LCRB - Laboratoire de cristallographie & RMN biologiques

Rapport Hcéres

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

Department for the evaluation of research units

AERES report on unit:

Laboratoire de Cristallographie et RMN Biologiques

Under the supervision of the following institutions and research bodies:

Université Paris Descartes

Centre National de la Recherche Scientifique

December 2012

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

Research Units Department

President of AERES

Didier Houssin

Research Units Department

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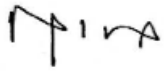


Pierre Glaudes

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 completed, 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 and was given along with an overall assessment. 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, when necessary, its in-house teams) received the overall assessment and the following grades:

- Grading table of the unit: Laboratoire de Cristallographie et RMN Biologiques

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

- Grading table of the team: Crystallography of small and macromolecular complexes

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

- Grading table of the team: RNA structure, interactions and anti-infectives

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

- Grading table of the team: Signalling and membrane transport

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

- Grading table of the team: Molecular mechanisms of translation initiation

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

- Grading table of the team: Structure and mechanism of action of viral proteins

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

Evaluation report

Unit name:	Laboratoire de cristallographie et RMN biologiques
Unit acronym:	
Label requested:	UMR
Present no.:	8015
Name of Director (2012-2013):	Mr Nicolas LEULLIOT
Name of Project Leader (2014-2018):	Mr Nicolas LEULLIOT

Expert committee members

Chair:	Mr Eric GUITTET, CNRS, Gif-sur-Yvette
Experts:	Mr Philippe CARDOT, University of Limoges (CNU representative)
	Ms Andrea DESSEN, University Joseph Fourrier, Grenoble
	Mr Patrice GOUET, University of Lyon (CoNRS representative)
	Mr Christian GRIESINGER, Max Planck Institute, Göttingen, Germany
	Mr Denis LAFONTAINE, Université Libre de Bruxelles, Belgium

Scientific delegate representing the AERES:

Mr Jacques BARATTI

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

Ms Catherine LABBE-JULLIE, Université Paris Descartes

Mr Jean-Claude MICHALSKI, CNRS

1 • Introduction

History and geographical location of the unit:

The "Laboratoire de Cristallographie et RMN Biologiques" was created in the Faculty of Pharmacy at the University Paris Descartes in 2000. The initial objective was to develop a new structural unit at the centre of Paris with a strong focus on the development of anti-infectious agents against both bacterial or viral targets.

Considerable efforts were initially devoted to the installation of a modern structural biology laboratory. During the last period, the laboratory has reached full maturity. Two teams joined the unit: one as a recipient of an ATIP CNRS grant and one from another unit on site. In the latter case, because of the difficulty to move older NMR spectrometers, it was not accompanied yet by a complete geographical regrouping of the members of the unit into a single site laboratory. Several younger researchers were appointed as group leaders because of the strong involvement of senior members in the life of the host institution or of their retirement.

Very recently (end of November 2011), the Director of the Unit was elected as President of the Paris Descartes University. This shuffled the cards again and led to the decision to push to the front younger scientists: Mr Nicolas LEULLIOT as the Director of the unit, and Ms Carine TISNE as deputy Director, both accepted in july 2012 to meet the challenge.

Despite sharing a common interest in structural biology, including methodological developments, with a general focus on biological targets relevant to pathologies and to their healing, the research areas are quite diverse albeit keywords could be easily shared by many of the teams (RNA, Anti-infectives, cancer, ribosome and HIV).

The "Laboratoire de Cristallographie et RMN Biologiques" is now composed of 49 staff members, with 35,5 permanent and 14 temporary staff. The permanent staff members are divided equally between University and CNRS and is composed of 5 professors, 3 CNRS researchers, 9 lecturers,, 7 CNRS ITA (Engineers, technicians and administrative personnel) and 1 INSERM ITA, 2 IATOSS and 15 non-permanent staff members (Including 10 PhDs).

The Unit is composed of five independent teams and houses the equipment necessary for structural studies. This includes liquid handling and pipetting robots for crystallogenesis, one diffractometer for macromolecular crystallography and three NMR spectrometers (2*600MHz spectrometers with cryoprobes, recently upgraded and with specific equipment for the small molecule screening as developed in the Unit (cryofit equipment coupled to a robot…).

Management team:

Director of the Unit: Pr Nicolas LEULLIOT (appointed July 2012)

Deputy Director: Dr Carine TISNE (CNRS) (appointed July 2012)

AERES nomenclature:

SVE1_LS1

Unit workforce:

Unit workforce	Number as at 30/06/2012[1]	Number as at 01/01/2014[2]	2014-2018 Number of project producers[3]
N1: Permanent professors and similar positions	14	13	12
N2: Permanent researchers from Institutions and similar positions	8	9	8
N3: Other permanent staff (without research duties)	9,5	10,5	5
N4: Other professors (Emeritus Professor, on-contract Professor, etc.)	1	1	1
N5: Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	2	1	1
N6: Other contractual staff (without research duties)	1	1	1
TOTAL N1 to N6	**35,5**	**35,5**	**28**

Percentage of producers	***100.00 %***

Unit workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	10	
Theses defended	8	
Postdoctoral students having spent at least 12 months in the unit*	7	
Number of Research Supervisor Qualifications (HDR) taken	6	
Qualified research supervisors (with an HDR) or similar positions	14	14

2 • Assessment of the unit

Strengths and opportunities:

- High level of scientific achievements over the last period.
- Strong implication in teaching
- Strong involvement in structuring the teaching, in the context of the reshaping of the studies in health sciences...
- High reactivity as seen from its capacity to adapt to the new situation created by the election of the unit director as University President
- Capability and willingness of younger researchers to meet the challenge and ensure administrative and management successions.
- Strong unit and team spirit and internal cohesion (shared offices between teams, attendance at the meetings even if the presenter is not from the same team).
- Strong support from the University, which acknowledges the pivotal role played by this Unit, in one of its priorities: the development of a strong axis on drug discovery. The Unit is an active component of the IFR "Institut Médicament - Toxicologie - Chimie - Environnement".
- Implication in the "Initiative d'Avenir" program (two EQUIPEX, one Labex).

Weaknesses and threats:

- Inability to solve the needs for technical support (cleaning).
- The active presence at international conferences or meetings remains limited.
- Low number of post-docs from abroad.
- The localisation of one of the teams in a different building could be detrimental to the cohesion of the Unit despite the fact that this situation does not seem to be a major matter of concern to them.
- Still limited cohesive scientific vision.

