Research evaluation

EVALUATION REPORT OF THE UNIT

INP - Institut de neurophysiopathologie

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

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In the name of the expert committee[1] :

Frédérique Liegeois, Chairwoman of the committee

For the Hcéres[2] :

Stéphane Le Bouler, president par intérim

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 Frédérique Liegeois, University College London, Royaume-Uni
Experts:	Ms Carine Ali, Normandie University, Caen Mr Vania Broccoli, San Raffaele Scientific Institute, Italy Ms Olga Corti, Institut national de la santé et de la recherche médicale, Paris Ms Sophie Crespin, Université de Lille (PAR representative) Mr Eric Peyrin, Université Grenoble Alpes (representative of CNU) Mr Marc Sanson, Sorbonne Université, Paris Ms Sylvia Soares, Sorbonne Université, Paris (representative CoNRS25) Ms Elisa Zanier Mario, Negri Institute for Pharmacological Research, Italy

HCÉRES REPRESENTATIVE

Mr Giovanni Stevanin, INSERM, Paris

CHARACTERISATION OF THE UNIT

- Name: Institut de neurophysiopathologie
- Acronym: INP
- Label and number: UMR7051
- Number of teams: 11
- Composition of the executive team: Mr Michel KHRESTCHATISKY

SCIENTIFIC PANELS OF THE UNIT

SVE Sciences du vivant et environnement

SVE5 Neurosciences et troubles du système nerveux

THEMES OF THE UNIT

The overarching aim of the Institut de Neurophysiopathologie (INP) is to study the central nervous system (CNS) and develop novel therapeutic avenues. At the end of the previous contract period (December 2021) it comprised eleven teams, with two main topics being neuro-oncology and neurodegeneration with multiple collaborations between teams and topics.
Within the neurodegeneration field, three teams are engaged in finding new therapeutic avenues: Team 1 (neural plasticity and degeneration) focuses on pathophysiological mechanisms underlying Alzheimer's disease, Team 3 (Blood Brain Barrier and neuroimflammation) studies the role of the blood-brain barrier (BBB) in neuroinflammation and neurodegenerative conditions, and Team 6 (Modelisation of pathology and neurodegeneration), studies molecular and cellular mechanisms that drive pathogenic processes in the human disease brain using stem cells. In addition, Team 4 (neurobiology of memory processes) aims to characterise the neurobiological changes during learning and memory processes, in health and disease, with diagnosis applications, and Team 7 (Neurocyto) specialises in the cytoskeleton and neuronal physiology.
Within the neuro-oncology axis, Team 8 (GlioME: Gliomageneis and MicroEnvironment) focuses on human gliomal biology with a view to identifying novel therapeutic avenues, while Team 10 (Angionesis, invasiveness and microenvironment) examines the role of adrenomedullin in glioblastoma growth and vasculature.
At the interface between the two main axes, Team 9 (Cytoskeleton and neurophysiopathology) aims to characterise cytoskeleton regulation in tumour and neurodegenerative processes. The three other teams are specialised teams: Team 2 (genes, rhythms and neurophysiopathology) examines the molecular mechanisms underlying circadian clocks and how they are disrupted in neurological conditions, Team 5 (Neuro-inflammation and Multiple sclerosis – MS) examines the role of TWEAK (TNF-related weak inducer of apoptosis) in neuroinflammation and MS, with a view to identifying novel therapeutic avenues and Team 11 (Nasal olfactory stemness and epigenesis) studies olfactory stem cells for brain repair.

HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

The INP was created in January 2018 and is currently reunited on a single refurbished site (Timone campus) from 2019 to reduce the dispersion of the neuroscience units of Marseille.
Historically, the INP was created by merging several teams located on distinct geographical sites. Eight teams came from the Faculté de médicine (North site): five teams were from the former NICN unit (Laboratoire de neurobiologie des interactions cellulaires et neurophysiopathologie) and three were recently emerging teams from NICN and CRN2M (Centre de recherche en neurobiologie-neurophysiologie de Marseille) units. One Biotech company (VECT-HORUS) that emerged from one of the INP's groups, also came with these teams. In addition, three teams specialising in neuro-oncology joined INP from the other local site (Facultés de Médecine et de Pharmacie — Timone campus).
All teams, their associated platforms and the Vect-Horus biotech are located on four different floors of the main Marseille Medical Faculty building of the 'Campus Santé Timone'.

RESEARCH ENVIRONMENT OF THE UNIT

The new location allows the INP to benefit from the proximity of other labs in Pharmacy and Medical universities as well as two Neuroscience Institutes (INT and INS), with complementary approaches used for in-vivo imaging, computational neuroscience, neurophysiology research. The proximity of the INP to the Timone AP-HM hospital facilitates collaborations with relevant clinical services (Neuro-oncology and Neurology).
The INP can also access research platforms on the Timone Campus such as imaging facilities in Pharmacy and Medical faculties (MALDI, flow cytometry) and several imaging platforms of various centres nearby (CERIMED, CEMEREM, CRMBM, INT: PET, SPECT, MRI, bi-photon). Of note, a Level-3 confinement laboratory is now available in the Timone Campus for lentiviral and adenoviral production, cell culture, etc.

INP benefits from funds from the AMU university. AMU is a young university (created in 2012 from the fusion of three local universities) which promotes novel interactions between groups that were not in the same previous universities through Labex and Idex. INP received research funds (AMIDEX Pépinière 2018-2019), postdoctoral fellows (n=2) and a salary for a business developer in charge of the platform's development, from AMIDEX. Overall, this teams' relocation has made the Timone Campus one of the main poles of neuroscience research in France, to which INP contributes significantly with original research and up-to-date facilities.

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

Permanent personnel in active employment	
Professors and associate professors	12
Lecturer and associate lecturer	15
Senior scientist (Directeur de recherche, DR) and associate	5
Scientist (Chargé de recherche, CR) and associate	7
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	50
Subtotal permanent personnel in active employment	**89**
Non-permanent teacher researchers, researchers and associates	3
Non-permanent research supporting personnel (PAR)	7
Post-docs	4
PhD Students	29
Subtotal non-permanent personnel	43
Total	**132**

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

Employer	**EC**	**C**	**PAR**
Aix-Marseille Université	27	0	31
CNRS	0	8	17
Inserm	0	3	0
CHU Marseille	0	0	2
EFS	0	1	0
Total	**27**	**12**	**50**

UNIT BUDGET

Recurrent budget excluding wage bill allocated by parent institutions (total over 6 years)	**1,641**
Own resources obtained from regional calls for projects (total over 6 years of sums obtained from AAP idex, i-site, CPER, territorial authorities, etc.)	2,279
Own resources obtained from national calls for projects (total over 6 years of sums obtained on AAP ONR, PIA, ANR, FRM, INCa, etc.)	5,465
Own resources obtained from international calls for projects (total over 6 years of sums obtained)	274
Own resources issued from the valorisation, transfer and industrial collaboration (total over 6 years of sums obtained through contracts, patents, service activities, services, etc.).	1,334
Total in euros (k €)	**10,993**

GLOBAL ASSESSMENT

The INP is a large research unit (~130 researchers) that has undergone major changes in the last contract period, namely a move to a newly refurbished site in the Timone Campus and an internal restructuring. It now hosts eleven teams with scientific objectives focused mainly on neurodegeneration and neuro-oncology, and all converge towards translational goals. There is strong evidence of interactions between basic and translational science, with established clinical (mainly AP-HM Neuro-oncology and Neurology departments) and industry partnerships (e.g.: Servier, Lucas Meyer, Neuron Expert, VectHorus).
It was acknowledged that the COVID-19 pandemic may have hindered some of the original plans, for instance due to travel restrictions and lab closures and delays in the relocation of the teams. Despite this, scientific productivity and income generation have remained strong (> 500 publications or reviews, 50% of them with leading positions of INP members).
The INP has addressed most previous recommendations from HCERES. They regrouped within a single site, expanded their international visibility with collaborative projects (>20, including with industries) and successful international grants (INT, CoEn…), invested in local platforms and redeployed staff. They also recruited new researchers (3 permanent positions of CNRS researchers, 4 permanent support staff), strengthened their translational work via publications (such as Molino et al., FASEB J 2017; Pellegrino et al, Scientific rep 2021 ; Garcia-Gonzalez et al., FASEB J 2021; Soubéran et al., Stem Cells 2019) and patents (n=11), and maintained their public engagement activities. English is now used in most internal seminars.
In terms of strengths, the unit's profile, resources, and organisation are now well suited to its activity. The unit benefits from sufficient support staff (50 Research supporting personnel among 89 permanent personnel), state-of-the-art new platforms (e.g.: the NCIS imaging platform recognised as a Nikon Centre for Excellence) and has secured a high proportion of own funds (~11M€) to carry out its activities over the 2016–2021 period. There are several teams with highly innovative scientific approaches, and the partnership with industry has been fruitful (particularly with VectHorus and Nikon for example). Given its resources (staff, platforms) and novel visibility inside the Timone Campus, the unit has great potential to further increase its international visibility and its income from international calls in the future, still limited at present (n=1 with Wisconsin University, and n=4 at the European level).
Areas for improvement include the number of publications signed by doctoral students (19 students at the end of the contract period and 58 trained during the five-year period): only 131 publications signed by PhD students among 428 original papers, which is lower than expected from an institute of this size and with such a high number of support staff (n=50). Similarly, the level of international funding income (one non-European grant) remains modest but there is potential for post-COVID-19 improvement given the novel attractiveness the unit has gained with its restructuration and platform development. There is also overall an imbalance between teams, for all criteria evaluated. When focusing on teams present during the full contract period, productivity (9 to 146 publications/team) varied widely and was correlated with team size (5 to 24 people) and contract numbers (1 to 27/team), more than by the number of PhDs or postdoc trained, but this heterogeneity calls for a need for reorganisation for the benefit of some teams, some being in need of a plan for continuation in particular because the scientists are close to retirement and have difficulties to stabilise permanent staff or attract students (e.g. Teams 2 and 4 with 3 and 2 PI respectively). Collaborative projects between teams exist since all teams had common publications with another or multiple INP teams, but this could be further increased for some projects (neurooncology field, rhythms and angiogenesis) and may benefit for more multimodal approaches, including with AP-HM.

