

EVALUATION REPORT OF THE UNIT  
BIOSCAR – Biologie de l'os et du cartilage :  
régulations et ciblage thérapeutique

UNDER THE SUPERVISION OF THE  
FOLLOWING ESTABLISHMENTS AND  
ORGANISMS:

Université Paris Cité,  
Institut national de la santé et de la recherche  
médicale – Inserm

---

**EVALUATION CAMPAIGN 2023-2024**  
GROUP D

Rapport publié le 04/03/2024



In the name of the expert committee<sup>1</sup> :

David Magne, Chairman of the committee

For the Hcéres<sup>2</sup> :

Stéphane Le Bouler, acting president

Pursuant to Articles R. 114-15 and R. 114-10 of the French Research Code, evaluation reports drawn up by 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 David Magne, Institut de Chimie et Biochimie Moléculaires et Supramoléculaires, CNRS et Université Claude Bernard Lyon 1

Ms Beatrice Bouvard, INSERM UMR S 1229, RMeS, Université d'Angers

Mr Jean-Marc Brondello Institute for Regenerative Medicine and Biotherapy, CHU St Eloi, Montpellier

### Experts:

Mr Dominique Heymann, Nantes Université, CNRS, Institut de Cancérologie de L'Ouest, Saint-Herblain.

Ms Barbara Obermayer-Pietsch, Division of Endocrinology and Diabetology, Dept. of Internal Medicine, Medical University of Graz, Austria

Ms Sabrina Pisano Institute for Research on Cancer and Ageing, Nice

## HCÉRES REPRESENTATIVE

Ms Francesca Palladino

## REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Mr Raymond Bazin, IT PMN, Inserm

Mr Matthieu Resche-Rigon, Doyen de la faculté de Santé de l'Université Paris Cité (en vidéo)

Mr. Philippe Ruzniewski, Doyen UFR de Médecine de l'Université Paris Cité

Mme Claire de Marguerye, Déléguée Régionale Inserm Paris Ile-de-France centre Nord, INSERM

## CHARACTERISATION OF THE UNIT

- Name: Biologie de l'Os et du Cartilage : Régulations et Ciblage Thérapeutique
- Acronym: BIOSCAR
- Label and number: U1132
- Composition of the executive team: DU Martine Cohen Solal; DU adjoint Hang-Korng Ea

## SCIENTIFIC PANELS OF THE UNIT

SVE Sciences du vivant et environnement  
SVE6 Physiologie et physiopathologie humaine, vieillissement

## THEMES OF THE UNIT

BIOSCAR is a single-team unit dedicated to advancing translational research on osteoarticular tissues. Their work encompasses basic, preclinical and clinical studies led by researchers from the fields of biology, rheumatology, and orthopedics. During the current contract, BIOSCAR was organized into two axes focused on osteoarticular pathophysiology: 'Bone fragility in osteoporosis and rare bone diseases, bone tumours and metastasis' (axe 1), and 'Joint diseases, notably osteoarthritis and microcrystal-related diseases' (axe 2).

Axe 1 aims to 1) characterize the molecular and genetics features of rare bone diseases, identify clinical risk factors, and study the response to treatments; 2) describe the crosstalk between bone and the immune system, and study its impact on bone loss; 3) investigate the biological mechanisms leading to primary bone tumours, as well as those responsible for bone metastasis development. Axe 2 aims to better understand the impact of cellular energy metabolism in the development of osteoarthritis and microcrystal-induced inflammation.

## HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

Created in 2014 and renewed in 2019, the BIOSCAR unit has a long history of research on osteoarticular pathophysiology. It is located in the Lariboisière hospital in Paris, in the Viggo Petersen building that also hosts the clinical Department of Rheumatology.

## RESEARCH ENVIRONMENT OF THE UNIT

BIOSCAR is strongly involved in local, national and international structures and projects.

At the local level, BIOSCAR is, together with the B3OA unit, a founder of the IMOSAR 'Federative Structure of Research' devoted to bone and joint imaging. It is part of the university-hospital federation (FHU) PROTHEE (Prosthetic joint infections: innovative strategies to overcome a medico-surgical challenge), led by Université Paris Cité (UPC) and Saint-Louis Hospital. BIOSCAR is also actively involved in the Institute of Osteoarticular Diseases (IHM IMOA, « Institut Hors les Murs des Maladies Ostéoarticulaires), which groups all Ile-de France units working on mineralized tissues, as well as STAPS and Epidemiology departments.