Recommendations:

- Recruit both permanent researchers and post-docs from abroad.
- Reinforce the participation to international meetings.
- The efforts to strengthen the collaboration between the various teams must be maintained and possibly reinforced.
- Make a rapid decision about the localization of the Unit in the context of the construction of a new building. If the decision taken would be to move, be rapidly active in the definition of inner laboratory space.
- Maintain the links with the chemists group on-site.
- Capitalize on the exceptional know-how in Structural Biology to develop downstream research including cellular biology. This could be achieved either through the development of this competence within existing teams or the recruitment of additional teams.

3 • Detailed assessments

Assessment of scientific quality and outputs:

Major achievements were obtained by each team and are listed below.

With around 160 publications over the period, the production is quantitatively impressive, also taken into account the fact that half of the permanent members of the Unit are involved in teaching. The repartition in terms of impact factors is rather bimodal, with two distributions, one centred around 3-4 (accounting for a significant contribution of structures of smaller molecules and of their complexes solved) but also of a second one centred around 9-10. The latter attests of the visibility gained by the Unit in terms of design of active molecules (including methodology) or tackling issues of higher biological relevance (Angewandte Chemie, JACS, J Med Chem, Gen&Dev, EMBO J, PNAS, NAR, EMBO Rep...). Interestingly, each team contributed to this second distribution.

Members of all teams were invited at meetings or gave seminars (around 40 invitations are listed) or delivered communications (around 40) but about 1/4 only were at the international level.

Assessment of the unit's academic reputation and appeal:

The committee underlined the high visibility of the Unit.

The Unit demonstrated a very strong implication at the international (former director represents France at FEBS and IUBMB councils, he was the delegate for France to the council of EMBO/EMBC and of EMBL, numerous international collaborations...), national (CoCNRS, CNU, ANR projects evaluation...) and local (former director was elected President of the “Université Paris Descartes”, one unit member is the director of the Federative Institute for Research (IMTCE IFR...)) levels.

In addition, members of the Unit acted as coordinators in 6 of the 15 ANR grants obtained by the Unit during the evaluation period.

Several prizes and distinctions were awarded to the Unit members (Desnuelles prize awardee, Maurice Micloux awardee, junior member of IUF...).

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

Three patents were deposited during the period. The recombinant *in vivo* RNA production technology was transferred to 50 laboratories worldwide.

The Unit was particularly successful in collecting public funding: among the 50 academic grants obtained in the period, 15 ANR (mainly non focussed: "ANR blanche" or ANR for younger investigators) and 12 from more targeted agencies (ANRS, ARC, FRM...). The Unit participated in FP6 programs.

The unit is part of two "Investissements d'Avenir, Equipement d'Avenir" programs: 2 LABEX and 1 Equipex.

The unit is strongly connected to non-academic partners, either through industrial contracts (most teams) or participation in boards of directors (FD) or acting as consultants (BS)

Finally, the Unit plays a key role in disseminating scientific knowledge to a wider audience and in attracting a younger public to science.

Assessment of the unit's organisation and life:

In addition to weekly team meetings, regular "biochemistry" meetings (on a weekly to bi-weekly basis), with a presentation given by one member of the Unit, are organized. They are appreciated and well attended. The chosen sharing of the office spaces between the various teams of the Unit is an interesting option, since it favours day-to-day interactions beyond the team perimeter. Similarly, the organised internal training in molecular biology will certainly both reinforce the links between the actors and benefit the members involved in modern structural biology.

The committee split into three groups to meet the researchers, the technicians and the students and post-docs, respectively.

A common complaint was that, due to regulations beyond the control of the unit, a person in charge of maintenance currently on leave of absence for medical reasons could not be replaced.

Meeting with technicians. Most of all, the staff has expressed its contentment with the laboratory policy on promotions and permanent training.

The yearly private meeting that the ITAs have with the direction to list their current achievements and define future priorities, seems to take place in excellent conditions.

The few points that can be improved concern: 1/ a better participation of the ITAs who are in charge of critical instruments such as computers or NMR spectrometers, in the future moving of these instruments in the new building 2/ the current absence of permanent staff dedicated to the washing and cleaning of laboratory equipments.

Meeting with students and post-docs. In general students and postdocs were very happy with the research conditions in the unit. They have sufficient equipment and money for consumables. They feel well supervised and their supervisors are approachable when they are needed. They are also well informed about the activities in the unit and for example the scientific talks presented during the evaluation did not contain new information to them, indicating that they are well involved in the past and future of the research of the unit.

The students have no access to the laboratory and cannot work on-site on weekends. Researchers should be able to do their work when they choose to do so including weekends. International competitiveness and using resources most cost efficiently is clearly jeopardized by a strict exclusion of work being done on weekends. Practical solutions should be searched for, respecting all legal issues and the preservation of the laboratory equipment.

The students enjoy very much being involved in teaching students junior to them. They value this as an indispensable experience to enter professional life after their PhDs be it in academia or industry. However, students complained about the amount of "formation" they had to go through that prepares them for the teaching. They did not consider this to be useful at the extent it is imposed upon them. This has an impact on their enthusiasm towards teaching and also jeopardizes their working hours in the laboratory on their PhD thesis especially given the present situation of a 5 day working week.

Meeting with staff with research duties. This meeting had been prepared through a preliminary meeting the week before the AERES visit. It helped to present and discuss in details various issues in the limited amount of time scheduled. The attendants pointed out the difficulties encountered in the financing of medium-sized equipment, such as an X-Ray diffractometer that could replace the older diffractometer that was recently dismantled. This equipment is considered as a crucial link with the chemists present on-site and a good opportunity to share scientific interests. The sub-committee would clearly support the idea. The attendants attested that the present organisation of the Unit is really satisfactory. They enjoy the pluridisciplinarity and complementarity in the Unit, and the sharing of expertise. They apparently plebiscite the (monthly) "biochemistry" meetings, that they consider an occasion to reinforce the cohesion of the unit. They enjoy the opportunities offered to acquire additional experience and participate in various meetings. They seem not to encounter difficulties in the financing and recruitment of master and PhD students, probably because of the strong implication of the members of the Unit in teaching.

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

The professors and lecturers are naturally strongly involved in teaching, with a unique implication in biophysics courses at the University Paris Descartes. The reform of the studies in health sciences, recently introduced in France, proved (and still proves) very time consuming for the teaching members of the Unit.

