

EVALUATION REPORT OF THE UNIT  
EGM - Expression Génétique Microbienne

UNDER THE SUPERVISION OF THE  
FOLLOWING ESTABLISHMENTS AND  
ORGANISMS:

Université Paris Cité

Centre national de la recherche scientifique -  
CNRS

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**EVALUATION CAMPAIGN 2023-2024**  
GROUP D

Rapport publié le 08/02/2024



In the name of the expert committee :

Alan Dobson, Chairman of the committee

For the Hcéres :

Stéphane Le Bouler, acting president

In accordance with articles R. 114-15 and R. 114-10 of the Research Code, the evaluation reports drawn up by the expert committees are signed by the chairmen of these committees and countersigned by the president of Hcéres.

To make the document easier to read, the names used in this report to designate functions, professions or responsibilities (expert, researcher, teacher-researcher, professor, lecturer, engineer, technician, director, doctoral student, etc.) are used in a generic sense and have a neutral value.

This report is the result of the unit's evaluation by the expert committee, the composition of which is specified below. The appreciations it contains are the expression of the independent and collegial deliberation of this committee. The numbers in this report are the certified exact data extracted from the deposited files by the supervising body on behalf of the unit.

## MEMBERS OF THE EXPERT COMMITTEE

### **Chairperson:**

Mr Alan Dobson, University College Cork, Ireland

### **Experts:**

Mr Christophe Bordi, Aix-Marseille Université (representative of CNU)

Mr Fabien Darfeuille, CUEA, Bordeaux

Mr Reynald Gillet, Université de Rennes 1

Mr Jean-Michel Jault, CNRS, Lyon

Ms Claudine Mayer, Université Paris Cité (representative of CoNRS)

Ms Mylène Robert, CNRS, Grenoble (supporting personnel)

## HCÉRES REPRESENTATIVE

Ms Muriel Mercier-Bonin

## REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Ms Pauline Andreu, Université Paris Cité

Mr Patrice Coll, Faculty of Science, Université Paris Cité

Mr Christophe Giraud, CNRS Delegation - Paris-Centre

Mr Hugues Lortat-Jacob, CNRS - Biology INSB

## CHARACTERISATION OF THE UNIT

- Name: Expression Génétique Microbienne
- Acronym: EGM
- Label and number: UMR8261
- Composition of the executive team: Mr Ciarán Condon (director) and Mr Harald Putzer (deputy director)

## SCIENTIFIC PANELS OF THE UNIT

SVE Sciences du vivant et environnement  
SVE3 Molécules du vivant, biologie intégrative (des gènes et génomes aux systèmes), biologie cellulaire et du développement pour la science animale

## THEMES OF THE UNIT

The unit's research interests are primarily focused on RNA biology. They employ structural, biochemical and genetic approaches to study RNA maturation, modification, and post-transcriptional regulation of translation and mRNA decay, predominantly in bacteria, but also in archaea and yeast.

## HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

The "Expression Génétique Microbienne" (EGM) unit UMR8261 was originally founded in the early 1960s, with a focus on the expression genetics of microorganisms involving the use of genetic, biochemical and structural approaches.

## RESEARCH ENVIRONMENT OF THE UNIT

The EGM unit is hosted at the Institut de Biologie Physico-Chimique (IBPC), which is a CNRS administered unit located in the 5th arrondissement in Paris with the Université Paris Cité (UP Cité) as a "co-tutelle". The IBPC also hosts four other CNRS research units and is a "Fédération de Recherche" (FR550) providing both administrative and logistical support to EGM, managing common facilities and facilitating groups within the IBPC such as EGM in grant capture from funding sources, including national funding through CPER, ANR, and EU co-funded projects such as FP-DYNAMO-Paris and SESAME. The management and maintenance of equipment such as state of the art NMR, visualization wall and bioinformatics platforms, together with mass-spectrometry, crystallography facilities, by IBPC greatly benefit EGM researchers. They also have access to pooled resources including visualization systems such as "Chemidocs", fluorescence microscopes, phosphorimagers, protein purification equipment and ultracentrifuges.

EGM together with other four teams within IBPC, a unit from the College de France and a unit from the ENS, were involved in setting up the Labex DYNAMO (2012-2024). Funding from DYNAMO has been very beneficial for EGM, both from the point of view of the recruitment of one CNRS researcher but also of 5 PhD students, 5 post-doctoral researchers and 5 trainees to work with the different EGM teams. Through their involvement with FP-DYNAMO-Paris, a COFUND fellowship programme, EGM has also been able to hire four new post-doctoral researchers; thereby further benefiting the researcher outputs from the unit. EGM is also involved in the Equipex supported by Institut Pasteur, which provides them with access to an analysis platform for structural biology with equipment such as a cryo-electron microscope, X-ray crystallography, NMR and mass spectrometry. EGM's association with UP Cité also allowed it to recruit a MCU in 2019, while its association with the QLife network at the PSL University (Paris Sciences & Letters) also provides it with opportunities to obtain funding for PhD students. EGM has access to technology transfer support from UP Cité, PSL and CNRS, with access to funding for pre-maturation of projects, which are at an early technological development stage, but which have a high innovation potential.

The EGM is affiliated to the following Doctoral Schools: ED562- Biologie Sorbonne Paris Cité (BioSPC). ED563- Médicament, Toxicologie, Chimie, Imageries (MTCI) and ED577-Structure et Dynamiques des Systèmes Vivants (SDSV).

## UNIT WORKFORCE: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	3
Directeurs de recherche et assimilés	8
Chargés de recherche et assimilés	4
Personnels d'appui à la recherche	8
<b>Sous-total personnels permanents en activité</b>	<b>23</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	4
Doctorants	7
<b>Sous-total personnels non permanents en activité</b>	<b>11</b>
<b>Total personnels</b>	<b>34</b>

DISTRIBUTION OF THE UNIT'S PERMANENTS BY EMPLOYER: in physical persons at 31/12/2022. Non-tutorship employers are grouped under the heading "others".

Nom de l'employeur	EC	C	PAR
CNRS	0	11	8
Université Paris Cité	3	0	0
<b>Total personnels</b>	<b>3</b>	<b>11</b>	<b>8</b>

## GLOBAL ASSESSMENT

The overall standard of research being conducted in the unit is excellent with some examples of outstanding scientific production and discoveries. The unit is nationally and internationally recognized in the field of RNA biology and the control of gene expression, with overall excellent to outstanding scientific objectives on microbial RNA biology. For example, they described the resolution of the cryoEM structures of two RNases, M5 and Mini-III, processing the rRNAs of the 50S ribosomal subunit (Mol. Cell, 2020). These structures still remain the first bacterial rRNA processing complexes ever to be solved. This is also a good example of an inter-team publication, involving Teams 2 and 6. The scientific productivity of the unit has been excellent to outstanding resulting in an overall slight increase in published outputs from the last reporting period with a total of 101 peer-reviewed publications.

The attractiveness of EMG is excellent with a high-quality international reputation, as evidenced by the number of invitations to present their research findings at international meetings (88) and the organization of international scientific meetings (17). They were also involved in grant reviewing activity for national and international funding agencies (63) and in reviewing scientific papers (358) in their area. The unit has trained 18 PhD students over the period with 84% of the PhD students who have graduated having at least one first-author paper, with at least half of them having more than one.

The unit has been very successful in obtaining funding during the reporting period, with all teams obtaining ANR or ERC funding (ERC consolidator grant of 1.268 M€ for Team 3) with total grant capture from external sources averaging around 692 k€ annually, which represents 81% of EGM's total budget. They obtained 16 ANR grants (12 as PIs). All teams coordinated, either as team leader or member, eg the ANR grants ABC-F\_AB (267 k€), ARNr-QC grant (316 k€) UnifyRNA (250 k€), IB-mRND (213 k€), TrmTases (232 k€) and NMR-Vitamin (261 k€). Overall, the ANR and ERC funding supported 14 post-docs, 6 PhD students and 3 engineers. Additional funding through the Labex DYNAMO and FP-DYNAMO-Paris projects provided support for 7 post-docs, 5 PhD students and 1 engineer, while funding for 7 university PhD contracts was also obtained during the period.

