

EVALUATION REPORT OF THE UNIT
INCI - Institut des neurosciences cellulaires et
intégratives

UNDER THE SUPERVISION OF THE
FOLLOWING ESTABLISHMENTS AND
ORGANISMS:

Centre National de la Recherche Scientifique
(CNRS)
Université de Strasbourg

EVALUATION CAMPAIGN 2022-2023
GROUP C

Rapport publié le 05/05/2023



In the name of the expert

Yves-Alain, Barde, Chairman of the committee

For the Hcéres² :

Thierry Coulhon, President

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

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

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

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

MEMBERS OF THE EXPERT COMMITTEE

Chairperson: Mr BARDE Yves-Alain, Cardiff University, Cardiff, United Kingdom

Experts: Mr. BROCCOLI Vania, San Raffaele Scientific Institute, Milano, Italy
Mr. BRANCHEREAU Pascal, University of Bordeaux (representative of CNU 69)
Mr. BOURDONCLE Pierre, Inserm, Paris (representative of supporting personnel)
Mrs. ISINGRINI Elsa, Paris (representative of CNRS, Section 25)
Mr. MARIN Philippe CNRS, Montpellier
Mr ROUYER François, CNRS, Gif-sur-Yvette

HCÉRES REPRESENTATIVE

Mrs Nadia Soussi-Yanicostas

CHARACTERISATION OF THE UNIT

- **Name:** Institut des Neurosciences Cellulaires et Intégratives
- **Acronym:** INCI
- **Label and number:** UPR 3212
- **Number of teams:** 11
- **Composition of the executive team:** Mr Michel Barrot

SCIENTIFIC PANELS OF THE UNIT

SVE5: Neurosciences and Nervous System Disorders

THEMES OF THE UNIT

The focus of INCI is on basic neuroscience research, with a large component directly related to human health including the study of mechanisms underlying pain and sleep.

For most of the review period, INCI comprised eleven teams that were recently reduced to nine because of an internal reorganisation effort.

INCI uses multidisciplinary approaches to address questions ranging from cellular to integrative neuroscience. One of the focuses is on neurotransmission including synaptic plasticity and neuroendocrine secretion, whereby the bulk of the other activities relates to the neurobiology of rhythms and the neurobiology of pain using pre-clinical models.

INCI developed and invested significant resources to study and monitor relevant aspects of behaviour, including the development of technical platforms. INCI also has close contacts with a range of clinicians as well as with industry.

HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

The 'Institut des Neurosciences Cellulaires & Intégratives' (INCI) was created in Strasbourg in 2005. A major renovation (2002–2006) of the CNRS building 'Centre de Neurochimie' allowed the integration of unit previously part of a university facility and the creation of the 'Chronobiotron'. In 2018, Mr Michel Barrot became Director following in the footsteps of Mrs Marie-France Bader who became Director in 2009. Amongst her significant organisational achievements was a building renovation (completed in 2014) allowing the integration of three teams in the pain field, previously located in a university building.

All INCI teams performing non-human research are in the city centre of Strasbourg in a CNRS-owned building on the Unistra 'Esplanade' Campus. Human research is conducted at the Strasbourg Hospital at the HautePierre site for neonatology.

RESEARCH ENVIRONMENT OF THE UNIT

Each team is scientifically independent and supervised by a team/group leader or co-leaders. As the plans for the immediate future impact of the review of the past period, they are recapitulated here as described in the self-assessment report.

Following an internal call and external evaluation, team 10 was created in July 2020 as offspring of team 4. In addition, following an international call for young group leader, team 11 funded by 'FRM Amorçage de Jeunes Equipes' was also created in 2020 allowing the promotion of a young INCI member as well as a new recruitment following an external call, followed by another one in 2021. The recipient of an ERC Starting Grant was scheduled to join, and did join, INCI in summer 2022 (see below).

INCI is associated with CNRS and the 'Université de Strasbourg' (Unistra) and also hosts personnel from Inserm and from 'Hôpitaux Universitaires de Strasbourg' (HUS). INCI is now organised in nine teams with a young group leader joining in 2022 to set up an emerging team co-funded by ITI NeuroStra and FRM. Another INCI member (previously in team 5) created a new team focusing on the opioid system, nociception and pain, together with members of the present team 3.

To study the regulation and perturbation of neuroendocrine rhythms, teams 7 & 8 are due to merge to investigate metabolic and reproductive rhythms. The translation of pre-clinical model-based research to humans will be further facilitated by the fusion of the teams 9 and 11, jointly reviewed in this report (see below). Three members of team 4 will leave or have left INCI to join the 'Laboratoire de Neurosciences Cognitives & Adaptatives' (UMR7364, Strasbourg).

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

Permanent personnel in active employment	
Professors and associate professors	13
Lecturer and associate lecturer	8
Senior scientist (Directeur de recherche, DR) and associate	16
Scientist (Chargé de recherche, CR) and associate	11
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	20
Subtotal permanent personnel in active employment	68
Non-permanent teacher researchers, researchers and associates	7
Non-permanent research supporting personnel (PAR)	12
Post-docs	8
PhD Students	47
Subtotal non-permanent personnel	74
Total	142

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

Employer	EC	C	PAR
CNRS	0	21	10
Université de Strasbourg	20	0	3
CHU Strasbourg	0	0	7
Inserm	0	6	0
Université Paris Diderot	1	0	0
Total	21	27	20

UNIT BUDGET

Recurrent budget excluding wage bill allocated by parent institutions (total over 6 years)	2,685
Own resources obtained from regional calls for projects (total over 6 years of sums obtained from AAP idex, i-site, CPER, territorial authorities, etc.)	1,365
Own resources obtained from national calls for projects (total over 6 years of sums obtained on AAP ONR, PIA, ANR, FRM, INCa, etc.)	6,759
Own resources obtained from international call for projects (total over 6 years of sums obtained)	545
Own resources issued from the valorisation, transfer and industrial collaboration (total over 6 years of sums obtained through contracts, patents, service activities, services, etc.).	1,126
Total in euros (in K €)	12,480

GLOBAL ASSESSMENT

INCI is a remarkably successful story that is very well administered and benefits from a clear vision for the future. It successfully tackles topics of major significance, including pain, sleep and biological rhythms, also in the context of reproductive behaviour. Especially this latter aspect is not widely studied in higher vertebrates and INCI very successfully tackle it using sophisticated approaches.

INCI has a strong presence in Strasbourg and more generally in the 'Grand Est'. It is very well recognised both nationally and internationally as exemplified by numerous collaborations with institutions outside France. The topics under investigations cover important and broad areas of current Neurosciences. Despite the diversity of topics, from molecular mechanisms related to secretion all the way to complex reproductive behaviour, INCI benefits from the successful strategy implemented by its Director to maintain cohesion by decreasing the number of teams and encouraging team fusions. Remarkably, this strategy is well accepted by the Team Leaders and further contributes to the overall success of INCI.

Its attractiveness has reached a remarkable level, including impressive publication successes, 546 publications, an increase of 69% over the previous review period. The prosperity of the Unit is also convincingly reflected by its ability to recruit young scientists, including seven new tenured scientists during the review period.

Last, some of the teams have not only made impressive contributions including for example an unsuspected role for astrocytes in the mechanisms of action of oxytocin and a role for omega fatty acids in neurosecretion. A hallmark of INCI is that it has long embarked on complex, yet significant topics that are not widely investigated in contemporary Neurosciences, including for example the role of biological rhythms in mammalian reproduction.

As a result of its successes, INCI is well funded whereby it will need a significant effort both financially and personnel-wise to continue making the technical platforms essentially freely available. Beyond a number of more or less traditional technical facilities including elaborate high resolution fluorescence microscopy, a distinctive feature of INCI is its 'Chronobiotron' run in close collaboration with Strasbourg University and allowing the study of sleep in humans.

DETAILED EVALUATION OF THE UNIT

A – CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

The first recommendation of the previous Hcéres committee was to increase the scientific production in 'top journals'. In response INCI considerably increased its production from 323 (2011-16) to 546 (2016-21), in referenced peer-reviewed journals (see 'Evaluation Area 3: Scientific Production' for detail).

In agreement with the second recommendation of the previous Hcéres committee about increasing the number of publications involving more than one INCI team, these publications progressed, from 30 (2011-16) to 44 (2016-21).

The third recommendation of the previous Hcéres committee was to improve the participation of INCI to European research programs. In response, INCI coordinated and benefited from two large EU-funded European joint doctorate training networks (the Erasmus+ NeuroTime and the H2020-MSCA-ITN HaPpY) from an FP7 career integration grant. INCI also welcomed a Marie Skłodowska-Curie postdoctoral fellow and an ERC Starting grant (accepted in 2021, starting in 2022 and benefited from two collaborative PICS and four PHC, an ANR-DFG grant, a DFG grant, two NARSAD Young Investigator awards, a NARSAD Distinguished Investigator award, a Young Investigator grant from the American Foundation for Suicide Prevention, grants from the Niemann-Pick Selbsthilfegruppe e.V., from the Bild Hilft e.V. and from the Ara Parseghian Medical Research Foundation).

The fourth recommendation of the previous Hcéres committee was to prepare the generational turnover and attract and fund international researchers. In response, the international attractiveness of INCI has significantly improved as exemplified by the presence of foreign scientists including 32 internships, 44 PhD students, 21 postdoctoral fellows, thirteen invited researchers for sabbaticals or collaborations, and the recruitment of two young group leaders (a Hungarian scientist joined from Germany, and a Russian scientist relocating from Switzerland) thanks to competitive international calls (2018-19 and 2020-21).

The first call was co-funded by FRM 'Amorçage de jeunes équipes' and USIAS (IdEx) and led to create team 11 in 2020 and to the 2021 CNRS tenure recruitment of a CR; and the second call is co-funded by the ITI NeuroStra (IdEx) and the FRM 'Amorçage de jeunes équipes', leading to the arrival of a young investigator at INCI in Spring 2022 and his application to CNRS position. These two international recruitment contributes to the generational turnover, together with three additional tenure positions obtained at a researcher or assistant professor level (2 CR CNRS: in 2018 and 2019; 1 MCU Unistra 2019). Notably, three already tenured university-hospital professors have also chosen to join INCI (Teams 4, 8, 9). Moreover, in 2022 INCI will present three new candidates for tenured CNRS position and an assistant professor position (Team 1) will be open.

B – EVALUATION AREAS

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

Assessment on the unit's resources

Regarding human resources, INCI has a clear organisational structure that is well suited to serve its objectives. The financial resources (salaries not included) estimate by INCI is between 1.6 M€ and 1.9 M€ per year, with an impressive jump to 3.7 M€ budget in 2021 due to an increase in the grant budget and funds from the Region and EU. Additional successful applications and recruitment contributed to this increase. Core facilities secure access to several essential techniques are noted to be at capacity. In sum INCI is well resourced and competently administered.

Assessment on the scientific objectives of the unit

During the review period INCI optimised its three main research lines: Communication and networks, Neurobiology of pain and Rhythms. The significant degree of cohesion around the general topic of 'synaptic plasticity and behaviour' is illustrated by common publications involving more than one team and most importantly, by internal reorganisations that have already, and will further contribute, to optimise the use of available resources. Importantly, the research lines have been collectively set and approved by the Council of INCI, then validated by CNRS. The general significance of the objectives is evident as exemplified by research on topics of obvious relevance such as the mechanisms underlying pain, biological rhythms and sleep.

Assessment on the functioning of the unit

A striking strength of INCI is its organisation. There is a clear decisional structure with a meaningful and convincing distribution of responsibilities between different committees. There is also a strong sense that decisions are well explained and communicated to all staff as well as a feeling of inclusivity.

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

Strengths and possibilities linked to the context

The attractiveness of the Unit made it possible to significantly increase resources during the review period, with a budget of 3.7 m €, i.e. about twice that of the previous years. The obvious relevance to society of topics such as pain in particular facilitated contact with the health care system including local hospitals as well as industry. During the funding periods, the relevance of the research performed by the Unit to the general public has further increased, for example by providing a plausible explanation for the possible or alleged beneficial role of 'omega fatty acids', the mechanisms of action of peptides such as oxytocin, much discussed in the context of autism, the role of cholesterol in the nervous system and Niemann-Pick disease in particular and, of course, pain. In this latter case, a patent has been filed based on the unexpected discovery that peptides generated as breakdown products of creatine kinase exhibit an analgesic activity (US Patent 10,449,235 B 2).