9 PhD degrees were awarded for a total of around 22 full time researchers (14 with HDR) and 10 PhD students are present in the unit. At first sight these numbers seem small, especially considering the very heavy involvement of the staff in teaching at all levels. It contrasts with the global satisfaction for the number of students present in the unit manifested by the researchers during the discussion and also with the very high number of younger and less productive master students that were present in the Unit over the period.

The number of post-docs (7) is significant but still rather low, especially considering the number of ANR projects granted. An improved visibility at the international level would probably parallel an increase in the number of post-docs from abroad in the Unit and should be searched for.

Assessment of the five-year plan and strategy:

The strategy of the various teams is clear and the individual projects are usually ambitious. They are discussed in detail in the subsequent sections.

The members of the Unit are conscious of the need to favour horizontal contacts and collaborations between the teams. This should naturally spring from the common interest in several biological issues (cancer, HIV, anti-infective, RNA, ribosome, drug discovery…). But the unit members decided to help push the fate and enforced means to reach this goal (common meetings, sharing of competences (molecular biology), shared offices…). Financial support will be awarded to shared projects. The committee strongly supports these initiatives.

Now that the full maturity seems to have been reached, the question of the next step to be taken is still open. It is clear that the Unit should decide on the ways and means to develop its projects while capitalizing on the major achievements already obtained on various fundamental biological issues or pathologies. This could include developing even stronger relations with the on-site chemists or cellular biology approaches. The Unit promotes collaboration with other units, in close proximity to the site ("Institut Cochin"…), but the committee estimates that development of the competences within the unit should also envisioned. This could then be done within the teams or through the recruitment of an external group.

The problem/question of regrouping all the teams in a single location needs to be solved. All options, including moving to a new building, the construction of which is planned in the (near) feature, should be rapidly discussed…

4 • Team-by-team analysis

Team 1 : Crystallography of small and macromolecular complexes

Name of team leader: Mr Nicolas LEULLIOT

Workforce

Team workforce	Number as at 30/06/2012[1]	Number as at 01/01/2014[2]	2014-2018 Number of project producers[3]
N1: Permanent professors and similar positions	8	8	8
N2: Permanent EPST or EPIC researchers and similar positions	1	1	1
N3: Other permanent staff (without research duties)		1	
N4: Other professors (PREM, ECC, etc.)	1	1	1
N5: Other EPST or EPIC researchers (DREM, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)	1	1	
TOTAL N1 to N6	11	12	10

Team workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	3	
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	5	5

• Detailed assessments

Assessment of scientific quality and outputs:

This team has recently witnessed an important remodelling following the appointment in 2008 of a new PI who has since started to reorganize the research in what appears as a very successful transition. The PI of this team has also recently taken office as Director of the Unit and he actively works towards a further integration of the research of the different teams. Currently, the research in the team is articulated around three major themes, as follows:

1- Small molecule complexes (strong connection to external chemistry teams in Paris-Descartes University),

2- Protein inhibitor complexes,

3- Larger ribo-nucleoprotein (RNP) complexes, including eukaryotic pre-ribosomes and snoRNPs.

The team was productive in all three themes over the evaluation period: not less than 95 manuscripts were published. Three publications were selected by "Faculty of 1000" and three for journal covers. The three themes are perfectly complementary both conceptually and through the experimental strategies and tools involved. The team was particularly successful in theme 3 with two high impact factor publications, which were largely acknowledged in the field.

A key observation stemming from this team's work is the conclusion that a snoRNP assembly factor (SHQ1) acts as a molecular mimic during the box H+ACA snoRNP assembly pathway possibly holding components into place to achieve productive assembly. Importantly, the determination of the Cbf5-Shq1 structure also shed important light on the underlying molecular mechanism of the human genetic disease *Dyskeratosis congenita*.

During the oral presentations, the team leader demonstrated that he is perfectly knowledgeable in all the projects discussed, including those that he took over during the recent transition. The PI also appeared very much in-line with the latest developments in the field. In the future, it is quite likely that interface projects will emerge between the different themes under investigations in his laboratory.

Assessment of the team's academic reputation and appeal:

This team leader enjoys a very good international reputation, which is rapidly growing. The PI is regularly invited to international conferences in the field (for example the last two editions of the triennial Ribosome Synthesis Meeting, in Banff and Regensburg). The international networking is excellent, so are the collaborations with top leaders in the field, including major actors in the U.S. Such collaborations have led the team to publish in very competitive journals in the field, such as Genes and Development.

The PI is the recipient of a prestigious Junior IUF ("Institut Universitaire de France") position.

Surprisingly, this team currently houses no post-docs. With the recent publications, this situation will likely change soon.

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

Clearly above average. The team is well funded (coordination of two ANR projects, including a "jeune chercheur" grant, participation in 4 ANR projects...). Many (4) successful contacts with pharmaceutical companies in the field of protein targeting (Sanofi-Aventis, Mutabilis, Servier, Pierre Fabre) and several on-going fruitful contracts. Interesting involvement in extra-scientific activities (scientific exhibitions for large audiences).

Assessment of the team's organisation and life:

Each researcher in this team has his own set of projects but often, in addition, also contributes to other Lab members' projects based on their individual expertise in order to optimize the overall output of the team. Importantly, the office spaces are shared between the different teams of the Unit, which is a nice initiative as it fosters transversal discussions and increases the possibility to initiate new collaborations and to readily share experiences and expertise.

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

Excellent. This is mostly because this team mainly consists of University Professors (8) and is therefore very heavily involved in teaching. The team is currently hosting 3 PhD students. The team is also organizing several practicals.

Assessment of the five-year plan and strategy:

Excellent. The team demonstrates a strong expertise in most areas of structural biology with a strong link to (bio)physics, including teaching. The five year strategy capitalizes on this unique expertise. Owing to their recent successes, the proposal to pursue identical lines of research and to keep the three research themes (structure of small molecule, protein-inhibitor complexes and macromolecular complexes) alive, with a will to further develop the research on larger RNP complexes, seems perfectly reasonable.

The first two axes will be built and favour contacts with the pharmaceutical chemistry goups in the vicinity, they are strongly encouraged.

The last project is centered on the specific topic of the structure and function of ribonucleoprotein complexes assembly factors involved in human pathologies. The SWOT analysis soundly stresses the ambition and correlated risks of the project but the diversity of the various sub-projects presented and discussed (all of high pertinence) limits these risks.

The collaborative research opportunities opened by the participation in the CACSICE (Centre d'analyse de systèmes complexes dans les environnements complexes) should be encouraged. The SAXS projects should be really realized in strong interactions with the existing groups in the surroundings, as proposed.

