

EVALUATION REPORT OF THE UNIT
UVE - Unité des Virus Émergents

UNDER THE SUPERVISION OF THE
FOLLOWING ESTABLISHMENTS AND
ORGANISMS:

Aix-Marseille université - AMU

Institut national de la santé et de la recherche
médicale - Inserm

Institut de recherche pour le développement -
IRD

Université de Corse Pasquale Paoli

Ministère des armées

EVALUATION CAMPAIGN 2022-2023
GROUP C

Report published on August, 23 2023



In the name of the expert committee¹ :

Francesca Chiodi, Chairwoman 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:

Ms Francesca Chiodi, Karolinska Institutet, Sweden

Experts :

Mr Frédéric Arieu, Service de Parasitologie-Mycologie Hôpital Cochin, Inserm Institut Cochin Paris (representative of the CSS IRD)

Mr Didier Hober, Univ Lille et CHU Lille (representative of the CNU)

Mr Ali Mirazimi, Karolinska Institutet, Sweden

Ms Barbara Monoury, EPHE, Lyon (supporting personnel)

Mr Sébastien Nisole, IRIM, Montpellier (representative of the CSS Inserm)

HCÉRES REPRESENTATIVE

Ms Birke Bartosch

CHARACTERISATION OF THE UNIT

- Name: Unité des Virus Émergents
- Acronym: UVE
- Label and number: IRD_190 Inserm_1207
- Composition of the executive team: Mr Xavier de Lamballerie

SCIENTIFIC PANELS OF THE UNIT

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

THEMES OF THE UNIT

UVE research is aimed at detecting, studying and developing vaccines or chemical treatments against emerging viral diseases, with a strong emphasis on insect-borne viruses (arboviruses). During the SARS-CoV-2 pandemic UVE actively participated in studies on SARS-CoV-2.

HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

UVE (Unité des Virus Émergents) is a virology research unit based in Marseille, France. It is located in the main building of the Aix-Marseille University (AMU) Medical school. The UVE has also premises on the Timone campus, within the IHU and the Faculty of Medicine (the two locations are a few minutes apart on the same campus) and work sites in Laos, Bolivia and Mali.

The unit was created in 2008 with the Université de la Méditerranée under the leadership of Mr Xavier De Lamballerie and received a very positive Aéres (ex-Hcéres) review in 2011 for a 5-year (2012-2017) mandate. Institutional support was provided by IRD, AMU, and EHESP (École des Hautes Études en Santé Publique).

In 2015, EHESP withdrew from supporting biological research, and Inserm expressed strong interest in UVE. In 2015, IRBA joined as associate supervisor and in 2016, Inserm officially became one of the institutional supports and supervisors of UVE.

The connection of UVE with IRD and Inserm is a winning concept for this Unit. IRD aims at monitoring and controlling health issues across the world through development, while Inserm leads public health research aspects nationally. UVE is right at the crossroads of these two challenges.

In 2018, the unit was renewed with AMU, IRD and Inserm as supervisors, and EFS and IRBA as associate supervisors. An agreement was signed with the University of Corsica to formalise the merge with EA 7310, directed by Ms Alessandra Falchi.

RESEARCH ENVIRONMENT OF THE UNIT

Since 2008, the unit has been dedicated to the study of emerging viruses, with a particular emphasis for arboviruses and respiratory viruses. Themes such as diagnosis, antiviral therapies and epidemiology are regularly addressed by the unit's working groups.

This is an autonomous unit associated with IHU Méditerranée infection. A hospital laboratory (with 7 employees) located at the infectious diseases hospital is part of the unit. UVE participates in the national Reference center for Arboviruses with the expertise and task of diagnostic and surveillance and gives major contributions to several bodies of the ANRS-MIE.

UVE administrates two AMU platforms; EVAM, which gets inspiration from the European Virus Archive, and AD2P, focused on screening of antiviral molecules. These platforms have attracted a large amount of funds from H2020.