As INCI is obviously very successful and attractive, it managed to avoid, and certainly mitigate, what could have been a major risk namely the creation of ever more groups. Instead, the number of teams has been, or will be, reduced from eleven to nine, a process that is already well underway (see additional details in the next section that replaces 'Weaknesses' related to this topic).

Up to 2021, INCI has been a member of 'Neuropôle' structuring neurosciences in Strasbourg. It was replaced in January 2021 by an Interdisciplinary Thematic Institute, 'The nervous system facing environmental issues: from adaptation to pathologies' (ITI NeuroStra), funded by the local IdEx and by the SFRI (PIA3) for 2021–2024, with potential renewal for 2025–2028. ITI NeuroStra is co-directed by an INCI member, and federates 24 neuroscience research teams from ten research units, and ten technical platforms. It also trains young scientists, and seven additional INCI members are part of the scientific or pedagogic Steering and Executive committees of NeuroStra that also provides training towards master and PhD degrees in the fields of nociception and pain, time processing in the nervous system, and neurodegenerative and neurogenetic diseases.

The graduate program on nociception and pain is being funded for ten years until 2027, with INCI members serving as Directors. Further, the Strasbourg Pain Initiative assembles twelve teams from nine laboratories, from chemistry and painkiller development to pre-clinical model-based and human research. This initiative is a priority project of the current fundraising campaign supported by the Université de Strasbourg. In 2021 and the Région Grand Est. INCI teams also play an important role in a multitude of other national networks, including those focusing on sleep and autism. Internationally, INCI has been a member of the Neurex network, directed since 2003 by an INCI member. This trans-frontier neuroscience network has been supported by five successive EU INTERREG programs, including NeuroCampus (2016–2019) and Interneuron (2019–2022). It combines 110 laboratories and clinical services, with a total staff of 1200 scientists, within the campuses of Basel (Switzerland), Freiburg (Germany) and Strasbourg.

Besides Neurex, INCI also is at the origin of two EU-funded training programs: the Erasmus+ NeuroTime ('Neural processing of time') joint doctorate program between Strasbourg, Freiburg (Germany), Basel (Switzerland) and Amsterdam (Netherlands), which ended in 2021, which included seven INCI teams, was coordinated by a member of INCI and provided eight collaborative PhD fellowships to INCI in the 2016–21 period; and the 2021–2025 European Joint Doctorate ITN HaPpY ('Comorbidity of chronic pain and mood').

The report also details plans to further enlarge international collaborations in the future. INCI members are also active in the directory board or scientific councils of a number of national and international organisations including the Société Française des Neurosciences, Fédération pour la Recherche sur le Cerveau, Société Française d'Etude & de Traitement de la Douleur, European Pain Federation EFIC, Société de Biologie Cellulaire de France, the Groupement d'Etude & de Recherche en Lipidomique, the International Symposium on Chromaffin Cell Biology, the Société de Neuroendocrinologie, the International Neuroendocrine Federation, the European Biological Rhythm Society, the Société Francophone de Chronobiologie, the Société de Recherche & de Médecine du Sommeil, the Association Française de Psychiatrie Biologique & de Neuropsychopharmacologie, the Société Française de Psychiatrie de l'Enfant & de l'Adolescent & Disciplines Associées, and the European Union of Medical Specialists. Moreover, an INCI member, is part of the scientific directorate of Neurosciences and Cognition at the National Institute for Biological Sciences (INSB) of CNRS, Co-Director of the Multi-organisation thematic institute 'Neurosciences, cognitive sciences, neurology and psychiatry' of the French National Alliance for Life Sciences and Health (Aviesan), and co-leader of the

WP8 'Research Strategy, Networking' of ERA-NET Neuron Cofund (2016–2020) and Cofund2 (2021–2025) funded by H2020. Collectively, these activities reflect the strong implication of INCI in the local, national, and international scientific environment, illustrating a further strength of INCI.

Weaknesses and risks linked to the context

The main issue relates to resources, including the maintenance of existing colonies and the generation of new mutant lines. This may well become more problematic given the possibility to also perform work with genetically modified pre-clinical models, that are preferable to others for the study of specific behaviours. Likewise, the resources of INCI will need to be adequately staffed, including the complex behavioural platforms contributing to making INCI unique (see recommendations).

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

Strengths and possibilities linked to the context

The scientific objectives of INCI are of utmost relevance, both in terms of the fields of research (e.g. pain-related mechanisms and biological rhythms). The same applies to societal challenges, including for example the need to better understand the nature of pain and its mechanisms as well as the pressing need to develop drugs alleviating pain. A better understanding of biological rhythms is also key to better understand their impact on reproductive behaviour as well as the impact of day/night cycles. This latter topic also represents one of the highlights of INCI as it requires unique expertise to be meaningfully tackled in suitable pre-clinical models. Thus, in addition to unquestionable relevance there is also originality as this type of topic cannot be meaningfully and successfully approached at many institutions worldwide. The success of INCI is also illustrated by an unusual number of national and international collaborations. In sum the strengths far outweigh possible weaknesses.

Weaknesses and risks linked to the context

Weaknesses: none identified.

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

INCI appointed a team of prevention and security officers reporting and advising the unit Director. Members of the team include a radioprotection officer, a laser security advisor, and an advisor on the transport of dangerous goods. A risk assessment of the workplace risk assessment is updated yearly, and related investments implemented by INCI to minimise exposure to chemicals. A staff fire evacuation plan has been made and all newcomers are made aware of the plan as well as of other security measures. In addition, over 10% of the staff had first-aid training and during the 2020 Covid-19 crisis, INCI set up a Business Continuity Plan that could be reactivated if needed. Regarding IT security, scientific assets and computer systems are protected according to both CNRS and Unistra rules. Computers are encrypted and there is a mandatory seminar in Information Technology (IT) security awareness for newcomers. The IT charter specifies amongst other aspects that scientific data must remain available after staff departures. Last, the scientific and administrative data are backed up nightly. Regarding human resource management, CNRS and Unistra comply with European HSR4R (Human Resources Strategy for Researchers) whereby job offers are published on 'portail emploi'. A minimum of two individuals sits on the preselection committee, with the exception of calls for a young group leader operated through scientific societies and journals. An internal committee then pre-selects the candidates whereby an external ad hoc jury ranks them, a procedure approved by CNRS. INCI appointed an 'Equality Officer' trained in gender policies. For the 2016–2021 review period, the INCI woman/man ratio was 50-50% for recruited tenure researchers and faculty staff (2/2), 75-25% (6/2) for tenure ITA, 52-48% for PhD students, 66-34% for other student internships. The woman/man ratio for promotion was of 67-33% (4/2) for transition towards DR or PR, and of 87-13% (7/1) for ITA promotions.

For the next contract, four out of the nine teams of INCI will be led or co-led by women, compared with three out of eleven currently. INCI appointed as 'Sustainable Development' manager and carried out a carbon footprint assessment that was handed over to CNRS. Specific actions have been implemented about recycling, light switches operated by motion, LEDs and upgrading of the heating system. Unfortunately, the building is poorly insulated, and it would take a major effort to improve the situation. In sum, INCI benefits from a clear and

streamlined organisational structure in accordance with the best national and international standards, including recruitment procedures.

Weaknesses and risks linked to the context

A single weakness was identified regarding a lack of detail about procurement. With regard to foreseeable problems for the future, INCI and UAR3415 in particular indicates that experimentation rooms are close to full capacity whereby mitigating plans have been elaborated to overcome these problems.

EVALUATION AREA 2: ATTRACTIVENESS

Assessment on the attractiveness of the unit

INCI has been successful by national and international standards for quite a while and has managed to further increase its core strengths as well as its international visibility. Its attractiveness is amply and convincingly documented by an amazingly large number of national and international collaborations, the invitation of INCI scientists to give more than 420 lectures at congresses or universities in France and abroad, the organisation by INCI researchers/faculties of 50 national and international conference/symposia/workshops that gathered from hundreds to thousands of participants each, their participation in numerous local, national and international instances, as well as the recruitment of young scientists on permanent positions, including an ERC awardee.

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

INCI has a clear and efficient organisation structure that serves the INCI very well as exemplified by a decreasing number of teams and regrouping of personnel within existing teams. INCI managed to identify topics of high significance and relevance in current Neurosciences. Some require unique competence and knowledge and INCI is fortunate to include highly trained and competent scientists. INCI is highly visible nationally and internationally as indicated by an amazing number of collaborations. INCI has been successful in obtaining European and international funding, to support training through research (doctoral and postdoctoral levels) is exceptional (e.g.: Erasmus+ NeuroTime; H2020-MSCA-ITN HaPpY; Marie Skłodowska-Curie postdoctoral fellowship). As a result of the above, it manages to recruit young, well-trained scientists. The last five years have seen a remarkable number of publications in peer-reviewed journals with some having attracted an unusual degree of attention. Finally, INCI is also very strong at reaching out in terms of explaining what it does to the general public and collaboration with industry, in the pain field in particular.

Weaknesses and risks linked to the context

While no significant weaknesses have been identified there will be a need to carefully consider issues related to some facilities and how, if needed, projects should be prioritised.

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

Strengths and possibilities linked to the context

Given the retirement of eight staff researchers within the next five years INCI will attempt to recruit or consolidate five tenured staff over the next five years. While ambitious given the current financial constraints imposed by CNRS, there are clear signs that INCI is likely to be successful as this policy was already started in 2017. It clearly delivered as it led to four new recruitment over the following four years: CoNRS 25, CoNRS 26, MC 69 and CoNRS 25. They were successful in obtaining grants as PIs: IdEx Attractivité and ANR JCJC ; ANR JCJC, AFSP young investigator and FRC; IdEx Attractivité ; FRM 'amorçage de jeunes équipes', USIAS and DFG, the latter as a result of an international call set up by INCI. These recruitment was facilitated by an extra 7–8 k€ support from INCI common budget, now replaced by the 10 k€ CNRS/Unistra support to newly recruited researchers/faculties, a 30 k€ starting support provided by the ITI NeuroStra (since 2021). Furthermore, INCI also offered slots for competitive PhD fellowships and three of the recruited researchers/faculty presently mentor PhD students.

Besides, over 2016–2021, three other faculties already with tenure position also joined INCI: two PU/PH in 2016 and in 2020, and one MCU/PH in 2019, thus strengthening the 'pain' axis (team 4 and team 5) and 'rhythm' axis (team 6; team 8; team 9; creation of team 11). Molecular biology, 'omics', neuroanatomy/electrophysiology, pre-clinical models in psychiatry, and human studies (have also been strengthened by these recruitment. In this context, it is of note that INCI will host in 2022 an ERC Starting awardee and a new ITI Neurostra young group leader laureate with an 'FRM amorçage de jeunes équipes'. One researcher supported by an FRM 'Retour en France', these three talented junior researchers are now applying to a tenured position from the CNRS (at either CoNRS 25, 26 or 54). These three candidates aim at strengthening the 'network' axis at INCI, bringing in valuable expertise in various forefront in vivo imaging techniques to understand the cerebellar circuitry, the mesoscale network shifts during learning and the stress coping circuitry. In sum INCI, this highly successful and well thought over recruitment policy is a further indication of the attractiveness of INCI as well as of the way it is administered.

Weaknesses and risks linked to the context

No weaknesses have been identified beyond financial constraints imposed by CNRS and common to most research institutions in Europe and beyond. In fact, by comparison, INCI managed to mitigate these constraints in large part because INCI is remarkably attractive in terms of its topics, its publication success and the way it is administered as repeated again and again throughout the report.