The committee appreciated the contribution that the Director has made in ensuring the smooth running of the unit during the reporting period. The collegiality within the unit was evident during the interactions between the committee and the different levels of personnel, including the PhD students. It is clear that there are active interactions between researchers from among the different teams, which is mutually beneficial to both the researchers and to the unit as a whole. A number of promotions have taken place during the reporting period with EMG researchers being promoted to DR1, DR2, CRHC and MCHC. In addition, six PAR were also promoted -3 to "de corps" and 3 to "de grade"-.

The complementarity between the teams and the overall scientific focus is a significant strength of the unit. The successful integration to the unit of Teams 1 and 6 during the reporting period has significantly strengthened the scientific production and visibility of the unit.

With a reduction in the number of teams the unit needs to be successful in attracting new teams to continue the high quality of research being undertaken.

In addition, given the eminent completion of the Labex DYNAMO, the unit is encouraged to focus on attracting funding from alternative sources.

## DETAILED EVALUATION OF THE UNIT

### A - CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

Regarding scientific production, the previous recommendation to the unit was to continue their high quality research, which they have continued to do. In addition, they were encouraged to maintain their international visibility, which they have also succeeded in doing. They were also encouraged whenever possible to engage with the private sector, however opportunities to engage with this sector did not arise during this reporting period. Regarding graduate schools the unit was recommended to link up with future graduate schools in Paris and to attempt to engage with EU funding initiatives. They have succeeded in the former through a strong engagement with MTCI and BioSPC (where the director is a board member). While in the latter case they have procured an ERC consolidator grant and have been involved in the Marie-Curie COFUND programme (FP-DYNAMO-Paris).

Regarding the unit's organization and life, the unit was recommended to endure the continued recruitment of PhD and post-doctoral researchers in the event that the Marie Curie ITN was not renewed. The unit attempted to join the Idex UP but without success. They do plan to submit a call to a National programme, which will be launched in the near future. They were also recommended to address the retirement of several team leaders, and they have been attempting to hire replacement teams, but with limited success to date. However, a new team leader has been identified and may join the unit in the near future.

### B - EVALUATION AREAS

Considering the references defined in the unit's evaluation guidelines, the committee ensures that a distinction is made on the outstanding elements for strengths or weaknesses. Each point is documented by observable facts including the elements from the portfolio. The committee assesses if the unit's results are consistent with its activity profile.

#### EVALUATION AREA 1: PROFILE, RESOURCES AND ORGANISATION OF THE UNIT

##### Assessment on the scientific objectives of the unit

The unit is focused on studying gene regulation in microorganisms, particularly non-pathogenic model organisms that are amenable to genetic manipulation such as *E. coli* and *B. subtilis*. Their particular focus is on microbial RNA metabolism and on the control of gene expression, transcription of genes, mRNA stability and translation. The unit is nationally and internationally recognized in the RNA area. They are very focused on their scientific objectives, which are overall excellent to outstanding.

##### Assessment on the unit's resources

The unit has excellent financial and human resources. The teams have been very successful in obtaining grants particularly from national funding sources, with a total of 16 ANR grants. The staff are of a very high scientific quality and are a leading group nationally and internationally in the field of microbial RNA metabolism. The unit through its location within IBPC has access to a number of technological platforms, which is a major asset. Technical support is lacking due to retirements and detachments. It is important that new recruits have technical support. The physical infrastructure in which the unit operates, while very good, could be better; particularly given the age of the building. With the age of the building, making potential renovations of laboratory space is more difficult and costly.

## Assessment on the functioning of the unit

The direction and management structure of the unit is very well organized. The Director leads the executive team, which consists of the deputy director and the administrator. The unit has a laboratory council consisting of members from different relevant groups including group leaders, researchers, technical staff and PhD students/post-docs. The Director is advised by the executive team, the scientific team's leaders and by the laboratory council. The researchers and support staff are very satisfied with the functioning of the unit. There is clear evidence of an outstanding collegiality among all the levels of staff within the unit, which is facilitated through the active promotion of a number of group activities, which aim to help create strong interactions between members of the different research groups. The unit complies with health and safety, safety training and cyber security obligations ensuring an overall safe working environment. Overall, the functioning of the unit is outstanding.

### *1/ The unit has set itself relevant scientific objectives.*

#### Strengths and possibilities linked to the context

The unit is a flagship of fundamental research in the area of RNA biology not only nationally, but is also recognized internationally. The unit's scientific objectives have a clear scientific coherence on microbial RNA metabolism and on the control of gene expression, transcription of genes, mRNA stability and translation in model non-pathogenic microorganism.

#### Weaknesses and risks linked to the context

There are no weaknesses regarding the scientific objectives of the unit. However, the quite narrow focus of these objectives while being a strength, may also be a weakness to the extent that it may decrease the pool of scientists who are aligned with these scientific objectives and who may wish to establish teams within the unit.

### *2/ The unit has resources that are suited to its activity profile and research environment and mobilises them.*

#### Strengths and possibilities linked to the context

Regarding recurrent funding from the supervising bodies, CNRS and UP Cité contribute to 17% and 2% of the total budget, respectively. Most of EGM's funding comes from grant capture from external funding agencies (e.g. ANR, ERC, Labex DYNAMO). The teams are overall very well-funded and have been very successful in obtaining grants, particularly from national funding sources. The basic funding from CNRS and UP Cité is distributed to cover overall expenses and is also distributed to the teams in proportion to their size. The distribution of the funding, together with the monies generated from the indirect cost to the unit and to the teams to ensure their continued functioning; particularly those that are between funding cycles, is to be commended. In addition, monies from the indirect costs can be used as recruitment incentives for new teams.

The staff are of a very high scientific quality and human resources are appropriately distributed within the unit.

The unit level of gender equity is very positive, which is reflected in each category of permanent and non-permanent staff and with the total female staff numbers of 18 being slightly higher than that of the male staff numbers of 16.

The unit through its location with IBPC has access to a number of technological platforms, which are a major asset to the unit and from which they derive a real benefit from a scientific productivity standpoint.

The physical infrastructure in which the unit operates is very good.

#### Weaknesses and risks linked to the context

The decrease in permanent staff over the reporting period has had a negative impact on the resources of the unit. Some teams are lacking human capital, with lack of technical support, several retirements and some staff being under detachment.



There is an imbalance in the support being provided to the unit by CNRS (90%) and UP Cité (10%).  
There is a lack of appropriate facilities to study pathogenic microorganisms.

The age of the building means that any upgrades or changes to the facilities are more difficult to undertake and more expensive to fund.

*3/ The unit's practices comply with the rules and directives laid down by its supervisory bodies in terms of human resources management, safety, environment, ethical protocols and protection of data and scientific heritage.*

#### Strengths and possibilities linked to the context

The direction and management structure of the unit is very well organized. The Director leads the executive team, which consists of the deputy director and the administrator. The unit has a laboratory council consisting of members from different relevant groups including group leaders, researchers, technical staff and PhD students/post-docs. The Director is advised by the executive team, the other team leaders and by this laboratory council.

The cohesiveness and overall collegiality of the unit of the unit are facilitated through the active promotion of a number of group activities, which aim to help create strong interactions between members of the different research groups. These activities include picnics, retreats and lunches. This promotion of cohesiveness is also promoted by regular external and internal seminars, which involve the active participation of all the teams within the unit.

Very clear systems are in place within the unit with respect to health and safety aspects associated with working there, including appropriate booklets for practical safety, fire drills and extinguisher training. Measures for waste disposal are also in place together with safety training with courses on biological, radiochemical and chemical safety being mandatory.

#### Weaknesses and risks linked to the context

None identified.