The unit director is the main coordinator for the EU supported ZIKAlliance program. ZIKAlliance is a multinational and multi-disciplinary research consortium comprised of 54 partners worldwide and coordinated by UVE Inserm; this platform collects clinical and scientific data on ZIKA virus and associated diseases and has been a very valuable tool allowing compiled meta-analysis of data gathered from individual partners. ZIKAlliance is a partner in the European RECOCID network project. The unit also participated in the EU international networks CONVAT, RECOCID, KRONO, EVDLABNET focused on molecular diagnosis of infectious diseases; for these network activities several grants were received from H2020 and EDCTP.

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

Permanent personnel in active employment	
Professors and associate professors	3
Lecturer and associate lecturer	7
Senior scientist (Directeur de recherche, DR) and associate	0
Scientist (Chargé de recherche, CR) and associate	1
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	5
Research supporting personnel (PAR)	17
Subtotal permanent personnel in active employment	33
Non-permanent teacher-researchers, researchers and associates	3
Non-permanent research supporting personnel (PAR)	29
Post-docs	6
PhD Students	15
Subtotal non-permanent personnel	53
Total	86

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

Employer	EC	C	PAR
Aix-Marseille Université	7	0	2
Ministère des Armées	0	3	4
EPST	0	1	5
EFS	0	1	2
Inserm	0	0	2
Université de Corse Pasquale Paoli	1	0	0
APHP	1	0	0
CHU Marseille	0	0	1
EHESP	1	0	0
Others	0	1	1
Total	10	6	17

UNIT BUDGET

Recurrent budget excluding wage bill allocated by parent institutions (total over 6 years)	1.461
Own resources obtained from regional calls for projects (total over 6 years of sums obtained from AAP idex, i-site, CPER, territorial authorities, etc.)	127
Own resources obtained from national calls for projects (total over 6 years of sums obtained on AAP ONR, PIA, ANR, FRM, INCa, etc.)	4 523
Own resources obtained from international call for projects (total over 6 years of sums obtained)	6.785
Own resources issued from the valorisation, transfer and industrial collaboration (total over 6 years of sums obtained through contracts, patents, service activities, services, etc.)	863
Total in euros (k€)	13.759

GLOBAL ASSESSMENT

The unit comprises a single team and its work is devoted to the study of emerging viral diseases with specific expertise in the fields of arboviruses and respiratory viruses. The design of vaccines against these pathogens and the development of diagnostic tests is also an important activity of the unit. During the reporting period, the unit has been involved in several aspects of SARS-CoV-2 research.

The unit contributed to the recent institutional and organisational restructuring of the field of emerging viruses in France, in particular with the creation of the ANRS-Emerging Infectious Diseases and other national Covid-19 coordination groups. The unit was in charge of the serological analyses of large Inserm epidemiological studies and of the COVIREIVAC consortium of vaccine studies. The outstanding quality of the unit is embodied by its director, who has an outstanding reputation and visibility at the national and international level.

UVE has a policy of open communication and exchange between all personnel and at all levels, both for the discussion of scientific projects, the implementation of safety and protection standards and for access to training. UVE is attentive to the protection of its personnel by going beyond the recommendations and standards issued by the authorities. It invests in protective equipment, extensive automation of procedures, and a thorough vaccination policy. UVE gives its personnel access to high-level technological platforms thanks to investments and collaborations. These investments give its staff the opportunity to develop their skills and expertise.

The unit coordinates major international projects including the ZIKAlliance and EVAg thus participating in the construction of strong European research efforts in the field of emergent viruses and also showcasing the excellence of French research. An impressive collection of viruses has been stored, which are shared with the international scientific community via the European platform EVAg, of which UVE is the founding member and coordinator. An additional platform, AD2P, is dedicated to the screening of antivirals

During the evaluation period the unit has accomplished the publication of approximately 180 articles/year in specialized virology journals but also in top generalist journals including *Nature*, *the Lancet* and *NEJM*. Members of the unit are leading authors in some of these articles. This is an outstanding publication output which was achieved thanks to the involvement of senior scientists, early-career investigators and technical personnel of the unit. The unit has covered a large area of Arbovirus research; they have also demonstrated that they can promptly respond to new global threat by shifting their research area during the big Ebola outbreak and during the Covid pandemic period.

