid bioinformatics sup port. The team is still small but from the SWOT analysis seems to be well integrated with other teams in the unit. The team lea der is in the council of the unit and has taken competent responsibility for two technological platforms.

Assessment of the unit's involvement in training through research:

2 students (1 phD and 1 Ma ster 2) are currently being trained but it is too early to judge the quality of supervision on paper. This training is in the context of a European in ternational training network (ITN). The tea m leader also trained 2 other Master students who have performed well after which suggests good supervision skills.

Assessment of the five-year plan and strategy:

As stated above, The team leader ha s identified a good niche with potent ial medical applications to develop her group. She will continue the work on Hnf1b. This work is directly relevant to diabetes and she has generated an interesting disease model mutant mouse. Follow-up experiments are planned in cluding the identification of Hnf1b targets. This is in line w ith previous work in the kidney . The strategy is m odern but mainstream. It is however an important thing to do to clarify the disease mechanisms. The str ategy is clearly outlined in the report a nd appropriate. It has to be stressed t hat in spite of excellent projects, the number of projects the team intends to develop is totally unrealistic and close mentoring will be needed.

For instance, the team lea der plans to further develop a project she i nitiated as a post-doctoral fellow. To what extent her previous ad visor is continuing himself on this project should be clarified. The development of a third new axis on miRNAs as such an early stage and with a small group is probably not a good idea. She has attracted an EMERGENCE University Pierre and Marie Curie training b ut will need to secure funds in n ational competitions for emerging groups.

Conclusion:

- Strengths and opportunities:

This is a promising team, solid, with a good niche on pancreas biology. In the long term, the project has interesting potential for medical applications.

- Weaknesses and threats:

A lot more focus is needed. The emerging team will need to reach out internationally.

- Recommendations:

Mentoring should be provided for this team to emerge, focus his research and secure publication record and funding.

Assessment of team E13 (2009-2013 period)

Early mouse organogenesis and associated human diseases.

Name of team leader:

Ms Sylvia CEREGHINI

Assesment of scientific quality and outputs:

The team studies the morphogenesis of liver, pancreas and kidney. A transcription factor HNF1b (hepatocyte nuclear factor) plays a central role in the biogenesis of these organs. A genetic approach has been used to identify the targets of this transcription factor. Mice homozygotes for HNF1b loss of function are embryonic lethal while in humans heterozygous mutations in this gene are the cause of the RCAD/MODY5 syndrome associated with early onset of diabetes, liver dysfunctions and developmental abnormalities of kidney, genital tract and pancreas and embryonic defects can be seen on HNF1b heterozygotes in humans. State-of-the-art technologies including conditional ablation, Cre-induced deletions and tetraploid chimera were used to identify the contribution of HNF1b to organogenesis. Since several mutations in this TF induce diabetes and pancreas hypoplasia, it was not a surprise to find a role of HNF1b in pancreas morphogenesis. It was also found that HNF1b was involved in liver specification, early metanephric kidney development and nephrogenesis. A mouse model reproducing the RCAD/MODY5 disease has been created and is under characterisation. In parallel a genomic approach was used to identify the targets of HNF1b by CHIP-sequencing, leading to a list of 2000 possible targets. An important finding of this research is the discovery of the critical role of HNF1b in the proper patterning of early nephron structures. This process is operating through a cell non-autonomous pathway of differentiation involving the NOTCH signalling pathway.

Assesment of the team's academic reputation:

This area of research is competitive: 170 papers were published on the role of HNF1b, and however the team has recently published three excellent papers in *Development* on this topic. Altogether, the team has published 5 papers and 10 in collaboration. The novelty of the project is his focus on the organogenesis of Liver Kidney and pancreas, involving HNF1b, a major regulator of their organogenesis.

The team has been affiliated with INSERM since 2009.

Since 2007 12 invited talks at international meetings were given by the team.

The team is involved in several international collaborations, in different European countries as well as with USA UCSD, USA).