### EVALUATION AREA 2: ATTRACTIVENESS

#### Assessment on the attractiveness of the unit

The unit has a high-quality international reputation, given the number of invitations at international meetings and the organization of international scientific meetings. The unit has been successful in obtaining a total of 16 ANR grants (12 as PIs) and 1 ERC consolidator grant, supporting 14 post-docs, 6 PhD students and 3 engineers. The attractiveness of the unit is overall excellent.

*1/ The unit has an attractive scientific reputation and is part of the European research area.*

*2/ The unit is attractive because for the quality of its staff support policy.*

*3/ The unit is attractive through its success in competitive calls for projects.*

*4/ The unit is attractive for the quality of its major equipment and technical skills.*

#### Strengths and possibilities linked to the context for the four references above

EGM has a high-quality international reputation, which is evident from the number of invitations to give seminars (49) and present their research findings at international meetings (88) and in the organization of international

scientific meetings (17). They are also involved in grant reviewing activity for national and international funding agencies (63) and in reviewing scientific papers (358) in their area. They have also been involved in scientific advisory boards, as editors for scientific journals and as members of PhD juries.

A structured set-up has recently been established for post-doctoral researchers, involving the provision of information on IBPC, career development plans and a retreat for post-docs.

The unit encourages staff to apply for promotions and helps with their preparation for promotion. This is evident by the number of promotions that have taken place during the reporting period, with applicants being promoted to DR1, DR2, CRHC and MCHC. In addition, six ITs were also promoted - 3 to "de corps" and 3 to "de grade"-.

The unit has been successful in obtaining a total of 16 ANR grants (12 as PIs) during the reporting period. Teams 1 to 6 coordinated, as team leader or team member, e.g. the ANR grants ABC-F\_AB (267 k€), ARNr-QC grant (316 k€) UnifyRNA (250 k€), IB-mRND (213 k€), TrmTases (232 k€) and NMR-Vitamin (261 k€), respectively. Furthermore, Team 3 obtained one ERC consolidator grant (1.268 M€). All teams obtained ANR and/or ERC funding, supporting 14 post-docs, 6 PhD students and 3 engineers. The Labex DYNAMO and FP-DYNAMO-Paris projects have provided funding for 7 post-docs, 5 PhD students and 1 engineer. In addition, 7 university PhD contracts were obtained during the period. Total grant capture by the unit from external sources averages around 692 k€ annually, representing 81% of EGM's total budget.

EGM is well equipped with standard laboratory equipment and new capillary electrophoresis equipment has recently been acquired. EGM researchers have access to 5 platforms within IBPC (bioinformatics, visualization wall, crystallography, NMR, and mass-spectrometry), allowing researchers to conduct structural studies, crystallographic assays. Image analysis equipment is shared with IBPC researchers.

Cryo-EM analysis is performed in collaboration with Cambridge and Bordeaux, but the unit hopes to perform these studies in future through collaboration with researchers at Institut Pasteur. Two PAR (at 50% of their time) perform protein purification and proteomics for the unit.

### Weaknesses and risks linked to the context for the four references above

No formal support for staff set-up exists within the unit. Responsibility for this belongs to the recruiting team. This is not optimal.

There is a lack of official support for PhD students, with respect to their career development.

There is an over reliance on ANR and European co-funding, compared to other EU funding sources (e.g. Horizon Europe, particularly the Marie-Sklodowska-Curie actions, targeting post-doctoral fellowships and doctoral networks).

The unit has experienced some difficulties in attracting and recruiting new teams and researchers.

## EVALUATION AREA 3: SCIENTIFIC PRODUCTION

### Assessment on the scientific production of the unit

The scientific production of the unit is excellent to outstanding with articles published in high-quality journals (e.g. Mol. Cell, Nucleic Acids Res., Nat. Commun.) and a significant number of key findings in the field of RNA biology and in particular in the field of microbial RNA biology. For example, they described the resolution of the cryoEM structures of RNases M5 and Mini-III, processing the rRNAs of the 50S ribosomal subunit (Mol. Cell 2020). These structures were and still remain the first bacterial rRNA processing complexes ever to be solved. This is also a good example of an inter-team publication, involving Teams 2 and 6.

*1/ The scientific production of the unit meets quality criteria.*

*2/ The unit's scientific production is proportionate to its research potential and properly shared out between its personnel.*

*3/ The scientific production of the unit complies with the principles of research integrity, ethics and open science. It complies with the directives applicable in this field.*

Strengths and possibilities linked to the context for the three references above

EGM has slightly increased its total number of publications for the reporting period with 101 peer-reviewed publications, 9 book chapters and 7 general public articles, with 4 additional papers being deposited in BioRxiv. The quality of the peer reviewed articles is reflected in the fact that around 31% were published in high-quality journals (e.g. Mol. Cell, 2019 for Team 2; Nucleic Acids Res. 2022 for Team 3; Nat. Commun., 2019 for Team 6) in the field of RNA biology and in particular in the field of microbial RNA biology.

Beyond the number of publications, the unit has disseminated a number of key findings to the scientific community in their field. For example, in *B. subtilis* they have reported on new enzymes in translation dependent mRNA decay and rRNA maturation, on a new sponge RNA that controls sRNA involved in regulating NAD<sup>+</sup>/NADH ratios in cells and on how ribonucleases are involved in the control of ribosome assembly. In *E. coli* they have reported on regulatory RNAs that are involved with transcription factors in controlling complex gene regulatory networks and have provided new insights on the promotion of translation initiation via stem-loop structures. While in yeast, they have reported on a methyltransferase which also acts as a ribosome assembly factor which may be involved in quality control within this system.

For the reporting period, there was an average of 10.7 publications per researcher/MCU, with all the members of the unit, including researchers, university lecturers, technical staff, PhD students and post-docs having published. 63% of EGM post-docs have published papers, with 57% having at least one-author paper, resulting in an average of 1.6 papers. 84% of PhD students who have graduated have at least one first-author paper, with at least half of these having more than one. There is some evidence of inter-team publications, for example between Teams 2 and 6.

There are policies to ensure the integrity and traceability of the scientific work, involving laboratory notebooks and backing up of large volumes of data sets. Anti-plagiarism software is used on all PhD theses. The small size of the teams (6-10 people) provides less opportunities for unethical behavior. Publications from the unit are read by all signatories and are occasionally also read by other staff members. All publications are published as Open Access, either directly or as prepublications on the Open Access French HAL website. EMG researchers are actively discouraged in publishing in predatory journals by the unit's director.

Weaknesses and risks linked to the context for the three references above

None identified.

## EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

### Assessment on the inclusion of the unit's research in society

The unit's contribution to society is overall very good. Their main contribution is focused on producing basic knowledge. Fundamental science such as that being undertaken by the unit may in the longer term lead to significant advances to society. Evaluating such societal impact in the shorter term is often difficult.

- 1/ The unit stands out for the quality and the amount of its interactions with the non-academic world.*
- 2/ The unit develops products for the cultural, economic and social world.*
- 3/ The unit shares its knowledge with the general public and takes part in debates in society.*

## Strengths and possibilities linked to the context for the three references above

There is clear evidence that the unit has made an effort to disseminate their research activities and the results of their research to the general public. They have produced 8 articles, which have been either published in broad-interest journals or on web-sites. They have also written biographies describing the science that previous colleagues have undertaken and their contributions to this field of research.

The unit's director created a series of 22 infographic panels on the history of IBPC, which is exhibited all year round on the gates of IBPC on rue Pierre et Marie Curie. The director was also involved in the production of two movies to promote IBPC science for the COFUND calls; as well as being involved in an ANR funded project to study the impact of philanthropy on scientific research in France from 1910-1956.

EGM participated in an open day to celebrate the 80th anniversary of the creation of CNRS. They have participated in IBPC presentations and its platforms to visiting US students and to French high-school biology teachers.

The unit has also generated human capital in the form of highly trained researchers who have gained employment in the industrial sector.

## Weaknesses and risks linked to the context for the three references above

Teams within the unit do not participate in many outreach activities, targeting appropriate stakeholder groups.