Conclusion:

● Strengths and opportunities:

- This is a really good research team, competitive internationally. Although quite young in existence, it has already proved major research achievements with an excellent publication record, including one paper in the EMBO Journal and one in Genes & Development, 2 in PNAS, 1 in JACS and 1 in PloS Biology, which are particularly competitive. This is quite remarkable when considering the heavy teaching duties.

- Good level of funding.

- High number of permanent staff.

● Weaknesses and threats:

- The team and PI are heavily involved in teaching duties. A major undertaking has been a profound involvement in the reorganization of the University teaching courses. More energy will be needed there, as more reorganization is planned for the next few years.

- Currently, many of the *in vivo* follow-up analyses, which are based on original structural determination by the team, are performed by external collaborators. In the long run, it might be suitable to acquire novel expertise (may be through the recruitment of new team members, or new teams in the Unit) in order to directly conduct some of these analyses “in-house”.

● Recommendations:

- Pursue the research efforts initiated on the large macromolecular complexes where the team has been most successful.

- Initiate interface projects between the three themes under investigations in the team. For example the amino-peptidase fold discussed in theme 2 is present in a ribosome assembly factor (theme 3); develop protein complex inhibitors (theme 2) and structure-based drug design in the context of large RNP assembly (theme 3)…

- Actively recruit foreign post-docs to further increase the growing international recognition

Team 2 : RNA structure, interactions and anti-infectives

Name of team leader: Ms Carine TISNE

Workforce

Team workforce(XXX this format does not correspond to the one given in the report. Therefore I am not sure how to fill out this table!)	**Number as at 30/06/2012[1]**	**Number as at 01/01/2014[2]**	2014-2018 **Number of project producers[3]**
N1: Permanent professors and similar positions	2	2	1
N2: Permanent EPST or EPIC researchers and similar positions	2	2	2
N3: Other permanent staff (without research duties)	3	3	1
N4: Other professors (PREM, ECC, etc.)			
N5: Other EPST or EPIC researchers (DREM, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	7	7	4

Team workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students (XXX two students seem to have left the group prematurely after 11 and 18 months respectively.)	3	
Theses defended	2	
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	3	3

• Detailed assessments

Assessment of scientific quality and outputs:

This team has recently witnessed important remodelling following the appointment of one of the former team leaders as president of the university since 2012. He had also been heavily involved in science administration between 2007 and 2011 with ANRS and CNRS. The team leadership changed over the period from a unique director (-> 2010) to a co-direction (-> 01/2012) and finally the co-director took the lead (01/2012).

The topics investigated are:

1- Antibiotic resistance and novel antibacterial targets.

2- RNA structure and interactions, anti-infective design with focus on HIV, bacterial translation and trans-translation as well as tRNA maturation.

The team was productive in all two themes over the evaluation period with 27 articles in peer-reviewed journals as well as 2 book chapters and contributions to 3 popular science books. Also 2 patents carry names from the team. The publications were published in internationally renowned journals, see below. Two publications were selected by "Faculty of 1000". The two themes have as a common denominator the interaction of small molecules with target biomolecules and the usage of NMR to investigate these interactions. The publications from topic 2 have had the biggest immediate influence on the scientific community.

On the first topic, a binding pocket opened up in a N-6'-aminoglycoside acetyl transferase allowing accommodation of a second-generation aminoglycoside. Such opening of pockets can be observed on several systems and unfortunately due to limitations of solubility of the protein, NMR could not be combined in this project. A second project included screening of a small molecule library against the bacterial deformylase.

On the second topic, small molecules binding against RNA were investigated requiring efficient production of RNA. Based on tRNA fusion and cleavage this production of large quantities in the cell even with NMR adapted ^{13}C and ^{15}N labelling is possible and 50 laboratories in the world have used this technique already. The second subtopic, namely trans-translation has led to an EMBO Report publication in 2009 giving the protein SmpB together with the 360 nt tmRNA a role in the restart of a stalled ribosome, which is essential for virulence of these bacteria.

During the oral presentations, the team leader demonstrated that she can represent the topics worked on in the team very well. There were some discussions on the feasibility of some of the projects for the future, which will be described later.

Assessment of the team's academic reputation and appeal:

This team's group leaders enjoy a quite different international reputation. The former one is internationally renowned, very well connected with scientific collaborations nationally and internationally. The recently nominated one being much more junior does not yet have this standing in the community. Both PIs were invited to conferences, however most of them took place in France, the only two international conferences outside of France being an EMBO workshop in Heidelberg and an "international retroviral NC" symposium in Barcelona. Quite a lot of collaborations are listed with researchers in the field both nationally and internationally. The work has been published in internationally renowned journals, some of them in top journals like Angewandte Chemie, Nature Methods, Nature Protocols, PLOS Biology, JACS, ChemMedChem, J. Med. Chem., NAR.

The PIs received prestigious prizes: (Pierre DESNUELLES (2011) and Maurice NICLOUX (2008)).

The team was very successful in attracting grants that team members coordinate: ANR, ANRS and CNRS. Altogether, they raised funds in the reporting period at a very significant level.

The group presently includes three PhD students and additional permanent staff (2 CNRS researchers, 1 professor, 1 lecturer, 1 technician, 1 research engineer and 1 assistant engineer). There are no postdocs at the moment.

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

Clearly outstanding. Many successful contacts with pharmaceutical companies. Former director is member of the board of directors of the company Deinove, which is a public company, listed on Alternext. Former director being high up in science administration has had 9 participations in TV and radio shows as well as written with co-authors popular science books. In addition, two patents were deposited.

Assessment of the team's organisation and life:

Excellent. The team members interact very well between each other and the working atmosphere appeared to be smooth, with encouragement and great academic guidance for the members, especially the PhD students. The group also enjoys new lab space after renovation, which was much needed as well as very helpful. As mentioned in other reports, the office spaces are shared between the different teams of the unit, which is a nice initiative as it fosters transversal discussions and increases the possibility to initiate new collaborations and to readily share experience and expertise.

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

Excellent. Three PhDs have been awarded during the reporting period. The team is currently hosting 3 PhD students. The team also participates in teaching biochemistry and molecular biology, computing and chemistry at undergraduate and graduate level. It also is responsible for two practicals in biochemistry as well as crystal preparation.

