

EVALUATION REPORT OF THE UNIT
IGS - Information Génomique et Structurale
UNDER THE SUPERVISION OF THE
FOLLOWING ESTABLISHMENTS AND
ORGANISMS:

Aix-Marseille Université - AMU

Centre national de la recherche scientifique -
CNRS

EVALUATION CAMPAIGN 2022-2023
GROUP C

Report published on June, 26 2023



In the name of the expert committee¹ :

Michael Schindler, Chairman of the committee

For the Hcéres² :

Thierry Coulhon, President

Under the decree n° 2021-1536 of 29th November 2021:

¹ The evaluation reports "are signed by the chairperson of the expert committee". (Article 11, paragraph 2);

² The president of the Hcéres "countersigns the evaluation reports established by the expert committee and signed by their chairperson." (Article 8, paragraph 5).

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 Michael Schindler, University Hospital Tübingen, Germany

Experts : Ms Julie Menetrey, CNRS, Gif-sur-Yvette (representative of CoNRS)
Ms Nicole Pavio, Anses, Maisons-Alfort
Mr Olivier Reynard, Inserm, Lyon (supporting personnel)
Mr Aurélien Serandour, Centrale Nantes (representative of CNU)

HCÉRES REPRESENTATIVE

Ms Anne-Marie Di Guilmi

CHARACTERISATION OF THE UNIT

- Name: Information Génomique et Structurale
- Acronym: IGS
- Label and number: UMR7256
- Composition of the executive team: Ms Chantal Abergel

SCIENTIFIC PANELS OF THE UNIT

SVE Sciences du vivant et environnement
SVE4 Immunité, infection et immunothérapie

THEMES OF THE UNIT

The unit UMR7256 "Information Génomique et Structurale" (IGS) has historically pioneered the discovery of new viruses called giant viruses, as they are much larger than « regular » viruses and have genomes with larger coding capacity. In fact, some of these giant viruses are in the size or even larger than bacteria. The focal point of this groundbreaking work was the discovery in the years 2003-2004 that Mimiviruses can infect unicellular eukaryotic organisms like amoeba. The IGS is internationally recognized and opened up a new field of virology termed « environmental virology ». The IGS uses state-of-the-art genetic multi-omics and structural technologies as well as bioinformatics/systems biology to study these DNA viruses and their hosts in all types of environments (fresh water, oceans, soils).

HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

The unit "Information Génomique et Structurale" (IGS) is a UMR under the double supervision of CNRS and Aix-Marseille University (AMU). The laboratory was created in 1995 on the J. Aiguier Campus in Marseille by Jean-Michel Claverie and Chantal Abergel, current director. At the end of 2005, the laboratory moved to a new building on the Marseille Luminy Campus. It will soon move back to the Joseph Aiguier Campus where the research federation (FR3479), Institut de Microbiologie de la Méditerranée (IMM), to which it is attached, is located, in order to recover larger surface areas that would make it possible to accommodate new arrivals. The IGS benefits from access to the various common platforms of the IMM (imaging, proteomics, transcriptomics, fermentation, protein production, NMR, EPR), as well as to scientific culture activities with the institute networks and seminars. Part of the IGS's important computing resources is hosted in the data center on the J. Aiguier campus.

RESEARCH ENVIRONMENT OF THE UNIT

The unit is embedded in a strongly interdisciplinary research environment. It belongs to the research federation (FR3478) "Institut de Microbiologie de la Méditerranée" and in fact is one of the four member laboratories. Currently, the unit is located in a building at the Marseille Luminy Campus but upon moving to the Joseph Aiguier Campus it will share the location with the other members of the FR3478. The unit is also attached to the AMU Institute "Microbiology, Bioenergy and Biotechnology" (IM2B) which brings together 10 research units, the IMM research federation and 25 technological platforms, including the PACA-Bioinfo platform. The members of the unit are actively involved in several platforms of the IM2B and the management belongs to the institute council. Furthermore, members of the IGS are involved in PhD programs and the AMU Institute « Origins: from the formation of planets to the emergence of life ». Altogether, upon completion of its move to the IMM, the RU is embedded in an outstanding research environment to sustain and foster their research.