## ANALYSIS OF THE UNIT'S TRAJECTORY

During the presentations by the team members, they outlined their research plans for the next contract; the committee was convinced that the unit's trajectory is very good and realistically in line with their current activities and core expertise on RNA. In addition, it is in line with the ongoing interactions within the unit and with outside groups, which will be further enhanced by the addition of new teams.

The planned recruitment of a junior researcher and an application for an ERC starting grant fits well the general plan and trajectory. The unit continues to transition from microbial genetics towards novel omics-based approaches focusing on the study of RNA degradation, stability, and translation. They are also expanding their scientific approaches ranging from crystallography, NMR to Cryo-EM.

## RECOMMENDATIONS TO THE UNIT

### Recommendations regarding the Evaluation Area 1: Profile, Resources and Organisation of the Unit

The unit is recommended to ensure the establishment of L2 facilities, to facilitate work on microbial pathogens.

The unit is recommended to reinforce the skills within the unit in the analysis of sequencing data and to secure in the longer term a person with these skills on a fixed-term contract.

The unit is recommended to reinforce the skills within the unit on bioinformatics in general.

### Recommendations regarding the Evaluation Area 2: Attractiveness

The unit is recommended to recruit new teams as soon as possible to maintain their high level of scientific endeavor in the field of RNA.

They are also recommended to maintain their high level of grant acquisition.

The unit is recommended to recruit more lecturers to ensure more visibility with the University.

The unit is recommended to introduce some type of formal training in order to make all researchers aware of their responsibilities to comply with the principles of research integrity.

The unit is recommended to increase its support to PhD students, with respect to their career development, by putting in place formal career development plans for these students.

### Recommendations regarding Evaluation Area 3: Scientific Production

The unit is recommended to maintain its high level of productivity.

### Recommendations regarding Evaluation Area 4: Contribution of Research Activities to Society

Some efforts could be employed in increasing participation of EGM in knowledge sharing with the general public.

The unit should consider broadening their research focus on pathogenic microorganisms thus offering opportunities to generate scientific outputs that could be of commercial interest, which may lead to patenting opportunities and increased interactions with the industrial sector.

## TEAM-BY-TEAM OR THEME ASSESSMENT

**Team 1:** Physiology and regulation of protein synthesis  
 Name of the supervisor: Mr Grégory Boël

### THEMES OF THE TEAM

This team is focused on the identification and the role of key factors that control protein synthesis in *E. coli*, *Synechocystis* and *Streptococcus*, and in particular members of the ABC-F protein family and their impact on bacterial physiology. In addition, they decipher the mechanism of codon usage with the goal to improve protein synthesis, both *in vitro* and *in vivo*.

### CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous committee:

(i) “recommends to continue to focus on basic research and exploring funding opportunities.”

The team is actively seeking for fund each year by applying to ANR and international funding agencies (e.g. NIH).

(ii) “...there needs to be an increase in the number of permanent staff and trainees”.

During the reporting period, the team has recruited a technician and a MCU UP Cité.

(iii) “...encourages the team to explore translational opportunities resulting from its basic research”. The team is focusing on fundamental research and given the small size of the team, they did not try to move yet towards translational research.

### WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	1
Directeurs de recherche et assimilés	0
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>3</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	1
Doctorants	0
<b>Sous-total personnels non permanents en activité</b>	<b>1</b>
<b>Total personnels</b>	<b>4</b>

### EVALUATION

#### Overall assessment of the team

The overall assessment is excellent. The scientific production is excellent as the team has made salient discoveries in their field of research, published in 6 original papers or reviews as first and/or corresponding author (Cells Systems, JBC...). The team attractiveness is excellent to outstanding as it has successfully secured grants to fund its research (two ANR grants plus the “Chaire” from the Labex DYNAMO), attracted two permanent staff members and the PI has been a world-leading researcher in addressing the *in vivo* functions and the molecular mechanisms of several ABC-F proteins.

## Strengths and possibilities linked to the context

This newly established team focuses its work on a special class of ABC proteins, the ABC (ATP-Binding Cassette)-F family, whose functions have remained elusive for many years. The PI played a key role in the ground-breaking discoveries revealing that members of ABC-F interact with ribosomes and control protein synthesis. They also show the importance of the codon usage at the start of translation.

The team works in particular on the EttA protein and they notably identified 8 genes whose translation stalling event, which occurs in the early steps during peptide elongation, is rescued by EttA. They also studied the paralogs of EttA in *E. coli* (YbiT, YheS and UuP) and showed that they all bind near the Peptidyl Transferase Center in different ways thereby stabilizing different ribosome conformations. Two genes of the ABC-F family are also present in *Synechocystis*. The functioning of the MsrD ABC-F protein from *Streptococcus pneumoniae* has also been studied and it can presumably control its own expression through the formation of a retroinhibition feedback loop. Regarding the role of codons on the expression of proteins in *E. coli*, the team has identified a "Translation Booster Tag" consisting of the 7 first codon of a protein highly expressed in *E. coli* and that boosted the expression of a fluorescent reporter protein.

During the reporting period, the team has published 6 original papers or reviews as first and/or corresponding author (indicated by \*) in *Cells Systems* (2017\*), *JBC* (2018), *Microb. Biotechnol.* (2 in 2019\*), *Res. Microbiol.* (2019\*), *FEBS Lett.* (2021\*) and one editorial comment for a special issue (*Res. Microbiol.*, 2019) plus one report in an open access journal. Although beyond the reporting period, a paper that was in bioRxiv is now published in *Nat. Commun.* (2023), the PI being the last and corresponding author. During the visit of the committee, additional results of major significance were presented by the PI (e.g. the presence of acidic residues near the N-terminus of protein whose expression is under the control of EttA), and they have been submitted for publication, or should be submitted soon.

Team members gave 5 oral presentations in national (2) or international (3) meetings, including 1 in Cold Spring Harbor and 2 in FEBS meetings. The PI gave 5 invited seminars, he got his HDR in 2022 and participated to 3 PhD juries.

The team recruited one MCU and one technician and they also hired 4 post-docs (one is still ongoing) and two PhD students defended their thesis.

The team has an ongoing collaboration with Columbia University (USA), Université de Bordeaux, and with the Williams College (USA). The PI obtained two ANR grants as coordinator plus one "Chaire" Labex DYNAMO (415 k€) and one fellowship from the Labex DYNAMO for a post-doc.

Three team members participate in teaching, especially the MCU, but also 1 PhD student who had teaching assignment (ex "monitorat").

There is some involvement of the team to science outreach ('Science Pizza à l'ICM Paris' and at the '80 years of the CNRS at the IBPC') which is proportional to the team size. The PI wrote a publication to popularize the antibiotic resistance problem (2018).

## Weaknesses and risks linked to the context

One risk is that the grants will stop soon (Chaire Labex ends in 2023 and the ANR grant ABC-F in mid-year 2024). The MCU is heavily involved in teaching duties.

## Analysis of the team's trajectory

The team will pursue its investigation on the physiological roles of members of the ABC-F family of translation factors in *E. coli* and *Synechocystis*, in addition to studying ways to optimize translation for protein overexpression and production. The MCU is trying to obtain a JCJC ANR grant and the PI an ANR PRCI grant with the USA.

## RECOMMENDATIONS TO THE TEAM

The results obtained by the team are quite original and team members should maintain the same level of excellence at the forefront of the research in the field of ABC-F proteins. The committee encourages the team to publish its most-advanced work in high-profile journals in a timely fashion; this should help them to increase their chance of success in future grant applications.

**Team 2:** RNA maturation and degradation  
 Name of the supervisor: Mr Ciarán Condon

## THEMES OF THE TEAM

The main goal of the team is to identify all the major players involved in *Bacillus subtilis* mRNA degradation and stable RNA (ribosomal and transfer RNA) maturation. They are also characterizing enzymes involved in RNA maturation in yeast.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous recommendations were the following:

1) "Maintain the high quality of research and explore new source of funding".