This unit has demonstrated outstanding skill to attract very competitive research grants for their topic as main applicant; since 2016 UVE has obtained 13 European grants (H2020, IM2 and ECDC, total of 13.886 million €) and 19 national grants (ANR, ANRS, Reacting, for a total of 6.935 million €). In addition, 5 new national grants have been awarded in 2022.

The unit has been active in educating a new generation of PhD students, from many different countries, in the field of emerging viruses but could improve the recruitment of postdocs and junior researchers.

Several collaborations with industrial partners (1.892 million €) were established and filing of patents (4) was achieved during the last period. Given the high societal interest of the unit's topics, and their outstanding expertise, the unit should develop additional ways to communicate with the public.

DETAILED EVALUATION OF THE UNIT

A - CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

Recommendations of the previous Hcéres report were:

1. Encouragement to participate in social sciences research in relation with its research program;
2. Suggestion to promote its research by producing documents directed at the civil society;
3. Suggestion to involve in more strategic multidisciplinary research consistently to the one health strategy supported by the IRD;
4. Allow the transfer of lab-made diagnosis activities to a biotech company.

The unit has complied with recommendations 1-3 by producing social science research within the frame of the international ZIKAlliance consortium coordinated by the unit, has supported French authorities with the production of scientific information and by conducting integrated research within the frame of the ZIKAlliance consortium.

The unit decided not to comply with recommendation 4 as this recommendation does not reflect its objectives. On the other hand, in respect to recommendation 4, UVE has produced a large number of tests and quality controls to be distributed to Latin America, South-East Asia and African countries, in cooperation with the European EVA programme.

B - EVALUATION AREAS

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

Assessment on the unit's resources

The unit has outstanding resources (facilities, equipment) and an outstanding capacity to mobilise competitive funding. The unit is in need of additional laboratory and office space.

Assessment on the scientific objectives of the unit

The scientific objectives of the unit are outstanding. The unit inserted itself into national and international networks remarkably. The unit supported a heavy charge of missions and duties associated with its activities concerning arboviruses and SARS-CoV-2. In the future, the unit will continue to focus on viral emergence responses, especially on arboviruses.

Assessment on the functioning of the unit

The unit's human resources management is excellent. The measures taken by the unit to prevent risks to its scientific assets and information systems are excellent. The high reactivity of the unit in case of need has been highlighted in the context of the Covid.

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

Strengths and possibilities linked to the context

The staff (71 persons) encompasses personnel from various institutions (University, Inserm, IRD, EFS, Army and employers supported from grants), with approximately 70% of research FTEs being contractual. The unit produced over the evaluation period between 158 up to 216 articles per year with less than 20 permanent

research FTEs. The unit is one of AMU's leading contributors to European programmes often as coordinator. It runs national and international research programmes. It has a very high level of activity dedicated to the service of the scientific community (scientific councils, various scientific bodies, advisory and monitoring units, working groups, etc.). The unit's activities are diversified between research, expertise, diagnosis, CNR and development aid.

The unit has ensured financial resources beyond its recurrent allocation. In the consolidated budget for 2021 recurrent allocations including salaries of permanent staff represent 19% and own resources (grants or services) represent 81%.

Resources are pooled for the purchase of shared equipment and to enable the emergence or maintenance of new themes that are important for the unit's scientific strategy (for example: antiviral therapies and reverse genetics methodologies). The unit has invested heavily in high-level platforms (automated serology, automated serum neutralisation, molecular biology, P3 and A3 laboratories, reverse genetics, etc.) and has signed collaboration agreements to benefit from easier access to external technological platforms.