Conclusion:

The team of Ms Sylvia CEREGHINI has studied the morphogenesis of liver, pancreas and kidney. A transcription factor HNF1b (hepatocyte nuclear factor) was found to play a central role in the biogenesis of these organs. A genetic approach has been used to identify the targets of this transcription factor. This has led to excellent work published in international journals. Although Ms Sylvia CEREGHINI will retire by January 2015, a research program on pancreas development in direct continuation of Ms Sylvia CEREGHINI work has been presented by team 21.

5 • Conduct of the visit

Visit dates:

Visit start: Monday, 03/12/2012, at 8:30 a.m.

Visit end: Tuesday, 04/12/2012, at 6:00 p.m.

Visit site(s): University P. and M. Curie. Jussieu Campus.

Institution: Laboratory of Developmental Biology UMR 7622

Address : 9 Quai St Bernard. 75005 Paris

Programme of visit:

Monday 3rd December

8:30	Instructions AERES coordinator to committee
9:00	AERES coordinator presentation to whole Unit
9 :10	Current and incoming director presentations
10 :00	*Coffee*
10 :15	Team C. ANTONIEWKI
11 :00	Team S. RONSSERAY
11 :45	Team P. PERONNET
12 :30	*Lunch with unit personnel*
13 :30	Team M. GHO
14 :15	Team C. JESSUS/O. HACCARD
15 :00	Team K. WASSMANN
15 :45	Team V. GALY
16 :30	*Break*
16 :45	Team C. BAILLY
17 :30	Team D. WEILL
18 :15	Team C. HAUMAITRE
19 :00	Team S. CEREGHINI (Past results only)

Tuesday 4th December

8 :30	Team M. UMBHAUER/J-F. RIOU
9 :15	Team D.L. SHI
10 :00	Team S. SCHNEIDER-MAUNOURY
10 :45	*Break*
11 :00	Team T. JAFFREDO
11 :45	Team D. DUPREZ
12 : 30	*Lunch with supervising institutions representatives*
14 :00	Separate subcommittees meetings with scientific staff, technical staff, students and postdocs
14: 45	Interview Director(s) and re-interviews of group leaders
15 :30	Committee meeting behind closed doors
18 :00	End of site visit

The visit of the unit took place on December 3rd-4th, 2012. The overall organization of the visit was very satisfactory and the director and deputy-director can be praised for that. This is particularly noteworthy, since the chief administrative officer in charge of administrative and organisational matters left the unit several months ago without being replaced. There was sufficient time reserved for interviewing the director and deputy-director after listening to each individual team and discussions with the different personnels. Most, if not all, important aspects of the unit's life could be discussed. The written information provided was adequate, and the print-out of each team's presentations was a very useful complement. The presentation of the director occurred in front of the entire committee and all members of the unit, whereas, for the discussions with the staff scientists, the technical staff and the PhD/postdocs, the committee split into three groups. All team members attended the presentation of their leader(s). Following each presentation, the discussion was split into two parts: first, a 10 minutes discussion in the presence of all team members, followed by another 10 minutes with the team leader(s) alone.