Despite an unsuccessful application for an ERC senior grant by the PI, the team maintains an excellent quality of research and obtained 4 ANR grants, funding for two PhD students and one DYNAMO COFUND post-doc.

2) "Transfer some supervision tasks to other senior researchers in the team while the PI is taken the direction of the lab".

Two researchers (MCU and CRCN CNRS) other than the unit's head are actively involved in the running of the team, the supervising of students and applications for ANR funding.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	1
Directeurs de recherche et assimilés	1
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	2
<b>Sous-total personnels permanents en activité</b>	<b>5</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	1
Doctorants	2
<b>Sous-total personnels non permanents en activité</b>	<b>3</b>
<b>Total personnels</b>	<b>8</b>

## EVALUATION

### Overall assessment of the team

The overall assessment of this team led by the unit's director is excellent to outstanding. The scientific production of the team is excellent with 21 research articles including 11 published in high-profile journals (e.g. Mol. Cell, eLife, EMBO J., NAR, Science Adv.) and 14 published in leader positions. Their attractiveness is outstanding with a strong international recognition and visibility in the field of RNA degradation and maturation in bacteria, a total of 4 ANR grants (2 as coordinator) and the recruitment of 4 post-docs, 4 PhD students and 5 master 2 students. Their contribution to society is excellent with several general public articles and the participation of researchers to several events promoting science to the general public.



## Strengths and possibilities linked to the context

The permanent researchers of the team have published a solid body of articles (21 research articles, 50% in journal with a broad impact) with an impressive contribution of the PI (19 as first/corresponding author), and an excellent contribution of the two researchers (MCU, 10 articles with 3 as first/corresponding author and CRCN, 12 articles with 3 as first/corresponding author). In addition, all PhD and post-docs have published (10 articles) or have an article in preparation or submitted (3).

The team is at the forefront of bacterial RNA research, including the identification and characterization of new *B. subtilis* RNases including the 16S 3' processing enzyme, the 3'-5' sporulation exoribonuclease KapD and the RNA deprotection activity called BsRppH2, the study of a quality control link between tRNA processing and 16S 3' maturation and, in collaboration with Team 6, the resolution of the structures of the 23S and 5S rRNA processing enzymes, RNase M5 and Mini-III, respectively. Over the reporting period, this team is also at the origin of the discovery of new ways of regulating RNase activity by sRNAs. For this later point, they used the pulsed-SILAC to study bacterial sRNA regulation for the first time.

The PI is recognized as an international expert in the field of RNases (as a strong indicator of this recognition, the PI reviewed 114 papers over the reporting period. *He was awarded the Louis Pasteur Medal in 2021*. He is leading a team strongly recognized at the national level.

They have an excellent success rate in obtaining ANR funding (4 ANR grants, 2 as coordinator) for a total of 900 k€. The PI was involved as a co-author for the renewal of the Labex DYNAMO (980 k€) for the period 2019-2024 and is the coordinator of one of the themes in this program. The PI was also involved in the DYNAMO COFUND project to fund several post-docs (262 k€).

Despite a relatively small size of the team in terms of PhD students (2) and post-docs (2), the workforce is excellent, well balanced with four permanent researchers and one technician.

They take advantage of their excellent expertise in RNA degradation both in bacteria and yeast to create new opportunities through collaboration within the unit (in particular with Team 6), also at the national (for instance IBMC, University of Strasbourg, University of Toulouse, University of Orléans, University of Paris) and international level (University of Cambridge, Prague and Umeå) leading to several publications in high-impact journals.

## Weaknesses and risks linked to the context

Despite a strong recognition at the international level for the PI and for his strong expertise in the field of RNA maturation, he has not managed yet to obtain a major European grant (i.e. ERC advanced grant) that would certainly have helped to reinforce the attractiveness of the team and compensate the lack of possible funding coming via the Labex DYNAMO or COFUND program that will end in 2024 and 2026, respectively.

The fundamental nature of the research carried out in the team is limiting its interaction with industrial companies and its impact on society on the short term. Their focus is on the generation of knowledge and is not always/often exploitable in terms of patents.

## Analysis of the team's trajectory

The team will pursue its research initiated during the previous contract on several ribonucleases (Rae1, KapD) or new activities involved in RNA metabolism. Of note, one particularly exciting project will be to explore the impact of post-translational modifications on RNase activity. For all these projects, they already have strong preliminary data and they have secured two ANR grants (BASRae1 and BSpRNase). With the recent arrival of a DR2 CNRS in the team, they will revive a previous interest in yeast RNA metabolism, and more particularly in studying the role of methylation in ribosome biogenesis. A post-doc funded by the European COFUND FP-DYNAMO-Paris programme has been recently recruited to work on this project. The knowledge accumulated by the team on RNA degradation and maturation since its foundation 20 years ago is really solid and there is no doubt that they will continue to successfully pursue their research in this area. Exploring a completely new area in this field (modification of RNases) will certainly bring new insights on how RNA degradation is regulated in bacteria.

## RECOMMENDATIONS TO THE TEAM

The team is encouraged to maintain its research at the same level of excellence, and for that, the committee encourages the PI to explore novel opportunities of ANR or European funding (e.g. Chair of excellence in Biology and Health).

The PI should take advantage of his strong recognition in the RNA field in France to promote a French RNA network to apply for any new future national calls.

The committee encourages the team to exploit their discoveries whenever possible, with a view to applying them in the fight against antibiotic resistance or in the development of new biotechnology tools.

**Team 3:** RNA control of gene expression  
 Name of the supervisors: Ms Maude Guillier & Ms Eliane Hajnsdorf

## THEMES OF THE TEAM

The research objectives of the team, supervised by two co-PIs (DR1 and DR2 CNRS), are mainly dedicated to the study of the role of non-coding RNAs and RNA processing in the control of gene expression in *Escherichia coli*, as well as to the study of non-canonical modes of translation initiation in bacteria.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous recommendations were the following:

1) "to increase its engagement with the international community through the attendance of meetings abroad and keep publishing in the best journals".

They gave 13 oral presentations and presented 21 posters at international meetings. They also published 24 articles with a broad impact.

2) "to promote one PI or to have a shared team leadership".

The DR2 CNRS was immediately promoted to co-leader of the team. She will become the sole PI upon the retirement of the DR1 CNRS for the next mandate.

3) "This team has opened up an exciting avenue of research in the field of regulation of translation initiation in bacteria".

Although they published through 6 national and 2 international collaborations, they have not managed yet to publish on this promising topic.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	1
Directeurs de recherche et assimilés	2
Chargés de recherche et assimilés	0
Personnels d'appui à la recherche	1
<b>Sous-total personnels permanents en activité</b>	<b>4</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	1
Doctorants	2
<b>Sous-total personnels non permanents en activité</b>	<b>3</b>
<b>Total personnels</b>	<b>7</b>

## EVALUATION

### Overall assessment of the team

The overall assessment is excellent. The scientific production of the team is excellent with 3 major contributions (first/corresponding author position) in high-profile journals, in the field of post-transcriptional regulation of gene expression by small RNA (Mol. Cell, NAR) and polyadenylation in *E. coli* (NAR). Their attractiveness is excellent with 2 ANR and 1 ERC consolidator grants, the recruitment of 4 post-docs, 4 PhD students and 5 master students. Given the fundamental nature of their research, their contribution to society is very good. They had a successful collaboration to apply their research on pathogenic bacteria. They have also made some efforts to share their knowledge with general public.

## Strengths and possibilities linked to the context

One of the co-PIs of the team (DR1 CNRS) is recognized as a leading expert in the field of polyadenylation and RNA degradation in bacteria. During the reporting period, they used global transcriptomic approaches to reveal, for instance, that polyadenylation is an important process to promote the degradation of highly folded RNA in *E. coli*. The second PI (DR2 CNRS) is recognized for several major contributions in the study of regulatory RNAs. She revealed the importance of the interplay between sRNAs and two-component systems (TCS) in bacterial physiology. During the mechanistic studies of these sRNAs, she also discovered an unexpected role of mRNA stem-loops in promoting the activation of translation initiation.