Weaknesses and risks linked to the context

There are two types of activities in the unit: the diagnostic activities (in particular the CNR) and the research activities involving viral genetics. The hope of the unit is to carry out these activities in separate facilities. The spatial separation of diagnostic activities from research labs is vital to this unit and depends on space to be made available to the unit.

Access to technological tools, to hospital biological samples and an environment providing facilitating research depends on governance within the IHU, in which part of the unit is located.

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

Strengths and possibilities linked to the context

The unit has an advanced knowledge of national and international issues and actors (as shown by its participation and capacity to coordinate international programmes in its fields of expertise).

The unit has been concretely and strongly involved in the recent evolution of the institutional and organisational structuring of the field emergent viruses, in particular with the creation of the ANRS-Emerging Infectious Diseases. The unit was involved in the agency's Covid-19 scientific council, coordinated the GEPC (preclinical studies group about coronavirus), participated in the molecule prioritisation group and various other ANRS-MIE working groups. The unit also coordinated the research component of the Emergen consortium's genomic surveillance programme and was in charge of the serological analyses of the large epidemiological studies of Inserm (SAPRIS, EPICOV - representing several hundreds of thousands of samples) and of the COVIREIVAC consortium of vaccine studies (about ten clinical studies on primary vaccination and homologous or heterologous booster in particular populations).

The impact of the research activity of the unit can be evaluated through the numerous citations in scientific publications, and through a strong societal impact; for example, in the case of Covid: the modulation of vaccine strategy (COVIREIVAC consortium as an example), the qualification of antiviral therapies and the development of therapeutic recommendations.

Weaknesses and risks linked to the context

The low number of statutory staff is concerning in regard to the number of ongoing projects. In spite of this, the unit supported a heavy charge of missions and duties that are associated with its activities concerning emerging arboviruses and respiratory viruses (especially SARS-CoV-2).

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

Staff is encouraged to take training, regardless of their initial qualification and their permanent or contractual status. The unit complies with the issue of gender equality at all career levels.

The unit relies on its RSST registers, its prevention assistant and its weekly laboratory meetings, which are open to all, in order to pay attention to the working conditions of its staff, their health and safety and the prevention of PSR.

Level 3 laboratory protection standards have been raised by the laboratory council far beyond the usual recommendations, with the use of overpressure bonnets for many years, a very large automation of procedures to limit handling, massive investment in protective equipment and the implementation of a demanding vaccination policy.

The internal regulations and the staff welcome booklet specify all the measures put in place especially the organisation of biosafety and staff training. New arrivals are systematically included in a clearly identified tutoring procedure.

In November 2020, faced with the deterioration of working conditions within the IHU, the unit's management became concerned about possible RPS and malaise in the workplace; it convened a general assembly to support the staff and to discuss, in the presence of the supervisory authorities, the measures to be taken and a possible exit from the IHU. Albeit these issues, the observations of the Hcéres committee were a strong leadership of the management team, an excellent cohesion of the group, quality of human relations, strong motivation of the staff and renewed support to their management. The management of the unit has done an outstanding job to protect the personnel at all levels from the stressful situations (scientific disputes and pandemic) that have taken place over the last 3 years.

Bioinformatic equipment and data storage as well as internet security were well organized.

Public procurement, energy and resource saving, reduction of the carbon footprint, particularly in travel management, waste treatment and biodiversity preservation are at focus in the management of the unit. The unit complies with regulatory requirements and encourages teleworking and videoconferencing.

As expected regarding a unit involved in studies dealing with emergent viruses, the unit's activity increased during the different phases of the SARS-CoV-2 pandemic (including the containment periods). The UMR had put in place reinforced safety measures beforehand (FFP2 masks in all work areas, overpressure respirators in the P3 laboratories, unlimited and generalised access to hydroalcoholic gels, etc.). It set up a vaccination program. Interestingly the Covid crisis confirmed the robustness and responsiveness of the unit's organisation to guarantee continuity of activity in the event of an emergency situation.

Weaknesses and risks linked to the context

The number of permanent staff is considered as low compared to the heavy load of activities. The constant turnover of non permanent staff is a problem to maintain activities. There is a shortage of administrative staff.