At the national level, BIOSCAR rheumatologists and the Rheumatology Department work in a national reference centre for rare bone diseases, with the current director coordinating a national research network of 23 units (Filière OSCAR).

BIOSCAR has integrated two European consortia (the Sybil network, ERN-Bond on bone rare diseases and ITN biomeAqu H2020). It also actively participates in the EUR graduate school of musculoskeletal diseases, demonstrating a deep involvement at the international level in basic research, clinical activities and education.

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

Catégories de personnel	Effectifs
Professeurs et assimilés	10
Maîtres de conférences et assimilés	5
Directeurs de recherche et assimilés	0
Chargés de recherche et assimilés	2
Personnels d'appui à la recherche	13
<b>Sous-total personnels permanents en activité</b>	<b>30</b>
Enseignants-chercheurs et chercheurs non permanents et assimilés	10
Personnels d'appui non permanents	4
Post-doctorants	0
Doctorants	9
<b>Sous-total personnels non permanents en activité</b>	<b>23</b>
<b>Total personnels</b>	<b>53</b>

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

Nom de l'employeur	EC	C	PAR
UNIVERSITÉ PARIS-CITÉ	18	0	4
INSERM	0	2	8
AUTRES	1	0	2
Total personnels	19	2	14

## GLOBAL ASSESSMENT

The BIOSCAR unit has a long history of excellence in the fields of bone and articular cartilage diseases. It is organized in two research axes: 'Bone fragility in osteoporosis and rare bone diseases, bone tumours and metastasis' (axis 1), and 'Joint diseases, notably osteoarthritis (OA) and microcrystal-related diseases' (axis 2). The unit is well implanted in the Paris research community and fully supported by the institutions (Université Paris Cité and Inserm). The available human and material resources are fully adequate to develop the projects of both axes (16 scientists and clinicians, and 12 research support staff). Platforms include facilities to study calcified and non-calcified tissue samples.

Bioscar has an outstanding international reputation in the fields of rare diseases and microcrystal-associated diseases, and an excellent reputation in the field of OA: i) – using transcriptomics analysis of biological cohorts of early onset osteoporosis, the unit identified new variants in several genes associated with bone fragility (*COL1A2*, *WNT1*, *LRP5* etc.), and demonstrated the functional impact of the *LRP5* missense in WNT signalling: ii) – with a unique transgenic animal model in which an inducible form of *Lin-28a* is expressed in cartilage, BIOSCAR demonstrated that overexpression of this microRNA promotes chondroprotection and cartilage regeneration in experimental OA animals. BIOSCAR participate in international organizations for basic research and clinical activities. The unit obtained the European label for rare bone diseases (European Consortium ERN Bond) and is a founder of the European Crystal Network Workshop. The unit also actively participated in the creation of a gout management centre in Vietnam, allowing the creation and study of patient cohorts. Researchers are members of national and international societies [American Society for Bone and Mineral Research (ASBMR), European Calcified Tissue Society (ECTS), Société Française de Biologie des Tissus Minéralisés (SFBTM), Société Française de Rhumatologie (SFR), etc.]. Unit members were awarded several international prizes in these fields [ECTS, ASBMR, and Gout Hyperuricemia and Crystal-Associated Disease Network (G-CAN)]. The unit's visibility in the osteoarthritis field is best exemplified by the development of a new mouse model of osteoarthritis and the publication of a clinical trial on the use of in the most prestigious journal of Rheumatology (*Ann Rheum Dis*). The bone tumour axis, by contrast, has not yet gained the same prominence at the national and international level. The unit recruited one professor, three associate professors, and hosted an invited professor from the Netherlands. However, the absence of any recruitment of either postdoc or full-time researchers during the assessment period diminishes the overall attractiveness of the unit.

BIOSCAR researchers obtained important international and national grants: collaboration in two European projects (total of 1,981 k€), and 6 national ANR projects as leader (total 2,303 k€).