The team recently adapted large scale approaches to analyse translation initiation complexes in bacteria.

The team has published 24 papers, including 12 research articles, 7 reviews and 3 methodological papers.

The strong reputation and expertise of the team have been recognized via an ERC consolidator grant (BactRNA, 1.2 M€, 2019-2025) attributed to one of the co-PIs (DR2 CNRS). With their grants, they managed to recruit 4 post-docs, 1 engineer and 4 PhD students to maintain the workforce of the team despite the retirement of two researchers.

The team's projects are perfectly integrated within the unit's overall project. They greatly benefit from the expertise of the other teams, particularly teams 1 and 2.

They have established successful collaborations to work on pathogenic bacteria such as *Clostridioides difficile* to characterize the Hfq-interactome by transcriptomic approaches (RIP-seq) (collaboration with I2BC institute, Gif-sur-Yvette, France) and pathogenic *E. coli* associated with Crohn's disease (collaboration with Collège de France, Paris) to characterize the impact of two sRNAs on virulence.

## Weaknesses and risks linked to the context

The team has been heavily impacted by the departure of several members, including a CNRS AI in 2020 and two CRHC researchers in 2019 and 2020. This departure has been partially compensated by a 50% CNRS AI and the possibility to hire excellent PhD students and post-docs, but the team has also seen the retirement of the team's co-PI (DR1 CNRS) in October 2023. This departure will be partly compensated by the arrival of an emeritus researcher (DRCE, emeritus until 2026).

The team's very fundamental research projects may limit the sources of funding available to it.

## Analysis of the team's trajectory

As the team had to face the departure of several permanent members (3 researchers and one AI), they will focus on a smaller number of promising projects initiated during the 2017-2023 period. First, they will continue to characterize the interplay between sRNAs and two-component systems on a global scale. They will also perform a transcriptome-wide analysis of ribosome-mRNA interactions via a powerful method that will certainly be crucial to understand the key steps in translation initiation in bacteria. The development of new tools will surely be a real asset for the team in the future. The acquisition of this new expertise should foster new collaborations and open new funding opportunities. However, this project would certainly benefit from the recruitment of a full-time researcher already present as post-doc in the team and who has recently applied to an ERC starting grant.

## RECOMMENDATIONS TO THE TEAM

The relatively small size of the team as well as the various arrivals/departures may create some lack of continuity in the research projects. Therefore, to maintain the competitiveness of this team, it will be very important to secure one permanent researcher position to help the PI and the team to complete their promising projects.

The recruitment of a bioinformatic engineer would be a plus to make the most of the analysis regarding the results of the several omics projects being carried out by the team.

The committee also encourages the researchers to continue to apply for highly competitive funding (e.g. ERC) to help them to maintain their workforce.

**Team 4:** Transcriptional and post-transcriptional controls of gene expression  
 Name of the supervisor: Mr Harald Putzer

## THEMES OF THE TEAM

The team is interested in the transcriptional (initiation and elongation) and post-transcriptional (translation and RNA degradation) controls of gene expression. The various projects, carried out in *E. coli* (Gram-) and *B. subtilis* (Gram+), are divided into 2 major areas of research:

Theme 1, led by the team leader, aims to study the control of biosynthesis of the translational apparatus and the role of mRNA stability/maturation in gene expression. A focus is given on the structure/function of key ribonucleases in the control of protein biosynthesis. Theme 2, led by another PI, studies the use of amino sugars by *E. coli* and *B. subtilis* and, more precisely, the regulation of carbohydrate transport by the phosphotransferase (PTS) regulatory system.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Previous recommendations were the following:

1) *"The team should aim at publishing in journals with a broader focus."*

This recommendation has been followed by the team, resulting in notable achievements during the reporting period. Specifically, the team has generated a total of 14 publications, including three in the MBio journal and one in the NAR journal, both widely recognized and extensively read.

2) *"Since the team has not recruited a permanent researcher during the evaluation period, efforts should be made. The size of the team should increase to become more competitive at the international level."*

This recommendation was not followed given the fact that the PI will retire soon and this team will not be maintained in the next contract.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	0
Directeurs de recherche et assimilés	2
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	0
<b>Sous-total personnels permanents en activité</b>	<b>3</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	0
Doctorants	0
<b>Sous-total personnels non permanents en activité</b>	<b>0</b>
<b>Total personnels</b>	<b>3</b>

## EVALUATION

### Overall assessment of the team

The overall assessment is very good. The team holds significant international prominence and expertise in post-transcriptional gene regulation, contributing significantly to fundamental inquiries, particularly in the area of microbial RNA metabolism and motility. The team maintained a productive output with the publication of 14 research articles and received sufficient financial support from ANR. However, with the anticipated retirement of the group leader in 2025, the team has naturally downsized, leading to limitations in initiating new projects.

Consequently, the team has focused in the last few years on completing ongoing projects. The committee emphasizes the high quality of the work undertaken during the period, which both reflects and will conclude the excellent career of the team leader.

## Strengths and possibilities linked to the context

The team has fostered various partnerships to implement advanced imaging techniques like TIRF and more classical fluorescence microscopy, which significantly bolster the progress of their projects. These collaborations encompass a partnership with the "Collège de France" to elucidate the 3D structure of RNase Y. Additionally, there are two collaborations with research teams from the University of Grenoble Alpes, focusing on the study of the evolution of *E. coli* through the strains involved in the Lenski long-term evolution experiment.

The scientific output has been excellent, with a total of 14 publications, several of which appear in high-impact journals such as NAR (1), mBio (3), Mol. Microbiol. (1), JMB (1), among others. Moreover, of these 14 publications, 9 bear the signature of different members of the team, as first, last or corresponding author.

Over the reporting period, the team has demonstrated a notable level of visibility. The team leader was invited to deliver two seminars at international universities, and team members actively participated in six international scientific conferences, presenting either oral communications or posters. During this period, the team has secured funding for its research efforts, receiving a grant from ANR (21 k€, 2016-2022) led by the team leader and obtaining a 24-month post-doctoral contract from Labex DYNAMO, enabling it to attract 1 post-doc. The team played a role in fostering academic growth by contributing to the training of two PhD students who have published between 2 and 4 articles.

## Weaknesses and risks linked to the context

The imminent retirement of the team leader, coupled with the absence of a successor, has resulted in a reduction in the team, notably with the departure of two engineers.

The downsizing has led to limited resources for launching new projects, which, in turn, contributed to the team's relatively low acquisition of funding during the reporting period. In addition, this downsizing has led to a reduction in the team's involvement in teaching activities.

Although the two PhD students have successfully published their research work, it is worth noting that they have not yet co-authored any publications with the team leader, who serves as their co-supervisor.

## Analysis of the team's trajectory

There is no analysis of the trajectory due to retirement in 2025. Until the closure of the team, the focus will be on completing ongoing projects, particularly those related to the self-control mechanism of RNase Y and the impact of its membrane localization on RNA metabolism. The research activities will involve a comprehensive examination of RNA metabolism in different strains, including those expressing a cytoplasmic form of RNase Y and various mutants with deletions of the intrinsically disordered N-terminal domain. Although RNAseq analysis revealed significant transcriptome alterations in the mutant strains, further validation with complementary data, such as Northern blot analysis and half-life measurements, is required to establish their significance.

## RECOMMENDATIONS TO THE TEAM

With the impending retirement of the team leader in 2025, it is recommended that the team completes as much ongoing work as possible.

**Team 5:** RNA helicases: structure, function and properties

Name of the supervisor: Mr N. Kyle Tanner

## THEMES OF THE TEAM

The team focuses its research on two main and distinct topics: the roles and mechanisms of DEAD-box RNA helicases and ribosome biogenesis, through the study of methyltransferases. They mainly use yeast and bacteria but also the parasite *Leishmania infantum* as model systems.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous recommendations were the following:

1) *"The team should increase its international visibility through participation in conferences and workshops dedicated to helicases".*

Towards this aim they participated in several international meetings, giving 10 oral presentations and presenting 8 posters. They also reinforced their collaborative network with Tunisia through an "UTIQUE partenariat".