EVALUATION AREA 2: ATTRACTIVENESS

Assessment on the attractiveness of the unit

The UVE is at the forefront of research on emerging viral infections with international visibility and emphasis on arboviruses. The dynamism of the unit is outstanding, in terms of scientific production, funding capacity, and coordination of large national and international projects. The quality of the research carried out and the unique expertise that the unit has developed make it a particularly attractive environment.

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

Although relatively small in size, the unit has important national and international influence due to its expertise, its publication record and its ability to obtain numerous grants, particularly from the EU. This influence is also due to the major international projects coordinated by the unit, such as ZIKAlliance or EVAg. These projects actively participate in the construction of strong European research and also showcase the excellence of French research. Members of the unit receive regularly invitations to present their work in national and international workshops and conferences (Global Virus Network, AFRAVIH). PhD students also attended national and international conferences on a regular basis. The unit hosts conferences related to its international research projects including ZIKAlliance, EVAG and ARBO-France network.

The outstanding quality of the unit is embodied by its director, who has an outstanding reputation and visibility. In addition to steering these international projects, he also sits on the scientific advisory committees of numerous national and international bodies (including WHO committee on priority pathogens, ARBO-France, CS Covid of ANRS-MIE).

Senior members of the unit have also been involved in editorial boards of five international peer reviewed journals (*Viruses, Pathogens, Plos Neglected tropical diseases, Virus evolution, Vector Borne & Zoonotic diseases*).

Weaknesses and risks linked to the context

Young (statutory) personnel lacks visibility.

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

Strengths and possibilities linked to the context

The solid reputation of the unit makes it particularly attractive. This attractiveness has been illustrated during the period under evaluation, as the unit has welcomed 34 new members of staff since 2016, including 19 PhD students and 5 postdocs. 17 students have completed their thesis over the last 5 years, reflecting the dynamic environment of the unit; PhD students who presented their thesis have between 3-5 publications on average, two as first author. It should be noted that the unit succeeds in attracting foreign students, especially from southern countries.

The unit involves its staff in its research policy and they have the concrete possibility to propose and coordinate projects. The researchers supervising a research programme sign them last and the young researchers who carry out the experimental stages and data analysis sign them first. The scientific strategy is regularly presented to the unit's general assembly in the presence of representative of institutions. In total 13 statutory researchers hold an HDR.

Weaknesses and risks linked to the context

While the unit is very attractive to PhD students (17 defended their PhD thesis), it seems less attractive to postdocs and junior researchers, as only 5 post-docs worked in the unit during the reporting period.

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's ability to raise funds nationally and internationally is remarkable. Indeed, UVE has obtained 13 European grants (H2020, IM2 and ECDC); the grant leaders of these projects were the unit director (8), the unit deputy director (4) or additional members of the unit (1 project). In total the international grants amounted to 13.886 million Euros.

In addition, 19 national funding (ANR, ANRS, Reacting, etc.) were received from the unit in the evaluation period. The unit director was the grant leader of 16 of these projects and the remaining ones were coordinated by other members of the unit. The nationally awarded grants amounted to 6.935 million Euros.

Weaknesses and risks linked to the context

None.

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

Strengths and possibilities linked to the context

The unit is at the forefront of arbovirus research and has unique equipment, capacities and expertise, that makes it a key player in research on emerging viruses and in monitoring and preparing for current and future viral epidemics. Firstly, it has an impressive collection of viruses, which it shares with the international scientific community via the European platform EVag, of which it is the founding member and coordinator. It is also equipped with a BSL-3 laboratory neutralization platform, significant molecular diagnostic capacities and the AMU platform AD2P, dedicated to the screening of antivirals. These state-of-the-art infrastructures and the associated expertise allow UVE to host the national reference center (CNR) for arboviruses. The unit is therefore a key player in the research, diagnosis and characterization of emerging viruses.