DETAILED EVALUATION OF THE UNIT

A – CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

Recommendations from the previous HCERES report included

(i) regrouping teams geographically
(ii) increasing the number of high-impact outputs
(iii) increasing international collaborations and visibility
(iv) redeploying support staff between teams
(v) increasing number of PhD students.

Regrouping and Visibility. To increase attractiveness, the building has been renovated from 2016 to 2017 and the last part till July 2019. However, COVID crisis disrupted the full setting up of the unit. Most or the unit forces were regrouped into the unique site of the Timone Campus in July 2019, within the vicinity of two other Neuroscience institutes to strengthen research in Neuroscience locally (NeuroTimone). Some teams are involved in international collaborative projects (Europe, USA) and have been successful in securing European funding (ITN, CoEn), thus indicating that the international visibility is real for these teams (1, 3 and 10). INP has maintained and accentuated the development of translational research, from the bench to the clinic. The valorisation (11 patents), as well as its interaction with the socio-economic world (private-public partnerships) are strong in many teams, therefore increasing the institute visibility. To face several members' retirement, the unit has pursued its effort to recruit early-career CNRS scientists and group leaders whose works fit within the unit's overarching themes such as a group leader in cytoskeleton dynamics at the interface between all research axes of the unit. Finally, the development of new platforms has benefited from enormous investment. These have been labelled by University, CNRS and INSERM, and by Nikon (excellence pole) for one. Each has a scientific advisor and at least one technical responsible person (4 engineers were recruited over the period). Nevertheless, teams maintained their development (even for those emerging) helped by major means, equipment, and significant technical support.
Internal seminars can be in English, and several foreign scientists were invited to present their work. Some journal clubs are organized at the level of the teams.

Publications. In addition to the eleven patents, the unit has published a large number of original publications despite the international COVID19 pandemic situation and the unit relocation: 428 original articles, representing a means of eleven articles per permanent researcher.

PhD Students. The pandemic situation and the relocation affected PhD and postdoc recruitment. Still, nineteen PhD students were present at the end of the 2018–2021 period, less than half of what the unit was used to hire in previous contracts, and less than the number of HDR holders (n=29).

Staff redeployment. According to the recommendation of the previous HCERES committee, several engineers and technicians have been redeployed from one team to another taking into account personal desire and skills. Some have been replaced.

B – EVALUATION AREAS

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

Assessment on the unit's resources

The INP unit benefits from state-of-the art, updated and excellent platforms (IPSC, imaging with the Nikon label of excellence) and a favourable ratio of scientists to engineers (50 support staff for 39 permanent researchers) that enable cutting-edge and innovative research on two main topics (neurological diseases and neuro-oncology) where diagnosis, biomarkers and therapies are still lacking. The unit has managed to secure 2/3 of its budget (11M€) from external national and international competitive grants such as H2020, INca, ANR or FRC, which is an excellent result for a unit comprising ~130 people.

Assessment on the scientific objectives of the unit

The general strategy of the unit is excellent since combining fundamental scientific work to pinpoint therapeutic targets (e.g. Teams 1 or 2) or develop technical tools (e.g. Teams 3 or 7), and translational work in collaborations with clinical services (particularly the neurology and oncology departments of the AP-HM hospitals). The INP's strategic priorities include many translational projects on neuro-oncology and neurodegeneration that are well suited to its modern and excellent platforms (Stem and IPSC, imaging and molecular interaction, in particular), and links with industry or start-ups (Vect'horus, Sandoz, Nikon...).

Assessment on the functioning of the unit

The INP has put in place the operating procedures usually observed in a unit of this size (1 director assisted by 3 deputy directors for ~130 people). The identification of a deputy director specifically in charge of human resources and the success of a call for Quality of Life at Work projects show the desire to reinforce quality support for the careers of personnel. A deputy director in charge of the platforms shows a clear investment of the unit to advanced technical skills in innovative domains (imaging, interactome). The visibility is ensured partially by a scientific animation deputy director. Of note, the security of data is a point of particular attention on the part of the management because of the intellectual property/economic intelligence issues at stake. The women ratio in managing positions remains low. The HDR to PhD student ratio is also low (19 PhD for 29 staff members holding an HDR) to ensure competitive research in fields that are very competitive at the international level.

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

Strengths and possibilities linked to the context

The INP has 89 permanent staff, including 39 researchers. The ratio between technical and scientific staff (ITA +BIATSS/C+EC) is quite favourable (~1.8) in comparison to the average of 0.8 in laboratories of the CNRS – 'Institut National des Sciences Biologiques (INSB) ». The precarity index (CDD/permanent) of technical staff is low (0.1).
Over the period 2018–2021, the average annual budget of the INP is around 2 million euros. Excluding the payroll of permanent staff, support from AMU and CNRS represents on average 20% of this budget. The INP thus ensures that its budget is supplemented by its own resources. The success rate in competitive calls for proposals is 22% with an increase in the number of projects funded by the ANR or the PIA between 2018 and 2021.
A shared administrative and technical support is set up within the laboratory.
A 20% share is deducted from each contract to finance the global operations, the purchase of small equipment and to supply the common stocks of the INP.
Overall, the unit therefore has excellent staff support and has secured over 2/3 of its budget with a very good efficiency via successful regional and national calls and some international ones.

Weaknesses and risks linked to the context

Particularly advanced technological approaches or expertise are accessible via recognised platforms (NCIS, PINT) or high potential platforms (SCENT) inside INP. Regarding the recognition of the INP's platforms and the four IE/IR recruited since 2018, income from external contracts appears still limited (<100 k€ per year) to maintain their update. The hiring of a transfer engineer shared with other platforms offers the possibility of rapid revenue growth for the next five-year contract.
In addition, the proportion of funding from international bodies has increased but remains a small proportion (<5%, 274k over the period) given the unit size and its potential.

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

Strengths and possibilities linked to the context

The INP has set up several transverse research axes as priorities, as well as the development of excellent platforms and the LabCom (Laboratoire Commun de Recherche) which offers advanced technological platforms in partnership with the spin-off company Vect-Horus.
Three researchers were hired in 2016, 2017, and 2018. Two researchers have strengthened the transversal axes on Alzheimer's disease and aging (teams 1, 3, 4 and 6) and on glioblastoma (teams 8, 9 and 10). A third researcher with a strong technological background has developed a high potential platform for the generation and use of hiPSCs for modelling purposes. The recognition of the NCIS platform as a 'Nikon Centre for Excellence' also allows the whole INP to benefit from first-class super-resolution microscopy approaches.
Completely renovated premises with a surface area of 3,800 m² have been made available to the laboratory. The installation in these premises in the immediate vicinity of the other Marseille neuroscience institutes is likely to reinforce the interactions between the teams and to increase the visibility and attractiveness of the INP in what can be considered now as one of the major neuroscience poles in France.
Overall, the unit benefits from a range of state-of-the art platforms within a local interdisciplinary environment, providing great potential to increase its translational impact post-pandemic.

Weaknesses and risks linked to the context

No recruitment of permanent staff has occurred between 2019 and 2021, but this was a period impacted by the Covid pandemics. Six team leaders, including the INP director, will be 60 years old or older at the beginning of the next five-year contract. Two candidates have been presented by the laboratory in 2022, one on an AMIDEX Chair of Excellence and the second one, holding an ATIP, has been presented to the a CNRS for a permanent position.
The committee think the INP had a moderate number of postdocs (6) and PhD students (58 trained over the period, with nineteen still present at the end of the contract period for a total of 29 HDR holder). This is probably due to insufficient HDR holders and because of the COVID pandemics.

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 INP has internal regulations and a welcome booklet for newcomers. The appointment of a deputy director in charge of human resources is a positive sign of the importance attached by the management to the careers of staff. Non-permanent staff are encouraged to take part in competitive examinations. Care is taken to prepare annual evaluation files.
The INP has two prevention assistants which is consistent with the size of the unit and the biological and chemical risks associated with the various activities (human cells, various technics). They ensure compliance with the regulations in force concerning GMOs and update the risk assessment document annually.
The INP was a winner in 2019 of the 'Quality of Life at Work' call for projects launched by the CNRS.
The unit has put in place the appropriate measures in terms of management and security of the data generated (server in an air-conditioned room, regulated access, and redundancy of the electrical supply). Projects associating the laboratory with private partners are subject to vigilance regarding intellectual property issues. The computer engineer of the unit ensures the implementation of the recommendations of the chief information security officers of the supervising institutions.

Weaknesses and risks linked to the context

Among tenured researchers and lecturers/professors (E-C), the gender distribution is 38% (15) women for 62% (24) men. Women are team leaders of three teams out of eleven. On the contrary, a large majority of technical staff are women (78%). Since 2018, 263 people have worked at INP with a ratio of 60% women and 40% men. The same ratio is found among the 61 PhD students registered (including those who stopped prematurely) in the Institute between 2016 and 2021. The imbalance in the ratio of women to men in positions of responsibility is likely to be attenuated in the next years because of the retirement of researchers and university lecturers/professors (E-C) and the trend towards more women taking the competitive examination as mentioned in the self-evaluation report.