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

INCI has been successful in obtaining European and international funding, including the training networks Erasmus+ NeuroTime and H2020-MSCA-ITN HaPpY, an FP7 career integration grant, two collaborative PICS and four PHC, an ANR-DFG grant, a DFG grant, two NARSAD Young Investigator awards and a NARSAD Distinguished Investigator award, a Young Investigator grant from the American Foundation for Suicide Prevention, grants from the Niemann-Pick Selbsthilfegruppe e.V., from the Bild Hilft e.V. and from the Ara Parseghian Medical Research Foundation, and support from the Fonds de Recherche Nature et Technologies (Quebec). Moreover, they are now welcoming a Marie Skłodowska-Curie postdoctoral fellow and an ERC Starting grant (accepted in 2021, starting in 2022). Fourteen projects led by INCI members were funded directly, or indirectly via the Unistra IdEx, by the governmental Future Investments Programme (PIA), for a total of over 4 M€. It includes the prestigious graduate school of pain Euridol (EUR), and various fellowships and awards from the local IdEx, including attractiveness awards. INCI also contributed in obtaining in 2021 the ITI NeuroStra, funded by the local IdEx and the PIA3 SFRI, thus further contributing to Strasbourg attractiveness in Neurosciences by offering young group leader funds as detailed in other sections.

At national level, INCI has been successful with ANR calls, with 25 (13 as coordinator) ongoing ANR during the 2016–2021 period [5 JCJC, seventeen PRC (5 as coordinator), one ANR-DFG as coordinator, 1 PRCE as coordinator, 1 MRSEI], eighteen of them still being active in 2022 and in obtaining major foundation supports, in particular from the FRM.

Weaknesses and risks linked to the context

No weaknesses identified.

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

Strengths and possibilities linked to the context

INCI researchers benefit from shared equipment of core facilities supported by the INCI common budget covering part or all of the functioning costs, including maintenance contracts, upgrades, repairs. This is as such remarkable and a tremendous asset as this typically NOT the case at other institutions, particularly overseas. Over the 2016–2021 period, INCI invested over 1.2 M€ to equip its core facilities and platforms and to support other common general equipment because of successful applications to external calls. INCI has eight core facilities, each under the responsibility of a tenure researcher and/or engineer staff. The technical/engineer staff dedicate part-time to the considered core and part-time to their primary hosting team. A Techniques & Development committee is in charge of optimising and perpetuating these core facilities, as well as proposing new ones (one dedicated to in vivo and ex vivo 'dynamic imaging & electrophysiology', accompanying the major development of both cellular imaging, miniscope and (multi – fiberphotometry).

Besides the core facilities internal to INCI, scientists also benefit from three facilities that are independent platforms opened to other laboratories. The *in vitro* imaging platform at UAR3156 is directed by INCI members. It is labelled CORTECS and provides on-site paid access to nanozoomer, confocal microscopes and electron microscopes, for academic and private research teams. One of the highlights is surely the 'Chronobiotron' UAR3415 located at INCI housing a number of different pre-clinical models and rooms for experimentation. It belongs to national networks of experimentation and transgenesis platforms (ROCAD, CELPHEDIA), and has national GIS-IBiSA label and CORTECS (Unistra/CNRS/Inserm) label. It is open to academia (INCI being the main user) and to private companies, a potential source of additional income. The CIRCSom facilities for human sleep research are located at Strasbourg Hospital and directed by a member of INCI. This state-of-the-art facility is designed to investigate human sleep and chronobiology and aims at understanding the mechanisms underlying sleep and circadian disorders, and their functional interactions with other pathologies. A light-controlled environment allows performing chronobiological protocols under constant routine conditions to evaluate endogenous circadian rhythms, sleep homeostatic regulation and the role of light and other zeitgebers. CIRCSom is composed of five technical suites, isolated from all external time cues, with monitoring of zeitgebers (light, sound, temperature, food), equipped with bathrooms, and connected with a central monitoring room. It is unique for the study of non-visual effects of light using specific light monochromatic (blue, red, green) or polychromatic white light exposures (cold, warm colour enriched) in a wide range of luminance (1 to 20,000 lux) and administration mode (various light/dark regimens, ultradian light/dark cycles, etc.); and for the study of younger children and patients with debilitating neurological or psychiatric disorders. It thus allows multidisciplinary investigations based on combined techniques and expertise in chronobiology, sleep, neurology, adult and child psychiatry.

Weaknesses and risks linked to the context

Possible weaknesses derive from the strengths of the INCI regarding the facilities. It is already, or it is likely to be challenging to maintain, to service and upgrade technical facilities not only in terms of maintenance costs but possibly even more so in terms of recruiting or even maintaining adequate tenured technical staff.

EVALUATION AREA 3: SCIENTIFIC PRODUCTION

Assessment on the scientific production of the unit

The scientific production of the INCI is excellent. Between 2016 and 2021, INCI generated 546 peer-reviewed publications. 370 were original articles, 39 were clinical articles and 137 reviews. Sixty-two percent were from INCI researchers as main investigators, and about 38% were contributions by INCI members to collaborative efforts led by other laboratories. 44 original publications listed authors from at least two different INCI teams.

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

Strengths and possibilities linked to the context

Between 2016 and 2021, INCI generated 546 peer-reviewed publications. 370 were original articles, 39 were clinical articles and 137 reviews. 62% were from INCI researchers as main investigators, and about 38% were contributions by INCI members to collaborative efforts led by other laboratories. Forty-four original publications listed authors from at least two different INCI teams. As such this is an impressive record that also includes a number of important and original publications, with some of the highest profile in Neuroscience, including e.g. *Neuron* and *Nature Neuroscience*, as well as outstanding general biology Journals such as *eLife*. What is also remarkable is that all units participated to the publication effort, by and large to a similar extent. Importantly, the topics also include subjects that are not investigated in many laboratories and yet of great significance, including for example the studies of reproductive cycles as a function of biological rhythms. In sum, INCI is outstanding with regard to its scientific production.

Weaknesses and risks linked to the context

Not only are there are no weaknesses in the publication record but also the reorganisation that is already underway as detailed in other sections will most likely even further increase the quality of the contributions.

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

All INCI teams have been productive and have contributed to the outstanding overall publication record.

Weaknesses and risks linked to the context

Not relevant given the above.

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

Laboratory books are used for all research conducted at INCI, either numbered page paper lab books provided by CNRS or the electronic LabCollector. They are archived at INCI or saved and backed up on the servers of Strasbourg University data centre. The scientific data from INCI personal computers are backed up nightly on storage bays hosted within the data centre, and the implemented daily backups are kept for a month. The experimental recording systems are also backed up on several Network Area Storage (NAS) at the Unistra data centre, each NAS being doubled to guarantee protection against accidental deletion and file corruption. Peer-reviewed are referenced under Pubmed and/or ISI, and deposited in open public archives (UnivOAK, HAL). Human research studies are implemented after validation by the local and national authorities, including personal protection committee (CPP), French national agency for the safety of medicines and health products (ANSM), French national committee on information technology and freedom (CNIL), and regional health agency (ARS) for authorisations related to phase one studies. Human studies are performed in accordance with the principles of the Declaration of Helsinki. All research protocols involving pre-clinical models are submitted through the national Apafis application. They are evaluated by the local ethical committee (CREMEAS: CEEA-035) for recommendations before validation by the French Ministry of Research and Higher Education (MESRI). Moreover, INCI experimenters as well as the facility (Chronobiotron UAR3415, Agreement n° C 67-482-1) comply with additional decrees published on Feb. 1st, 2013, concerning :

- i. the conditions for the approval, setting up and operation of establishments using, breeding or supplying pre-clinical models used for scientific purposes and their controls;
- ii. the protection of pre-clinical models used for scientific purposes;
- iii. the acquisition and validation of the skills of the staff of establishments using pre-clinical models used for scientific purposes (authorisations to design and/or conduct experiments, surgery training...);
- iv. the delivery and use of medicines employed by establishments approved as users of pre-clinical models for scientific purposes.

The valid protocol numbers are provided at each model order, and the corresponding procedures are displayed in the room to inform the staff. The compliance with regulations is internally controlled by the engineer at Chronobiotron direction, by the Chronobiotron staff, and by the user SBEA committee (structure in charge of the follow-up of well-being); at a governmental level, the control is exerted by the departmental service. Half of the whole 2016-21 scientific production (48%) of INCI, from articles to book chapters, is freely available through open access (OA). This percentage increases to 54% when just considering scientific publications in peer-reviewed journals, and it is the highest for the most recent articles (64% for 2020-21). To comply with both Unistra and CNRS regulation, a registration of publications and their OA deposit are done through the publication depositories UnivOAK and/or HAL. Moreover, based on individual choice, some scientific publications are first deposited on a preprint server such as BioRxiv. INCI is rapidly progressing towards the objective of having all scientific publications supported by public agencies being OA. Concerning original data, the OA access depends on the considered subfield of research. Two of the teams in the network field, using electrophysiology and cellular imaging, are making data and codes available through GitHub, Zenodo and EBrains; whereas sequencing data from teams using 'omics' approaches are deposited on GEO (Gene expression Omnibus). Some source data are also deposited with the articles on Open Access journal sites (i.e. *eLife*, *Nat Commun*). Overall the policies implemented by INCI further document outstanding leadership.

Weaknesses and risks linked to the context

The critical mass of the INCI in terms of technical support seems to be decreasing. One technical staff (AI CNRS) recently left the INCI and one researcher (DR CNRS) retired during the period. By the end of 2024, one technician (AJT Unistra) and two researchers (DR and CR Inserm) will retire. This is a clear threat for the INCI which urgently needs to recruit new researchers and technicians to maintain its level of scientific production. During the period,

the INCI had an unsuccessful candidate for the CNRS (committee n° 25 and 24), which offer only a success rate of 4 to 6%. A tenure assistant professor position at the Institut Universitaire de Technologie (IUT) Louis Pasteur from the Université de Strasbourg will be open in the Team in 2022, but the heavy teaching duties (192 h/year) associated to the position will limit the time devoted for research and thus will not entirely compensate for the loss of the workforce.

EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

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

One of the most remarkable strengths of INCI consists in its outreach activities. This is in part facilitated by the obvious societal relevance of some of the core research topics at INCI, related to pain, sleep as well as more generally human behaviour as can be studied using suitable experimental models. Still, INCI has been spectacularly active in organising and formalising the diffusion of the knowledge the institute has accumulated (see further details in the corresponding sections).

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

Strengths and possibilities linked to the context

The contribution of research activities to society is a particularly obvious additional strength of INCI, in large part explained by its focus on pain-related mechanisms and rhythms including sleep and reproduction. INCI is involved in actions directed towards public health benefit, including the participation in clinical trials (27 over the reporting period) for developing new treatments of autism, specifically melatonin where INCI is trial coordinator, and obstructive sleep apnoea. INCI is also involved in a project aiming at better understanding the impact of intensive care-induced pain in premature infants. Further, INCI is involved in the development of non-invasive tools to monitor sleep and virtual reality in analgesia.

The clinical research activities of INCI also led to clinical recommendations, including the validation of light therapy as a first-line treatment of depression, the redefinition of melatonin indications in insomnia, circadian, neurological and psychiatric disorders, a revision of the criteria for the diagnosis of circadian disorders, cautious use of hydroalcoholic solution in premature intensive care units and maternities, etc. The INCI contributed to a Livre blanc de la Douleur (2017) for the French Ministry of Health and the 2016 ANSES (National Agency for Food, Environment & Work Health Security) report on the evaluation of health risks for professionals exposed to atypical working hours. INCI also took part of a working group from the European Space Agency (ESA) on energy balance and gut microbiota composition during spaceflight. INCI members (Teams 6, 7 & 8) are currently part of the ANSES working group on the health effects of lighting systems using light-emitting diodes, the 'chrononutrition' working group in charge of evaluating the impact of the daily distribution of food intake on metabolic health, and the 'non-conventional working hours' group assessing the effect of non-conventional working organisation on health. The INCI is also strongly committed in the formation of MDs, in relation to pain (SFETD schools on neuropathic pain; 2018, 2020, 2022) and the sanitary effects of shift work, under the supervision of CARSAT (Caisse(s) d'Assurance Retraite & de la Santé au Travail).