UNIT WORKFORCE: in physical persons at 31/12/2021

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	1
Senior scientist (Directeur de recherche, DR) and associate	1
Scientist (Chargé de recherche, CR) and associate	2

Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	9
Subtotal permanent personnel in active employment	13
Non-permanent teacher-researchers, researchers and associates	4
Non-permanent research supporting personnel (PAR)	4
Post-docs	2
PhD Students	4
Subtotal non-permanent personnel	14
Total	27

DISTRIBUTION OF THE UNIT'S PERMANENTS BY EMPLOYER: NON-TUTORSHIP EMPLOYERS ARE GROUPED UNDER THE HEADING "OTHERS".

Employer	EC	C	PAR
CNRS	0	3	9
Université de Toulon	1	0	0
Aix-Marseille Université	0	0	0
Total	1	3	9

UNIT BUDGET

Recurrent budget excluding wage bill allocated by parent institutions (total over 6 years)	581
Own resources obtained from regional calls for projects (total over 6 years of sums obtained from AAP idex, i-site, CPER, territorial authorities, etc.)	728
Own resources obtained from national calls for projects (total over 6 years of sums obtained on AAP ONR, PIA, ANR, FRM, INCa, etc.)	605
Own resources obtained from international call for projects (total over 6 years of sums obtained)	443
Own resources issued from the valorisation, transfer and industrial collaboration (total over 6 years of sums obtained through contracts, patents, service activities, services, etc.)	26
Total in euros (k€)	2 383

GLOBAL ASSESSMENT

The IGS unit is a monothematic unit that performs internationally recognized top-notch science in the field of giant viruses, a novel class of viruses that was originally identified by the unit. They have excellently developed this core research topic over the years and achieved a number of high profile publications in reputed journals. Likewise, the group performs excellent in terms of securing funding for their various activities having obtained numerous grants from the ANR, as well as an ERC and an Amidex Chair. As a consequence of this overall overwhelming success, the group rapidly expanded during the years with associated issues in terms of the overall organisation of the unit, lack of space and internal communication. In 2022 the group had an overall mediation which addressed these problems. As a consequence, communication and group interaction was enhanced a lot. The movement of the group to a new building was already planned during the last period but delayed, this move is now supposed to happen in 2024.

The research of the unit, still gathered around the giant viruses theme, is being diversified with excellent methods and state-of-the-art equipment. Consequently, sub-themes have been defined, which are led by younger/experienced PIs under the supervision of one of the founders, Chantal Abergel. The unit has an outstanding reputation and international visibility. It is highly attractive because of the overall innovative topic, its methods and equipment as well as its performance. Upon movement to Campus Joseph Aiguier at the IMM the unit might be able to better valorize their results and foster interaction with the socioeconomical community. The research unit has excellent outreach activity to the public. Altogether the IGS is a vibrant and dynamic research unit with an overall excellent to outstanding performance.

DETAILED EVALUATION OF THE UNIT

A - CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

1. The fundamental work that forms the basis of the unit should be continued along the proposed lines of research.

The team has been very successful in continuing its core research topic.

2. The unit must develop team leaders or theme leaders; one of the means to be implemented is to increase the number of HDR holders who would be directly responsible for doctoral students and projects; the unit's international attractiveness should be increased by welcoming postdocs and foreign researchers.

Themes have been defined and sub-team leaders were installed. All the postdocs in the RU are international.

3. Keep a quantitative record of extension activities. The collaborations initiated with companies such as Deinove or NEB are valuable. The molecular mechanisms or original enzymatic factors identified by the unit should, through this, find concrete applications, which will stimulate research on giant viruses and generate funding.

The collaborations initiated with the Deinove and NEB companies have not been pursued.

4. In order to optimise the advantages linked to the existence of a single team, it seems important to encourage scientific meetings not only within each community (experimenters and modellers), but also between communities as planned in the unit project.

Single team meetings are regularly held; bi-weekly meetings between the bioinformaticians and experimentalists are planned and now starting. There was a first retreat in 2022.