EVALUATION AREA 2: ATTRACTIVENESS

Assessment on the attractiveness of the unit

The Unit has implemented an excellent policy to ensure a stable recruitment of junior and senior researchers with dedicated spaces, scientific guidance, and secured the budget. Doctorate students are integrated in the doctoral school with dedicated activities, monitoring committee and scientific mentorship. The Unit has succeeded in recruiting competitive scientists with permanent positions (n=3) and technical personnel (n=4) with high technological expertise for managing and supervising the core facilities with excellent skills. Attractiveness and scientific visibility appear very good at the institute level but heterogeneous between teams. The overall activities of unit members on editorial committees and the awards received by some of them (e.g., Académie Nationale de Pharmacie, Fondation ARC) also contributes to the visibility of the unit.

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

Members of the Unit are involved in organising national and international scientific meetings (e.g. Congress on Medical Biology and Genetics, European Meeting on Glial Cells in Health and Disease) and participate actively to scientific organisations as members of steering bodies (e.g. Société Française de Neuropathologie, EORTC Brain Tumour group) and scientific committees (France Alzheimer). The personnel of the Unit have editorial responsibilities in internationally recognised journals (e.g. Frontiers in Molecular Neuroscience). Some scientists of the INP Unit received competitive national awards in recognition of their scientific activities (e.g., Académie Nationale de Pharmacie, Fondation ARC, Prix de la recherche Fondamentale Appliquée à la Chirurgie).

Weaknesses and risks linked to the context

Awards and scientific distinctions are unevenly distributed between teams (for example, 13 of the eighteen awards have been obtained by members of Team 8), suggesting some evident heterogeneity on attractiveness and visibility of the different teams. Editorial activities are generally carried out in specialised and not high-profile journals, such as the MDPI and Frontiers series, and eight of the eleven participation to editorial committees are held by members of Team 8.

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

Strengths and possibilities linked to the context

The Unit regularly recruits junior and senior researchers with full-term contracts with dedicated office and lab spaces. Doctoral students (58 trained during the contract) are followed by the doctoral school which is responsible for setting a regular thesis monitoring committee. The Unit is active in sponsoring candidates for full-term positions and succeeded in recruiting three scientists and four technical personnel with permanent positions.

Weaknesses and risks linked to the context

Research fellows can present only once a year their work to the whole laboratory. This criteria may have been impacted by the pandemic situation, however.

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

Over the reference period, the Unit obtained a very large number of contracts (n=81) from various origins including six ANR, one INca, twelve PIA and two competitive European grants: one COST Action – ANR (Proteocure-Team 1) and one Marie Skłodowska-Curie ITN (ECMED-team 3). It is not specified how many applications to European calls have been submitted by the Unit in order to understand the relative success rate.

Weaknesses and risks linked to the context

The INP unit has only secured a modest number of European grants (2 competitive calls and 2 from 'fondations'). This includes the largest FEDER fund for the Neurotimone project, 56% of which representing 1.85 M€ was specifically allocated for the development of the technological facilities of INP.

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

Strengths and possibilities linked to the context

The Unit runs three excellent technological platforms in highly strategic fields (Imaging, Interactome/Proteomics and iPS cell reprogramming). The facilities are equipped with state-of-the-art instrumentation as in particular the imaging core which is qualified as 'Center for Excellence' in the framework of a partnership with NIKON for super-resolution microscopy. The facilities are managed by a technical support and by a scientific supervisor selected among the researchers of the unit with advanced knowledge in the field. In particular, the Unit has taken the necessary steps to recruit qualified technical personnel for the management of the infrastructure and projects (n=4 permanent staff during the last contract period).

Weaknesses and risks linked to the context

Though the INP facilities are open to external services for academics or private companies, the actual income from these activities is still unperceivable. Thus, it is necessary to develop closer interactions with the private sector with dedicated and tailored services.

EVALUATION AREA 3: SCIENTIFIC PRODUCTION

Assessment on the scientific production of the unit

The UNIT has an outstanding track record of publications that overall meets the highest standards in terms of annual publications rate (> 80 original papers/years) and quality of journals (internationally recognised journals with peer review process with half on open access). Scientific production appears, however, highly heterogeneous between teams and strongly driven by Team 8 (1/4 of the original papers of the unit). A few teams contributed modestly (e.g., 9 for Team 2, 16 for Team 4)

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

Strengths and possibilities linked to the context

The unit has an extensive record of publications with more than 500 papers (original and reviews) in peer-reviewed journals over the years 2016–2022. About 50% of publications show team members in leading positions (first, last, corresponding) thus indicating an excellent scientific leadership of the Unit. Publication rates between the teams is uneven and highly influenced by the size of the team, as expected. Unit's productions and achievements at the highest international level include publication in highly recognised journals of the general audience (including but not limited to Nature, Lancet and Science). This places the Unit at an outstanding international level. These also apply to some of the small teams showing that optimal research standards are granted in the whole unit.

Weaknesses and risks linked to the context

Teams 8 and 9, which are the largest groups in the unit, contributed with 146 and 91 papers, respectively (16 and 10 papers per PI). On the contrary, the contribution to science by peer-reviewed papers was particularly low for two of the smallest teams already present in the previous contract; team 2 (n=9, 3 publications per PI) and 4 (n=16, 8 publications per PI), especially in the last three years. Some recently created teams (6, 7 and 10) performed better on this aspect with fifteen to 54 articles/PI.
The pandemic highly affected the teams with intense preclinical activities. Activity is now back to normal and contingency plan are in place to improve production in the next years.

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

As mentioned above Team 8 is contributing alone to more than ¼ of the whole scientific production by peer-reviewed papers. This is proportionate to the research staff distribution and potential but opens the discussion on strategies to improve production of the other teams by increasing interactions, or critical mass through a reorganisation.

Weaknesses and risks linked to the context

PhD students contributed as co-authors in about one out of five publications, according to the available files. This suggests a suboptimal engagement of PhD students within the activities of the unit. The effect of patent development on publishing activity for junior scientists may partially explain this fact. The high proportion of support staff signing papers may also partially explain why most publications are not taken in charge by PhD students.

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

The scientific production of the unit complies with the standard of research integrity ethics and open science. About half of the papers are open access (this percentage remains the same when considering only papers with Unit members in leading positions).
The unit has actively promoted research integrity with several seminars on Scientific Integrity, mentoring policy, and internal regulations.
Teams are also implementing data management plan as recommended by AMU (Aix Marseille University) and CNRS (Epidor/Zenodo).
Working strategies are in place to ensure ethics in experimentation. The INP management involves an engineer, veterinarian, and doctor in physiology to coordinate all activities within the unit, training and monitoring of skill books. Furthermore, the Unit has developed a WEB application to manage the follow-up of the competence booklets in experimentation (LICORNE). This application, supported by INSB management, is available to the scientific community practising experimentation and already used by more than twenty centres in France.

Weaknesses and risks linked to the context

Open science is recommended by the CNRS, but the unit mentions that it has a significant cost, especially for small teams. However, it is not clear how cost-associated issues are managed in teams with limited funds.

EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

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

The interactions of the unit with its environment are outstanding. It has maintained a particularly fruitful research collaboration with the spin-off VECT-HORUS for over a decade. It has developed 22 collaborative projects or services with industry such as BIOEC, Innate Pharma SAS, Servier and NIKON. The unit is also particularly involved in mediation and scientific dissemination initiatives (20 participation to animations, 23 interventions, 9 debates) aimed at various audiences, with an original axis developed in an arts-science partnership by Team 11. The unit also contributed to the patenting of new products or methods (n=11).

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

Strengths and possibilities linked to the context

The INP has 22 collaboration agreements or service contracts with a dozen industrials (Sandoz SAS, Servier, Hoffman La Roche Ltd., Innate Pharma, Basilea Pharmaceutica International Ltd, Lucas Meyer cosmetics, neuron experts). For more than ten years, the Institute has also had a research contract with the spin-off VECT-HORUS. The LabCom between INP and VECT-HORUS is supported and reinforced in the context of the move to new premises on the Timone site since the start-up is in the same building as the unit.

Weaknesses and risks linked to the context

Although as a unit the INP has a strong industry and public engagement track record (22 partnerships), some teams are much more active than others: for example, Teams 4 and 5 have no partnership with industries.

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

Strengths and possibilities linked to the context

The capacity of the unit to develop technologies or methodologies that can be economically valorised is remarkable. Four teams have contributed to the filing of eleven patents between 2016 and 2021. Five of these patents were filed jointly by Team 3 and VECT-HORUS, demonstrating the strong relationship established within the LabCom.
A patent has been filed for an apparatus and system by Team 4. Team 8 has filed four patents on manufacturing processes and potential therapeutic applications in the field of cancer. Finally, an optical thermal method and system for diagnosing pathologies have been developed and patented jointly by Team 9 and the PINT platform.

Weaknesses and risks linked to the context

The committee observed that patenting was restricted to Teams 3, 4, 8 and 9.

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 has a remarkable contribution to the dissemination and mediation of science with more than 70 participation in five years in events for the general public (n=20 such as Nuit Européenne des Chercheurs, Lions Club, Fête de la science, Semaine du cerveau…), in science and society debates (n=9) or contributions to broadcasts and the written press (23 interventions).
The unit counts 60% of researchers involved in teaching activities (E-C). The involvement of several members of the unit in the steering committee of the graduate school NeuroSchool (EUR) shows the concern of the unit to be part of high-level European training. Innovative e-learning materials have also been developed.

The scientific communication and knowledge sharing activities are also aimed at patients and patient associations. One of the teams (Team 11) is involved in interesting and innovative actions combining arts and sciences with two exhibitions per year since 2016.