2) *"The team is encouraged to reinforce the interaction between the senior scientists".*

This was partially achieved thanks to a new project relying on Dhr1 and Bud23.

3) *"...The team is encouraged to extend the panel of biophysical methods they use by taking advantage of the recent arrival of the Tisné team."*

This was not followed as the team preferred to continue its fruitful collaborations, notably with biophysicists outside the unit.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	0
Directeurs de recherche et assimilés	2
Chargés de recherche et assimilés	0
Personnels d'appui à la recherche	0
<b>Sous-total personnels permanents en activité</b>	<b>2</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	0
Doctorants	0
<b>Sous-total personnels non permanents en activité</b>	<b>0</b>
<b>Total personnels</b>	<b>2</b>

## EVALUATION

### Overall assessment of the team

The overall assessment is very good for the period to excellent regarding the career of the PI. The scientific production of the team is very good, having published in leading journals in the RNA field, such as RNA and NAR. The attractiveness of the team is excellent, relying on a solid collaborative network and the successful recruitment of PhD students. The fundamental nature of the research performed by the team together with its overall size, limits the possibility that the outputs are likely to have a direct impact on society.

## Strengths and possibilities linked to the context

The team's work is based on a strong and long-standing expertise in RNA helicases biochemistry. The application of the team's expertise to the study of leishmaniasis is original and a very good example of the application of basic science to a major medical problem. It relies on a strong partnership with Pasteur Institute Tunis (Partenariat Hubert Curien UTIQUE). Technical development of a modified PAR-CLIP methodology in near-physiological conditions is particularly original and powerful. Ribosome biogenesis is a very good added value to the team. The team has produced 8 research articles, notably in leading journals in the RNA field, including *Nucleic Acids Res.* (3) and *RNA* (1). The work of all the team members is fairly recognized through their authorship, in the order of their contributions (5 (co)-first, 5 last or (co)-last and 5 (co)-corresponding authors). The team is well aware of the need to make their work available through open access, which is respected whenever possible.

The team has an excellent network of collaborators. It is participating to other academic activities, including PhD juries (11), papers refereed (20), review of grants (5).

The new arrivals in the team seem to be particularly well trained to perform correct experimental manipulations and appropriate record keeping. 5 PhD students were recruited, including 4 with a co-direction, and all of them defended their thesis. In the same period, 1 post-doc (3-year duration) and 2 Master 2 students joined the team.

## Weaknesses and risks linked to the context

The number of projects (seven) is pretty high for a limited number of people. The strategy to prioritize these projects is unclear. Recent ANR proposals have been unsuccessful, often at the pre-evaluation level. The team has no explanation that could help improve this recent lower success rate. This highly impacts the activity of the team.

The team has suffered from many administrative delays to set up their collaboration with Tunisia on leishmaniasis.

The team does not have a strong involvement in teaching activities (except laboratory training) or events for the general public.

## Analysis of the team's trajectory

There is no analysis of the trajectory due to the team's closure.

## RECOMMENDATIONS TO THE TEAM

There are no recommendations due to the team's closure.



**Team 6:** Biogenesis, architecture and interactions of RNAs  
 Name of the supervisor: Ms Carine Tisné

## THEMES OF THE TEAM

The team performs structure-function studies of RNA and RNA-protein complexes using combination of structural methods (NMR, crystallography, cryoEM) in the context of RNA-mediated regulation, RNA modifications and RNA processing.

## CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous recommendations were the following:

1) *"The team has very good track records of high-level publications and is encouraged to keep this momentum, taking advantage of the new synergies and opportunities within IBPC."*

The team has maintained and even improved upon their track records.

2) *"The team has to secure a number of PhD students with a background in biophysics to address the research questions."*

The team has improved the number of PhD and M2 students during the reporting period.

3) *"...specific care is recommended to keep the load balance between the three projects. Efforts should be made early enough to secure the long-term running costs of the NMR equipment."*

A PhD student was recruited to set up the in-cell NMR observation with the technical support of a permanent staff, without impacting the two other projects. The team was involved in a successful effort to finance the recycling of helium through funding from UP Cité.

## WORKFORCE OF THE TEAM: in physical persons at 31/12/2022

Catégories de personnel	Effectifs
Professeurs et assimilés	0
Maîtres de conférences et assimilés	0
Directeurs de recherche et assimilés	1
Chargés de recherche et assimilés	1
Personnels d'appui à la recherche	2
<b>Sous-total personnels permanents en activité</b>	<b>4</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	0
Personnels d'appui non permanents	0
Post-doctorants	1
Doctorants	3
<b>Sous-total personnels non permanents en activité</b>	<b>4</b>
<b>Total personnels</b>	<b>8</b>

## EVALUATION

### Overall assessment of the team

The overall assessment is outstanding. The scientific production and the attractiveness of the team are outstanding with publications in Nat. Commun., Mol. Cell, NAR, and a high fundraising capacity. The team works on monitoring nucleotide chemical modifications in tRNA using NMR spectroscopy. It has made significant contributions to the field of RNA biology and has a strong scientific reputation, as evidenced by a new method to synthesize RNA-conjugates to study SAM-dependent m<sup>6</sup>A RNA methyltransferases. The fundamental nature of the research performed by the team limits the possibility that the outputs are likely to have a direct impact on society. But it is important to note the high level of involvement of the PI in management and expertise duties.

## Strengths and possibilities linked to the context

The team has a strong track record of producing high-quality research in the field of RNA biology (32 publications over the reporting period with 18 as first, last or corresponding author in journals with broader audience like Nature Communications, Molecular Cell and journals of general interest like Nucleic Acid Research or Biochimie. This demonstrates the team's expertise in NMR spectroscopy and in CryoEM and their overall contribution to the scientific community. All non-permanent members of the team have published at least one first-author article to an increased understanding of the structural biology of RNA-protein complexes involved in RNA maturation. They are in particular focused on understanding how RNA modification and processing influence RNA maturation and in doing so subsequently impact RNA functions.

The team leader is deputy director of IBPC and manages the IBPC platforms.

The team members have established strong national and international scientific reputations through their involvement in various academic and evaluation committees (e.g. member of the CoNRS section 20), collaborations, and invitations to international seminars (University of Cambridge). This reputation can attract talented researchers and foster collaborations (Cambridge, Brussels, and Frankfurt).

The team has secured several research grants (5 ANR grants with 3 as coordinator) and fellowships (PSL Q-life convergence institute).

The access to advanced equipment and technological resources (NMR platform, crystallography, cryoEM, bioinformatics), partly funded by the team, enhances its research capabilities.

## Weaknesses and risks linked to the context

None identified.

## Analysis of the team's trajectory

Since joining the unit in 2016, the team has undergone a transformative trajectory marked by substantial growth (arrival of an AI) and achievements. Team members have assumed leadership positions within the institute, with the team leader becoming the deputy director of the IBPC and another member serving as the scientific manager of the NMR platform. The team's expertise has expanded through the addition of the AI position, enhancing their capacity to undertake more ambitious projects in genetics and molecular biology. This growth in technical capabilities has facilitated the pursuit of complex research endeavours. The team has gained recognition through national and international collaborations and organizing international meetings (Grenoble and Paris). Their expertise is now sought after for evaluating international consortia, grant proposals, and research papers, indicating a rising influence in the field (e.g. member of three SAB, evaluation committees). The team's commitment to knowledge dissemination is evident in their strong publication track record. Looking ahead, the team is poised for continued success, guided by technical advances in NMR and cryoEM analysis, with a focus on elucidating the intricate processes of RNA biology, including tRNA modifications, chemical alterations, splicing events, and ribosomal RNA maturation. This collective trajectory positions the team for significant contributions to the field in the future.