Weaknesses and risks linked to the context

There are no weaknesses or risks in the INCI interactions with the non-academic world, which are an obvious strength of the unit.

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

Strengths and possibilities linked to the context

INCI members have established fruitful collaborations with several industrial partners (Servier, Biocodex, Compumedics, Roche Laboratories, Theranexus and others) in the frame of collaboration contracts, clinical activities, consulting and training activities. These collaborations concerned the diverse areas of expertise present at INCI (melatonin, circadian rhythms, sleep, pain, neurodegeneration, behaviour, electrophysiology...), bringing substantial funding to the unit (> 1.1 M€ over the reporting period). They allowed the recruitment of four PhD students funded by Cifre fellowships. Overall, the medical, translational and fundamental research conducted at INCI yielded two pre-maturation and two maturation contracts supported by the SAT Conectus over the reporting period. Previous valorisation projects also led to two patent fillings over this period.

Weaknesses and risks linked to the context

Given the high translational potential of the research made at INCI, the number of patents filled over the reporting period is rather low (2) and none of them have been licenced.

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

Strengths and possibilities linked to the context

INCI massively shares its knowledge with the public, through various outreach actions that aim at spreading scientific culture. These include debates, conferences to the general public, interviews by major national media networks, TV shows (France 5, Arte, France3, Public Sénat), radio programmes (France Inter, France Bleu Alsace, RTBF...), blogs, websites, and YouTube. Schools, high schools, medical, paramedical as well as patients' associations are especially targeted. Over twenty articles in non-specialist journals (Médecine/Sciences, La Recherche, Science & Médecine, Autisme, La Lettre des Neurosciences...) and eighteen institutional (CNRS, Inserm, Unistra) press releases following breakthrough scientific publications were published over the reporting period and covered all the scientific expertise present at INCI.

INCI members actively participate in the local organisation of the annual three-day 'Fête de la Science'. INCI PhD students have a strong commitment towards the public, by participating in various science outreach events, such as the above-mentioned 'Fête de la Science', the Brain Awareness Week, Pint of Science, Kids university, or the 'Téléthon', through conferences, talks in schools and high schools, scientific theatre plays, Christmas cookies selling, etc. The major contribution of the INCI students to the DoctoNeuro association, which gathers Neuroscience Master and PhD students from Unistra, and to its board (15 INCI members are part of the DoctoNeuro board) must also be acknowledged. DoctoNeuro not only stimulates meetings and exchanges between students from the different Neuroscience laboratories in Strasbourg but also disseminates knowledge in Neuroscience to the general public.

Weaknesses and risks linked to the context

No weaknesses at all in this area, it is rather so that INCI is exemplary in terms of outreach and diffusion of knowledge to the general public.

C – RECOMMENDATIONS TO THE UNIT

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

Like with most other research institutions funding, especially related to technical platforms including personnel costs may become an issue in the years to come. A meeting with ITAs and ITRFs revealed that many struggle to share their time between the platforms they are responsible for and the team(s) they are associated with. It may be desirable to group platforms and to reorganise access to specific instruments. A charter may also be envisaged ensuring that the contribution of technical personnel is adequately valued and recognised, including in terms of publications.

Recommendations regarding the Evaluation Area 2: Attractiveness

Given the successes of the Unit as a whole and its national and international reputation in a very attractive and important area of the Neurosciences, a potential danger is that it may become a victim of its own success. In particular, the constraints resulting from limited space and technical personnel may restrict access to platforms and introduce long delays in performing experiments, related to behavioural experiments and potentially imaging as well. Given the time limits linked with the completion of PhD Theses this may become problematic in the future.

Recommendations regarding Evaluation Area 3: Scientific Production

INCI has done very well indeed in the all-important area of publication. There have been major improvements during the review period regarding the number of relevant, very visible publications in widely read Journals with

also a significant effort towards open access publication and INCI is strongly encouraged to maintain its high level of scientific production.

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

The main recommendation would be to attempt a better commercial exploitation of discoveries made by INCI, for example, by increasing patent filing and/or exploitation. Also, it is important to ensure that the wealth of knowledge at INCI in highly relevant areas such as pain, sleep and biological rhythms is made accessible to industrial partners in the framework of contracts that clearly and significantly benefit INCI financially.

TEAM-BY-TEAM ASSESSMENT

Team 1: Intracellular membrane trafficking in the nervous & neuroendocrine systems

Name of the supervisor: N. Vitale & S Gasman

THEMES OF THE TEAM

The team focuses on the mechanisms controlling intracellular membrane trafficking, especially the different steps of vesicular trafficking, such as exocytosis and endocytosis. Within this general frame, it explores

- i) the molecular players involved in vesicle biogenesis, exocytosis and endocytosis, with a particular attention paid on small GTP-ases, the actin cytoskeleton, annexins and lipids;
- ii) the mechanisms underlying the excessive catecholamine secretion in pheochromocytoma and
- iii) the cellular and molecular mechanisms by which leptin enters and is transported through the tanycytes to reach the cerebrospinal fluid.

This new line of research initiated at the beginning of the contract period is developed in collaboration with the teams of Drs V. Prévot (Inserm, Lille) and J. Dam (Cochin Institute, Paris).

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

As suggested by the previous Hcéres committee, the team has increased its scientific production in top journals and published 47 original articles, including widely read journals such *PNAS*, three *Nature Commun*, *Nature Metab*, *Cell Rep*, two *eLife*, one *Cancer Lett*, the latter being published in 2022. Of these, four were signed as first, last or corresponding author (PDC) by the team's members. The efforts to increase the proportion of publications signed as PDC in widely read journals should be pursued. Following the recommendations of the previous Hcéres committee to increase intra-INCI collaborative publications, several intra-INCI collaborative projects have been carried out and four out of the 47 original articles of the team over the period are collaborative publications with other INCI teams. While the previous Hcéres committee suggested improving the participation in major European research programs, no European grants have been obtained by the team over the period. In accordance with the recommendations of the previous Hcéres committee to prepare the generational turnover and attract and fund international researchers, a tenure assistant professor has been hired by the team in September 2022, but this recruitment will not compensate for the loss of the team's work forces due to the high teaching duties of such positions.

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	3
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)	3
Subtotal permanent personnel in active employment	9
Non-permanent teacher researchers, researchers and associates	1
Non-permanent research supporting personnel (PAR)	1
Post-docs	1
PhD Students	4
Subtotal non-permanent personnel	7
Total	16

EVALUATION

Overall assessment of the team

The team has an internationally recognised expertise in vesicular trafficking and has been successful in developing new lines of research on the role of lipids in exocytosis mechanisms and the transport of leptin to the cerebrospinal fluids thanks to collaborations with renown teams. Its scientific production is excellent with 47 original articles published over the evaluation period, including ten articles in leading journals in their field, the latter being often collaborative papers.

The team showed an excellent capacity to train PhD students (6 theses defended, 4 ongoing), is very active in teaching and knowledge diffusion, including towards the lay public. Members of the team are strongly involved in local and national committees, meeting the organisation and the management of local technical facilities.

Strengths and possibilities linked to the context

The team has a longstanding and internationally recognised expertise in the mechanisms regulating vesicular trafficking in neuroendocrine cells. Capitalising on this experience and the development of novel neuronal and neuroendocrine models as well as innovative tools, the team got important insight into the control of exocytotic processes by several protein factors, such as small GTPases and annexins. The team also pioneered studies on the role of lipids in various membrane trafficking processes, including calcium-regulated exocytosis and vesicle biogenesis. It generated original data sets demonstrating that omega-3 forms of phosphatidic acid regulate the expansion of the exocytotic fusion pore, whereas the monounsaturated phosphatidic acid regulates vesicle docking in neuroendocrine cells, providing the first demonstration that a single phospholipid can contribute to different steps of vesicular trafficking depending on its fatty acyl chain composition (Cell Rep, 2020). This seminal work has been highlighted by an Inserm press release, in the Inserm Science et Santé magazine, in '2020 Une année avec le CNRS', and selected amongst the papers of the year 2020 by the French Society for Neuroendocrinology. The toolbox developed by the team to study the contribution of phosphatidic acid in neurosecretion led to one patent filing that involves two members of the team.

The team has established fruitful collaborations with the Departments of Digestive and Endocrine Surgery and Surgical Oncology from Nancy and Strasbourg University Hospitals and has privileged access to pheochromocytoma resections from the Tumour Biobank of Nancy hospital to investigate the mechanisms underlying catecholamine hypersecretion in pheochromocytoma. This collaboration has been very productive (five original articles published in *Endocr Relat Cancer*, *Small GTPases*, *Neuroendocrinology*, *bioRxiv*, *Cancer Letters* and one review article published in *Cancers*). It allowed the team to demonstrate that catecholamine hypersecretion in these tumours is linked to the perturbation of specific exocytic steps and to the modification of the expression of key players of the exocytic pathway. In the frame of this project, the team also identified the somatostatin analogue Pasireotide as a potential inhibitor of catecholamine hypersecretion in human pheochromocytoma cells.

Thanks to a fruitful collaboration with an Inserm team in Lille and a team from Cochin Institute, the team tackled the mechanism by which peripheral leptin is transported through tanycytes to reach the cerebrospinal fluid and which is crucial for the central control of pancreatic lipid accumulation, and glucose homeostasis (collaborative article published in *Nature Metab.* in 2021, also highlighted by the French Society for Neuroendocrinology). The team has been successful in raising funding from various French agencies (ANR, Inserm/Plan cancer) and charities (FRM, Ligue contre le Cancer). This resulted in sixteen grants (12 as coordinator, 4 as partner) for a total of around 2 M€ over the evaluation period.

Team members have been invited for 48 oral presentations at international (22) and national (26) conferences or seminars and have organised three international conferences and eight symposia, illustrating the excellent national and international visibility of the team. The team has trained ten PhD students over the period (6 graduated and 4 ongoing). Within the two years following their thesis defence, PhD students of the team cumulated between three and thirteen publications. Some of them received travel or conference awards or thesis prizes from different societies. The team's staff are strongly involved in local, national and international committees (ERC LS5 panel for advanced grant evaluation, Academy of Finland's review panel) in teaching and knowledge diffusion, including towards the lay public.

Weaknesses and risks linked to the context

The critical mass of the team is decreasing. One senior researcher (DR CNRS) retired during the contract period and two others (DR and CR Inserm) will retire by the end of 2024. Also, one permanent technical staff (AI CNRS) recently left the team and one technician from Unistra will retire by the end of 2024. There is therefore a significant risk of loss of expertise in the team. A tenure assistant professor at Unistra joined the team in September

2022, but the heavy teaching duties (192 h/year) associated to such positions will strongly limit the time devoted for research and thus will not compensate for the loss of the workforce. Only two postdocs have been trained in the team over the reference period. No international funding has been obtained by the team during the review period. There is no participation of the team in international research networks. This limits the opportunities to attract promising young scientists who could then apply to CNRS tenure positions.

RECOMMENDATIONS TO THE TEAM

The team should implement a strategy to attract promising young scientists to compensate for the past and forthcoming decrease in its work forces. An effort should be made to hire more postdocs, including from abroad, even though funding from French agencies such as ANR does not allow funding postdoc salaries on the long-term, thus limiting the attractiveness of postdoc positions in France. The team has been successful in developing new lines of research (e.g. the role of lipids in vesicular transport and leptin transport in tanycytes) thanks to collaborations with French teams. They should also initiate collaborations with foreign laboratories and try to apply to international collaborative calls (ITNs, ERANET, bilateral ANR etc.). This would make new opportunities to recruit foreign postdocs.