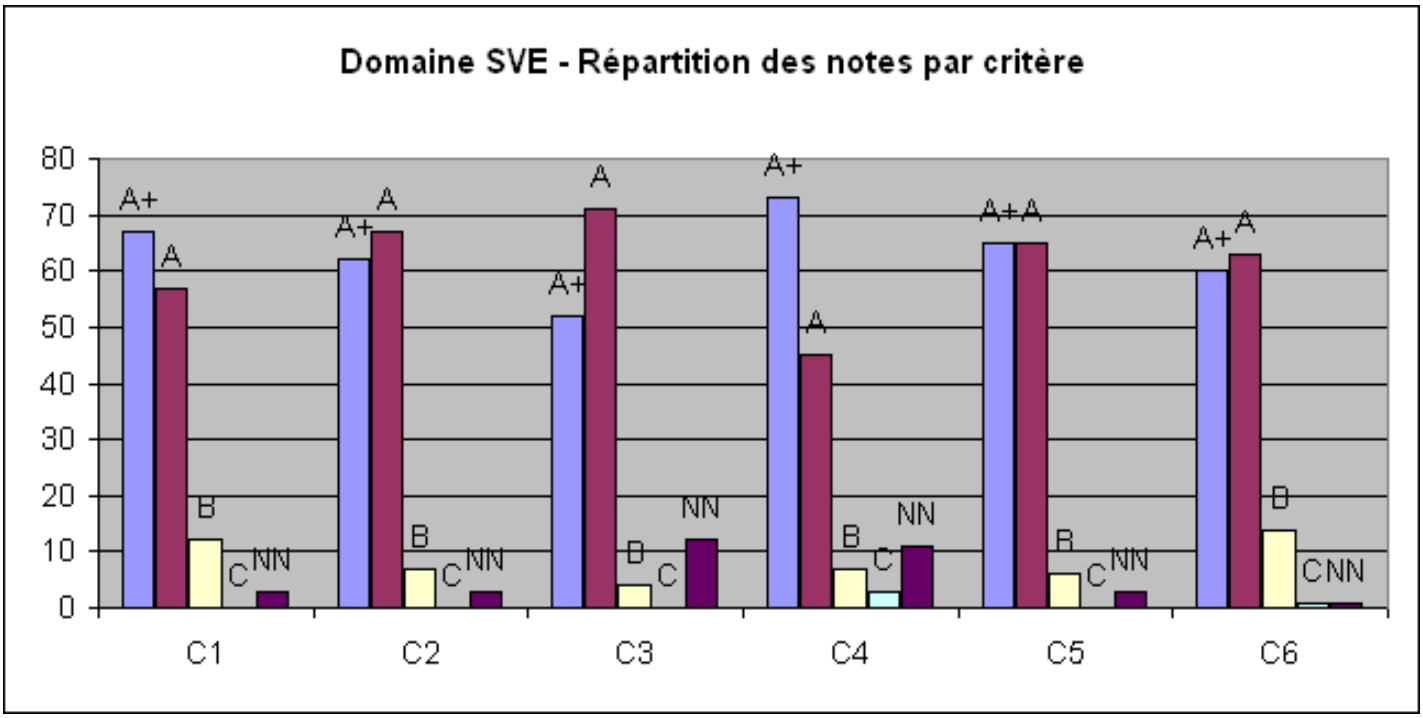
6 • Statistics by field: SVE au 10/06/2013

Notes

Critères	C1 Qualité scientifique et production	C2 Rayonnement et attractivité académiques	C3 Relations avec l'environnement social, économique et culturel	C4 Organisation et vie de l'entité	C5 Implication dans la formation par la recherche	C6 Stratégie et projet à cinq ans
A+	67	62	52	73	65	60
A	57	67	71	45	65	63
B	12	7	4	7	6	14
C	0	0	0	3	0	1
Non Noté	3	3	12	11	3	1

Pourcentages

Critères	C1 Qualité scientifique et production	C2 Rayonnement et attractivité académiques	C3 Relations avec l'environnement social, économique et culturel	C4 Organisation et vie de l'entité	C5 Implication dans la formation par la recherche	C6 Stratégie et projet à cinq ans
A+	48%	45%	37%	53%	47%	43%
A	41%	48%	51%	32%	47%	45%
B	9%	5%	3%	5%	4%	10%
C	0%	0%	0%	2%	0%	1%
Non Noté	2%	2%	9%	8%	2%	1%



7 • Supervising bodies' general comments

Paris le 10 04 2013

Le Président
Didier Houssin
Agence d'évaluation de la recherche
et de l'enseignement supérieur
20 rue Vivienne - 75002 PARIS

M. le Président,

Nous avons pris connaissance avec le plus grand intérêt de votre rapport concernant le projet du laboratoire de Biologie du Développement Paris-Seine, porté par Mme Schneider Maunoury. Nous tenons à remercier l'AERES et le comité pour l'efficacité et la qualité du travail d'analyse qui a été conduit.

Ce rapport a été transmis au directeur du laboratoire qui nous a fait part en retour de ses commentaires que vous trouverez ci-joint. Nous espérons que ces informations vous permettront de bien finaliser l'évaluation du laboratoire.