Weaknesses and risks linked to the context

The committee did not observe any weakness in the sharing of knowledge and interaction with the general public and encourages the unit to continue its efforts in this direction.

C – RECOMMENDATIONS TO THE UNIT

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

The number of technical staff is significant, and the institute has recruited four expert engineers for its platforms. These platforms have been well developed, but a bioinformatics core facility already present in one team may be extended, and to increase platforms income, the Transfer Engineer recently hired will certainly open new possibilities.
The institute must continue to respond to calls for international projects in view of its size and to increase further its visibility. Applications joining together multiple forces or teams from the institute must be encouraged.
The recruitment and support of new permanent researchers able to take on team responsibilities will have to be proposed to ensure the continuity of activities given that six leaders will be reaching retirement age in the next period. Efforts to recruit international team leaders, if possible, women to partially correct the gender imbalance, must be a priority. While the unit complies with regulations on human resources management and safety, actions must be taken to allow women to lead teams such as co-leadership of several existing teams.
The hiring of more PhDs and postdocs should be encouraged, particularly regarding the reasonable amounts of contracts obtained that can pay their salary and the fact that sufficient HDR holders are available for their supervision. Again, PhD students and post-docs from abroad must be specifically searched for.

Recommendations regarding the Evaluation Area 2: Attractiveness

Given some heterogeneity between teams in size, funds and production, there is scope for the leadership to encourage further knowledge transfer with a view to increasing attractiveness across the whole unit. For example, an internal grant review committee could ensure teams who have secured funding provide constructive feedback to teams applying for international calls.
The income generated by European funds could increase in the next period (two competitive ones currently), given that travel restrictions are lifted and that INP platforms are attractive at the European level. The unit has the resources to participate in, or even lead international consortia in several fields. The leadership could implement strategies to increase the success rate and target European and international funding. This should in turn increase the number of international students and researchers.
The panel also recommends developing closer interactions with the private sector to increase income.

Recommendations regarding Evaluation Area 3: Scientific Production

We encourage the teams to maintain their scientific production as in the past, but to increase PhD involvement in peer-reviewed papers.
The panel recommends ensuring all teams contribute to PhD supervision, public engagement activities, funding applications, and scientific outputs, proportionately to their sizes in the next period.
More collaborations between teams leading to more common publications must occur to participate actively in more competitive calls.

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

The contribution of research activities to society is a strength of the INP unit. Interactions with industry, patent generation and public engagement activities should be at least maintained at their current level in the next period. Increased interactions and joint activities would be beneficial to reduce between-team imbalance.

TEAM-BY-TEAM ASSESSMENT

Team 1: Neural Plasticity and Degeneration

Name of the supervisor: Mr. Santiago Rivera

THEMES OF THE TEAM

Team 1 focuses its work on the involvement of matrix metalloproteinases (MMPs) in the development of Alzheimer's disease. It focuses its research on the understanding of the pathophysiological mechanisms involved and on therapeutic approaches selectively targeting MMP.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The team did not report any previous recommendation in the auto evaluation document.

WORKFORCE OF THE TEAM

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	0
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	3
Subtotal permanent personnel in active employment	**5**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	1
Post-docs	1
PhD Students	1
Subtotal non-permanent personnel	3
Total	**8**

EVALUATION

Overall assessment of the team

Overall, this Team is very good. It is dynamic in its research valorisation through a high-level scientific production in number (n=25) and in quality, in training through research with the hosting of six PhD students, and has successfully obtained research contracts (n= 11 including 2 ANR). Moreover, it is well integrated in the laboratory, as shown by its numerous scientific interactions with other teams of the unit (particularly, Teams 3, 4, 6 and 7).

Strengths and possibilities linked to the context

Qualitatively, the scientific production of the team is notable, with articles in recognised journals such as PNAS, Cellular and Molecular life Sciences, FASEB J., Microbiome, etc. The number of scientific articles over the period (25) is rather good, corresponding to more than 1.5 articles per full-time equivalent researcher per year. It should be noted that an important part of these articles (about 40%) is the result of inter-teamwork.
The number of theses defended or in progress (6) proves that the team (despite only 2 HDR over the period 2016–2020 and only one since) is dynamic in attracting students and obtaining the funding necessary for their work.
The strategy for obtaining academic contracts is of high quality and diversified (ANR x2, Alzheimer Foundations, PIA), with a total of eleven contracts over the period (corresponding to own resources of about 100 keuros per full-time equivalent researchers per year).
The team has a satisfactory national and international academic recognition and visibility (organisation of congresses, learned societies, setting up of the CIVIS grouping of European universities) and participates in the popularisation of its research work and in the promotion of science in general.

Weaknesses and risks linked to the context

Although the interaction of the team with the non-academic world is present (participation in the creation of a start-up, in collaboration with the biotechnology company VECT-HORUS, or with other companies), the committee did not find any patents filed, in a field that is particularly suited to it.

RECOMMENDATIONS TO THE TEAM

In the recent configuration of Team 1, the activities are based on only two researchers (C/EC), and now only one left with HDR (team leader). The committee encourages the team to maintain its research potential and student supervision by attracting confirmed researchers and/or by encouraging permanent EC to obtain HDR as soon as possible. Increasing the number of articles signed by PhD students is also necessary.

Team 2: Genes, Rhythms and Neurophysiopathology

Name of the supervisor: Ms Anne-Marie François-Bellan

THEMES OF THE TEAM

The team is interested in exploring the interplay between circadian rhythms and RNA metabolism, including post-transcriptional regulation of non-coding RNAs. By whole-genome analysis and by transcriptomics combined with selective deletion of RNA elements in cell lines, the group is unravelling the RNA interaction of key lncRNAs with a circadian processing. The group is also active in establishing bioinformatic pipelines for the analysis of transcriptome data and spatial structures of lncRNAs.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The team was encouraged by the previous evaluation to improve its number of publications in higher impact factor journals. Although this recommendation is not coherent with the DORA guidelines, the objective to publish in high quality journals has not been fully achieved and only seven articles have been produced.
The team was also encouraged to host more foreign postdoctoral researchers (3 out of 13 for all the teams from the NINC and CRO2 units in the previous evaluation report). This aspect has remained partly unsolved and requires more efforts to further improve the current situation. This could have been hampered by COVID restrictions, however.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	0
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)	2
Subtotal permanent personnel in active employment	**5**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	0
PhD Students	0
Subtotal non-permanent personnel	0
Total	**5**

EVALUATION

Overall assessment of the team

The team has an original approach. The record over the period has been good, with the team working on original research topics. The scientific production is very good in quality but low in quantity with seven original publications in peer-reviewed journals during the contract period. The group has obtained limited funding during the period, and its limited internal and international scientific collaborations seriously limited its visibility and attractiveness. The group has three ongoing collaborations with companies on research areas consistent with its interest, with some dedicated funding (overall amount not specified). The team is very active in science dissemination participating in public debates on a regular basis.

Strengths and possibilities linked to the context

The group is working on interesting and original scientific topics at the interface between circadian rhythms, non-coding RNA processing and gene regulation. On this aim, the group has been actively engaged in developing some bioinformatics tools and IT management for performing and analysing transcriptomic datasets. Moreover, the group has successfully exploited gene editing for deleting selected gene elements in cell lines for functional studies. The two doctoral students supervised by the team have each signed four articles as first author.

Weaknesses and risks linked to the context

The team has a relatively small size with few research fellows (3 researchers) and this context can challenge the ability to conduct competitive research. The group has attracted few grants (one from the FRC and one from the industry with Sandoz) during the contract period. The few internal and international scientific collaborations might limit the attractiveness of the group and its potential to find new financial resources. The experimental models have been limited to cell lines only.

RECOMMENDATIONS TO THE TEAM

The team should develop scientific activities and operative strategies to further enhance its scientific productivity and funding from external agencies. To achieve this, the group could leverage the transcriptomic datasets to extend the studies to key new molecular players in regulating circadian systems. The team should actively connect with both internal and international groups to develop strategic collaborations aimed at increasing its attractiveness and at enhancing its funding opportunities. Extending the analysis of cell lines models to primary cultures of disease models available in the institute may increase these opportunities.

Team 3: BBB and Neuroinflammation

Name of the supervisor: Mr. Michel Khrestchatisky

THEMES OF THE TEAM

Team 3 mainly aims to understand the role of molecular/cellular events occurring at the blood-brain barrier (BBB) during neuroinflammatory/neurodegenerative processes. The knowledge generated converts to therapeutic/diagnostic innovation, via the LabCom established with VECT-HORUS (a spin-off company). This partnership is internationally renowned within the competitive field of vectorisation/drug delivery to the brain. Thus, Team 3 is a reference for partnerships with private academic or valorisation entities. This makes Team 3 unique within INP.
Another side project of team 3 relates to the development of systems biology approaches and data mining software.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The main recommendation of the previous evaluation was to consider the work (over)load of the team leader, due to the direction of the whole unit. In accordance with this comment, the size of the team has been limited to three full-time researchers and two technical staff. Other general comments raised at the level of the unit may be relevant to the team, including attractiveness (recruitment of more PhD students and increase in publication level). It is important to mention that in the context of COVID-19 pandemics and installations in the new building, it was a choice of the team to avoid endangering PhD students. Regarding the specific question of publications, it is also important to keep in mind that a significant quantity of data generated in Team 3 falls under the rules of confidentiality.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	0
Senior scientist (Directeur de recherche, DR) and associate	2
Scientist (Chargé de recherche, CR) and associate	1
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	3
Subtotal permanent personnel in active employment	**6**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	1
PhD Students	3
Subtotal non-permanent personnel	**4**
Total	**10**

EVALUATION

Overall assessment of the team

Team 3's record over the period has been excellent, with innovation in the field of neuro-inflammation and neurodegenerative diseases such as the improvement of the BBB crossing by adequate patented conjugates. Their challenge is relevant at the social and economic levels. The team has bet on the therapeutic/diagnostic value of receptor-mediated transport for CNS delivery. The ground is solid enough to be a reference in this competitive area and the team is already successful, with two patents, 34 original publications and contracts for an amount of 487K€ as well as the initiation of a phase I clinical trial. The team offers a unique setting for students interested in a career at the interface between academia and industry.