Team 2: Physiology of neural networks

Name of the supervisor: P. Isope

THEMES OF THE TEAM

Team 2 has focused its research interest on six strongly interconnected topics as follows:

- i. synaptic transmission in the cerebellar cortex (synapse between granule cells and molecular layer interneurons or Purkinje cells),
- ii. synaptic physiology of the cerebellar cortex in pathological conditions (bacterial neurotoxin – C. perfringens Epsilon toxin ETX – attacking oligodendrocytes, spinocerebellar ataxia),
- iii. modular information processing in the cerebellum,
- iv. influence of cerebellar cortex on cerebellar nuclei and cerebral cortex (inhibition of cerebellar glutamate and GABA neurons by Purkinje cells, cerebello-prefrontal pathways in the context of schizophrenia),
- v. inhibitory synaptic interactions and circuits in olfactory bulb glomeruli (subtype of periglomerular cells) and sensorimotor information processing in the spinal cord, in normal and pathological conditions (neuropathic pre-clinical models, corticospinal tract to the control of movements). The national and international reputation of team 2 comes from solid and comprehensive studies on microcircuit operational rules.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Team 2 has successfully addressed the previous committee recommendation that was to increase their scientific production in top journals. Indeed, between 2016 and 2021, Team 2 has published 44 articles (28 original articles), in widely read journals including two Nature Communications, six eLife, one Molecular Cell, one Annals of Neurology and five The Journal of Neuroscience. For 70% of those (31 articles), the team was the leader meaning co-first or co-last author. Team 2 also published nine review articles or editorial comments and six book chapters. These 44 articles were produced by six researchers (in practice 5 full-time since one of the research directors is >90% involved in research management), five postdoctoral fellows and ten PhD students, with the help of one technical staff. 24 of the 28 research articles were co-authored by PhD students or postdoctoral fellows and, all PhD students had one or more publications with at least one as 1st author within the two years following their PhD defence. Intra-INCI collaborative studies and publications are not the major strength of this team. Nonetheless, a collaborative effort between team 2 and team 3 has shown that Epsilon toxin ETX inhibited a subtype of large conductance Kir channels in cerebellar oligodendrocytes. Also, team 2 keeps strong interactions with medical partners at the Strasbourg Hospital and with UGECAM Alsace for the creation and the scientific supervision of a new platform dedicated to motion capture in humans.

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	3
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)	1
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

Team 2 investigates fundamental mechanisms involved in neural circuits of the cerebellum, olfactory bulb and dorsal spinal cord. Leveraging translational approaches and clinicians, the team studies the cerebello-thalamo-cortical pathway in the context of schizophrenia and is involved in preclinical studies on corticospinal pathways modified in the context of Amyotrophic Lateral Sclerosis and Spinal Cord Injury. Team 2 is an outstanding team that published, between 2016 and 2021, highly visible peer reviewed articles (e.g. *eLife* 2019, *Nat. Comm.* 2002) and raised 2.2 M€ funds from institutional agencies and foundations, allowing the acquisition of state-of-the-art equipment. Team 2 was very active in knowledge diffusion and participated in the creation of an international summer school. In addition, members of team 2 were highly involved in local and national committees and management bodies (e.g. French Academy of Science, MESRI). Efforts must be maintained to attract and fund international researchers/postdocs in order to sustain the high-level scientific activity.

Strengths and possibilities linked to the context

Thanks to up-to-date *ex vivo* and *in vivo* electrophysiological techniques coupled to optogenetic approaches, behavioural and neuro-computational studies, team 2 published, between 2016 and 2021, 44 scientific articles (including 2 in *Nature Communications* and 6 in *eLife*) and reviews about interactions between different brain regions such as spinal cord and cerebellum, cortex and spinal cord, cerebellum and thalamus as well as thalamus and cortex. This work was performed by six researchers, one technician, five postdoctoral fellows, ten PhD students and leveraged strong interactions with team 3 and neurocomputational teams (Marseille, Stockholm, Leipzig) as well as new links with local translational teams working in human clinics. Team 2 collected 2.2 M€ from institutional and foundation grants, including 926 k€ from ANR (Agence Nationale de la Recherche) and 475 k€ from Fondation pour la Recherche Médicale (FRM). Team 2 which belongs to GDR2904 NeuraNet was regularly invited to give seminars (28) and lectures (12 in international meetings: 3 keynotes and 6 plenary).

Weaknesses and risks linked to the context

Regarding economic and societal actions, team 2 does not work with private companies but collaborates with medical partners at the Strasbourg Hospital in the context of schizophrenia. Neurodevelopmental diseases (autism and spinocerebellar ataxia) are also tackled. Team 2 is aware of the need of recruiting new researchers and technicians.

RECOMMENDATIONS TO THE TEAM

In view of its high-level publications track record (28 scientific articles and sixteen reviews published between 2016 and 2021, including two in *Nature Communications* and 6 in *eLife*), 2.2 M€ funding and diffusion/training/scientific influence, team 2 is an excellent scientific group. About PhD students, team 2 indicates that 24 of the 28 research articles were co-authored by PhD students or postdoctoral fellows and that all PhD students had one or more publications with at least one as 1st author within the two years following their PhD defence. This is a laudable effort that must be maintained, knowing that the future of PhD students is closely based on their publication(s). Team 2 has strong interactions with one national (Marseille) and two international neurocomputational teams (Sweden and Germany), and with medical partners at the Strasbourg Hospital. Those fruitful collaborations must be carried on and utilised to chase international funds, PhDs and post-docs recruitment. Even though team 2 closely collaborates with team 3, in the interest of INCI as a whole, it would be desirable if this excellent team considered collaborations with other teams at INCI. Finally, team 2 participation to major European research programs could be improved whereby it is note worthing that team 2 is well on course towards preparing the generational turnover with the arrival of CNRS researcher, funded by ERC Starting grant (starting in 2022).

Team 3: Nociceptive signalling in the spinal cord

Name of the supervisor: R. Schlichter

THEMES OF THE TEAM

Using electrophysiology, imaging techniques, biochemistry and mass spectrometry, team 3 deciphers the plasticity and modulation of spinal neuronal networks involved in the processing of nociceptive information in the dorsal horn as well as analgaesic mechanisms involving glial cells. Team 3 collaborates with teams 6 and 7 about noradrenaline, caffeine and circadian rhythms, with team 10 about emotions and oxytocin receptors in amygdala, with LNCA UMR7364 about endocannabinoid variations in different addictions, and with team 1 about cancer sciences. Parallel research is conducted by a single team member about evolutionary biology and zoology.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous Hcéres committee suggested that the team should improve the proportion of publication in widely read journals. Between 2016 and 2021, the team addressed this recommendation by generating 51 publications (1/3 pain and nociception, 1/3 neuronal networks and their plasticity), including 42 original articles (2 *Neuron*, 1 *Cell rep.*, 1 *Nat. Neurosci.*), three book chapters and six reviews. Amongst the 42 original articles, 21 have been published in the field of evolutionary biology and zoology by a single member of the team. In addition, the team has been actively involved in the organisation of an international workshop on pain and participated in the organisation of six national meetings/symposia and an Inserm Workshop. The team raised 425 k€ from institutional and foundation grants, as well as from a private partnership. Two additional senior researchers joined the team (1 CR Inserm and 1 DR CNRS), bringing new knowhow such as single-channel electrophysiological recordings, biochemistry, molecular biology and mass spectrometry (platform). Two additional research topics have been or will be added:

- i. central metabolism and sex differences in morphine metabolism;
- ii. and alteration of the nociceptive system in a model of autism.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	1
Lecturer and associate lecturer	1
Senior scientist (Directeur de recherche, DR) and associate	1
Scientist (Chargé de recherche, CR) and associate	2
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	3
Subtotal permanent personnel in active employment	8
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	13

EVALUATION

Overall assessment of the team

Thanks to strong local, national and international collaborations, but also various techniques ranging from electrophysiology to molecular biology, the team has achieved a very good scientific production between 2016 and 2021 by publishing 51 publications including 42 original articles (21 in the field of evolutionary biology and zoology that is not the topic of the team), three book chapters and six reviews. Additional strengths of the team are its capacity to collaborate with other INCI teams, to share its knowledge with the public and to collaborate with a private company in the context of neuroendocrine cancers. The team managed to obtain 425 k€ from national institutional and foundation grants, as well as from a private partnership.

Strengths and possibilities linked to the context

The team enjoys a strong reputation based on its expertise on neuronal networks in the dorsal horn of the spinal cord involved in somatosensory processing. The research on endogenous morphine is interesting and certainly relevant whereby the scientist is also well aware of how controversial this field is, with the potential difficulties in publishing results. Still, the current scientific landscape is becoming more receptive towards the publication of results that are not mainstream. From a technical point of view, multilevel approaches are developed by team 3, ranging from the molecular to the behavioural level. Members of the team participated in ongoing training for physiotherapists and nurses and publications for medical and paramedical. The team members have been invited to give four conferences to a broad audience of non-scientists, three conferences in the field of Autism, and interviews in national and international media (*Times magazine*). One recent publication of the team (*Br J. Pharmacol*, 2022) was highlighted by an Inserm press release. One strength of the team is its capacity to collaborate with other INCI teams (9 original articles published in collaboration with at least another INCI team over the evaluation period (12 original articles and 2 review articles published in collaboration with at least another INCI team over the evaluation period). Another strength of team 3 lies in the fact that it hosts the 'plateau technique de Spectrométrie de Masse des Petites Molécules de Strasbourg' (SMPMS) involved in 21 local, national and international projects. This platform that develops new strategies to detect and quantify with high sensitivity various neurotransmitters, hormones and drugs allowed the team to obtain a patent granted (US Patent) about the ability of creatine kinase-derived peptides to relieve pain.

Weaknesses and risks linked to the context

20% of the 42 original articles are co-authored by PhD students of the Team, a relatively modest proportion. Amongst the ten PhD students, six defended and four are ongoing. Most of the original articles (80%) do not seem to involve PhD students, whereas 21 of the 42 original articles have been published in the field of evolutionary biology and zoology by a single member of the team. What remains a little unclear is how coherent the team is and especially will be in the future, given the departure of a major contributor to the field of nociceptive mechanisms in the dorsal horn, which is of major pathophysiological interest in the area of nociceptive neurotransmission.

RECOMMENDATIONS TO THE TEAM

A single researcher published numerous articles in the field of evolutionary biology and zoology and while this is highly valuable as well as original science it may also introduce a diversity at a time when the team is about to lose its main and best-known contributor. The team must therefore ensure to maintain high-quality research in the field of nociceptive mechanisms in the dorsal horn. In view of the numerous international collaborations, it may be worth considering further efforts to join major European research programs and to attract foreign international researchers and postdocs.

Team 4: Plasticity of pain controls

Name of the supervisor: P. Poisbeau

THEMES OF THE TEAM

For a better understanding of pain control, the team is using a large variety of technic from molecular and cellular biology to electrophysiology and behaviour, both in pre-clinical models and human studies, that it applies in four research axes, the role of oxytocin in pain and analgesia, the opioid control of analgesia and their interaction with morphine, the action of the vasoactive intestinal peptide (VIP) on neurodevelopment and the pain response in relation with neuro-inflammation.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

As suggested by the previous Hcéres committee, the team has increased its scientific production in top journals and published 78 publications for seven researchers, one tenure and three non-tenure technical staff, three postdoctoral fellows, fourteen PhD students. For 62% of those publications, the team was leader (first, co-first, last or co-last author). 67% of these publications were co-authored by PhD students or postdoctoral fellows, and all PhD students had at least one publication as 1st author within two years following their PhD defence. Following the suggestion of the previous Hcéres committee to favour intra-INCI collaborative publications, several publications of the Team include collaborations with two other INCI teams (Teams 3 and 10). In accordance with the recommendations of the previous Hcéres committee to improve participation in major European research programs, 2.9M€ from institutional and foundation grants, and 220 k€ from private and valorisation contracts were obtained. Following the recommendations of the previous Hcéres committee to prepare the generational turnover, a new team with a junior group leader from team 4 has been created during the period. In accordance with the recommendations of the previous Hcéres committee to attract and fund international researchers, the team leader is responsible for the major program for research training EURIDOL, graduate school of pain. This program supports the training of twenty PhD students.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	3
Lecturer and associate lecturer	1
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	4
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	2
Post-docs	0
PhD Students	6
Subtotal non-permanent personnel	8
Total	12

EVALUATION

Overall assessment of the team

Team 4 included seven researchers at the beginning of the contract. It is now composed of four researchers essentially due to the creation of a junior emerging team inside INCI. The team hosted several young researchers, including postdoctoral fellows and PhD students. By using state-of-the-art techniques from molecular biology and electrophysiology to behaviour in both pre-clinical models and human studies, the team has a notable track record of major achievements. Several of them allowed the generation of outstanding publications in peer-reviewed journals. To support its research, the team also demonstrated outstanding ability to raise funding from institutions, foundations, and industry. The team has strong connections with industry demonstrated by contracts (Biocodex, Cis-Bio, domiconus) and filed four patents during the period. The team is very active in knowledge diffusion and participated in the creation and direction of the research training program EURIDOL.