Restant à votre disposition pour de plus amples informations, je vous prie de croire, M. le Président, à l'expression de mes salutations respectueuses.

Le Vice -Président Recherche et Innovation

Paul Indelicato

Vice-présidence Recherche et Innovation
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March 27, 2013

Laboratoire de Biologie du Développement, UMR7622
Vague D
Response to AERES assessment report

To whom it may concern,

We are happy to see that the general opinion of the AERES committee on our achievements and project is excellent. We warmly thank the committee chair and all of its members for their careful review and extremely relevant and useful comments.

We wish to reply on six points concerning the Unit: our recruitment policy, the recruitment of a spin-off team, the installation of new assistant professors in the Unit, the departure of the functional genomic team, the cancelled departure of a team to Montpellier and the situation of the animal facilities. We also reply on some specific points concerning the assessments of five teams.

Response of the assessment of the Unit

1) Recruitment policy and procedures

There is a general concern in the AERES report about the recruitment policy of LBD. In the "weaknesses and threats" section, the committee mentions the "lack of sufficiently clear procedures for the internal promotion of new groups" (p. 6), and recommends that we adopt "clear and transparent procedures" (p. 6 "recommendations" section). They regret that the criteria are not the same for opportunistic and open calls (p. 3). The recruitment policy is indeed an essential aspect of a Unit's scientific project, thus we wish to clarify and explain our position.

Our recruitment policy and procedures are clear and transparent and have been presented to the AERES committee both in the written project and during the committee visit. The criteria are the same for all recruitments, regardless of their nature: external or internal, opportunistic or on open calls. We quote here the Unit's project report:

"Principles for recruiting new groups
The recruitment of new groups will need to be approved by the IBPS Steering committee and will have to

respect a certain balance in the composition of the different Units. New groups will usually be recruited through open calls, to which internal as well as external groups will be able to apply, but we will keep the possibility to hire groups on the basis of opportunity outside programmed calls. Applications will be examined by a Search Committee formed of the IBPS Steering Committee, the LBD group leaders, SAB members and representatives of our institutions. Selected candidates should be successful in getting external label and financial support. Groups will be recruited on the basis of the quality and originality of their projects, of their potential for achieving high standard science, of their potential to integrate into the Unit, to interact with the present groups and staff members, and to enrich the scientific as well as the daily life of the Unit."

The committee recommends to "avoid opportunistic recruitments" (p. 6, "recommendations" section) and considers that internal recruitment "is a possible source of frustration among scientists with HDR" (p. 9 last paragraph).
While we will favour recruitments through open calls, we are convinced that it is essential to allow opportunistic (internal of external) recruitments, with the clear rules exposed above, including examination of the scientific quality of the team by an external Committee, and financial support of the proposed projects. Besides, the possibility of internal recruitments is important in the frame of a mixed university unit, with many assistant professors and professors with limited possibility to move to another place. Each recruitment, be it internal or external, is the result of a clear scientific choice.

2) Creation of a spin-off team from a pre-existing team

The AERES committee recommends re-examining the creation of this team in one year in order to take into account its ability to obtain competitive grants (p. 6, "recommendations" section).

We are happy to read that the scientific potential of this young team is very positively evaluated (team 21, report p. 53-55) and thank the committee for their useful recommendations on the project. Following the previous positive evaluation of the project by the IBPS scientific advisory board (SAB) (January 2012), this comforts our confidence in the ability of this young investigator to lead a successful research team. We totally agree with the recommendation that this team needs to obtain competitive grants in order to be viable. We had mentioned this essential criterion in the written document: "This creation will depend on AERES evaluation and on C. Haumaitre's ability to secure young investigator funding."
Along this line, the PI has already obtained two small but competitive grants, an "Emergence" funding from UPMC and a grant from the "Société Francophone du Diabète" (SFD), and has recently applied to two more important ones: ANRJCJC (ANR Jeunes Chercheurs, including a post-doc salary) and European ITN (as a PI, including a post-doc salary and a PhD salary).
However, we think that one year is a much too short period of probation, especially given the current shortage of funding in France. We thus propose to create this team as an "Emergent team" ("Equipe émergente") until the PI has obtained such competitive grant, and for a maximal period of two and a half years. In the mean time, this emergent team will receive full support from the Unit in terms of lab space, technical support and institutional funding redistribution, as for all other teams of the Unit.