Strengths and possibilities linked to the context

One strength of the team is the establishment of the Labcom. This label is a seal of excellence, in recognition with the quality of its expertise in translational research. Members of the team have co-authored 34 original publications (of which 20 involve at least another team of the INP), two reviews and two book chapters. Most journals are very well renowned in the field (Experimental Neurology, Fluids and barriers of the CNS, Glia…). One PI has produced a data-mining software, PredictSearch (detailed analysis of transcriptomic/proteomic signatures), which has been shared among various INP Teams.
During the contract, the team has raised 487 K€ for their own budget, with success to national and international calls (two PIA with AMIDEX and 1 ITN contract), as well as few contracts with industries.
Members participate in disseminating their expertise to the public (fête de la science) and to specialists (ITN workshop). More than 50 oral communications were counted the team leader is internationally recognised, and as such, is regularly invited to present at conferences for lay audiences as well as for specialists in the field. He has been awarded a Frost and Sullivan price. He (together with VECTHORUS) is the owner of six families of patents (several other patents under preparation), which shows the dynamism and attractiveness of the team and of the linked spin-off.
Regarding training to research via research, the team has supervised six PhD students (2 ongoing theses) and two postdocs. These ECR can benefit from the exceptional structure of Neurosciences in Marseille (NeuroTimone, plateforms, DHUNE, Amidex…).

Weaknesses and risks linked to the context

While this was a choice to limit the number of PhD/Post-docs during the pandemic situation and the site move, it is also questionable that nearly all PhD students were under the (co-) supervision of the team leader only.
The Labcom (either VECTHORUS or the team) seems to be the only source of PhD salaries, no academic grant (doctoral school for instance) was obtained.
The absence of MCU/PU may limit the visibility and access to students at the bachelor and master levels.
Several publications of the Team are either outside of the field of Neurosciences or affiliated to VECTHORUS rather than to the team. The three PIs do not publish much together, which raises questions about the cohesiveness of the team. Additionally, the number of publications of the three PIs is very unbalanced towards the team leader.
Of note, over the last two years, no own resources have been obtained by the team beyond the high amounts of money obtained for the unit.

RECOMMENDATIONS TO THE TEAM

Considering the number of permanent staff, the number of PhD students/postdocs could be increased to benefit all PIs of the team. Also, considering its size, the diversity of topics may be too wide; therefore it could be relevant to focus on specific projects (very likely those relating to the BBB/vectorisation).
The Labcom is undoubtedly remarkable. But even if the committee understand that collaborations within the context of scientific projects are the basis of the LabCom, we recommend to pay attention that VECTHORUS does not monopolise the research activity of permanent staff and EC/R. In fact, although such an interface between public and private research has a powerful leverage effect, EC/R may fear joining due to the delay necessary for intellectual property before they can publish.
The activity of the team is already excellent and could benefit from strengthening its fundamental research activities and from increasing the recruitment of PhD students.

Team 4: Neurobiology of Mnesic processes

Name of the supervisor: Mr. François Roman

THEMES OF THE TEAM

The team explores mechanisms of synaptic plasticity and the underlying molecular and structural changes during learning and memory processes, and their integration at the behavioural level. Focus is put on both the normal and pathological contexts, including schizophrenia, bipolar syndrome and Alzheimer's disease, and combined explorations in humans. The work is oriented both towards expanding basic knowledge in the field and investigating cognitive, pharmacological and stem cell-based therapeutic strategies.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Non applicable in absence of reference to recommendations in the provided self-evaluation document.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	2
Lecturer and associate lecturer	0
Senior scientist (Directeur de recherche, DR) and associate	0
Scientist (Chargé de recherche, CR) and associate	0
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	4
Subtotal permanent personnel in active employment	**6**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	0
PhD Students	0
Subtotal non-permanent personnel	**0**
Total	**6**

EVALUATION

Overall assessment of the team

The team had a good track record over the period. This is a small team integrating two professors near retirement age, few doctoral students (n=2) and post-doctoral fellows, and four permanent technical staff, two of which at 50% employment. Despite its small size and limited internal financial resources, the team is dynamic and highly collaborative, especially internally within INP (most of its 16 publications are joint publications with other INP teams). The team demonstrated involvement in both the academic and non-academic world (an original device for testing behaviour, patented at European/international levels), and overall, a very good research output.

Strengths and possibilities linked to the context

This is a small team formerly part of Pole 3 C – Faculté des Sciences Saint Charles, with long-standing collaboration history with original members of the unit. It is dynamic, despite its small size and limited internal financial resources, focusing on the development of original diagnostic tools for patients, preclinical behavioural assays and cell-based therapies, as attested by a number of representative publications (16 original and 1 review article in total), in recognised specialised journals, such as Neuropharmacology, Neurobiology of Learning and Memory, Stem Cell International and Frontiers in Molecular Neuroscience. Most publications are based on collaborative works within the research unit (10 articles). The team often played a leading role, with seven articles having the team leader as senior author and the involvement of several other team members, including doctoral students and postdoctoral fellows as first or second authors. The team has also been actively involved with non-academic partnerships (Institut Privé de Recherche en Sémiochimie et d'Ethiologie Appliquée and the biotech Vect-Horus ; a doctoral student with CIFRE funding). The team has obtained a European (2019) and international (2020) patent in the context of the development of a device for testing cognitive ability.

Weaknesses and risks linked to the context

While the team has been strongly involved with intra-institutional and local interactions, more global opening towards national and international collaborations has been limited. Similarly, there is limited evidence of attractiveness towards young researchers with recruitment potential by INSERM/CNRS. With the two senior investigators close to the age of retirement, this raises the question of the future of the team and the transmission and perpetuation of its know-how, skills, and expertise. Continuation of activities into the next period constitutes the main challenge.

RECOMMENDATIONS TO THE TEAM

The team and INP's management bodies are encouraged to plan actions that will allow the continuation of research activities and the retention of the main know-how/expertise that are of translational interest for most INP teams.

Team 5: Neuro-inflammation and multiple sclerosis

Name of the supervisor: Ms Sophie Desplat-Jego

THEMES OF THE TEAM

Team 5 focuses its research on the role of the TWEAK pathway in neuro-inflammatory conditions, of multiple sclerosis (MS). The group combines preclinical and clinical studies. The team has a strong interaction with the hospital. With their expertise in medical immunology, members of the group wish to determine the benefit/risk of modulating the TWEAK pathway, for instance via a therapeutic antibody against TWEAK, currently evaluated in a phase I clinical trial for rheumatoid arthritis. Other projects of the team relate to biomarkers in link with TWEAK (binding antibodies, polymorphism) and their role during multiple sclerosis.
The team leader is also deputy director for human resources in the INP.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Not applicable since this team was established in January 2018 and therefore could not be evaluated in the previous evaluation round.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	3
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)	0
Research supporting personnel (PAR)	3
Subtotal permanent personnel in active employment	**7**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	0
PhD Students	0
Subtotal non-permanent personnel	**0**
Total	**7**

EVALUATION

Overall assessment of the team

The team's track record over the period was good with eleven original publications. Team 5 relies on hospital practitioners who have a strong interest in understanding mechanisms and identify targets for autoimmune disorders, in particular multiple sclerosis. Their work is thus relevant to patients and has raised interest from private companies (Tescan, Roche Diagnostics).

Strengths and possibilities linked to the context

Members of the team have co-authored eleven original publications (of which 8 involve at least another team of the INP), two reviews, one editorial, one letter and two book chapters. Most journals are in the field of immune disorders rather than neurosciences (JTH, Arthritis and Rheumatology, Front Immunol, Lancet Rhumato, Immunol Res, Sci Rep…) but in renown journals and team members are in good positions. The access to human samples, the development of TOF-SIMS (original approach to study inflammation on MS tissues) and the expertise in neurogenetic are definite strengths of the team.
During the contract, the team has raised 44 kE for their own budget, with success to a call from the Fondation de l'Avenir and a contract with IRBA. Clinical studies are funded by the AP-HM for an amount of ~200K€.
Members participate in the dissemination of knowledge to the public, in particular towards patients. The team leader is a member of the French society 'Groupe d'Etude de l'Autoimmunité', and she has in this frame organised three symposia.
Regarding training, the team has one ongoing PhD and has hosted at least two other undergraduate trainees. The website of the team includes very interesting initiatives, including podcasts.

Weaknesses and risks linked to the context

The levels of own resources raised remains rather modest in comparison with the cost of the proposed projects. The team has not yet hosted any postdoc and only one PhD. The number of striking papers dealing with TWEAK/MS, the main topic of the team, is quite low.

RECOMMENDATIONS TO THE TEAM

The team is at an early stage of development and all efforts should be done to ensure its efficient growth from a good level to a higher one. The dynamic may benefit from putting all talents on a single goal, to ensure that the Team becomes 'THE' TWEAK/MS expert in the competitive field of MS research (including research performed in Marseille). Networking with partners and societies focused on MS (ARSEP, ECTRIMS…) and neuro-inflammation (ESMI…) could be strategic.
The team should capitalise on its privileged situation (expertise/location) to promote further translational expertise. The link of one PI with the 'Etablissement Français du Sang', may be exploited for the benefit of the team.
This recent Team needs to pursue its structuration including at the local level (training by research) and international levels (participation in networks). The number of PhD students/postdocs should be increased and non HDR PIs may benefit from applying for the HDR.