5. Involve doctoral and post-doctoral students in the influence of the unit by encouraging them to present their work, orally at national and international conferences.

Researchers, engineers, PhD and post-doctoral students are encouraged to present their work in national and international conferences. Communications and poster presentations are made during the Junior Scientist Microbiology Meeting of Marseille (JSM3). Postdocs have submitted abstracts to give oral communications at the FEMS (June 2022). PhD students presented their work at the "Environmental and Agronomic Genomics" symposium (October 2021) in the form of posters or oral presentations (5 presentations, 3 posters between 2016 and 2021).

6. Develop tools necessary to characterise the cell cycle of these viruses; the project could lead to industrial development, which should not be overlooked.

This project has not been followed up.

B - EVALUATION AREAS

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

Assessment on the unit's resources

The unit resources are excellent to outstanding allowing young researcher recruitment, as well as equipment purchases.

Assessment on the scientific objectives of the unit

The scientific objectives of the unit are excellent to outstanding.

Assessment on the functioning of the unit

The functioning of the unit is very good to excellent.

1/ The unit has resources that are suited to its activity profile and research environment.

Strengths and possibilities linked to the context

The IGS is a fundamental virology laboratory focused on the study of giant viruses. Over the years, it has developed increasingly diverse skills to study them. After installing cell biology and amoeba culture in the laboratory, which is essential for virus isolation from the environment, the IGS has progressively developed numerous omics approaches and has mastered the analysis of the data produced. The laboratory continues to develop protein biochemistry and structure resolution of selected proteins. In addition to crystallography, the IGS has developed structure resolution by cryo-electron microscopy (cryo-EM). This expertise expansion was accompanied by the acquisition of equipment dedicated to biochemical, structural biology, informatics activities, necessary to carry out the projects.

The unit has secured a number of fundings during the 2016-2021 mandate among which 1 ERC advanced grant (2.25 M€), 5 ANR grants (overall around 1.1 M€), 1 chair Amidex (0.8 M€). The financing is mutualized in its entirety. At the scientific level, this increase in funding has driven to the arrival of many CDDs at the IGS providing an extremely effective scientific dynamic.

The relocation of the laboratory to the J. Aiguier site, with an increase in the surface area should resolve problems due to lack of space and probably tensions. Those difficulties, conjugated first to the Covid lockdown and secondly to the introduction of preventive and laboratory limited access measures post-Covid push the unit direction to request a mediation from the CNRS Human Resources Department in order to establish common values despite the different individual ways of working (experimentalists versus bioinformaticians). This communication work has been positively welcomed by the unit members and largely beneficial to all. A collective training is underway and was finalized by summer 2022. There was a joint lab retreat and the team has restarted to re-organize lab-meetings. Upon taking the lead in 2018, the current director did a great job in restructuring the unit in terms of vertical hierarchical organization to more flattened responsibilities and interactions among the team members.

Weaknesses and risks linked to the context

Given the arrival of many fixed-term contracts thanks to the funding obtained, a certain lack of space is felt, which has consequences for the reception of trainees (which must be regulated in order to guarantee that everyone has the means to work in decent conditions). Also, tensions (amplified by the health crisis) are the consequence of this lack of space and of individual differences in involvement in the group. As mentioned above, these difficulties are currently solved.

2/ The unit has set itself scientific objectives, including the forward-looking aspect of its policy.

Strengths and possibilities linked to the context

The IGS is responsible for the discovery of the majority of giant virus families and is internationally recognised for its contributions to the field. This represents a strength to answer the scientific project studied: 1) Biodiversity and biogeography of giant viruses, 2) Comparative genomics and evolution of different giant virus families, 3) Co-evolution A. castellanii/giant viruses/virophage/transpoviron, 4) Structure and function of selected proteins, 5) Development of the genetics of the amoeba and giant viruses and 6) Co-evolution of viruses. (ERC project). The

themes developed at the IGS can possibly be the basis for fruitful interaction between academics and industrials.

Weaknesses and risks linked to the context

The small size of IGS unit, despite being a strength to perform dynamic research, represents also a weakness to develop 6 ambitious projects with the use of a broad range of methodologies.