3) Departure of the functional genomics team

In the « Assessment of the five-year plan and strategy » section (page 10 paragraph 2), the report states that "the departure of the functional genomics team, at a time when this field is exploding, could be of some concern."

We think the committee misunderstood the situation of the functional genomics team. This team is currently attached transitorily to the LBD before its insertion in January 2014 into the "Platform and Technology Development" Department of IBPS, where it will develop a bio-informatic platform. This change in its administrative situation will not the least modify its current localization nor its privileged relationship with LBD and the tight collaboration with several LBD groups. Contrarily, the creation by this team of a widely open bio-informatics platform will have a very positive impact on our research.

4) Installation of assistant professors

Page 6, the report mentions in "Weaknesses and Threats" section " the recent installation of many assistant-professors, without parallel increase in the technical staff, resulting in a loss of research performance". In page 10 paragraph 2, the committee proposes a pause in the recruitment policy of the teaching personnel, unless sufficient technical staff and increased number of PhD students can be recruited in parallel.

First we want to make clear that the presence of university assistant-professors and professors is essential for the LBD, by contributing to high-level research and by favouring the intellectually indispensable link between research and teaching. We approve the recommendations to increase the ratio of technical staff to university lecturers by hiring more technical staff in the LBD (a goal extremely difficult to reach in the current economical context).
However, we are convinced that a pause in the recruitment of assistant-professors is not a good solution in a "Mixed" Research Unit. Indeed, in the last 3-4 years, the LBD has already limited its applications to UPMC assistant-professor positions to the strict minimum. Only positions absolutely required to reinforce new or small teams have been requested recently (4 positions in the last 5 years). Moreover, the LBD had an active policy of requesting professor positions in order to promote the career of assistant-professors within the Unit (5 assistant-professors became professors in the last 5 years). The LBD has also obtained during this period 11 technical staff positions, among which 7 were allotted to research teams. Currently, all teams but one have a technician or engineer. We will pursue our efforts along this line.

5) Departure of K. Wassmann's group to Montpellier

K. Wassmann finally decided to stay in the LBD and let it know by email to the AERES delegate and to the AERES committee chair on **January 16th**, 2013, asking for a modification of the AERES report on this point. C. Jessus, the Unit's Director, also sent an e-mail to the AERES delegate on the same topic on **January 18th**. This fact has to be taken into account, so not to seriously impact both K. Wassmann's evaluation with the absence of recommendation (see below, section "comments on team's reports) and the Unit's report.

6) Animal facilities

The committee seems to consider that the situation of the aquatic facility is an opportunity (p. 5, "strengths and opportunities" section) while that of the mouse facility is a threat (p. 6, "weaknesses and threat" section).
In reality the situation is less contrasted. Both facilities are crucial for LBD scientific activity and both absolutely require renovation. These two facilities are planned to be refurbished but both projects encounter high difficulties in terms of funding and of calendar. For the aquatic facility, the IBPS scientists have obtained all the funding for equipment but the UPMC does not renovate the space despite its commitment to do so. For the mouse facility, the building is secured but the equipment still remains to be funded.

None of these two projects will be possible without a full commitment of our institutions, in particular of UPMC.

Response on the assessment of some Teams

Team E6: T. Jaffredo

We regret that some of the major strength lines that make the originality of the group have not been mentioned in the AERES report.
One of these lines relies on the study of the human embryo in complement with two other amniote models previously investigated in the team i.e. mouse and chicken embryos. This has been made possible with the venue in 2010 of one internationally recognized senior Inserm researcher who has significantly reinforced the group by bringing an array of functional hematopoietic tests and the manipulation of the human embryo hematopoietic tissues. With these three models, the team now has a unique expertise in Europe regarding the development of the hematopoietic system.
Another one is the development of high-throughput analyses associated to the establishment of bioinformatics and biostatistical routines. To this end, the team developed two collaborations with internationally recognized experts. They have performed the proof of concept by being able to extract extremely relevant information on the hematopoietic supportive compartment by applying an ensemble of filters and analyses that reduce the complexity of the gene sets. They are applying these routines to the study of the ongoing transcriptomic analyses performed in the laboratory. This is a growing and promising field, which, associated to more classical approaches of cell biology and embryology mastered by the group, should bring significant insights into the discovery of critical regulators of hematopoiesis.
Taken together, theses two lines contribute to create a singular make up of know-how important to underline.