## RECOMMENDATIONS TO THE TEAM

Given the risk associated with dependence on specific grants, the team should explore and apply for a wider range of funding opportunities, especially at the international level (like ERC or Horizon Europe).

The team conducts five ambitious projects aiming to better understand the relationships between RNA maturation and RNA function. While the team seems to have the capacity to lead all these projects, it should assess whether there are too many projects to maintain both quality and competitiveness, especially with respect to its size. It may be beneficial to prioritize projects that align most closely with the team's long-term vision and expertise.

Even though he is on the right track, the CRCN should strengthen his autonomy and sign more last-authored publications.

## CONDUCT OF THE INTERVIEWS

### Dates

**Start:** 09 November 2023 at 08:30

**End:** 10 November 2023 at 18:00

**Interview conducted: on-site**

### INTERVIEW SCHEDULE

#### Day 1 of the interview 09/11/2023

<b>8:45-9:15</b>	<b>Hcéres committee meeting</b> <i>Closed-door meeting</i>
<b>9:15-9:20</b>	<b>Hcéres rules and procedures by M. Mercier-Bonin</b> <i>Public session (all unit members)</i>
<b>9:20-10:10</b>	<b>Scientific and administrative presentation of the unit</b> 30 min presentation (including unit's trajectory) + 20 min discussion C. Condon <i>Public session (all unit members)</i>
<b>10:10-10:40</b>	<b>Coffee break</b>
(10:40-12:50)	<b>Scientific presentations by team leaders 1/2</b> 30 min presentation (including team's trajectory) + 10 min discussion <i>Public session (all unit members)</i>
<b>10:40-11:20</b>	<b>Team 1</b> (Grégory Boël)
<b>11:25-12:05</b>	<b>Team 2</b> (Ciarán Condon)
<b>12:10-12:50</b>	<b>Team 3</b> (Maude Guillier & Eliane Hajnsdorf)
<b>12:55-14:00</b>	<b>Lunch break &amp; committee debriefing</b> <i>Closed-door meeting</i>
<b>14:00-14:15</b>	<b>Meeting with staff</b> (if needed)
(14:15-16:05)	<b>Scientific presentations by team leaders 2/2</b> 30 min presentation (including team's trajectory) + 10 min discussion <i>(note: for Teams PUTZER #4 and TANNER #5, no trajectory presentation so 20 min presentation + 10 min discussion)</i> <i>Public session (all unit members)</i>
<b>14:15-14:45</b>	<b>Team 4</b> (Harald Putzer)
<b>14:50-15:20</b>	<b>Team 5</b> (N. Kyle Tanner)
<b>15:25-16:05</b>	<b>Team 6</b> (Carine Tisné)
<b>16:05-16:25</b>	<b>Committee debriefing</b> <i>Closed-door meeting</i>
<b>16:25-16:45</b>	<b>Coffee break</b>

**Committee splitting in three sub-groups for collective meetings with staff**

<b>16:45-17:30</b>	<b>Meeting with ITAs (in French)</b> <i>In the absence of any managing staff (director, team leaders)</i>
<b>16:45-17:30</b>	<b>Meeting with researchers</b> <i>In the absence of any managing staff (director, team leaders)</i>
<b>16:45-17:30</b>	<b>Meeting with post-docs and students</b> <i>In the absence of any managing staff (director, team leaders)</i>
<b>17:30-18:00</b>	<b>Committee debriefing</b> <i>Closed-door meeting</i>
<b>18:00</b>	<b>End of the first day</b>

**Day 2 of the interview 10/11/2023**

<b>8:30-9:00</b>	<b>Committee debriefing</b> <i>Closed-door meeting</i>
<b>9:00-09:50</b>	<b>Meeting with institution representatives: Université Paris Cité &amp; CNRS</b> <i>Closed-door meeting</i>
<b>9:50-10:10</b>	<b>Committee debriefing</b> <i>Closed-door meeting</i>
<b>10:10-11:00</b>	<b>Meeting with the Director of the unit</b> <i>Closed-door meeting</i>
<b>11:00-12:00</b>	<b>Committee debriefing &amp; Redaction of the final report 1/2</b> <i>Closed-door meeting</i>
<b>12:00-13:00</b>	<b>Lunch Break</b>
<b>13:00-16:00</b>	<b>Redaction of the final report 2/2</b> <i>Closed-door meeting</i>
<b>16:00</b>	<b>End of the interview</b>

## GENERAL OBSERVATIONS OF THE SUPERVISORS

Le Président

Paris, le 5 février 2024

**Objet : Rapport d'évaluation de l'unité DER-PUR250024221 - EGM - Expression génétique microbienne**

Madame, Monsieur

L'Université Paris Cité (UPCité) a pris connaissance du rapport d'évaluation de l'Unité de Recherche **DER-PUR250024221 - EGM - Expression génétique microbienne**

Ce rapport a été lu avec attention par la direction de l'unité (cf annexe 2 du courrier du Doyen de la Faculté des Sciences), la vice-doyenne recherche et le doyen de la Faculté des Sciences d'UPCité (dont vous trouverez ci-joint le courrier à votre intention), par la vice-présidente recherche d'UPCité et par moi-même.

**Présidence**

**Référence**

Pr/DGDRIVE/2023

**Affaire suivie par**

Christine Debydeal -  
DGDRIVE

**Adresse**

85 boulevard St-Germain  
75006 - Paris

J'adresse mes remerciements au comité HCERES pour la qualité du rapport d'évaluation et vous indique ne pas avoir d'observations de portée générale à apporter.

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

[www.u-paris.fr](http://www.u-paris.fr)

Édouard Kaminski



Référence  
MC/NE/EB/2024-002

**Faculté des Sciences**  
**Université Paris Cité**  
5 rue Thomas Mann  
75013 Paris

Objet : Dossier DER-PUR250024221- Évaluation HCERES de l'UMR 8261 EGM - Retour Tutelle Université Paris Cité

Chères et Chers Collègues,

Nous souhaitons par ce courrier remercier les membres du comité de visite pour le temps qu'ils ont consacré à l'évaluation de l'unité EGM, ainsi que pour leur écoute et le travail considérable qu'ils ont accompli.

La Faculté des Sciences est fière de compter EGM parmi ses unités de recherche et rappelle la grande qualité de la recherche menée par tous les membres du laboratoire.

Après lecture du rapport provisoire d'évaluation de l'UMR 8261 EGM, la Faculté des Sciences ne souhaite ajouter ni remarques générales ni remarques factuelles.

C'est également le cas du CNRS, comme vous le verrez en annexe.

La direction de l'unité souhaite faire des remarques que vous trouverez dans le document PDF amendé de commentaires et intitulé « HCERES\_EGM\_Retour\_Unité ».

En vous priant, chères et chers collègues, d'accepter nos chaleureuses salutations

Maximilien CAZAYOUS  
Doyen  
Faculté des Sciences  
Université Paris Cité



Nathalie EISENBAUM  
Vice-Doyenne recherche Faculté  
des Sciences  
Université Paris Cité



## Annexe 1

### Retour de la tutelle CNRS

Madame, Monsieur,

Je vous remercie de nous avoir transmis de ce pré-rapport et prie de bien vouloir noter que le CNRS n'émettra pas de réponse institutionnelle de type « observations de portée générale ».  
Je reste à votre disposition pour tout complément d'information.

Bien à vous,

—  
Frédéric FRANCOIS-ENDELMONT  
CNRS – DAPP  
Direction d'appui aux partenariats publics





Paris 19/01/24

To whom it may concern,

We are happy with organization and conditions of the HCERES visit on Nov 9-10, 2023 and the conclusions of the report delivered on Jan. 8, 2024. We thank the committee for their diligence.

Sincerely,

A handwritten signature in blue ink that reads 'Ciarán Condon'.

Ciarán Condon

CNRS Director of Research, DR1

Director of UMR8261 (EGM)

The Hcéres' evaluation reports are available online:  
[www.hceres.fr](http://www.hceres.fr)

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