Strengths and possibilities linked to the context

The team presents a strong publication record with 78 publications in peer-reviewed journals. Amongst these publications, 62% were signed by team members in leading positions, 57% were co-signed by postdocs or PhD students and 70% were published in renowned journals belonging to the top 5% of the journals in their field. The quality of the publications is also underlined by press releases and interviews (*Sciences et vie, la recherche, Le monde,...*), radio interviews and by the participation in one television documentary for France 2. The team relies on strong collaborations in France and abroad to create interdisciplinary. This is illustrated by 24 collaborators co-signing articles. The team collected 3.6 M€ from institutional and foundation grants or from private and valorisation contracts (Biocodex, Cis-Bio,...). Team members are also solicited by industry for expert advice and consulting (Sanofi, Domiconus, ...). The team filed four patents during the period. The remarkable scientific appeal of the team has also been recognised by awards for poster presentation and for scientific achievement. The team engaged in significant efforts in knowledge diffusion by participating in public conferences and science popularisation events and fundraising. There is also an effort of the team to include PhD students in these scientific mediation activities.

Weaknesses and risks linked to the context

The emergence of a new team (Team 10) from Team 4 together with mobility of tenure scientists to other INCI teams that decreased the number of researchers in the team working on pre-clinical model projects is a source of concern. Collaborations with other teams of the INCI were not emphasised.

RECOMMENDATIONS TO THE TEAM

Given the loss of expertise in preclinical models through the emergence of team 10 and the wish of the remaining members of the team to focus on, and further develop human research, the strategy to integrate another unit seems to be appropriate and judicious.

Team 5: Neuroanatomy, pain & psychopathology

Name of the supervisor: M. Barrot & I Yalcin

THEMES OF THE TEAM

The team explores at a multiscale level the anatomical, neurochemical, synaptic and molecular basis of neuropathic pain and its anxio-depressive comorbidities. Within this general frame, the team pursues the three following specific and strongly interconnected objectives:

- i) to characterise brain circuits relevant for the comorbidity between pain and psychopathologies, with a special focus on the anterior cingulate cortex and structures relevant to the emotional aspects of pain;
- ii) to decipher the mechanisms underlying alleviation of painful and comorbid symptoms of neuropathic pain by antidepressants
- iii) and to decipher the molecular mechanisms of the comorbidity of pain and depression by applying a combination of transcriptomic, epigenetic and bioinformatics approaches.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The previous Hcéres panel suggested increasing the scientific production in widely read journals. In response the team has published 52 original articles, 26 review articles, editorials and commentaries, and seven book chapters over the evaluation period. Several original articles signed by the team's members as PDC (first, last corresponding) were published in some of the most widely read journals in the field of Neuroscience (*1 Biol Psy*, *1 Cereb Cortex*, *1 Neuropsychopharm*, *2 JNeurosci*) and generalist journals like Nature Commun. Following the suggestions of the previous Hcéres committee to increase intra-INCI collaborative publications, nine articles of the team were in the frame of collaborations with one or two other INCI teams, which shows its strong interactions with other INCI teams. In accordance with the recommendations of the previous Hcéres committee to improve participation in major European research programs, one of the team leaders is coordinating a Marie-Sklodowska Curie ITN in the fields of pain and its comorbid depressive symptoms.

Following the suggestions of the previous Hcéres committee to prepare the generational turnover and attract and fund international researchers, the team has been very successful in attracting early career scientists (6 postdocs and two tenure CNRS researchers hired over the period).

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	3
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	8
Non-permanent teacher researchers, researchers and associates	3
Non-permanent research supporting personnel (PAR)	6
Post-docs	1
PhD Students	7
Subtotal non-permanent personnel	17
Total	25

EVALUATION

Overall assessment of the team

The team is renowned for its expertise in neuropathic pain and comorbidities that it explores using an integrative strategy combining molecular, electrophysiological, neuroanatomical, behavioural and translational studies. Its scientific production is excellent, with 52 original articles, including some in widely read journals (*Nature Commun*, *Biol Psy*, *Neuropsychopharm*, *Cereb Cortex*, *J Neurosci*...), and 26 reviews published over the period. Its scientific appeal and capacity to raise funding (4.2 M€ over the period originating from various national and international agencies) are outstanding. The team collaborates with several renowned research groups in France and abroad and has been successful in attracting talented and promising early career scientists from France and abroad.

Strengths and possibilities linked to the context

The team benefits from a strong international recognition for its expertise in the field of neuropathic pain and its anxiety-depressive comorbidities and for its major achievements in the field. These include

- i) a major contribution in our understanding of the mechanisms of action of antidepressants in neuropathic pain (*J. Neurosci*, 2018);
- ii) the demonstration that the hyperactivity of the anterior cingulate cortex drives the emotional impact of neuropathic pain (*J. Neurosci* 2018);
- iii) the identification of a key molecular pathway in the pathophysiology of depression (*Biol Psy* 2017)
- iv) and the characterisation of an original transcriptomic and epigenomic landscape in amygdala of depressed patients with a history of early life adversity (*Nature Commun* 2021).

These publications were highlighted by editorials or press releases and their first/last authors received awards for their contribution. The team has successfully implemented novel skills in transcriptomics, genomics, epigenetics, electrophysiology and optogenetics in addition to its historical expertise in neuroanatomy, pharmacology and behaviour, which allows it to develop integrative strategies to address questions relevant to its project. The team's ability to raise funding is outstanding (4.2 M€ raised over the period from various local, national and international institutions or charities). The team has obtained the label 'FRM team'. It coordinates an ITN dedicated to the comorbidity of chronic pain and mood disorders, that gather twenty academic and private partners from eight countries.

The team has built an impressive network of collaborations, including many renowned laboratories in France and abroad that bring their complementary expertise, models or tools to the projects developed by the team. The team has also established strong interactions with pain clinicians and psychiatrists, thus reinforcing the translational aspects of its projects and offering the possibility to combine data from pre-clinical models and patients. The team contributes to various scientific networks and organisations at local (Strasbourg Pain Initiative, EUR Euridol, University federations NeuroPôle/NeuroStra, FHU Neurogenycs), national (2 GDR), and international (EU InterReg upper Rhine Neurex/NeuroCampus network, ENINET network, Neurotime EU Erasmus Mundus) levels. The team shows an outstanding capacity to train PhD students, including foreign students (20 students trained over the period).

Within the two years following their thesis defence, PhD students of the team cumulated between three and five publications with at least one signed as the first author. The team's staff have administrative responsibilities (direction of INCI and of the ComptOpt platform, pedagogic direction of the EUR Euridol and of NeuroStra) and actively participate in local and national committees (CoNRS, ITMO Aviesan, ANR, FdF and IReSP/INCa). The members of the team that includes three Unistra faculties are strongly involved in teaching (pedagogic direction of the Neuroscience master and Euridol) and in knowledge and scientific culture diffusion towards the general public.

Weaknesses and risks linked to the context

The team does not suffer from major weaknesses or risks. However, the interactions of the team with the private sector are currently somewhat limited even though the team obtained a CIFRE fellowship in the frame of a collaboration with a biotech (Theranexus SA).

The coordination by one of the co-PIs of the 'HaPpY' ITN gathering nonacademic partners specialised in technological developments in neurophotonics (Doric Lenses), research and network supporting (EFIC, Neurex), development of behavioural models (Neurofit), product development and marketing (Technimede), bench to bedside strategies development (Theranexus), and biomarker discovery (Transpharmation), should offer unique opportunities to reinforce this aspect.

RECOMMENDATIONS TO THE TEAM

The team should capitalise on its multidisciplinary expertise allowing integrative studies and on its outstanding network of collaborators to further increase the proportion of publications in widely read journals. This should be facilitated by the implementation of novel expertise, such as molecular approaches, genomics, transcriptomics, epigenetics, electrophysiology and optogenetics as well as translational and clinical studies thanks to the connection of the team with clinicians, allowing multiscale and multidisciplinary studies. The team should also increase its collaborations with industry by taking advantage of its coordination of the 'HaPpY' ITN that gathers several non-academic partners. It may also reinforce the bench-to-bed valorisation of its research thanks to its collaborations with pain clinicians and psychiatrists. Even though the capacity of the team to attract young scientists is already excellent, it might try to host even more postdoctoral fellows thanks to international grant applications, given that the type of funding provided by French agencies such as ANR does not allow the funding of postdoc salaries on the long-term, thus significantly limiting the attractiveness of such positions in France.

Team 6: Light, vision & the brain
 Name of the supervisor: MP Felder-Schmittbuhl & F. Pfrieger

THEMES OF THE TEAM

The Team focuses on the mammalian retina, using different pre-clinical models and cellular models to analyse the role of the retinal circadian clocks, how they synchronise with day-night cycles, how they are organized in the different cell types of the retina, and how they control daily and seasonal retinal physiology. The interactions between light and the circadian brain clock (suprachiasmatic nucleus and lateral habenula) are studied in the brain to understand how they affect physiology and behaviour. Finally, the team developed projects to understand the molecular basis of retinal degeneration as well as cholesterol transport defects in different pathological contexts, with the aim of defining new therapeutic approaches.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Following the recommendations of the previous Hcéres committee to increase the scientific production in widely read journals, the team has published 50 original articles (30 with first or last authoring) and 21 reviews/editorials (all peer-reviewed), and one book chapter through the 2016–2021 period (922 citations altogether). The recommendation has been only partially fulfilled for widely read journals. In accordance with the recommendations of the previous Hcéres committee to favour intra-INCI collaborative publications, the team has produced several publications in collaboration with other INCI groups, in particular those working on biological rhythms. Following the suggestions of the previous Hcéres committee to improve participation in major European research programs, several fruitful international collaborations have been implemented, but no participation to European research programs. A large number of collaborations with other laboratories are based on pre-clinical models generated by team 6. In agreement with the recommendations of the previous Hcéres committee to prepare the generational turnover and attract and fund international researchers, the team trained a large number of early career scientists (14 PhD students – who published 22 original articles as first authors – and 5 postdocs). Group members at different stages of their career, well-balanced mix of scientists and teacher/scientists, and one new assistant professor were recruitment through the period.

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	4
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)	1
Subtotal permanent personnel in active employment	7
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	1
PhD Students	7
Subtotal non-permanent personnel	8
Total	15

EVALUATION

Overall assessment of the team

The work focuses on the retina and the impact of light on the brain. This team is internationally well recognised for its work on retinal clocks, photoreceptor degeneration in different pathologies, and cholesterol metabolism in the retina. The different projects carried out by the PIs appear rather far apart and would strongly benefit from more intra-team interactions. Recent projects on the links between retinal clocks and retinal physiology in normal and pathological situations could provide an efficient way of bridging these research programs in the team. In addition, new projects on how interactions between light and retinal clocks impact physiology and behaviour open new possibilities of collaborative work with clinical studies and groups studying human physiology and behaviour at INCI and such interactions should be reinforced, in particular with team 9. The group has been productive with more than 70 peer-reviewed papers, including many in widely read journals, but the proportion of the latter could be further increased. The team has six permanent positions including early career researchers and has trained fourteen PhD students and five postdocs. More than 2 M€ of funding was obtained, mostly from national and international institutions and foundations, but based on the translational nature of some of the projects, more funding could be expected from private companies.