The scientific production of the unit is excellent: 217 publications, of which 113 in first and last position. Results from both research axes have been published in the highest quality journals of the bone and joint fields (*Annals of Rheumatic Diseases*, *Journal of Bone and Mineral Research*), and in more generalist and prestigious journals (*PNAS*, *Science Advances*). Researchers are strongly involved in teaching and educational programs. They actively participate in courses of the UPC Medical School and manage the Graduate School of Musculo-Skeletal Sciences of UPC.

The societal impact of the unit is excellent. The unit created one start-up providing recommendations for patient care (Rheuma-Care), and deposited two patents. Several members were involved in actions aimed at the general public, with communications through a new internet site and various media and social networks (for example, Youtube a TV channel dedicated to rheumatic diseases).

In conclusion, the overall attractiveness of BIOSCAR is excellent in terms of international recognition and funding in the osteoarticular fields.

## DETAILED EVALUATION OF THE UNIT

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

Globally, the unit followed recommendations made in the previous report

The report advised the unit to apply for excellence programs, and to promote basic and clinical activities. During the contract, BIOSCAR obtained two European grants as partner (H2020). Moreover, several projects from the two main axes developed in the unit now implicate both basic researchers and clinicians.

Young researchers were encouraged to obtain HDRs: two were awarded and two are scheduled for 2023.

The last report also pointed the urgent need to train students in animal care: five PhD students validated a formation proposes by UPC since 2021.

The unit was encouraged to keep on track of technical developments and international collaborations. This was addressed with the involvement of researchers in two European projects, and with the initiation or reinforcement of collaborations, in particular with the venue of an invited professor from the Netherlands.

Finally, it was also recommended that the units make an effort to recruit young scientists. Several associate professors joined the laboratory.

### B – EVALUATION AREAS

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

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

BIOSCAR unit activities are excellent and fully justified and in line with its missions and the human resources made available by INSERM, the Paris University and the Lariboisière Hospital. BIOSCAR conducts pertinent basic and translational research projects in the bone and rheumatology fields.

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

The unit's resources are excellent. The unit receive the required up to date technical support from dedicated platforms and shared services. Human resources are pooled to encourage collective research activities.

##### Assessment on the functioning of the unit

The overall functioning of the unit is excellent. BIOSCAR complies with human resources management principles that respect parity and are non-discriminatory in terms of training, internal mobility and career development. This unit is attentive to staff working conditions and health, including prevention of psychosocial risks. The unit applies recommendations relating to the prevention of environmental risks and the pursuit of sustainable development objectives.

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

### Strengths and possibilities linked to the context

The BIOSCAR unit works on common diseases that have an impact on quality of life (osteoporosis, osteoarthritis, microcrystal-related diseases) and for which current treatments and care are not optimal. The unit established well-phenotyped cohorts and biological collections and uses mouse models that mimic human bone and joint diseases. It developed specific tools to investigate the cellular and tissue mechanisms that regulate the physiology and pathophysiology of these diseases.

The unit contributes to the University-hospital federation (FHU) PROTHEE to analyze the pathophysiology of prosthesis infection, and identify markers and treatments. It is directly linked to the clinical rheumatology department of Lariboisière hospital; all rheumatology clinician researchers are members of BIOSCAR unit and participated actively to translational research.

### Weaknesses and risks linked to the context

The projects developed cover multiple topics (rare diseases, bone tumours and metastasis, osteoarthritis, and microcrystal-related diseases).

## *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

BIOSCAR is a singled-team unit comprised of 47 individuals in total, including thirteen professors or assistant professors, two full-time researchers, thirteen technicians and administrative persons, and nine PhD students. Its location in the Lariboisière Hospital allows it to develop both basic science and translational clinical research with access to patient cohorts. The two main research axes developed by BIOSCAR receive the required up to date technical support from dedicated platforms and shared services. For example, the histological plateau for calcified and non-calcified tissue samples, a hallmark of BIOSCAR, has been improved by the addition of spatial transcriptomic and proteomic technology. The number of researchers in each axis is well balanced: eight for the bone axis and six for the OA/microcrystal diseases axis. Whenever possible, each scientist carrying out basic research interacts with a clinician. Total financial resources of BIOSCAR were 8,700 k€, including 203 k€ (2%) from the University Paris Cité and 812 k€ (9%) from Inserm.

### Weaknesses and risks linked to the context

The bone tumour team appears weaker in terms of implication of clinicians: only one orthopedic surgeon for several researchers.