Weaknesses and risks linked to the context

The activity of the platforms and the CNR are by nature very consuming of space, personnel and funding. This may affect the academic research of the unit, which is important for maintaining a cutting-edge research activity.

EVALUATION AREA 3 : SCIENTIFIC PRODUCTION

Assessment on the scientific production of the unit

The scientific production of the unit is outstanding.

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

Strengths and possibilities linked to the context

UVE scientists have been important players at the international level in response to growing emerging viral diseases. The unit has published over 1080 articles in peer-reviewed journals between 2016-2021. The publication frequency has previously (2016-2019) been over 158/year, and this increased during the pandemic up to 216 publications per year (2020-2021). This is a very high number of published research articles in an international context for a unit with such structure and size.

The members of this unit are either senior author or corresponding author in about 30% of the reported publications. The focus of research of this unit is emerging viral zoonosis. Beside the large number of publications in these specialized journals, the unit reported several publications in journals of high visibility and general distribution including 23 publications in *Lancet journal family*, 10 in *New England Journal of Medicine*, 10 in *Nature* and *Nature family journals*, 7 publications in *JAMA*, etc; these publications in journals of high visibility result from collaborations and the members of the unit have a prominent role only in some of those. The research portfolio of the unit spans from basic science to more translational science.

In general, the unit has demonstrated excellent level of production of peer reviewed research reports of very high quality. The unit has covered a large area of Arboviruses research; they have also demonstrated that they can respond to new global treat by shifting their research area (such as their activities during an Ebola outbreak and during the Covid pandemic period).

Weaknesses and risks linked to the context

The research area addressed by the unit is rather broad. To focus more on a more restricted number of topics will most probably increase the impact of the outcomes.

As for many other laboratories world-wide, scientific publications on SARS-CoV-2 infection and related diseases reached journals of high visibility and impact. This has increased the visibility of the unit UVE, but may be of temporary nature.

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

During the reporting period, the unit, in addition to the historical focus, has been involved in several aspects of SARS-CoV-2 research; in view of the novelty and high relevance, research on SARS-CoV-2 conducted by the unit has been published in high profile journals. All tenured researchers and professors have contributed to the scientific production of the unit with a ratio of 57 publications / scientist. The unit appears to have an agreement in place for senior authorship of publication favouring scientists in charge of research projects.

Weaknesses and risks linked to the context

No weaknesses detected.

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

UVE staff reports research protocols and experiments in laboratory notebooks; these are proofread by senior scientists. The interpretation of results and the choice of journals in which to publish are conducted by the group of young and more established investigators. According to these procedures results are traceable and possible to reproduce. Data are deposited on a UVE server but also in additional external server space acquired from AMU.

The unit advocates data sharing through the collaborative network ZIKAlliance which may ultimately lead to meta-analysis of the data generated by individual laboratories in the alliance. UVE is also a partner in the European project RECOCID which aims at promoting data sharing in the field of infectious diseases.

Weaknesses and risks linked to the context

Regular general meetings of the unit with PhD students and other young scientists presenting and discussing their results were not held regularly. The percentage of open access publications is low.

EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

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

The unit is involved in outstanding operational research (clinical studies and research, collaboration with private partners) and provides outstanding expertise in national and international committees. The general public communication component is part of a controlled strategy with regard to the strong demands linked to the pandemic and the fact that UVE has belonged to a particularly visible IHU over the past two years.

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

Strengths and possibilities linked to the context

UVE was closely linked with AP-HM (Assistance Publique Hôpitaux de Marseille) and was leader of 8 clinical studies. Through its vast expertise, consulting and other development activities (diagnostic tests), UVE has made an outstanding work especially during the covid pandemic as indicated by the numerous committees that UVE researchers have joined these last 4 years. The unit regularly contributes to working groups of the HAS, the HCSP or other bodies interacting with the HAS and the HCSP (ANRS-MIE, Covid interministerial therapeutic cell, Vaccine Strategy Orientation Council, Vaccin Covid Scientific Committee etc.).