Assessment of the five-year plan and strategy:

The team has been extremely successful over the past years in the study of small molecule protein/RNA interaction. The new research plan for the coming 5 years develops along several lines and are usually along the research lines already explored:

In vivo RNA/protein co-expression. The idea here is to express RNA such that it is packaged into a virus capsid by attaching a 19 nt signal sequence such that e.g. M2 phage packages this RNA. While the advantage of preventing the RNA from being cleaved by the bacterial RNAses is convincing, as well as the final retrieval of the packaged RNA from the virus particle, it did not become clear how for these applications the proposed method compares with the conventional T7 polymerase transcription of RNA.

Inhibitors for $tRNA^{Lys3}$. Here binders were identified with down to 1.4 µM dissociation constant which however did not have sufficient efficacy in *in-vivo* infection assays conducted in a collaborating laboratory. Affinities necessary for in vivo effects were not defined and this screening project seemed therefore not optimally designed.

Fluorine-19 NMR. This approach with aminoglycoside inspired ligands reports on changes of RNA conformations (Angew. Chem. publication). While the team can be congratulated to this finding and its publication, the readout is phenomenological and indirect. In the future, the team aims at replacing these fluorinated aminoglycosides by fluorinated RNA binding molecules that are not aminoglycosides, but it did not become clear for the committee why this was an attractive goal.

In cell RNA NMR. RNA maturation was proposed to be studied in oocytes by injection of suitably labelled tRNAs. Technical and practical issues (will tRNAs provide a reasonable and informative signal based on the concentrations that can be used ? would the tRNAs interactions with macromolecules broaden lines beyond detection ?) seem under-estimated. The definition of the highest priority maturation step to be studied remains elusive. The advantage of the method over existing methods for the analysis of the maturation of tRNA in eukaryotic systems should be more clearly positioned.

Maturation of HIV NCp15. This protein is processed by proteases faster in the presence than in the absence of RNA. This project is funded by ANRS and related work is going on in the "Structure and mechanism of action of viral proteins" team. This project is very much recommended for further research.

Conclusion:

● Strengths and opportunities:

- This is a really good research team that can build on most successful projects that were published in internationally renowned journals and led to patents. The team was competitive and renowned internationally.

- Good level of funding from various sources.

- High number of permanent staff.

● Weaknesses and threats:

- The team has suffered from the change of former team leader who became President of the University. The new team leader has not fully grown to take over the scientific lead of the team and some of the projects need to be improved to reach international standards and to keep up with the impressive scientific tradition of the team.

- As was mentioned also in the reports on other teams, the whole unit is in the unique position to make use of pharmaceutical and medicinal chemistry in collaboration with groups at the University, combined with structure elucidation and go from there to translational research in collaboration with existing units in close proximity to the site (Institut Cochin...).

● Recommendations:

- Reconsider some of the research activities, especially the *in cellulo* work with respect to the hopeful outcome in the context of what is known already.

- Some of the screening efforts did not have the perspective of finding compounds with *in vivo* activity. There should be a strategy, as to what targets are to be screened with what technology.

- On the longer run initiate projects that make use of the unique position of the team in structural biology, being connected to medicinal chemists and having cell biology and imaging in close proximity.

- Increase international visibility (attending and presenting more at international meetings), recruiting foreign PhD students and post-docs.

Team 3 : Signalling and membrane transport

Name of team leader: Ms Isabelle BROUTIN-L'HERMITE

Workforce

Team workforce	Number as at 30/06/2012[1]	Number as at 01/01/2014[2]	2014-2018 Number of project producers[3]
N1: Permanent professors and similar positions	3	2	2
N2: Permanent EPST or EPIC researchers and similar positions	3	3	3
N3: Other permanent staff (without research duties)	2	2	1
N4: Other professors (PREM, ECC, etc.)			
N5: Other EPST or EPIC researchers (DREM, Postdoctoral students, visitors, etc.)	1	1	1
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	9	8	7

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

• Detailed assessments

Assessment of scientific quality and outputs:

The 'Signalling and membrane transport' group, counts on the expertise of CNRS researchers as well as Professors/Assistant Professor staff to develop projects that view understanding membrane transport and cell signalling. The staff includes three researchers (one of which is the head of the group), two permanent professors, one professor, one technician and one IR. During the evaluation period, the group concentrated on structural and biochemical aspects of membrane proteins from both eukaryotic and prokaryotic systems, and the latter subject has given rise to subprojects in antibiotic resistance and novel targeting strategies towards the development of potential antimicrobials.

The group is known for tackling complex projects, i.e., developing methodologies for the study of structure and function of membrane proteins, and during the past few years has published 36 peer-reviewed articles in the field. Their crystallographic research on the extracellular domains of two eukaryotic tyrosine kinase receptors (prolactin and VEGF receptors) helped to improve the comprehension of the mechanism of activation of these proteins by dimerization, and opened perspectives towards the development of new antitumor drugs. Their work on efflux pumps is well recognized by the scientific community and has given rise to excellent PhD theses. The development of methodological tools for the study of membrane proteins is challenging, and the consistent, successful effort of the group in this subject was much appreciated by the committee. Their results were published in journals such as J. Biol. Chem., Structure, PLoS One, J. Mol. Biol., and Chem. Biol.

Assessment of the team's academic reputation and appeal:

The group has been very successful in guaranteeing external funds for research (through multiple ANRs and industrial grants). The group also has vast national and international visibility, not only through the previous PI's participation in numerous scientific councils and his nomination as vice president of the University, but also through presentations made by the current PI and other members of the group in scientific colloquia at the European level. The committee recommends that there be more openness towards the recruitment of foreign students and postdocs.

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

The methodological aspects of the work are of great interest to the membrane protein community. Partnerships with industry and grants from local associations have played a major role in supporting the scientific work and training young scientists in the group. Efforts made towards the discussion of necessary teaching reforms and awareness of major social health problems have also been made in the form of presentations at the national and international levels, and the group participates in GDRs, which has led to the development of numerous important collaborations.

Assessment of the team's organisation and life:

Interaction between team members seems to be very good, with members organizing workshops and activities in partnership with each other. The high quality of PhD theses awarded attests to the very good level of training provided by the team.

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

Five PhD theses have been initiated during the period, and three students are still pursuing their degrees, and thus it is clear that the scientific quality of the group is a major point of attraction for students. In addition, team members, including students, have been involved either in the organization of workshops and 'Science Days' (national and international), but have also participated in a number of meetings. Two Permanent professors are actively involved in university councils and committees, which decreases the amount of time available for research and interacting with students, making the good results of the unit even more commendable.