## *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

During the evaluated period, gender parity for the permanent staff was well respected overall (19 women and 15 men). Two permanent agents of the unit are in charge of raising staff awareness of gender equality. The Unit advises and promotes career advancement: two promotions to engineer position (IE) and one to research engineer (IR). The unit encourages staff to attend training workshops and congresses, fostering the development and implementation of new technologies.

Health and safety obligations are standardized following UPC and INSERM rules. Tasks including newcomer training are shared by the technical staff.

Intellectual property is secured through the use of electronic books, allowing validated protocols to be shared. Imaging data are secured by backups on external hard drives.



The Unit implemented a policy for lowering CO<sub>2</sub> emissions: it encourages the attendance of online meetings and congresses, and promotes travel by train. Electronic devices and printer cartridges are recycled.

### Weaknesses and risks linked to the context

Women are strongly underrepresented in research positions (5/10).

## EVALUATION AREA 2: ATTRACTIVENESS

### Assessment on the attractiveness of the unit

The unit has an outstanding international reputation in the fields of rare diseases and microcrystal-associated diseases, as shown by its involvement in recognized international structures in basic sciences and clinical activities (European Crystal Network Workshop for instance). Its reputation is also excellent in the osteoarthritis field, but it is less visible in the bone tumour field. BIOSCAR researchers are also members of committees of international societies [American Society for Bone and Mineral Research (ASBMR), European Calcified Tissue Society (ECTS)]. Funding is excellent: collaboration in two European projects for a total of 1,981 k€, 6 national ANR projects as leader. The unit's capacity to recruit new university researchers and host international students is satisfying. No full-time researcher or postdoctoral fellow was recruited.

- 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

BIOSCAR members were collaborators in two European projects ('Sybil' and 'Biomedaqu') providing a total of 1,981 k€. BIOSCAR secured six national ANR projects as leader (Target Bone, RANKLthym, BoneTax, OASIS, Crystal-In, COMT) for a total of 2,303 k€. The unit is a national reference centre of rare bone diseases. Unit members have responsibilities in drafting European guidelines for microcrystal disease management. BIOSCAR members are also implicated in the organization of international congresses: they created and successfully developed the European Crystal Network Workshop, which each year brings together in Paris worldwide experts of microcrystal associated diseases. Fourteen BIOSCAR members received awards for their presentations at national or international congresses: ECTS (European Calcified Tissue Society), ASBMR (American Society for Bone and Mineral Research), or EULAR (European Alliances of Associations for Rheumatology).

Between 2017 and 2022, BIOSCAR hosted 38 master and fifteen PhD students. Students were well integrated into the unit, with training sessions and discussion three times a week, as well as a monthly social/game session to enhance the scientific and social attractiveness of the unit. The unit also hosted a number of guests, including a visiting researcher from the Netherlands in 2023 to facilitate interaction on proteomics and genomics.

The BIOSCAR unit develops and maintains technological platforms, namely for histology, imaging, and animal facilities, that are key elements for their outstanding technological and developmental impact at a European level. Histology and imaging facilities are opened to external collaborators and to the industrial community. The imaging facility of the unit was part of the IMOSAR imaging facility focused on X-ray multi-scale imaging for preclinical research on small animals and for human clinical research.

Specific mouse models were generated and are shared with international researchers, e.g. for tumours, metabolic and inflammatory investigations in bones and joints.

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

Although scientifically excellent, the bone tumour axis seems to face challenges in gaining prominence and its international visibility is somewhat weaker than that on rare diseases, osteoarthritis and microcrystal-related diseases.

No postdocs or full-time researchers have been recruited over the past five years. Technical platforms appear under-exploited.

## EVALUATION AREA 3: SCIENTIFIC PRODUCTION

### Assessment on the scientific production of the unit

The scientific production of the unit is excellent. Articles from BIOSCAR have been published in the journals with the highest quality in the osteoarticular field (Ann Rheum Dis for instance), and sometimes in prestigious generalist journals such as Science Adv. and PNAS. All unit members, including technical staff, were associated with these articles.