Team E12: K. Wassmann

The PI of this group, Dr K. Wassmann, has been applying for a senior group leader position at the “Institut de Génétique Moleculaire de Montpellier” (IGMM) and has been selected in an international call to establish her group there. As a consequence she decided to move there in September 2013. She has informed the AERES committee of the UMR7622 of this decision during the visit. Since the visit of the AERES committee in December 2012 and after thorough reflection and discussion with both Catherine Jessus and Sylvie Schneider-Maunoury, Dr K. Wassmann decided to stay at the UMR7622. The move of her lab to Montpellier would have severely affected the working conditions and therefore the success of the group. She therefore asks the committee to take this change of situation into account in the final AERES report, so that the team is not penalized due to the fact that its report does not contain a recommendation.

Team E20: D. Weil

We note that the past activity of J.-C. Larcher's team, i.e. the study of post-translational modifications of Ilf3/NF90, has not been evaluated. We would like to stress that we see the integration of this group in D. Weil’s team as an opportunity (i) to improve the integration of the Weil team into UPMC, as J.-C. Larcher has been actively involved in UPMC committees for years, (ii) to increase its involvement in training, with four professors and assistant-professors, including J.-C. Larcher himself, who has the heavy charge of one of the largest Biology Masters in France, and (iii) to bring a new scientific expertise in protein biochemistry.

Team E21: C. Haumaitre; Complements to Point 2) of the response on Unit's assessment.

In Page 54, section « Assessment of the unit's involvement in training through research », we would like to add that the Master student trained in 2006 by C. Haumaitre successfully obtained a doctoral fellowship and pursued as a PhD student under her direct supervision. They published 3 papers and 1 patent together. The last paper was signed with the PhD student as a first author and C. H. as co-last and co-corresponding author in *Diabetes*. C. H. has been evaluated positively to obtain the HDR, she will defend in June 2013.

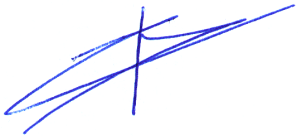
Page 54 in "Assessment of the five-year plan and strategy", the report states that « The team leader plans to further develop a project she initiated as a post-doctoral fellow. To what extend her previous advisor is continuing himself on this project should be clarified ».
The situation is very clear. Previous C. Haumaitre's advisor, R. Scharfmann, is not continuing this project. A project on the role of HDAC11 initiated by C. H. during her post-doc continued in collaboration with her after she left. A manuscript will soon be submitted on this work.

Page 55 in "Weaknesses and threats" section: « The emerging team will need to reach out internationally »: C. Haumaitre was very recently asked by Dr Dabelea (University of Colorado School of Medicine, USA) to publish a review on her topic "epigenetic regulation of pancreatic islets" by the Journal "*Current diabetes Report*", which provides in-depth review articles contributed by international experts on the most significant developments in the field. C. H. is also an invited speaker in the EMBO Workshop "Liver and pancreas development, function and disease" (Greece, May 2013).

Team E13: S. Cereghini

We would like to mention that S. Cereghini continues her activity at least until January 2015. Together with a posdoctoral researcher, a PhD student and an assistant professor, she is pursuing the complete molecular characterisation of the RCAD/MODY5 mouse model generated as well as the analysis of renal tubular morphogenesis and nephron segmentation, as detailed in the project section of Sylvie Schneider-Maunoury's Team, to which Silvia Cereghini and colleagues will be associated administratively from January 2014.

Best regards,



Catherine Jessus
DIrector

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