The indisputable proof of the recognition of their expertise is reflected in the recent (October 2022) appointment of the director of UVE to the « *Comité de veille et d'anticipation des risques sanitaires (Covars)* » by the French government, which took over from the Covid-19 scientific council (with expanded missions) for national advice on epidemic risks.

As part of the popularization component of the EVA project, European Researchers Nights have been organized.

Weaknesses and risks linked to the context

No weaknesses were identified.

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

Strengths and possibilities linked to the context

The UVE was granted close to 1.9 millions € through industrial partnerships (Becton Coulter, Evotec, Immunotech, Janssen and more; 14 contracts in total) in the last 5 years. This impressive work is indeed true non-academic interaction, even if it is not at the origin of creation of a start-up company.

Four patents have been filed between 2014 and 2020, for generation of infectious and attenuated RNA viruses, and treatment of coronavirus.

Weaknesses and risks linked to the context

No weaknesses were detected.

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 unit's scientists take part in science festivals and in scientific events such as the Polytech days with presentations and discussions.

During the pandemic, UVE had to deal with their administrative belonging to the IHU, associated with a lot of exposure in social media. UVE adapted a strategy to avoid the spotlight and rather work « with great reserve and assume this position in the specific context of the IHU » (quotation from the AER). In the controversial context of the IHU, this approach has proven to be a good strategy.

Weaknesses and risks linked to the context

A website dedicated to the work and activities of the unit is not present; this would be rather important to increase the interaction with the general public.

The unit still has limited capacity (skill and resources) to carry out analyses of economic and societal impact of their activities in order to communicate them to the public.

C - RECOMMENDATIONS TO THE UNIT

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

The number of scientists is low in relation to the activities conducted by the unit; several scientists at all career levels including post docs should be recruited. Increasing permanent technical staff would be important to ensure continuity and maintenance of technical skills. There is a chronic shortage of administrative staff.

The unit needs more laboratory space to further develop its research as well as diagnostic activities.

Recommendations regarding the Evaluation Area 2: Attractiveness

The unit should maintain its visibility, both nationally and internationally. As the current visibility is linked to the unit director, both junior unit members as well as the unit's technological platforms should gain in visibility. A dedicated, comprehensive and up-to-date website would help for this.

The field of viral emergence will play an important role in the future with new pandemics; it is therefore important to prepare a new generation of young scientists in the field of viral emergence. The work of UVE should give focus to the recruitment of competent international post-doctoral fellows, to give training in science and prepare them for leadership of the future. The unit's research activity will benefit by promoting more actively the affiliation to UVE of visiting professors and/or senior scientists from other international recognized universities to further develop their collaboration with recognized research institutes.

The unit should further reinforce its strategic plan to ensure that a good balance is maintained between the important, cutting-edge research activity and its CNR and platform commitments.

UVE should maintain its outstanding level of funding, with national and European grants. This unit should also try to mobilize research Grants from NIH, Bill & Melinda Gates Foundation and other international funding agencies.

A future workshop and network building could address how to connect emergence of new viruses/viral diseases to global climate changes.

Recommendations regarding Evaluation Area 3: Scientific Production

The percentage of open access publications should be increased; these will further increase the visibility of the research outcome of this unit.

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

The design, development and maintenance of an attractive website is mandatory in the future of this unit. The website is an important tool for information to scientists and laymen and can also to some extent be rendered interactive.

The unit could consider participation in social platforms to inform the public on their discoveries and activities.

Outreach dissemination activities should be organized to improve visibility of the unit.

The level of economic interaction of the unit could be improved through collaborations with experts in commercialization.