- 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

Studies of bone fragility were conducted in non-tumoral (osteoporosis and rare bone diseases) and tumoral (bone sarcomas and bone metastases) contexts. Experimental approaches combined analysis of biological cohorts, in vitro investigations, and animal preclinical models. Using transcriptomics analysis of biological cohorts of early onset osteoporosis, the unit identified new variants in several genes associated with bone fragility (*COL1A2*, *WNT1*, *LRP5* etc.), and demonstrated the functional impact of the *LRP5* missense in WNT signalling (Collet et al., JBMRPlus 2018). The establishment of a mouse model carrying *LRP5* inactive variants revealed the functional relationship between its inactivation and low bone mineral density (Favre et al., JBMRPlus 2023). The primary bone tumour project led to the identification of Calpain-6 as a new biomarker of sarcoma stem cells involved in the drug resistance process (Anrique et al. JCI Insight 2018). The team proposed that Calpain-6/YAP axis may play a role in the metastatic process, and that its inhibition may prevent tumour relapse (Tchicaya-Bouanga et al., J Cell Death and Disease 2022). The unit further showed that activation of HIF1 signalling in hypoxic osteoprogenitors leads to an increase in bone formation and an exacerbated metastatic process of mammary tumours outside the skeleton (Devignes et al., PNAS 2018).

Researchers from the joint disease axis showed that Tocilizumab (IL6 inhibition) has no impact on hand OA progression (Rchette P. et al., 2021, Ann Rheum Dis). A second study, using the French KHOALA prospective cohort, showed that local Glucocorticoid injection is not associated with an aggravation of knee OA (Latourte A. et al., 2022, Arthritis Rheum). A third study assessed the impact of knee chondrocalcinosis diagnosis on OA development and joint replacement frequency (Latourte A. et al., 2020, Arthritis Rheum). Finally, using unique transgenic animals in which an inducible form of Lin-28a is expressed in cartilage, BIOSCAR demonstrated that overexpression of this microRNA promotes chondroprotection and cartilage regeneration in experimental OA animals (Jouan Y, 2022, Science Adv).

Overall, the scientific production of BIOSCAR is excellent quantitatively and qualitatively. From 2017 to 2022, BIOSCAR published 218 original articles including 58 as first authorship and 43 review articles. The research team demonstrated its capacity to publish its original data in international reputed journals, including specialized journals (e.g. Journal of Bone and Mineral Research PLUS, Annals of Rheumatic Diseases in first and last position) and more generalist journals of excellent standing (e.g. PNAS and Science Adv).

BIOSCAR complies with the principles of research integrity and ethics. Research was performed by using validated and reproducible procedures monitored by responsible technical staff, and controlled by the supervisors. Staff members are encouraged to attend training in ethics and integrity. Researchers were informed about the risk related to predatory journals, and publications of BIOSCAR were preferentially submitted to open access journals. All contributing members (researchers, students, and technical staff) were considered as co-authors, their position in the article dependent on their contribution. All animal experiments and all investigations which required patient samples were initiated after approval by ethics committees, and for human samples after informed and signed consent. For animal experiments, all procedures were initiated by respecting the 3R rules and ARRIVE guidelines.

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

No weakness identified.

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

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

The impact of Bioscar research activities on society is excellent. BIOSCAR obtained industrial contracts for a total of 450 k€ (Danone, Naturex), deposited two patents, and created a start-up (Rheuma-care). BIOSCAR members are involved in several scientific outreach activities (Youtube channel dedicated to rheumatic diseases, many articles in journals such as Viva, Femme Actuelle, etc.), as well as educative actions aimed at students at local events.

*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

BIOSCAR obtained industrial contracts as leader for a total of 450 k€ (Danone, Naturex, PK Med, etc.). It created the 'Rheuma-care' start-up that proposes a mobile application with eLearning and nutritional information on gout management. BIOSCAR members also created a website dedicated to microcrystal diseases. Two patents were deposited in 2022 and 2023.

BIOSCAR is strongly implicated in public interaction, with an audience ranging from adolescents to elderly patients. Unit members are active in the media via radio, TV, press, Youtube, podcasts and Twitter (X), on topics such as gout diseases. School pupils were invited to participate in hands-on courses for research approaches, ethical awareness and science integrity, supervised by BIOSCAR PhD students and researchers.

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

No weakness identified.