Team 6: Modelisation of Pathology and Neuroregeneration

Name of the supervisor: Mr. Emmanuel Nivet

THEMES OF THE TEAM

The main goal of the team is to exploit induced pluripotent stem cells (iPSCs) reprogramming to establish patient-derived cell models in the dish mainly for studying neurodegenerative diseases and their associated pathological pathways among which neuroinflammation and glial-to-neuron communication. The team has long-standing expertise and technical competence on the generation of iPSCs and their differentiation into neural and glial cells. Lately, the group has also acquired technical proficiency with CRISPR/Cas9 technologies for gene correction by gene editing in iPSCs.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

This team was established in January 2018 and therefore could not be evaluated in the previous evaluation round.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	0
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)	0
Research supporting personnel (PAR)	1
Subtotal permanent personnel in active employment	**2**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	1
Post-docs	0
PhD Students	1
Subtotal non-permanent personnel	**2**
Total	**4**

EVALUATION

Overall assessment of the team

The team's track record over the last period was excellent despite its modest size and recent creation. Over the last years the team has included one PI, three technical staff, one postdoc and two PhD students shared at 50% with other groups. Thus, the relatively small size of the group has strongly influenced its objectives and overall activities. The quality of the scientific production is however high, showing the use of patient-derived iPSCs for modelling glial inflammation in Alzheimer's disease (AD) and decipher new altered molecular pathways. Although, the group is progressively and coherently expanding both in terms of research personnel and publications (9 papers), its growth has been relatively slow over the years, probably due to the lack of sufficient financial support but the group has recently obtained funding from ANR. The different scientific collaborations have resulted in publications but may have overdiversified the activities, slowing down the own internal research.

Strengths and possibilities linked to the context

The PI has long-standing and competitive experience and knowledge on iPSC biology and in vitro disease modelling. He has applied his competence in iPSC manipulation to investigate mechanisms underlying the inflammatory response in astrocytes derived from AD patients. Moreover, he has developed internal (Teams 1 and 7) and external (INT institute) collaborations exploiting iPSC models for various applications and diseases. His work in the Unit is original and strategic for developing fully humanised models for research studies and therapeutic testing. The team published nine papers, two of which as main contributor (Cell Reports and Biorxiv).

Weaknesses and risks linked to the context

The major challenge of this team is on its very small size in terms of personnel and financial resources that endangers the development of its own research. The relative objectives and resources of the technical facility and the research team must be clearly distinguished to maximise the focus of the team on its research and development.

RECOMMENDATIONS TO THE TEAM

The team has growth potential. It has unique expertise on iPSC biology and can leverage on its patient-derived models to expand the impact of the overall research in the Unit. The use of these models is well elaborated providing excellent systems to unveil molecular mechanisms of inflammation in neurodegenerative disorders. The team should attract other interested researchers to leverage these cellular models for their studies and increase the impact of the team and the financial resources. The team should work towards the development of cell models adequate for small-molecule screening that are of great interest for the private sector to develop synergies and financial support from industry. Finally, the team can consider recruiting more undergraduate students and/or to supervise PhD students/postdoc shared with other teams in the Unit with common scientific interests. These steps would increase the critical mass of the team with relatively low financial needs.
Additionally, it should be active in attracting more funding from other academic and private resources. The lack of sufficient financial support has likely limited the growth of the team. Funding should be explored by developing synergies with the private sector or with other academic groups. Prioritising collaborations that are already associated to dedicated funding and resources is an option. International visibility and attractiveness should be further pursued by attracting international research fellows.

Team 7: NeuroCyto: the Neuronal Cytoskeleton in health and disease

Name of the supervisor: Mr. Christophe Leterrier

THEMES OF THE TEAM

The team aims to decipher fundamental mechanisms involved in cellular organisation of neurons, by using advanced microscopy techniques to observe molecular assemblies at nanoscale level. They focus on the neuronal cytoskeleton to understand how neurons differentiate, build and maintain their arborisation.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Not applicable as the team started in 2017 as part of the CNRS ATIP program.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	1
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)	0
Research supporting personnel (PAR)	4
Subtotal permanent personnel in active employment	**6**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	0
PhD Students	5
Subtotal non-permanent personnel	**5**
Total	**11**

EVALUATION

Overall assessment of the team

The team's track record in the period was outstanding in terms of publications (n=38), funding (>1M€ + >3 M€ for the platform), PhD attractiveness (n=5), collaboration (including with two internal teams), and technical development focusing on axonal actin-spectrin interplay, microtubules repair and turnover and development in microscopy. It is internationally competitive despite its small size (2 permanent researchers).

Strengths and possibilities linked to the context

This team is well known for its expertise on the actin organisation in the axon and the use of cutting-edge microscopy. Accordingly, several collaborations are well established, and national and international funding

has been already obtained (ANR, FRM, NIH, Amidex). Numerous high impact articles have been published, in relation to technical development: 34 over the period, with more than 100 citations for four of them in renowned journals (Nature Comm, Nature Methods, J of Neuroscience, Nat Neurosc Rev). The team leader has developed a particular partnership with NIKON, and the imaging platform (for which the team leader is the scientific advisor) is one of its twelve European centres of excellence. The team takes extensive part in science dissemination to society (books, magazines, radio, press, social media, brain week for scholars). The team has been also successful in stabilising its core of permanent members and five PhD students and one postdoc are (or have been) hired by the team.

Weaknesses and risks linked to the context

Permanent staff include two Technicians, one Engineer, one associate professor and one researcher (the team leader). The associate professor (who will be retiring in 2026) has not been associated with a publication of the team except a review. Only two INP teams are collaborating with team 7 which is quite surprising, but all teams have access to the platform managed by the Team-7 leader, and then benefit from the Team 7 expertise.

RECOMMENDATIONS TO THE TEAM

The team needs to attract and hire new permanent researchers for the long term to maintain competitiveness since the number of subprojects and collaborations is quite high (n=5) for this new and small team. Further collaborations within INP could improve INP excellence. PhD students and/or technical staff should be provided to support the projects of the Associate Professor. Neurocyto team's expertise in subcellular analyses by using super-resolution should be exploited by other INP teams that study neural pathologies such as neurodegenerative diseases or glioblastoma to further improve our understanding in those fields.

Team 8: GlioME: Gliomagenesis and Microenvironment

Name of the supervisor: Ms Dominique Figarella-Branger

THEMES OF THE TEAM

The team is focused on translational research in neuro-oncology with a major focus on diagnostic and prognostic classification of gliomas. They develop new therapeutic approaches, and examine basic mechanisms, especially on gliomagenesis.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Not applicable since no recommendations were provided.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	4
Lecturer and associate lecturer	4
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)	0
Research supporting personnel (PAR)	6
Subtotal permanent personnel in active employment	**15**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	2
Post-docs	2
PhD Students	3
Subtotal non-permanent personnel	**7**
Total	**22**

EVALUATION

Overall assessment of the team

It is a large team (22 persons): most of the permanent staff (7/9) are clinicians, with some international experts in the field, with twelve PhD students trained (3 currently), and six postdocs during the last five years. The scientific quality was very good (basic science) to excellent (clinical science), with many external funding obtained (33 grants), and a large part of the translational and collaborative work published in top tier journals (n=160). This team had then an excellent track record during the period, mainly on clinical side. There was an excellent interaction between the team and the clinic. Four patents were submitted.

Strengths and possibilities linked to the context

The team has developed an important clinical and translational body of research. The team contributed to the development of new clinical trials and novel biomarkers and to the current histological classification of gliomas. They recruited two young investigators, one full-time researcher who developed the axis gliomagenesis, one very active clinician who developed original new therapeutic approaches.
The team developed good national and international collaborations, academic and non-academic, as well as partnerships with industry (Basilea Pharmaceutica, Innate Pharma…).
The team, according to its size, to its numerous collaborations and involvement in national and international consortia and organisations, presents an excellent publication activity mostly in the clinical and translational domain:160 publications were produced in renown journals such as Scientific reports, Nature communication or Acta Neuropathologica, as well as four patents.
The team had recurrent successes in national grant applications (n=33), including ANR, INca, PHRC, but not at the European or international level. The team is also active in dissemination to the scientific community (n=141 communications) and to the public (participation to 'la semaine du cerveau, nuits européennes des chercheurs).

Weaknesses and risks linked to the context

Despite one permanent recruitment, there is a lack of academic researchers and postdocs to develop ambitious projects. The single full-time researcher in the team cannot develop more fundamental aspects of the research alone. The research on microenvironment is presumably developed through collaborations within the Institute, but this is not specified. However, the topic of the microenvironment of gliomas is a very competitive one. The organisation of the team and the projects led by each PI lacks clear distinctions.

RECOMMENDATIONS TO THE TEAM

The team is excellent at the clinical and translational level but would also benefit from a stronger basic science task force; in other words: more postdocs and full-time researchers in the team.
We recommend continuing recruiting promising young researchers, to apply to ambitious (European) projects, and to develop internal collaborations, taking advantage of cutting-edge platforms developed in the institute (IPSC, etc.). And more genomic analyses in the context of the microenvironment.