Assessment of the five-year plan and strategy:

The strength of the group remains in the development of biophysical techniques to study membrane proteins, and the strong interactions with other groups, in particular with the Ecole Normale, is a very positive point that should be fostered. However, the committee encourages the group to tackle the structural characterization of novel, challenging projects, including proteins for which there are no homologous structures in the literature. The 'savoir faire' that has been developed by this group is unique in France, and it is optimally positioned to represent a recognized, national centre for the structural biology of membrane proteins. This should be feasible, since the group has strong technical support, which should allow for the initiation and development of new, challenging projects. Working on fully assembled, novel membrane proteins should be given preference over dedicating efforts to smaller (periplasmic or cytoplasmic) domains of these macromolecules.

Conclusion:

● Strengths and opportunities:

- The team has done extremely well, especially considering the heavy teaching load of several of the members.

- The development of state-of-the-art techniques to study the electrophysiological aspects of membrane protein targets is of great interest to the biophysical community.

● Weaknesses and threats:

- The group has invested resources and effort into structural biology of the VEGF receptor system with the goal of developing antagonists. A cyclic peptide that binds to VEGF with low micromolar affinity has already been identified, and the group should reconsider carefully how much further time and effort will be required to succeed beyond this point.

- The hiring of foreign postdocs that have been trained in centres outside of France is limited.

● Recommendations:

- The recruitment of foreign post-docs is strongly encouraged in order to bring fresh ideas into the group.

- The group has concentrated considerable effort in the past few years on the study of efflux pumps, with which it has been extremely successful. The committee encourages the group to continue performing biophysical studies and developing tools to study these macromolecules, but in terms of structural biology, turn to the study of novel membrane-inserted macromolecular targets for which no structural information is available. The group has the know-how that is required in order to achieve this goal with success.

Team 4 : Molecular mechanisms of translation initiation

Name of team leader: Mr Bruno SARGUEIL

Workforce

Team workforce	Number as at 30/06/2012[1]	Number as at 01/01/2014[2]	2014-2018 Number of project producers[3]
N1: Permanent professors and similar positions			
N2: Permanent EPST or EPIC researchers and similar positions	1	2	2
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (PREM, ECC, etc.)			
N5: Other EPST or EPIC researchers (DREM, Postdoctoral students, visitors, etc.)	1		
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	3	3	3

Team workforce	Number as at 30/06/2012	Number as at 01/01/2014
Doctoral students	1	1
Theses defended	1	1
Postdoctoral students having spent at least 12 months in the unit	3	?
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:

The scientific quality and outputs of the team are very good. It provides a solid expertise on the molecular mechanisms of translation initiation, based on the multidisciplinary nature of the team and of the unit. In particular skills in terms of protein supramolecular assemblies for translation are mature and generate collaborative projects and works.

With 9 publications over the period (the majority of which with high impact factors (Nar Rev Microbiol, 4 NAR…)), and considering its small size, the team is highly productive. 3 invited conferences and 4 oral communications, the majority beeing at International meetings abroad.

Assessment of the team's academic reputation and appeal:

The low number of researchers, the lack of permanent academic staff with teaching duties, useful for promising student detection and recruitment, remain a limiting factor. The extreme determination of the permanent staff allows overpassing that limitation, through collaborative work and successful grant applications.

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

The team presents a very mature and efficient strategy for interacting with the economic environment at very different levels. First, there are strong interactions with innovative biotech companies both in terms of research activities and consulting. Second the very efficient "translation" technical facilities and know-how of the team is at a maturity level which authorises cooperative works. Some projects (so far at high risk) may generate technological breakthroughs of high industrial impact (chemical genetics, RNA folding prediction). In terms of social and cultural environment, HIV translation studies, associated to drug screening, led to a clear visibility of the social interest of the involved research.

Assessment of the team's organisation and life:

The high non-permanent to permanent researchers and technical personnel ratio implies specific strategies to maintain and develop the team "knowledge and know how". It requires strong intra team communication skills and opportunities. Equilibrium is made possible by the strong involvement of the staff leader in raising funds for students and postdocs.

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

The rather low number of "HDR" objectively limits the number of PHD students potentially involved. However the recent recruitment of a full researcher will considerably increase that potential for the next years. It allows a regular turnover of at least 2 students at the group level and one other at the unit level to enhance or consolidate intra unit collaborations. Nevertheless, the group is highly involved in industrial collaborations, consulting, and technology transfers to biotechnology companies (start-up), that will certainly prove to be a very positive "outdoor gate" for the PHD students. Similar opportunities could be assessed for the post-doctoral scientists.

Assessment of the five-year plan and strategy:

The major research subject of the group is devoted to translation studies, a very competitive subject at international level, involving strong resources. The group ends a particularly awarded period from 2007 to 2011: ATIP, which led to at least 9 publications but allowed to establish a "know how" centre in terms of translation initiation involving protein purification and prediction of RNA structures.

It can be assessed that ATIP and numerous ANRS-FRM-SIDACTION grants authorized to establish a high level structure rather unique in France both in terms of materials and methods for "translational" studies. This expertise stimulated intra unit collaborations and attracted collaborations at national and international level. The consequence of that effective and edge cutting strategy allowed HIV translation investigations. They were successful not only in terms of scientific knowledge but also in terms of collaboration at academic and industrial level.

The aims to understand deeply and to master the tricks and tips of the eukaryotic translation are ambitious, while rather limited by the shortage of the "scientific and technological work force". Strong opportunities are opened by the skills and expertise already developed in terms of translation and RNA structure determinations. Innovative tools, reached recently "maturity" allowing explorative trends in terms of first and second order scientific collaborations (viral translations, translation factors and drug screening). More fundamental biochemical approaches are programmed in terms of chemical genetic approach and RNA secondary structures.

Conclusion:

- Strengths and opportunities:

- There is a real know-how" in all the "structural" and "dynamics" aspects of pro- and eukaryotic as well as viral translation mechanisms

- The variety and specificity of the "tools" generated by the group are convincing

- The scientific perspectives include applicative options, like drug screening or design. Feasibility is high, it may generate intensive collaborations at the academic and industrial levels

- An interesting balance between project feasibility and risk is presented, innovative and mature "tools", clear projects with a rather objective risk management, are likely to increase student and post-doc attractiveness, including with strong non-academic perspectives.

- Weaknesses and threats:

- Low permanent and low student/postdoctoral work force.

- Recommendations:

- Instrumentation park development for that group appears necessary and will require specific attention in terms of housing

- The permanent researchers have to hierarchize their projects, not only in terms of risk/balance equilibrium but also in terms of workforce potential.