3/ The functioning of the unit complies with the regulations on human resources management, safety, the environment and the protection of scientific assets.

Strengths and possibilities linked to the context

The unit is a single-team structure, which allows it great flexibility in the management of human resources according to the needs of one or other of the projects. The IGS has an elected representative for ITA, researcher/teacher-researcher, student, training, prevention assistant and communication. Laboratory councils are rare due to the size of the structure but take place whenever necessary. The management imposes quality control with the drafting of laboratory notebooks as well as a dedicated file server where validated protocols are deposited. The raw data of the experiments are also deposited on the server in order to ensure scientific integrity.

There is excellent parity of women and men. The management encourages researchers to take responsibility (HDR and group leading) and to disseminate their work through oral presentations. ITAs are supported in their advancement by the management (6 promotions in the period 2016-2021).

Weaknesses and risks linked to the context

During this mandate, the rhythm of laboratory meetings was erratic with periods of regular meetings followed by periods without. This situation is now improved: from about one year now, weekly meetings have been reintroduced: (i) the experimentalists meet regularly (once a month), (ii) the bioinformaticians are supposed to meet once a week and (iii) meetings between experimentalists and theoreticians should be able to start in September 2022 (less frequent and more generalist than the working meetings).

Due to some tensions, the laboratory and its management relied on the Human Resources department of the CNRS Regional Delegation and found solutions to restore good working conditions. The management is attentive to the working conditions of the unit's personnel, their health and safety and the prevention of psychosocial risks and measures have been taken. For instance, adaptations were made to the workstations of those who wished to do so, with raised desks, new office chairs, additional screens and ergonomic mice.

In terms of management, the unit is developing from a team managed by one PI into a unit with several team leaders. This transition might generate certain difficulties that need to be anticipated, like for instance internal competition for funds, grant applications, responsibilities.

EVALUATION AREA 2: ATTRACTIVENESS

Assessment on the attractiveness of the unit

The attractiveness of the unit is outstanding. The unit keep a key position in the giant virus international community.

1/ The unit has an attractive scientific reputation and contributes to the construction of the European research area.

Strengths and possibilities linked to the context

The unit has an outstanding attractive scientific reputation attested by numerous participations to congresses and invitations to present their work in academic and international meetings: 17 invitations in 2016, 26 in 2017,

17 in 2018, 13 in 2019, 5 in 2020, and 12 in 2021. It is of note that PhD students regularly present their work (poster and oral communications), and all PhD participate to each "congrès annuel de l'Institut de Microbiologie de la Méditerranée".

Unit researchers are members of the scientific council of Jobim (Journées Ouvertes de Biologie Informatique et Mathématiques) and participate to the organisation of the annual congress of the French Society of Microbiology and to ACAM training courses. Several members of the unit have editorial responsibilities in international journals (*Genome Biology and Evolution*) and participate to the direction of collection (*Viruses, Frontiers in Microbiology*). Members of the unit are appointed participants of numerous learned societies and academies: SFBBM (Société Française de Biochimie et de Biologie Moléculaire), Société Française de Virologie, Société de Philomatique de Paris, World Society of Virology, European Association Microbiology, American Society for Microbiology, American Association for the Advancement of Science, American Society for Biochemistry and Molecular Biology. The unit is also well represented into scientific or steering committees (University, Scientific societies, Hcéres evaluation). Finally, members of the unit are winners of various national scientific prizes and awards: Prix Coup d'élan pour la recherche Française, Fondation Bettencourt-Schueller; Lucien Tartois, Fondation pour la Recherche Médicale; Prix Jaffe, Academie des Sciences ; PEDR.

Weaknesses and risks linked to the context

The visibility of the unit is carried out almost exclusively by the actual and former directors. Young scientist, team leaders lack visibility at European and international levels (very few communications).

2/ The unit is attractive for the quality of its staff hosting policy.