Team 9: Cytoskeleton and Neurophysiopathology

Name of the supervisor: Mrs Hervé Kovacic & Vincent Peyrot

THEMES OF THE TEAM

The main goal of this team is to explore the molecular basis of cytoskeletal regulation and cellular plasticity in brain cancer (glioblastoma) and neurodegenerative processes, by focusing on tubulin cytoskeleton and associated proteins, Rho-GTPases, integrins and redox signalling. The team aims to identify biomarkers and new pharmacological compounds active in such diseases.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The team was created in 2012 by the reorganisation of two teams of the UMR_U911 to associate molecular and cellular expertise on the study of the cytoskeleton and its regulation by redox signalling in tumour progression. Nevertheless, there is no previous report for this team.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	4
Lecturer and associate lecturer	4
Senior scientist (Directeur de recherche, DR) and associate	1
Scientist (Chargé de recherche, CR) and associate	0
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	9
Subtotal permanent personnel in active employment	**18**
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	1
Post-docs	0
PhD Students	5
Subtotal non-permanent personnel	**6**
Total	**24**

EVALUATION

Overall assessment of the team

The team's track record was very good and the scientific approach original. The team is mainly composed of university academics with teaching duties (8 out of 9 permanent PI) and nine technicians/engineers. Twelve PhD students were trained during the last contract (5 still in place) and one postdoc hired. During the previous contract, 69 articles were published, and one patent deposited in 2017. They obtained twelve grants (European, National funding bodies) ranging from 2KE to 207kE in value. One contract PIA for the PINT platform was obtained, the team leader being the supervisor and two members are the scientific advisors of two local Poles. The team is involved in science dissemination in society, as well as teaching and e-learning.

Strengths and possibilities linked to the context

Team members have a very good expertise in biochemistry, biophysics and cell biology which are their main domains of publications (between 10 and 20 articles/year in Antibiotics, Antioxidants & redox signalling, Biomedicine & pharmacotherapy, Cell Death & disease, EJ Medicinal chem, Frontiers in Pharmacology, Int J of Bio macromol, Int J Mol Sci, J of Cell Sci, Molecules, Scientif Rep, Plos One, Toxicon, Tumor Biol, …). They have developed intra-INP collaborations and with clinical services that have contributed to the identification of new biomarkers in neuro-oncology diagnostic. At the international level, several collaborative publications, including with Russia, Mexico, Brazil, Algeria, and Tunisia, demonstrate its visibility. Remarkably, the team promotes its technical expertise inside the PINT platform dedicated to proteomics and share its expertise on molecular interactions and thermic stability characterisation with several companies like Emergence Tx, MiMabs, or Beckman. They have signed NDA with Nanotemper (Germany) or ProteinStable (UK). They are highly invested in teaching and contribute to science dissemination to the wider society (regional press, radio, and TV) and the scientific community (editorial activities). The team participated in the training of twelve PhD students, one postdoc and one invited professor.

Weaknesses and risks linked to the context

Although there was a very high number of articles published within the period, publications are focused on specialised journals, linked to the expertise of the team. The number of PhDs according to the number of researchers is weak since four staff members didn't supervise a PhD student during the period. The committee noted the lack of international competitive grant.

RECOMMENDATIONS TO THE TEAM

All permanent researchers should be encouraged to supervise students and contribute to project calls without considering those for the PINT platform even if their involvement is important. This should help increase grant income, particularly at the international competitive level. The team should translate its expertise of the cytoskeletal regulation in cells and tissues, thus increasing the physiological knowledge as well as the number of publications in more general journals.

Team 10: Angiogenesis and Tumor Microenvironment

Name of the supervisor: Mr. L'houcine Ouafik

THEMES OF THE TEAM

The team was recently created, and the team leader has developed an outstanding expertise on the role of adrenomedullin in the angiogenesis of glioblastoma.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Not applicable as recently created.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	1
Lecturer and associate lecturer	0
Senior scientist (Directeur de recherche, DR) and associate	0
Scientist (Chargé de recherche, CR) and associate	0
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	5
Subtotal permanent personnel in active employment	**6**
Non-permanent teacher researchers, researchers and associates	1
Non-permanent research supporting personnel (PAR)	0
Post-docs	0
PhD Students	2
Subtotal non-permanent personnel	**3**
Total	**9**

EVALUATION

Overall assessment of the team

The team developed original research on the role of Adrenomedullin in the angiogenesis of glioblastoma. The publication record is very good (54 publications), considering the small size of the team (6 persons, only one full-time researcher).
Despite its small size, the team has been developing original therapeutic approaches directed towards Adrenomedullin and has very active collaborations with industrial partners. Three patents have been already deposited.

Strengths and possibilities linked to the context

The team developed original research on the role of Adrenomedullin in the angiogenesis of glioblastoma, benefiting from collaborations with the clinicians at the La Timone hospital.
The publication record is good despite its small size (only 6 persons with one full-time researcher) and only four contracts obtained, all as coordinator however (GSC Rmway, MArjan Milus foundation, Latoxan-SattSud est), for a reasonable amount of 237K€.
The team developed original therapeutic approaches directed towards Adrenomedullin, especially antibodies that bind Adrenomedullin or its receptor, which could be used as a drug. The team has active collaborations with industrial partners such as Latoxan laboratory (venom production) and Finn therapeutics (antibodies development).
Three patents have been already developed and 25 papers have been published (4 as the last author) since 2018.
The team leader has also an important teaching activity at AMU (70 h/year) and his small team welcomed twelve students in five years.

Weaknesses and risks linked to the context

The main weakness of Team 10 may be due to the small number of PI of the team (the Team leader is the only full-time researcher and the only staff member), consequently very focused on a single topic, and the team must be reinforced in the near future with additional staff members.

RECOMMENDATIONS TO THE TEAM

Considering the small size of the team, we encourage reinforcing the team, and to recruit a postdoc, and develop more collaborations within the Institute. Developing in vivo models could also be beneficial to the projects.

Team 11: NOSE: Nasal Olfactory Stemness and Epigenesis

Name of the supervisor: Mr. François Feron

THEMES OF THE TEAM

The team is part of the five historical core teams of INP. The team's focus put forward in the title is the exploration of the olfactory mucosa as a site of permanent neurogenesis and the multilevel investigation of the adult ecto-mesenchymal stem cells with a view to identifying signatures/biomarkers of neurological and psychiatric disorders. The team also develops preclinical olfactory stem cell-based transplantation approaches aimed at repairing brain lesions and restoring behaviour in disorders such as amnesia and Parkinson's disease and moves towards clinical translation of such approaches.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

There is no reference to such recommendations in the self-evaluation document.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	1
Lecturer and associate lecturer	2
Senior scientist (Directeur de recherche, DR) and associate	0
Scientist (Chargé de recherche, CR) and associate	0
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	0
Subtotal permanent personnel in active employment	**3**
Non-permanent teacher researchers, researchers and associates	1
Non-permanent research supporting personnel (PAR)	1
Post-docs	0
PhD Students	2
Subtotal non-permanent personnel	**4**
Total	**7**

EVALUATION

Overall assessment of the team

The track record of this team over the period is good. It is composed of personal with clinical and teaching duties including an associated artist scientist, in addition to students (Bachelor, Master, PhD) and postdoctoral fellows (23 in total throughout the evaluation period). It is highly dynamic, with widespread activities encompassing good academic production in the context of national and international collaborations, partnerships with private companies and clinicians, efforts towards valorisation of findings through patenting of innovative methods, and strong involvement in academic training and original activities towards communication of science to the general public.

Strengths and possibilities linked to the context

The team has implemented multiomics approaches, mostly in the context of collaborations, to explore the therapeutic and diagnostic potential of olfactory stem cells and their extracellular vesicles. They made original contributions to the field of autism spectrum disorders, characterising patient-specific alterations, as attested by publications in high-quality journals (two articles in Molecular Psychiatry, in 2016 and 2021; one article in Molecular Autism in 2016). Research output has been overall good throughout the evaluation period (22 articles published in recognised peer-reviewed international journals – e.g. Molecular Neurodegeneration, Journal of Alzheimer's disease, Journal of Neuroscience – at least half of which with members of the team as first and/or senior authors, including involvement of PhD students), with some original (e.g. non-conventional roles of Vitamin D in the brain; limbic expression of chemoreceptors) and impactful (e.g. 72 citations for a paper published in 2018) discoveries.
The team is collaborative, both internally at INP (9 articles involve at least another team of the unit) and at the international level (Australia, Italy), and organised three conference events. It has established ties with industry (Servier, Lucas Meyer, Neuron Expert) and put efforts into valorising key results, e.g. by moving forward towards patenting of innovative methods. Team members are strongly involved in academic training (e.g. involvement of team leader as founder and first director of EUR NeuroSchool, co-founder/director of PhD program/international master in neurosciences; one team member is responsible for a successful bachelor's degree – Physiology and functional genomics). There are also strong in dissemination to the public, through involvement in several original actions, such as taking co-responsibility of DESU 'Communication et vulgarisation scientifique,' in association with the Ecole de Journalisme – AMU, fostering artistic events in relation with science (e.g. NeuroStories and Neuro Art Labs), writing books (Autism), in addition to using social media. The team has obtained a very good amount of 615K€ for research.

Weaknesses and risks linked to the context

The team's overall activities reflect only in part the focus set by the team's name. Less than half of the published articles involve work with olfactory stem cells, most of which collaborative and not in the most impactful journals in the field (e.g. International Journal of Molecular Sciences, Stem Cells International). The activities of the clinician/artist-scientists seem to be at least in part disconnected from the team's main orientations. Considering competitiveness and major advances in the field, in induced pluripotent stem cell technologies, the relevance of choosing olfactory stem cell populations for repair purposes can be debated.