Team 5 : Structure and mechanism of action of viral proteins

Name of team leader: Mr Serge BOUAZIZ

Workforce

Team workforce	Number as at 30/06/2012[1]	Number as at 01/01/2014[2]	2014-2018 Number of project producers[3]
N1: Permanent professors and similar positions	1	1	1
N2: Permanent EPST or EPIC researchers and similar positions	1	1	1
N3: Other permanent staff (without research duties)	1	1	1
N4: Other professors (PREM, ECC, etc.)			
N5: Other EPST or EPIC researchers (DREM, Postdoctoral students, visitors, etc.)			
N6: Other contractual staff (without research duties)			
TOTAL N1 to N6	3	3	3

Team 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

Team 5 joined the laboratory in 2010 and currently has three permanent members (Inserm researchers and ingenior) and one PhD student. It has developed a strong expertise in the study of protein-protein, protein-nucleic acid and protein-ligand interactions by liquid NMR and obtained significant results during this four-year period.

Its research focused on viral and retroviral proteins such as the human cytomegalovirus (HCMV) terminase complex, HIV-1 NCp7, HIV-1 Vpr and HIV-2 Vpx, which are important therapeutic targets. The team masters the technique of large-scale chemical peptide synthesis. It has a leading role in the structural studies of proteins that are difficult to produce *in cellulo* because they tend to aggregate (*e.g.* Vpr). The team is also competent in modelling and docking studies and is involved in the identification and optimization of novel inhibitors by NMR-based methods. For this purpose, it disposes *in situ* of a 600 MHz spectrometer equipped with an automatic sampler.

Assessment of scientific quality and outputs:

The main research activity of team 5 focuses on HIV and fits perfectly into the themes of the laboratory. Among the significant results obtained on HIV, we can note those on the chaperone role of NCp7 for essential retroviral nucleic acid sequences (PBS), the identification of enhanced interactions between Vpr and P6 in a hydrophobic environment, the design of a peptide inhibitor against Vpr and the characterization of a new bevirimat-based maturation inhibitor against the polyprotein Gag.

The team had 27 peer-reviewed articles. Many were (co-)published in high impact factor journals such as JACS, PLoS Pathogen, Retrovirology… Team members signed five articles as first author and/or corresponding author in JMB, PloS One, Biochemistry… The team was well funded for its research activities on HIV and obtained three ANRS and one Sidaction research grants. It was also involved in an ANR-funded project to investigate the entry mechanism of naked viruses such as dsRNA rotaviruses and birnaviruses, which are important pathogens. This work resulted in two interesting articles published in JBC on the mechanism of action of membrane perforating viral peptides.

Assessment of the team 's academic reputation and appeal:

The technical and methodological strengths described above allow the team to be involved in numerous HIV and non-HIV collaborative research projects (collaborations with ICAB-Bordeaux, ENS-Lyon, Paris-Cochin…) and provide good recognition both nationally and internationally. The PI was invited as a visiting professor at the Nanyang University of Singapore to train students in molecular modelling with NMR restraints. The team had a strong support of the ANRS as stated above and was awarded a two-year postdoctoral fellowship to study Vpr and its protein partners. The PI directed the research of two PhD students.

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

The team is well funded by various sources (ANRS, Sidaction, ANR…) and is strongly involved in the development of novel inhibitors with great therapeutic potential. Of interest, in collaboration with virologists and chemists, it was granted a European patent with extension to the USA on a HIV-1 assembly and maturation inhibitor derived from bevirimat.

Finally, we can stress that the team developed strong ties with other teams of the Institute. For example, team 5 worked with team 3 on the identification of a non-peptide inhibitor against the pro-angiogenic VEGF-VEGFR interface (team 5 performed the WaterLOGSY experiments). The design of efficient protein-protein interface inhibitors is challenging and this work led to an excellent collaborative article published in "Chemistry and Biology".

Assessment of the team's organisation and life:

Team 5 has a strong expertise in the study of protein-protein, protein-nucleic acid and protein-ligand interactions by liquid state NMR and obtained significant results during this four-year period.

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

The team is well involved in training through research. The PI gave training courses on drug design and NMR spectroscopy in France and abroad. The permanent professor has teaching duties in Physics and Pharmacy at the University Paris Descartes. The engineer trained students and researchers to use the 600 MHz spectrometer.

Assessment of the five-year plan and strategy:

The skills of team 5 on the NMR studies of viral proteins alone and in complex are indisputable and the presentation of the five-year project by the PI, focusing on HIV-1 NCp7, Vpr, Vpx and their interactants, was appreciated by the committee.

Of interest, collaborative projects within the laboratory are again considered, and the chaperone activity of NCp7 on specific nucleic acid sequences will be investigated with team 2. A second project concerns Vpx; the PI proposes to take advantage of his expertise on Vpr to solve the structure of this other accessory protein, which also tends to oligomerize. The PI also intends to pursue his research on HIV-1 maturation inhibitors. The use of a 600 MHz spectrometer (available in house with the 600 MHz) and the involvement of the PI in the Equipex project for the purchase of a 800 MHz spectrometer in Paris should lead to even more ambitious projects. Hence, the PI has begun the structural study of Vpr in interaction with UNG2, a restriction factor for HIV-1 that counteracts Vpr.

The number of projects (notably those on non-HIV proteins such as rotavirus VP7, which ensured a ANR grant) is limited by the size of the team. This risk is well taken into account in the SWOT analysis and candidates are presented at the CNRS competition for researchers.

Conclusion:

- Strengths and opportunities:

The main research activity of team 5 focuses on HIV and fits perfectly into the themes of the laboratory. Among the significant results obtained on HIV, we can note those on the chaperone role of NCp7, the identification of enhanced interactions between Vpr and P6 in a hydrophobic environment, the design of a peptide inhibitor against Vpr and the characterization of a new bevirimat-based maturation inhibitor against the polyprotein Gag.

- Weaknesses and threats:

The number of projects is limited by the small size of the team and the recruitment of a new permanent researcher seems mandatory.

- Recommendations:

The skills of team 5 on the NMR studies of viral proteins alone and in complex are indisputable. The team should remain focused on these subjects as long as it is limited in size.