## ANALYSIS OF THE UNIT'S TRAJECTORY

During the next assessment period, the unit will continue pursuing research activities developed over the last ten years. These will be organized around two axes: BONE (bone fragility and cancer) and JOINT (OA and microcrystal diseases). Both research axes involve renowned researchers (biologists and/or rheumatologists). Several PhD students, and new researchers have joined the laboratory during the last period, demonstrating its attractive potential, but unfortunately neither postdoc nor full-time researchers were recruited.

The BIOSCAR laboratory is today well-recognized in the osteoarticular field both at the national and European level. Integration into European networks and international recognition is less pronounced for the bone tumour research activities. In the future contract, the proposed objective of building cohorts of bone tumours and metastasis will be an important step in this direction. Another objective is to consolidate the BIOSCAR expertise in bioinformatics, including big data and omics analysis. This will be achieved progressively, first with the recruitment of a PhD lecturer, and subsequently with the venue in the Lariboisière Hospital of two epidemiologic units.

In addition to these two strategic objectives, BIOSCAR researchers propose pertinent developments of their current activities. New strategies and experiments are proposed for the BONE theme, and in particular: i) for early onset osteoporosis (EOOP), osteomesopycnosis, cherubism, osteopathia striata; ii) for the tumorigenic effects mediated by the skeleton; and iii) for osteosarcoma. An important objective of the JOINT axis, which includes hypoxia and OA, cartilage regeneration and pain, as well as microcrystal-related diseases, is the creation of a department dedicated to gout management.

Finally, on the 2030 horizon, the BIOSCAR unit will benefit from a new building, in the context of the restructuring of the hospital site programmed by University Paris Cité (UPC) and the Lariboisière Hospital. BIOSCAR will integrate a 7500 m<sup>2</sup> research centre that will also host animal facilities, and platforms for histology, molecular biology, imaging and omics. The final aim will be to unify BIOSCAR and B3OA (Laboratory of Osteoarticular Biology, Bioengineering and Bioimaging) units. Starting in 2030, the Viggo Petersen building will also host the Department of Reumatology from the Bichat Hospital, consolidating both research and clinical structures on the Lariboisière site. Although not without constraints and risks, this restructuring may be the opportunity to further optimize the visibility and attractiveness of the laboratory.

## RECOMMENDATIONS TO THE UNIT

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

The committee recommends that the unit create a RPSS committee (mental health committee) in common with the units and departments that will be part of the future Lariboisière research centre.

The unit should consider the use of servers to back up image data

The committee recommends the establishment of rules by which all researchers who obtain money devote an equal part or an equal percentage of their grant to common expenses. Alternatively, a part of the recurrent budget could be dedicated to common expenses (e.g. consumables), with researchers paying for use of platforms from their own funds.

Platforms appear under-exploited. In order to increase European visibility, the unit might want to consider applying for quality standard certification. Rules governing access to the platforms and time-sharing of the technical staff by individual researchers should be precisely defined. The unit may want to consider designating a scientific manager for each platform.

The committee recommends more open discussions between the direction and the technical staff concerning the rules and programming of staff promotion.

### Recommendations regarding the Evaluation Area 2: Attractiveness

The unit should take advantage of its recurrent ANR and European funding to recruit postdocs. This strategy may be crucial in the attempt to recruit full-time INSERM researchers. In parallel, efforts could be devoted to the recruitment of INSERM researchers from others and maybe less active units to join BIOSCAR.

### Recommendations regarding Evaluation Area 3: Scientific Production

No weakness identified.

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

No weakness identified.

## CONDUCT OF THE INTERVIEWS

### Date(s)

**Start:** 24 octobre 2023 à 9 h

**End:** 24 octobre 2023 à 18 h

### Interview conducted : on-site

#### Agenda

Unit: 'BIOLOGIE DE L'OS ET DU CARTILAGE (BIOSCAR)'

Date of the visit: October 24, 2023

Conference room – Ground Floor

Department of Rheumatology, Lariboisière hospital, 2 rue Ambroise Pare, 75010 Paris