Strengths and possibilities linked to the context

During the discussion meeting with the PhD students and the post-doctoral fellows, the committee noted that the working environment and the supervision they benefit were of high quality. The unit gives good support on administrative aspects. Scientific supervision of PhD students is validated by thesis monitoring committees of doctoral schools. During the mandate, the unit welcomed 10 PhD students, 9 of them performed their master in France, one in Italy. Three post-doctoral young researchers joined the unit, all of them were from abroad.

The unit is attractive in terms of staff hosting quality since most of the experienced post-doctoral and young scientists are encouraged to apply for research grants and permanent positions. A former PhD student will apply for a CNRS researcher position at the IGS after a second post-doctorate abroad and a current post-doctoral scientist will apply to an ERC starting grant and to the CNRS CRCN 2023 competition. Among the 5 external contractual researchers visiting the unit during the period, among whom 2 were from abroad, a senior researcher (former associate professor in the USA) decided to settle down in Marseille. She is now leading an A*Midex Chair of Excellence and will benefit from a tenured professor position at the Aix-Marseille University in the coming year.

Scientific integrity is one of the unit priorities. Young researchers and PhDs follow training courses. Laboratory notebooks are kept up to date. There is a welcome booklet for new lab members. The unit is committed to adopting the FAIR (Easy to Find, Accessible, Interoperable, Reusable) principles for its data and computational codes. In the unit, a training manager is involved in communicating and supporting training opportunities to ITA and researchers.

Weaknesses and risks linked to the context

Laboratories spaces are limited and the unit has not move yet to the J. Aiguier campus. This relocation will be determinant for welcoming new members.

3/ The unit is attractive because of the recognition gained through its success in competitive calls for projects.

Strengths and possibilities linked to the context

The unit has an outstanding attractiveness since several important grants were obtained from competitive calls. One international contract was raised, the PRC Russia Permagenomics (2017-2019, 21k€) coordinated by the unit. Among the European calls for projects, two grants were dedicated to post-doctoral salaries: UFI Vinci (2019-2020, 25 k€) and EMBO Fellowship (2020-2022, 83 k€). The actual director has obtained the prestigious ERC advanced grant for the period 2019-2024, for a total amount of 2.25 M€.

During the period, 2 French national grants were gained, both of them coordinated by the unit: French Institute of Bioinformatics PIA (2016-2017, 100k€) and RENABI-IFB (2013-2019, 82 k€). In total, 5 ANR grants were obtained, among which 3 are coordinated by the unit (italics): ANR Oceanomics (2012-2021, 190 k€), ANR VIRiON (2016-2022, 315 k€), ANR Pandoravirus (2014-2019, 312k€), ANR TransVIR (2020-2024, 276 k€), ANR ROV-Chasseur (2021-2024, 28 k€). The unit could benefit from a regional chair of Excellence Amidex Chair (2020-2022, total amount 811 k€). Finally, fundings from foundations were also received, like the Fondation Bettencourt Schueller (Coup d'élan) and the Fondation pour la Recherche Médicale (Prix Lucien Tartois).

Weaknesses and risks linked to the context

In the evaluation period most of the grants were coordinated by the actual and former directors.

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

Strengths and possibilities linked to the context

The unit has an important equipment park in line with its research projects, which relies for example on the determination of protein 3D structures at high-resolution. It was highlighted during the discussions that the protein purification systems (AKTA) will be upgraded with the financial support of the Chair of excellence and other support from the IM2B Institute. Upstream to the crystal diffraction data collection on synchrotron sites (ESRF, SOLEIL), the unit owns an X-ray diffraction system, Xcalibur PX-Ultra.

The unit hosts the PACA bioinformatics platform that is very important for many aspects among which for trainings (e.g. Phylogeny.fr, 10-20000 unique IP/month, 150,000 executed tasks, ~1700 Pubmed citations) and PhD programs (Plinius). This platform is also open to academics (e.g. Spongex, Permagenomics) or to biotech companies (e.g. Deinove) for new researches on specific projects.

Weaknesses and risks linked to the context

The unit needs to secure the regular maintenance of the equipment and to maintain qualified personnel to keep running the major equipment.

EVALUATION AREA 3 : SCIENTIFIC PRODUCTION

Assessment on the scientific production of the unit

The assessment of the unit production is excellent to outstanding.