5 • Conduct of the visit

Visit date:

Start: Thursday, December 6, 2012, at 8:00
End: Thursday, December 6, 2012, at 18:45

Visit site(s):

Institution: Université Paris Descartes, Faculté de Pharmacie
Address: 4 Avenue de l'Observatoire, 75270 Paris

Specific premises visited: Laboratoire de Cristallographie et RMN Biologiques

Conduct or programme of visit:

08:00 1. Centering of the committee
8:15 Preliminary meeting of the committee (closed hearing) (30 min)
8:45 2. Scientific part
Presentation of AERES evaluation and of committee members*(J. Baratti and E. Guittet) (10 min)*
8:55 Presentation of the unit project: N. Leulliot (20 min + 20 min discussion)
9:35 Scientific Presentation Team 1 - Leulliot (20 min + 20 min discussion)
10:15 Scientific Presentation Team 2 - Tisné (20 min + 20 min discussion)
10:55 Break (15 min)
11:10 Scientific Presentation Team 3 - Broutin (20 min + 20 min discussion)
11:50 Scientific Presentation Team 4 - Sargueil (20 min + 20 min discussion)
12:30 Scientific Presentation Team 5 - Bouaziz (20 min + 20 min discussion)
3. Meeting with representatives of Institutions
13:10 Discussion with committee members
13:40 *Buffet / discussion (90 min)*
4. Meeting with researchers, technicians, doctoral students and post doctoral fellows
15:00 *In parallel, the committee splits into three groups.*
Meeting with researchers
Meeting with technicians
Meeting doctoral students and post doctoral fellows
5. Meeting with the unit Director
15:30 *30 min discussion with the committee)*
6. Debriefing of the committee
16:00 Deliberation of the committee (closed hearing)
18:30 *Thanks and leave of the committee*
18:45 *End*

Specific points to be mentioned: The Unit made a CD containing a copy of all publications of the Unit over the period available to the Committee. This facilitated the evaluation greatly.

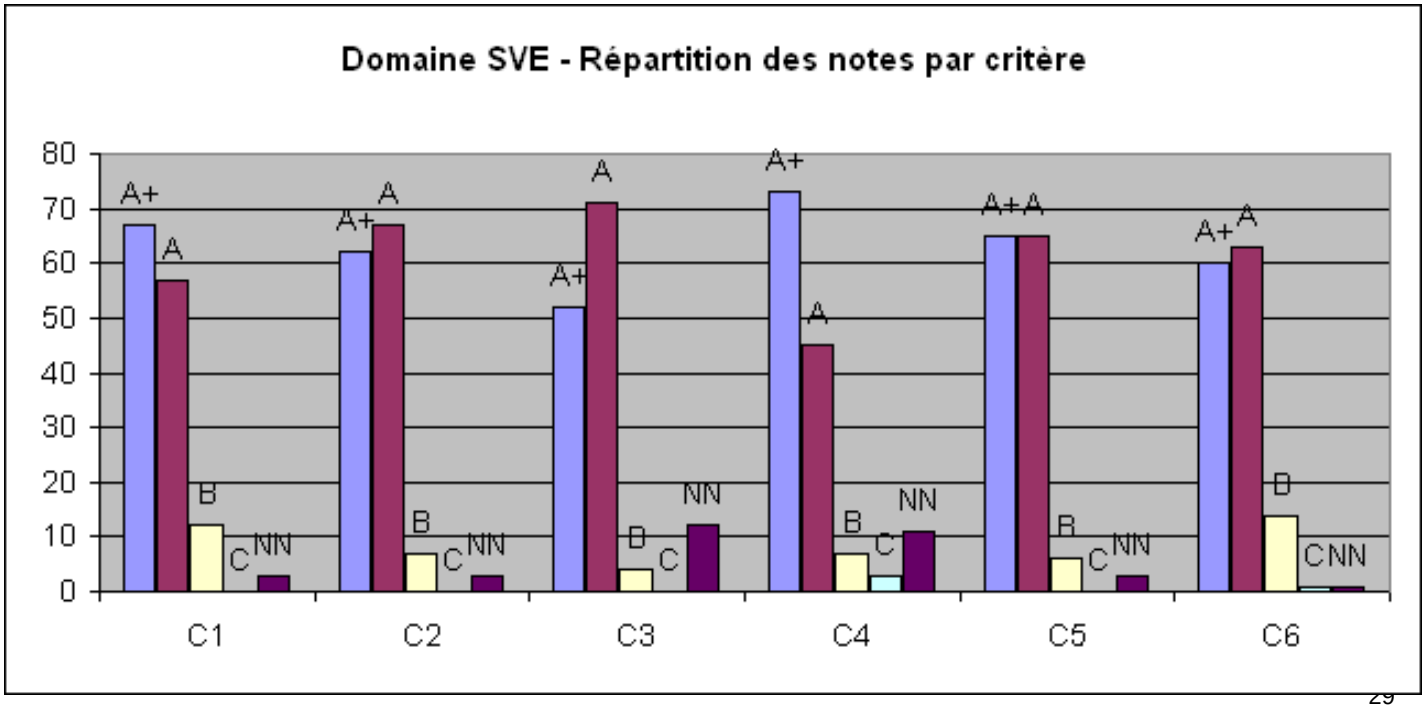
6 • Statistics by field: SVE on 10/06/2013

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

UNIVERSITÉ PARIS DESCARTES

Vice Président du Conseil Scientifique

Paris le 25.03.2013

Vos ref : S2PUR140006731 –
Laboratoire de Cristallographie et
RMN Biologiques - 0751721N

Monsieur Pierre GLAUDES
Directeur de la section des unités de recherche
Agence d'Evaluation de la Recherche et de
l'Enseignement Supérieur
20, rue Vivienne
75002 PARIS

Monsieur le Directeur

Je vous adresse mes remerciements pour la qualité du rapport d'évaluation fourni à l'issue de la visite du comité d'expertise concernant l'unité « Laboratoire de Cristallographie et RMN Biologiques »

De même que le Directeur de l'unité, Nicolas LEULLIOT, le Président et moi-même n'avons aucune remarque particulière à apporter.

Je vous prie d'agréer, Monsieur le Directeur, l'expression de ma considération distinguée.

Le Vice Président du Conseil Scientifique

Stefano Marullo, DM, DesSci

Université Paris Descartes, Vice-présidence du conseil scientifique, 12 rue de l'école de médecine, 75170 PARIS cedex 06
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A l'attention de M. Frédéric Dardel, Président de l'Université Paris Descartes

Objet: Rapport du Comité de Visite de l'AERES concernant le renouvellement de l'UMR8015

J'ai le plaisir de vous informer que le rapport du Comité de Visite de l'AERES n'appelle pas d'observation de ma part.

La direction et les membres du Laboratoire de Cristallographie et RMN Biologiques remercient vivement le comité pour le bon déroulement de l'audit et le travail d'évaluation réalisé.

Nicolas Leulliot
Directeur de l'UMR8015