Strengths and possibilities linked to the context

The team has a sufficient group size with six permanent position and has a good attractiveness for PhD students and postdocs. 71 peer-reviewed papers were published amongst which 28 of the 50 original articles were signed by tenured scientists as corresponding authors. PhD students signed 22 original articles as first authors. New projects on light effects on the brain using preclinical models open strong possibilities of interactions with other groups and clinicians in the future. Projects with strong translational aspects in retinal pathophysiology (retinal degeneration, cholesterol transport) and collaborations with clinicians, pharma companies provide strengths to increase funding. Thanks to numerous and efficient collaborations, the team is strongly involved on outreaching activities for the general public from children to adults, and patients at the regional and national levels.

Weaknesses and risks linked to the context

The development of a rather large number of independent projects by the different tenured scientists weakens the capacity of the team to efficiently develop the more promising projects. Although a large number of papers have been published, those published in widely read journals could be further increased. Based on the translational nature of several projects, the team could do better in obtaining industrial funding.

RECOMMENDATIONS TO THE TEAM

The team should keep on putting together projects with fundamental questions related to retinal circadian physiology while reinforcing the collaborations between the PIs. The more translational projects on photoreceptor degeneration or retinal cholesterol metabolism may also benefit from this, possibly by focusing on a smaller number of projects with a priority for those reinforcing the links between the PIs. The recent development of projects using pre-clinical models to study the effects of light and clocks on physiology and behaviour should be pursued and may also benefit more from the complementary expertise of other chronobiology teams, including teams 7/8 and 9/11. Participation in European projects should be a target for the next few years, although international collaborations have been successfully engaged on different projects. The expertise of the team in retinal physiology, a field with important health issues could be used to contribute to such projects. Based on the strong translational projects, obtaining additional resources and establishing collaborations from private companies would seem to be reachable targets. This would obviously help buy equipment, recruit people, and help carry the fundamental projects of the team.

Team 7: Circadian clocks & metabolism

Name of the supervisor: E. Challet

THEMES OF THE TEAM

The longstanding interest of the lab is to understand the functional interplay between circadian clocks and food/fasting rhythms. This research is focused on identifying how food cycles are entrained in brain regional clocks and their respective interplay. Molecular pathways and metabolic changes have been investigated to explore how alterations of key genetic determinants modulate food behaviour and oscillating brain networks. An important topic of research has been to elucidate how the circadian system works in diurnal and nocturnal species and how differently they respond to arousal triggers. Last, efforts were also directed at exploring various aspects of circadian rhythmicity in the db/db pre-clinical model of obesity and type-2 diabetes.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Following the suggestions of the previous Hcéres committee to increase the scientific production in widely read journals, the team has produced 44 publications, 32 of which as main contributors. In addition, the group published six review articles, two of which in widely read journals that have been highly cited (*Endocr Rev* 2017, *Nat Rev Endocrinol* 2019) and five chapters in textbooks. Though the team has a relatively small size, the number of publications and their relevance could be further improved. In accordance with the recommendations of the previous Hcéres committee to favour intra-INCI collaborative publications, the Team has been active in collaborating with different laboratories in France and abroad, as exemplified by fifteen shared publications. However, the number of publications shared with other INCI teams is very limited. The merger between teams 7 and 8 might certainly help in developing more structural and long-term internal collaborations. In agreement with the recommendations of the previous Hcéres committee to improve participation in major European research program, the team was successful in obtaining funding by the EU Erasmus Mundus Neurotime PhD program (220 k€) as PI. This is the result of a well-structured and long-term collaboration with renewed international experts in the field. However, the group can explore more opportunities to enter in international and European consortia for accessing to more funding. Regarding the recommendations of the previous Hcéres committee to prepare the generational turnover and attract and fund international researchers, the team successfully trained six national PhD students in the funded period. However, given the challenges in attracting more funding, the group did not have the opportunity to put together a more ambitious recruitment programme whereby considering the international visibility of the group, it should be possible to attract and train more international research fellows and promising young talents.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	1
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)	1
Subtotal permanent personnel in active employment	4
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	8

EVALUATION

The overall assessment of the team

The team is known for its expertise on chronobiology of feeding and its interplay with circadian clocks. Its good international reputation in this area is highlighted by significant reviews. Even though they have been recently published (see above) they have already been highly cited (according to Web of Science). The reputation of the team is also attested by the publication of chapters in prestigious textbooks and invitations to international meetings (18). The overall scientific production is very good with a total of 44 publications, 29 of which being original articles. However, the great majority of these studies are published in specialised journals and some of them with a somewhat restricted sectoral visibility. The team is relatively small with six tenured members (now only four) with two Unistra faculties who have a high load of teaching, responsibilities in local and national committees and administrative duties. The merge with team 8 will contribute to compensating for the decrease in permanent positions. The team successfully trained six PhD students, but enrolled only one postdoc over the reporting period. The team has faced notable issues in obtaining academic funding for its work. In fact, it obtained 726 k€ from three National and one international funding bodies over this period. However, the team showed excellent results in developing collaborations with the industrial sector obtaining two contracts with companies (total value 674 k€). The group has a relative small international collaborative network, although the close and long-term collaborations with selected European groups have been strategic for grant funding and research achievements.

Strengths and possibilities linked to the context

The team is well recognised for its expertise in the field of chronobiology of feeding. It has made important contributions towards a better understanding of the biological basis of the brain local clocks and these contribute to reinforcing the food cycle. The team has also extended their investigations to very original and valuable topics, including in particular the effects on the circadian clock of arousal stimuli in diurnal pre-clinical models. There are clear efforts to integrate technical expertise to expand the analysis of the circadian rhythms with functional tools (in vivo electrophysiology) and molecular analysis (proteomics).

Weaknesses and risks linked to the context

The challenges faced by the team to attract competitive academic grants have reduced the critical mass to a level that it has made hard to remain highly productive. Thus, the decision to merge this group with team 8 is seen as a wise strategic move for helping to regain a critical mass sufficient to better manage the laboratory workload, access additional technical resources, stimulate collaborative work and share of administrative and operative duties. The group has relatively few stable international collaborations. During the review period, the group has not obtained funding by French public agencies such as ANR. Moreover in this timeframe the team gave only four conferences addressed to the lay public suggesting that its outreaching policy has not been properly developed.

RECOMMENDATIONS TO THE TEAM

In order to further strengthen the research activities of the group and increase the opportunities of funding, it might be useful to try and find collaborations with clinicians to relate the work on preclinical models to the human behaviour and diseases. In this spirit, it may be valuable to increase the focus on the reciprocal interactions between metabolic disorders and dysfunctions of the internal brain circadian clocks. Models beyond the diabetic (db/db) preclinical model might also be considered to enhance our understanding on the interplay between metabolic alterations and circadian rhythms. Therefore, the collaboration with clinicians and the analysis of samples from patients might be an interesting development to increase our knowledge on the pathological consequences affecting the circadian clocks. Last, the group might seek new collaborators to exploit additional technologies for an even more multidisciplinary research: unbiased and throughput proteomics and transcriptomics might offer new levels of research to investigate molecular triggers of behaviour. Multidimensional imaging techniques may also offer interesting new research directions. Given the high expertise and reputation of the team, it should be feasible to access to these technologies by establishing strategic collaborations with selected local and international groups. In sum, the merger with team 8 is strongly supported as it will enhance the critical mass, facilitate scientific collaborations, widen access to the additional technical competences and support the financial resources. The two teams share scientific interests and their merge is seen as a well-thought move and natural progression, likely to lead to productive collaborative efforts.

Team 8: Neuroendocrine rhythms in reproduction
 Name of the supervisor: V. Simonneau

THEMES OF THE TEAM

The team investigates intricate neuroendocrine circuits involved in the daily as well as seasonal regulation of reproductive activity in mammals. During the period under review, three main projects were followed: the cellular and molecular mechanisms triggered by the melatonin/T3 signal regulating seasonal functions; the role of circadian clocks in female reproduction; and the interactions between seasonal reproduction and metabolism through the RF-amides peptides.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Following the suggestions of the previous Hcéres committee to increase the scientific production in top journals, the team has published 49 papers amongst which 36 original articles (all peer-reviewed) through the 2016–2021 period, with several in widely read journals (PNAS, FASEB, Sci Rep) although the number of these could be further increased. Following the suggestions of the previous Hcéres committee to favour intra-INCI collaborative publications, the team has strong and successful national and international collaborations but relatively few intra-NCI collaborations. The decision to merge with team 7 opens the way for projects involving different PIs. Following the suggestions of the previous Hcéres committee to improve participation in major European research programs: Several fruitful international collaborations but no participation to European research programs. Following the suggestions of the previous Hcéres committee to prepare the generational turnover and attract and fund international researchers: The team trained a large number of young scientists (15 PhD students including seven through international co-supervision). There is no recent recruitment of a young researcher with a tenure position in the team, which contributed to the decision of merging with team 7.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	2
Lecturer and associate lecturer	1
Senior scientist (Directeur de recherche, DR) and associate	1
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	8
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	12

EVALUATION

Overall assessment of the team

The team enjoys strong international recognition in the neurobiology of seasonal rhythms and the interactions between circadian and seasonal timing mechanisms, the understanding of melatonin function, with pioneer work on the kisspeptin peptide in the integration of the photoperiod. The expertise covers different pre-clinical models with comparative approaches to understand photoperiodism and seasonal adaptation. This includes innovative work to understand important but poorly understood physiological processes such as endogenous circannual rhythms and hibernation. The productivity is very good with about 50 papers published during the 2016-21 period, even though even higher-profile journals could be targeted. The team has been successful in raising grant money with a total of about 1.4 M€ (13 academic or private contracts). The lack of new permanent positions has driven the idea of a merge with team 7 for the next period, which is a wise strategy. In sum this team has been a highly successful and stands out internationally by the significance as well as the originality and quality of its research. The range of pre-clinical models used to study rhythms and their significance in reproductive behaviour is quite extraordinary and led to truly novel discoveries.

Strengths and possibilities linked to the context

There is evidence of strong expertise and fruitful collaborations for the different projects on seasonality, including some very original ones. Recently published work revealed the possibility of using a pre-clinical model to study responses to melatonin or investigating how shift work affects human reproduction through a successful collaboration with clinicians. Collaborative projects are also ongoing to develop seasonal pre-clinical models through CRISPR-based genetic modifications. The team includes four tenured scientists and recently recruited two clinicians for developing human studies. Two postdocs and fifteen students including seven with an international co-supervision were recruited, a feature that is a big positive. All tenure Team members, including clinicians and engineers, co-authored at least four publications each and 86% of the original articles were signed by PhD students (most of them as the first author).

Weaknesses and risks linked to the context

The committee notes a lack of newly recruited permanent position. The merge with team 7 is very promising but will likely require some rethinking of the projects to foster collaborations. Finally, no participation to European programs has been noticed.

RECOMMENDATIONS TO THE TEAM

The team should continue developing its successful seasonal projects and collaborations with groups providing complementary expertise. The work with melatonin in pre-clinical models could lead to exciting discoveries thanks to the sophisticated tools for molecular approaches available in this model and should be pursued. The discovery of circadian effects on seasonal reproduction is new and original and should be developed. These projects also provide a good way to foster collaborations with team 7 in the context of the future merge between the two groups. This merge seems is a convincing move strategy even if it will likely require some changes in the projects of the two teams to reinforce collaborations between members after fusion.