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

Strengths and possibilities linked to the context

During the evaluation period 2016-2021, the IGS has published 40 scientific articles indexed in pubmed including 28 in high profile journals (18 as first and/or last author). Among them, 10 are in the best journals and includes one in *ISME Journal*, three in *Nature Communications*, one in *Cell* and one in the international edition of *Angewandte Chemie*. Several reviews and opinions (20) have been published, including one in a very high profile journal (*Trends Microbiology*).

Weaknesses and risks linked to the context

No specific weaknesses identified.

2/ Scientific production is proportionate to the research potential of the unit and shared out between its personnel.

Strengths and possibilities linked to the context

The scientific production of IGS is of excellent level with several articles and reviews published in highly renowned journals. The overall production is shared equally between the different members and includes the direction, researchers, PhDs and postdocs as well as ITAs (mostly IR). All PhD students that have defended their thesis during the evaluation period have published at least one article but more often 2 and up to 4, including articles in high impact factor journals (*Nature Communication, Angew Chemie*).

Weaknesses and risks linked to the context

Most reviews are signed by senior researchers only. Involvement of PhD student in such exercise may be beneficial for them notably under the mentorship of senior experts.

3/ The scientific production of the unit complies with the principles of research integrity, ethics and open science.

Strengths and possibilities linked to the context

Publications from IGS are available through the HAL platform and therefore complies with the open science principle. Several opinion articles challenge scientific dogmas and participate to the scientific debate.

Weaknesses and risks linked to the context

There is no identified weaknesses.

EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

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

The media coverage and vulgarisation, *i.e.* public outreach activities of the unit are outstanding.
The socio-economical interactions and interactions with the non-academic world are very good.

1/ The unit stands out by the quality of its non-academic interactions.

Strengths and possibilities linked to the context

The main partnerships that the unit establishes with non-academic players concerns the "underwater robotics team" which is specialized in developing devices devoted to perform water and sediment sampling. The main actors are the French Navy and various subcontractors such as the AKKA Technologies company. An international agreement with Vietnam for the joint development of exploration and sampling underwater robots has also been set up. An overall amount of about 75 k€ has been gained through such contracts.

The non-academic partnerships initiated by the unit helps to meet technological challenges such as scientific advices and the preparation of the funding application to the region for the establishment of the OceanoScientific scientific structure near Toulon.

The unit hosts one doctoral student whose research is financed in part by non-academic partners (Cifre bourse with the AKKA company); three other 3 doctoral students will be also hired.

Concerning the research activities performed in the field of the giant virus biology, the group managed by the unit director has been financed by the foundations Bettencourt and FRM.

Weaknesses and risks linked to the context

Given the highly important field of research, *i.e.*, biology and evolution of giant viruses, it might be interesting for the unit to try to develop collaborative research projects and enlarge interactions with actors of the ecology/environment sector.

2/ The unit develops products for the socio-economic world.

Strengths and possibilities linked to the context

The underwater robotics team is very strongly involved in industrial collaborations including the French Navy and its subcontractors such as Naval Group and AKKA (see above). The bioinformatics platform proposes its services to the public and is registered by France Genomics. The platform offers on-line access to two home-made tools, one of which is highly cited and used by the scientific community. A request for accreditation by AMU is envisaged in the near future for two softwares, ACDtool, the other one is dedicated to the "Validation of predicted anonymous proteins simply using Fisher's exact test".

Weaknesses and risks linked to the context

The industrial connection of the unit is linked to only the robotic and bioinformatic activities and might be enlarge to the other topics.

3/ The unit shares its knowledge with the general public and takes part in debates in society.

Strengths and possibilities linked to the context

The discovery of giant viruses and in particular of the Pandoravirus family followed by the work done by the IGS on the reactivation of viruses from Siberian permafrost samples gave rise to numerous radio and television interviews (Radio RFI, France2/Télématin) and to the making of documentary films (Documentaire France 5, Film scientifique prix du festival de Prague, Documentaire Ushuaïa, Festival Pariscience).