Present Director: Pr Martine Cohen-Solal; Future Director: Pr Hang-Korng Ea

8:15 a.m.-8:45 a.m.	closed-door meeting of committee (please provide coffee)
8:50 a.m.-9 a.m.	Welcome and presentation of the committee
9 a.m.-9:40 a.m.	Highlights of the unit: scientific strategy, achievements and unit project 20 min presentation, 20 min discussion
9:40 a.m.-10:25	presentation 'Bone Axis': (M. Cohen-Solal, D. Modrowski) 30 min presentation, 15 min questions
10:25-11 : 10	presentation 'Joint Axis': (H.K. Ea, E. Haÿ) 30 min presentation, 15 min questions
11:10-12:15	Committee debriefing (closed door)
12:15-1:15 p.m.	Lunch
	closed-door meeting (with the Hcéres scientific advisor) in the conference room of Inserm Bioscar, basement of rheumatology building
1:15 p.m.-1:45 p.m.	Meeting with PhD (Charles Leroy)
1:45 p.m.-2:15 p.m.	Meeting with technicians and administrative staff (Agnès Ostertag)
2:15 p.m.-2:45 p.m.	Meeting with researchers (without team leaders)
2:45 p.m. – 3 p.m.:	Coffee break
3 p.m.-3:30 p.m.	meeting with representatives of the institutions: R. Bazin, Inserm Mathieu Resche-Rigon Vice doyen de la faculté de Santé de l'Université de Paris Université Paris Cité (en vidéo)
15:30-16h00	meeting with Director and deputy director of the unit
16:00-18h00: 6 p.m.	Closed-door meeting of the HCERES committee End

## GENERAL OBSERVATIONS OF THE SUPERVISORS

Le Président

Paris, le 18 janvier 2024

HCERES  
2 rue Albert Einstein  
75013 Paris

**Objet : Rapport d'évaluation de l'unité DER-PUR250024160 - BIOSCAR – Biologie de l'os et du cartilage**

Madame, Monsieur

L'Université Paris Cité (UPCité) a pris connaissance du rapport d'évaluation de l'Unité de Recherche BIOSCAR – Biologie de l'os et du cartilage.

Ce rapport a été lu avec attention par la direction de l'unité, dont vous trouverez ci-joint un courrier listant les erreurs factuelles à corriger, le vice-doyen recherche et le doyen de la Faculté de Santé d'UPCité, par la vice-présidente recherche d'UPCité et par moi-même.

Avec le Doyen de la Faculté de Santé, nous remercions le comité pour la qualité de son évaluation. En dehors des remarques factuelles émises par la direction de l'unité, nous n'avons pas d'observations d'ordre général à apporter.

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

**Présidence**

**Référence**

Pr/DGDRIVE/2023

**Affaire suivie par**

Christine Debydeal -  
DGDRIVE

**Adresse**

85 boulevard St-Germain  
75006 - Paris



Édouard Kaminski



F. BRIAL	01 49 95 63 58
M. COHEN-SOLAL	01 49 95 63 58
A. COUDERT	01 49 95 63 58
H-K EA	01 49 95 63 58
Th. FUNCK-BRENTANO	01 49 95 63 58
E. HAY	01 49 95 63 59
A. LATOURTE	01 49 95 63 58
F. LIOTÉ	01 49 95 62 86
D. MODROWSKI	01 49 95 63 52
G. ODRI	01 49 95 63 52
S. PROVOT	01 49 95 63 58
P. RICHETTE	01 49 95 63 58

Hceres committee  
M. Stéphane Le Bouler

Paris, 3<sup>rd</sup> January 2024

Dear committee members, dear committee chairman,

We thank the committee members and the committee chairman for this instructive and positive report and we are grateful for the discussions during the evaluation of BIOSCAR unit. We appreciate that the committee supported the unit research translational strategies and functioning and acknowledged our works and international recognition in the bone and joint fields. We are grateful for the committee insights and recommendations and are aware that the unit strength will increase with the recruitment of full-time researcher and postdocs. In the future contract, we will employ efforts to succeed on this task.

Hang-Korng Ea and Martine Cohen-Solal

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

**Evaluation of Universities and Schools**  
**Evaluation of research units**  
**Evaluation of the academic formations**  
**Evaluation of the national research organisms**  
**Evaluation and International accreditation**



2 rue Albert Einstein  
75013 Paris, France  
T.33 (0)1 55 55 60 10

[hceres.fr](http://hceres.fr)

 [@Hceres\\_](https://twitter.com/Hceres_)

 [Hcéres](https://www.youtube.com/Hceres)