CONDUCT OF THE INTERVIEWS

Date

Start: November 29th of 2022 at 9 am

End: November 29th of 2022 at 6.30 pm

Interview conducted online

INTERVIEW SCHEDULE

09:00-09:05	Hcéres rules and procedures by B. Bartosch Public Session (all unit members)
09:05-10:25	Administrative and scientific presentation of the unit Including question answer session Public session (all unit members)
10:25-10:50	Debriefing committee (closed door meeting)
10:50-11:20	Meeting with ITA (in French) In the absence of any managing staff
11:20-11:50	Meeting with researchers In the absence of any managing staff
11:50-12:20	Meeting with post-docs and students In the absence of any managing staff
13:15-14:00	Meeting with institution representatives (closed door meeting)
14:00-14:30	Debriefing committee (closed door meeting)
14:30-15:30	Meeting with the management team of the unit (closed door meeting)
15:30-18:30	Redaction of the final report (closed door meeting)

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-PUR230023381 - UVE - Unité des virus émergents

Marseille, le mercredi 21 juin 2023

Madame, Monsieur,

Je fais suite à votre mail du 23/05/2023 dans lequel vous me communiquiez le rapport d'évaluation Hcéres de l'Unité de Recherche UVE - Unité des virus émergents.

Comme demandé dans ledit mail, je vous indique que les tutelles de l'UVE, Aix-Marseille Université l'Inserm l'IRD, 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

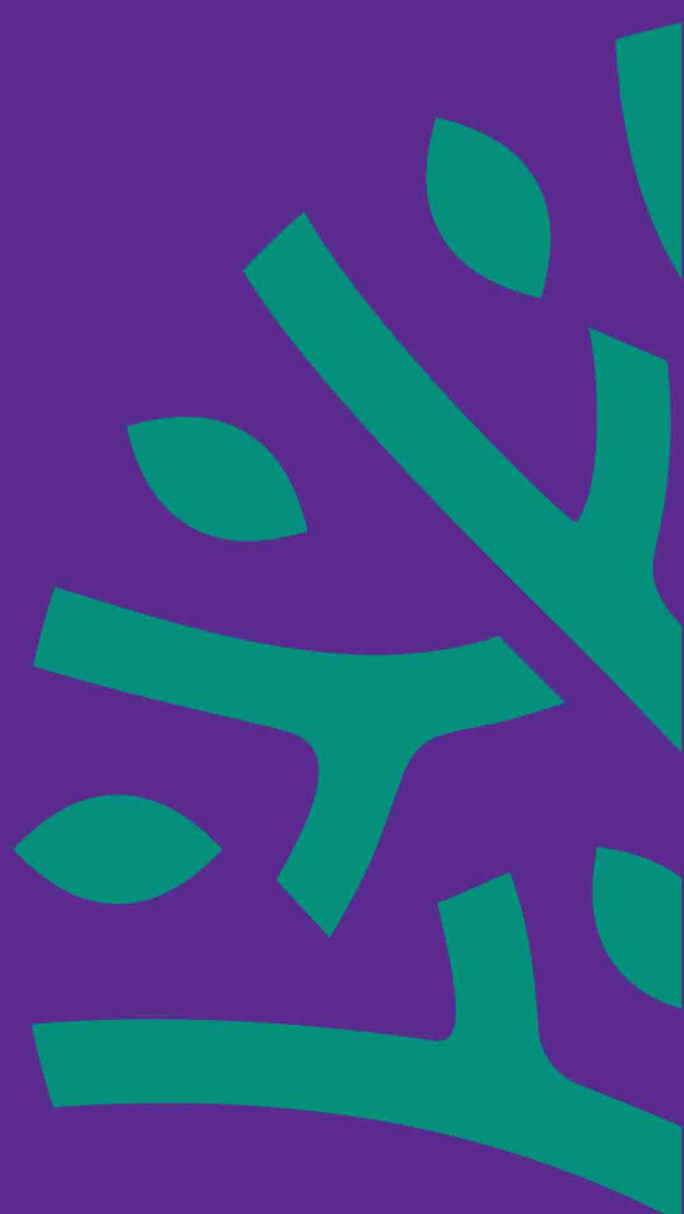
Evaluation of Universities and Schools

Evaluation of research units

Evaluation of the academic formations

Evaluation of the national research organisms

Evaluation and International accreditation



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