The unit counts also tens of publications aimed to diffuse scientific knowledge or opinions to non-specialized public, for example through the CNRS National Press. Some examples are mentioned here to highlight the intense interest of the public for the giant virus topic: "Noumeavirus, a new amoeba virus, remotely controls its host's nucleus" (2017), "Pandoravirus: giant viruses that invent their own genes" (2018), "The epigenome, the secret boot of giant viruses" (2020), "Marseilleviridae use their own histones to pack their genome into nucleosomes" (2021). Three chapters in vulgarization books were published, among which "Étonnant vivant" 2017, CNRS Edition.

Several members of the unit are regularly in contact with students in colleges, high schools, BTS and at the university. The whole unit carries out regular training of teaching staff in collaboration with the rectorat. One member of the unit participates in the mentoring program of "Femmes et Sciences" (Montpellier) since 2020.

Weaknesses and risks linked to the context

None.

C - RECOMMENDATIONS TO THE UNIT

Recommendations regarding the Evaluation Area 1: Profile, resources and organisation of the unit

The committee recommends to keep focusing on the exciting and outstanding research on Giant viruses and to do so, to continue securing funds to sustain the group, further promote its growth, and maintain the unit's structure and organization especially after moving to the Aiguier campus.

It is proposed that the DU fosters regular group meetings, implement journal clubs and exchanges with all the other groups of the J. Aiguier campus and take this opportunity to invite external speakers for national and international networking on the Giant viruses topics.

As already very well done by the DU, she should continue to promote professional progression of the staff members and the development of the younger PIs to become team leaders and to keep a level of flattened hierarchy.

Recommendations regarding the Evaluation Area 2: Attractiveness

The committee recommends to improve the strategies to attract more BSc/MSc students, maybe by developing the teaching activities.

Recommendations regarding Evaluation Area 3: Scientific Production

The participation of PhD students, experienced and/or senior researchers in writing reviews could be improved. In addition, sub-team leaders should publish as last-authors to allow their future scientific development.

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

To lever the potential of socioeconomical interactions, the team could consider to foster industry contacts especially in order to use giant virus encoded proprietary enzymes for biotechnological purposes.

CONDUCT OF THE INTERVIEWS

DATE

Start: November 15th of 2022 at 8.45 am

End: November 15th of 2022 at 7 pm

Interview conducted online

INTERVIEW SCHEDULE

- 08h45 – 08h55** **Committee pre-start meeting**
Closed-door meeting
- 09h00 – 09h05** **Committee introduction**
Public session (all unit members)
- 09h10 – 09h30** **Administrative and scientific presentation of the unit by the director**
10 min presentation + 10 min discussion
Public session (all unit members)
- 09h35 – 11h30** **Scientific presentations by group leaders**
10 min presentation + 10 min discussion
Public session (all unit members)
- 09h35 – 09h55** **Chantal Abergel.** Physiologie et évolution des virus géants
- 10h00 – 10h20** **Mathieu Legendre.** Bioinformatique et génomique
- 10h25 – 10h45** **Elsa Garcin.** Métalloprotéines et protéines liant les acides nucléiques
- 10h50 – 11h10** **Sandra Judy.** Commensalisme viral
- 11h15 – 11h25** **Hugo Bisio.** Shedding light on host-giant virus (co-)evolution by reverse genetics
- 11h30 – 12h30** **Debriefing-1 committee**
Closed-door meeting
- 12h30 - 13h00** **Lunch break**
- 13h00 – 13h40** **Meeting with ITA (in French)**
In the absence of any managing staff (DU, team leaders)
- 13h45 – 14h25** **Meeting with researchers**
In the absence of any managing staff (DU, team leaders)
- 14h30 – 15h10** **Meeting with post-docs and students**
In the absence of any managing staff (DU, team leaders)
- 15h15 – 15h45** **Meeting with institution representatives: CNRS/Aix-Marseille University**
Closed-door meeting
- 15h50 – 16h10** **Debriefing-2 committee**
Closed-door meeting
- 16h15 – 16h45** **Meeting with the unit director**
Closed-door meeting
- 16h45 – 19h00** **Redaction of the final report**
Closed-door meeting
- 19h00** **End of the interview**