RECOMMENDATIONS TO THE TEAM

The team is encouraged to put their main efforts on the use of omics approaches to thoroughly characterise the olfactory stem cells and extracellular vesicles they work with, to identify factors and mechanisms behind potential beneficial effects. They should also consider integrating more relevant sources of cells in their studies, strengthening their ties with competitive groups, including internally at INP. They should also consider recruiting a young scientist with high potential for contributing to the development of the team's activities and stable integration within Inserm/CNRS and pursue their efforts towards patenting original approaches and developing partnerships with industry.

CONDUCT OF THE INTERVIEWS

Date(s)

Start: 22 novembre 2022 à 10 h

End : 23 novembre 2022 à 18 h 30

Interview conducted: online

INTERVIEW SCHEDULE

Lab Interview program
Institut de NeuroPhysiopathologie (INP)
Date of the visit: 22–23 of November 2022
Present Lab director: Michel Khrestchatisky

HCERES Scientific advisor: Mr. Giovanni Stevanin
Research committee:
Ms Frédérique Liégeois (President), expert panel HCERES
Ms Carine Ali, expert HCERES
Mr. Vania Broccoli, expert panel HCERES
Ms. Sophie Crespin, PAR representative
Ms Olga Corti, expert HCERES
Mr. Eric Peyrin, CNU85 representative *(present only the afternoons)*
Mr. Marc Sanson, expert HCERES *(present only November 22)*
Ms Sylvia Soares, CoNRS25 representative
Ms Elisa Zanier, expert panel HCERES

Observers:
Ms Monique Dontenwill, INSB CNRS representative
Mr. Tangui Maurice, CoNRS28 representative
Mr. Emmanuel Bourinet, CoNRS25 representative

November 22

10:00-10:30 Welcome of the committee with the HCERES advisor (committee only)
Zoom link: https://hceres-fr.zoom.us/j/96685373070?pwd=NkR6REZqcERxOWZEdFNpamxBSVZNQT09

10:30-5:30 p.m. **Day one of the interviews**
Zoom link D1: https://univ-amu-fr.zoom.us/j/86821986645?pwd=QWcyMnlETTk0bWx2eGVWeitlQytGdz09

10:30-10:45 Presentation of the evaluation process to the unit by the HCERES advisor

10:45-11:45 **INP 1.0**: Presentation of the unit scientific outputs and strategy at INP, Technological Platforms and Vect-Horus partnership, by the current lab director Michel Khrestchatisky (25′ presentation)
INP 2.0: Brief presentation of the INP's ambition and projects by François Devred (15′ presentation)
(20mn general discussion with previous and future unit directors)

11:45-1 p.m. *Lunch break*

1 p.m.-3 p.m. Presentation of the scientific programs and research results by group leaders (13′ presentation + 13'discussion)

Neurodegeneration Axis
Neural Plasticity and Degeneration (Santiago Rivera)
BBB and Neuroinflammation (Michel Khrestchatisky)
Neurobiology of Mnesic Processes (François Roman)
Stem Cells, Pathological Modelling and Neuroregeneration (Emmanuel Nivet)

3 p.m.-3:30 p.m. *Coffee break*

3:30 p.m.-5 p.m. Presentation of the scientific programs and research results by group leaders (13′ presentation + 13'discussion)

Neuro-oncology Axis
GlioME: Gliomagenesis and Microenvironment (Dominique Figarella-Branger)
Cytoskeleton and Neurophysiopathology (Hervé Kovacic/Vincent Peyrot)
Angiogenesis and Tumor Microenvironment (L'houssine Ouafik)

5 p.m.-5:30 p.m. *Debriefing* of the committee with the HCERES advisor (committee only)
Zoom link: https://hceres-fr.zoom.us/j/96685373070?pwd=NkR6REZqcERxOWZEdFNpamxBSVZNQT09

5:30 p.m. End of the first day

November 23

9:30-10:00 Welcome of the committee with the HCERES advisor (committee only)
Zoom link: https://hceres-fr.zoom.us/j/96685373070?pwd=NkR6REZqcERxOWZEdFNpamxBSVZNQT09

10:00-4:30 p.m. **Day two of the interviews**
Zoom link D2: https://univ-amu-fr.zoom.us/j/82346092136?pwd=SEhha0tHWGtrQ1F4c2RsRXZPOCsvdz09

10:00-12:30 Presentation of the scientific programs and research results by group leaders (13′ presentation + 13'discussion)

NOSE: Nasal Olfactory Stemness and Epigenesis (François Feron)
Genes, Rhythms and Neurophysiopathology (Anne-Marie François-Bellan)

11:00-11:30 *Coffee break*

Neuroinflammation and Multiple Sclerosis (Sophie Desplat-Jego)
NeuroCyto: the Neuronal Cytoskeleton in health and disease (Christophe Leterrier)

12:30-2 p.m. *Lunch break*

2 p.m.-2:30 p.m. Discussion with scientists (without team leaders)

2:30 p.m.-3 p.m. Discussion with PhD students and postdocs

3 p.m.-3:30 p.m. Discussion with engineers, technicians and administrative personnel (**en Français**)

3:30 p.m.-4 p.m. *Coffee break*

4 p.m.-4:30 p.m. Discussion with team leaders

16:30-17 : 00 Discussion with the unit director (committee only)
Zoom link: https://hceres-fr.zoom.us/j/96685373070?pwd=NkR6REZqcERxOWZEdFNpamxBSVZNQT09

5 p.m.-5:30 p.m. Discussion with the representative of the managing bodies & local representatives
(committee only)
Zoom link: https://hceres-fr.zoom.us/j/96685373070?pwd=NkR6REZqcERxOWZEdFNpamxBSVZNQT09

CNRS:
CNRS INSB DAS Monique Dontenwill
Tangui Maurice, CoNR28
Emmanuel Bourinet, CoNRS25
Déléguée Régionale CNRS, Aurélie Philippe
AMU :
Philippe Delaporte, Vice-Président Recherche AMU,
Nicolas André, Vice-Président Santé, AMU (en charge du suivi de notre unité)
Jean-Louis Mège, Recherche Faculté de Médecine Marseille, Campus Timone,

17:30-18 : 30 Private meeting of the visiting committee
Zoom link: https://hceres-fr.zoom.us/j/96685373070?pwd=NkR6REZqcERxOWZEdFNpamxBSVZNQT09

6:30 p.m. End of the unit interview

PARTICULAR POINT TO BE MENTIONED

Supervising bodies provided clear support to the unit, as shown by the large number of permanent technical staff and have been involved in the relocation of the unit in the Timone Campus to increase the visibility of the Neuroscience research in Marseille.

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-PUR230023172 - INP - Institut neurophysiopathologie

Marseille, le mercredi 21 juin 2023

Madame, Monsieur,

Je fais suite à votre mail du 26/05/2023 dans lequel vous me communiquiez le rapport d'évaluation Hcéres de l'Unité de Recherche INP - Institut neurophysiopathologie.

Comme demandé dans ledit mail, je vous indique que les tutelles de l'INP, 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:
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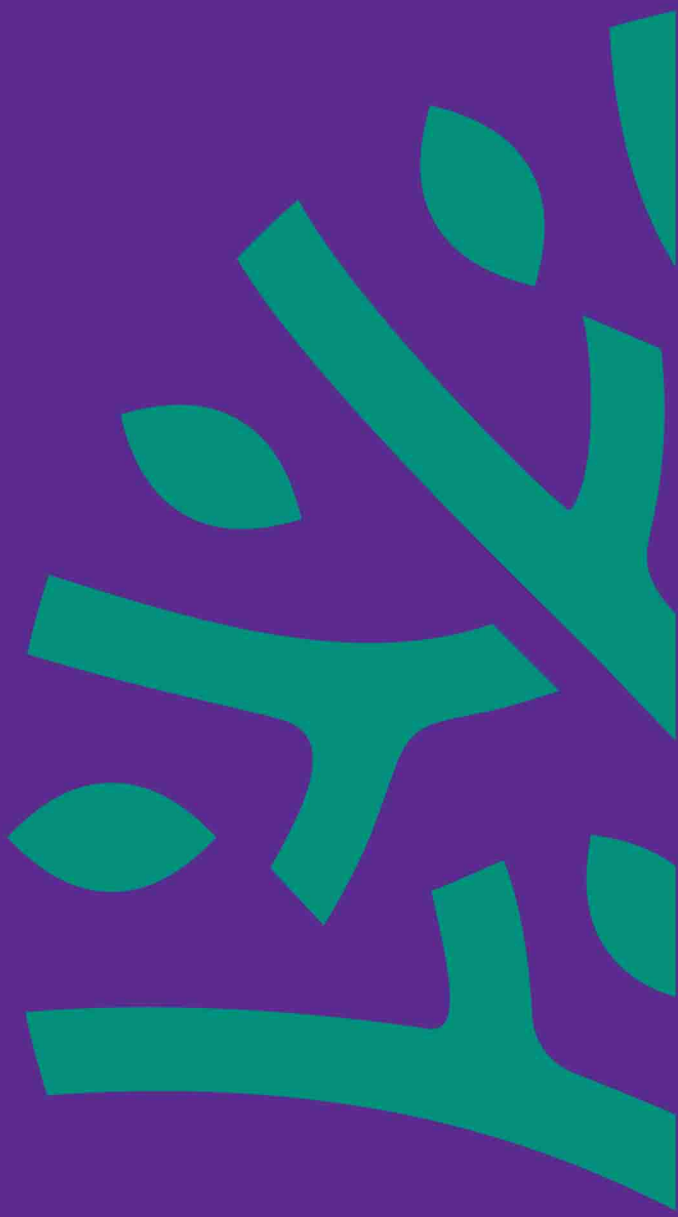
Evaluation of the academic formations
Evaluation of the national research organisms
Evaluation and International accreditation



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