GENERAL OBSERVATIONS OF THE SUPERVISORS

Le Président de l'université

au

Département d'Évaluation de la recherche -
Hcéres

Objet : Observations de l'unité relatives au
rapport d'évaluation des experts Hcéres
N/Réf. : VPR/LS/AMS/CM – 23-06

Dossier suivi par : Cécile Merle
Tél : 04 13 94 95 90
cecile.merle@univ-amu.fr

Vos réf : DER-PUR230023157 - IGS - Information génomique et structurale

Marseille, le mercredi 21 juin 2023

Madame, Monsieur,

Je fais suite à votre mail du 23/05/2023 dans lequel vous me communiquez le rapport d'évaluation Hcéres de l'Unité de Recherche IGS - Information génomique et structurale.

Comme demandé dans ledit mail, je vous indique que les tutelles de l'IGS, Aix-Marseille Université et le CNRS, n'ont pas d'observation à formuler.

Vous souhaitant bonne réception des présentes,

Je vous prie de croire, Madame, Monsieur, l'expression de mes respectueuses salutations.



Eric BERTON



The Hcéres' evaluation reports are available online:
www.hceres.fr

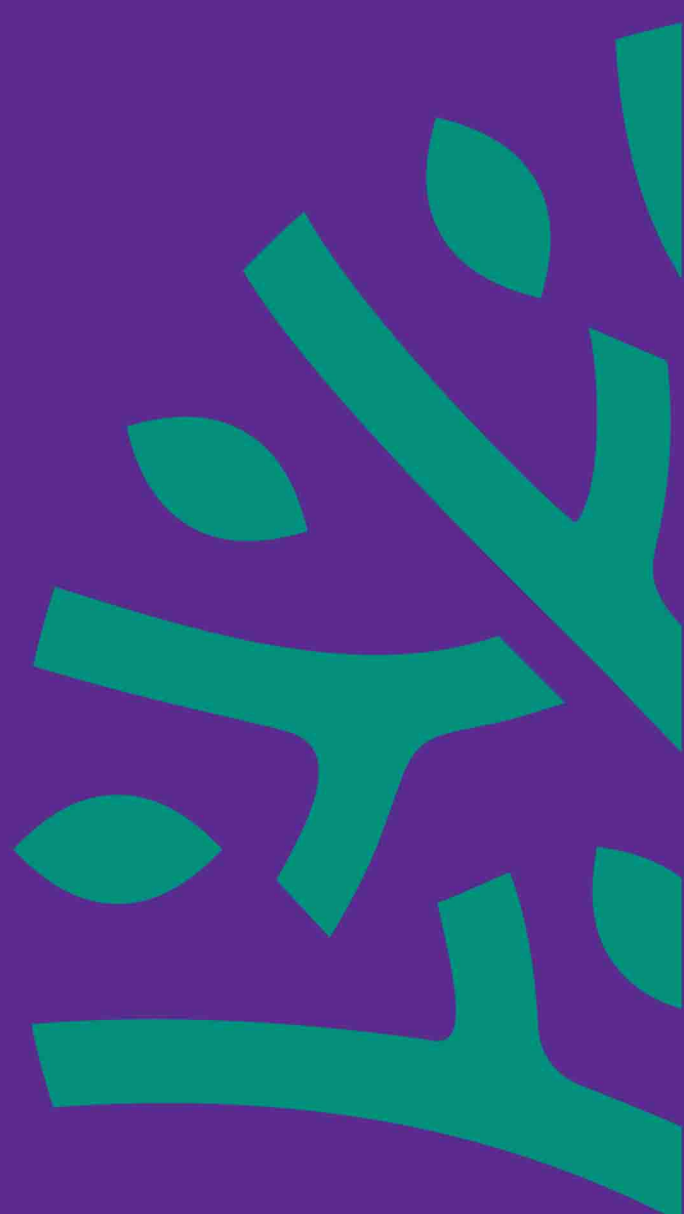
Evaluation of Universities and Schools

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