Team 9: Light, circadian rhythms, sleep homeostasis & neuropsychiatry
 Name of the supervisor: P. Bourgin

THEMES OF THE TEAM

The new team 9 results from a merge between previous teams 9 and 11 which adds a molecular neuropsychiatry axis to the light/circadian/sleep themes carried by the team. Team 9 is characterised by a strong translational approach. It analyses how light, on the one hand, and the brain circadian clock, on the other hand, interact with the sleep homeostat to control the sleep-wake cycle. A particular focus is on clock-independent action of light on the sleep-wake cycle, including through melanopsin-expressing cells of the retina. Light effects are studied at the clinical level (light therapy) in the context of depression. Team 11 has shown that the circadian clock appears to be required for the effects of antidepressants such as ketamine. On the clinical side, team 9 investigates how sleep defects contribute to daytime behavioural disturbances in autism spectrum disorders and develops ambulatory tools to monitor sleep and photoreception to identify biomarkers of psychiatric disorders.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

Following the suggestion of the previous Hcéres committee to increase the scientific production in widely read journals, the team produced 74 publications amongst which 47 original articles through the period with more than half as first or last author, including some widely read journals. The Team coordinated two reference books and generated seventeen book chapters. The suggestion of the previous Hcéres committee to favour intra-INCI collaborative publications could be improved. Following the suggestion of the previous Hcéres committee to improve participation in major European research programs, a large number of fruitful international collaborations have been implemented but no participation to European research programs. Following the suggestion of the previous Hcéres committee to prepare the generational turnover and attract and fund international researchers, the team trained young scientists (7 PhD and 3 postdocs) and recruited three new members (including the leader of team 11) during the period.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	3
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)	6
Subtotal permanent personnel in active employment	11
Non-permanent teacher researchers, researchers and associates	2
Non-permanent research supporting personnel (PAR)	1
Post-docs	1
PhD Students	3
Subtotal non-permanent personnel	7
Total	18

EVALUATION

Overall assessment of the team

Team 9 investigates the interaction between circadian rhythms, sleep and light with a translational approach from pre-clinical models at INCI to humans at the hospital. The team has shown that light directly acts on the brain, and not only through its clock synchronising action to control sleep-wake cycles. The addition of team 11 brings molecular neuropsychiatry projects that fit well with the existing translational approaches on light therapy for depression and the internationally recognised expertise in the analysis of sleep defects in neurodevelopmental and psychiatric disorders. However, the two PIs of the new team will have to work to develop strong interactions. This multidisciplinary group is large with ten tenure researchers and has trained three postdocs and seven PhD students. The group is productive with 74 publications amongst which 47 original articles through the period, including some widely read journals and ten clinical articles. Team 9 has established a large number of collaborations with both academic and non-academic partners, many of them with resulting co-signed publications and contributions to products' development. The team has been very successful in raising funds with an impressive 3.7 M€ of grant money, also related to the cost of human studies. Importantly, the team is very active and internationally recognised on the clinical side with the two leading investigators heading large national clinical networks (STRAS&ND and SoPsy) in addition to the human chronobiology facility at the hospital.

Strengths and possibilities linked to the context

The team has a unique and strong expertise in the analysis of the effects of light on the brain, particularly on sleep regulation. Thanks to a novel preclinical model for depression developed by new recruit researchers, depression is also investigated at the molecular level through the regulation of the homer1 synaptic protein by the circadian clock. To support such projects and foster collaborations through the country, the team has strongly invested in the organisation of research/clinical networks such as STRAS&ND (excellence centre for autism and neurodevelopmental disorders) and SoPsy (circadian rhythms and sleep), as well as the CIRCSoM platform (human chronobiology). A very strong translational research is developed on the clinical side with numerous national and international collaborations, including several partnerships with companies for drug development, portable devices for sleep and photoreception measurements, as well as diagnostic tools. The team has strong outreaching activities in agreement with the work on human sleep and circadian rhythms.

Weaknesses and risks linked to the context

One of the team strengths is its translational approach, and attention must be paid to keep the link between pre-clinical and human studies, which must be a difficult task. The merge of team 11 is a well-defined strategy to reinforce the preclinical part of the team, however, the very different molecular approaches of team 11 bring uncertainty about its successful integration. In addition, interaction with other INCI groups could be increased, in particular with team 6. The team does not have tenure engineers or technician support, which limits the team capacity to answer industry approaches and project development.

RECOMMENDATIONS TO THE TEAM

The team has been really successful during the 2016–2021 period, especially on the human/clinical side and should keep working on the same pace. The work revealing the importance of clock-independent effects of light on the sleep-wake cycles opens new questions that can be addressed in both humans and pre-clinical models, and the team will have to make sure to keep a very active group on this side that is based at INCI. The integration of the molecular neuropsychiatry group offers a remarkable opportunity to develop a high-level molecular and cellular counterpart to the analysis of the interactions between the sleep/circadian networks and psychiatric disorders. However, it also carries the risk to develop as a parallel rather than a common team effort. Thus, keeping the two sides strongly connected should be a priority for the next years. Along a similar line, the common interests in the effects of light on the brain in normal and pathological situations (light therapy) could be used to develop strong interactions with team 6.

Team 10: Peptidergic control of emotions

Name of the supervisor: A. Charlet

THEMES OF THE TEAM

The team investigates the role of oxytocin (OT) and its receptor OTR in neural network underlying emotional behaviour, including anxiety and fear. Within this general frame, the team developed four main projects dedicated to the role of OT neuronal ensembles in the modulation of fear expression and extinction, the role of a small population of parvocellular OT neurons in the control of pain, the role of OT system in prosocial behaviour and social motivation and the interaction of OT with astrocyte functions in the central amygdala and its impact on neuronal network activity and related behaviour.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

The first recommendation of the previous Hcéres committee was to increase the scientific production in widely read journals. In response, the team published (2016–2021) nineteen publications for two researchers, one non-tenure technical staff, four postdoctoral fellows and six PhD students. For 90% of those publications, the team was leader (first, co-first, last or co-last author). 75% (14 research articles) were co-authored by PhD students or postdoctoral fellows. All PhD students had at least one publication as 1st author within one year following their PhD defence. The second recommendation of the previous Hcéres committee was to favour the intra-INCI collaborative publications. Whereas the team does not mention collaborations with other intra-INCI teams, one seminal publication of the team (Nature Neurosci. 2021) is the result of a collaboration with two other INCI teams (Teams 3 and 4). The third recommendation of the previous Hcéres committee was to improve the participation in major European research programs. In response, 1.4 M€ from institutional and foundation grants, and 100 k€ from private and valorisation contract were obtained (2016–2021). The team benefited locally from the Unistra IdEx program (300 k€); nationally from ANR (890 k€) and ANRT (100 k€); and internationally from the NARSAD and EU FP7 integration grant (170 k€). Regarding the recommendation of the previous Hcéres committee to prepare the generational turnover, the team mentioned the need for recruitment. The last recommendation of the previous Hcéres committee was to attract and fund international researchers were successfully implemented by the team.

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)	0
Subtotal permanent personnel in active employment	2
Non-permanent teacher researchers, researchers and associates	0
Non-permanent research supporting personnel (PAR)	0
Post-docs	2
PhD Students	4
Subtotal non-permanent personnel	6
Total	8

EVALUATION

Overall assessment of the team

The team is a small team that has been created in 2020 (initially part of team 4) with only two tenure members. The team hosted several early career researchers including postdoctoral fellows and PhD students. By using state-of-the-art technic including pre-clinical behaviour, circuit mapping tools, *ex vivo* and *in vivo* electrophysiology and calcium imaging, the team has a remarkable track record of major achievements supported by publications in highly visible peer-reviewed journals (*J. Neuro* 2019, *Nature Neuroscience* 2020, *Neuron* 2016, 2017, 2019). To support its research, the team demonstrated a strong ability to raise funding from institutions, foundations, and industry. Finally, the team made significant efforts towards knowledge diffusion despite its small size. All in all, team 10 is an outstanding team.

Strengths and possibilities linked to the context

The team shows an outstanding publication record with nineteen publications in peer-review journals. Amongst these publications, 90% present team member as leader, 75% were co-signed by postdoc or PhD students and 60% were published in renown journals, including some in the top 5% of the journals in their field (2 original articles published in *Neuron*, 2 in *Nature Neuroscience* and 1 review article published in *Neuron*). The quality of the publications is highlighted by the remarkable number of editorial comments, press releases, newsletter articles and radio interviews (four publications highlighted by editorial comments, F1000 recommendations, CNRS or University press releases). There were more than 40 newsletter articles or radio interviews enlightening the team's results. The team relies on strong collaborations to create interdisciplinary and intentional cross-stimulation, which is attested by collaborators co-signing articles. The team has an outstanding ability to raise funding as illustrated by the fact it collected 1.4 M€ from institutional and foundation grants and 100 k€ from private and valorisation contracts. The team has also been recognised by awards for poster presentation and for scientific achievement. The team made effort in knowledge diffusion by participating to public conferences and science popularisation events and fundraising, which represent seven–eight conferences per year. A special effort was made to include PhD students in scientific mediation activities.

Weaknesses and risks linked to the context

The team hosts postdocs and PhD students, but the training of undergraduate students is not mentioned. The critical mass of the team is low, and the team does not benefit from a technical support by a tenure technician/engineer. Collaborations with other teams of the INCI are not mentioned.

RECOMMENDATIONS TO THE TEAM

The team should capitalise on its recognition and expertise in neuropeptidergic modulation of emotions to increase its international visibility and attract early career researchers. The implementation of a recruitment strategy is important to increase the team size. The team should foster inter-team collaborations and take advantage of the prolific environment and the extensive expertise within INCI.

Team 11: Circadian clock, sleep & homeostatic plasticity in mood disorders
 Name of the supervisor: T. Serchov

THEMES OF THE TEAM

The Annexe did not contain any details about Team 11, given that the main contributor only joined in the summer of 2022.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

NA

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)	0
Subtotal permanent personnel in active employment	1
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	4

EVALUATION

Overall assessment of the team
NA

Strengths and possibilities linked to the context

NA

Weaknesses and risks linked to the context

NA

RECOMMENDATIONS TO THE TEAM

CONDUCT OF THE INTERVIEWS

Date(s)

Start: 10 octobre 2022 à 8 h 30

End : 11 octobre 2022 à 18 h

Interview conducted on-site

INTERVIEW SCHEDULE

October 10th, 2022

<u>8:30 a.m. – 8:45 a.m.</u>	Closed session with the committee
<u>8:45 a.m. – 9 a.m.</u>	Presentation of the committee to the unit
<u>9 a.m. – 10:00</u>	Presentation of the unit by the present director M. BARROT (plenary session, 40' presentation + 20' discussion with the committee)
<u>10:00-10:30</u>	Presentation of Team 1: Intracellular membrane trafficking in the nervous and neuroendocrine systems (N. Vitale/S. Gasman). (15' presentation + 10' questions + 5' in private PI-committee)
<u>10:30-10:50</u>	Coffee break
<u>10:50-11:20</u>	Presentation of Team 2: Physiology of neural networks (P. Isope). (15' presentation + 10' questions + 5' in private PI-committee)
<u>11:20-11:50</u>	Presentation of Team 6: Light, vision & the brain (M.P. Felder-Schmittbuhl/F. Pfrieger). (15' presentation + 10' questions + 5' in private PI-committee)
<u>11:50-1 p.m.</u>	Debriefing of the Visiting committee (closed-door)
<u>1 p.m. – 2 p.m.</u>	Lunch with the lab
<u>2 p.m. – 2:30 p.m.</u>	Presentation of Team 3: Nociceptive signalling in the spinal cord (R. Schlichter). (15' presentation + 10' questions + 5' in private PI-committee)
<u>2:30 p.m. – 3 p.m.</u>	Presentation of Team 5: Neuroanatomy, pain & psychopathologies (I. Yalcin/M. Barrot). (15' presentation + 10' questions + 5' in private PI-committee)
<u>3 p.m. – 3:30 p.m.</u>	Presentation of Team 10: Peptidergic control of emotions (A. Charlet). (15' presentation + 10' questions + 5' in private PI-committee)
<u>3:30 p.m. – 3:50 p.m.</u>	Coffee break
<u>3:50 p.m. – 4:20 p.m.</u>	Presentation of Team 7: Circadian clocks and metabolism (E. Challet). (15 presentation + 10' questions + 5' in private PI-committee)
<u>4:20 p.m. – 4:50 p.m.</u>	Presentation of Team 8: Neuroendocrine rhythms of reproduction (V. Simonneaux). (15' presentation + 10' questions + 5' in private PI-committee)
<u>4:50 p.m. – 7 p.m.</u>	Private meeting of the visiting committee (report preparation)
<u>8 p.m.</u>	Dinner in town for the committee

October 11th, 2022

<u>9:00 – 9:30</u>	Presentation of Team 9: Light, circadian rhythms, sleep homeostasis & neuropsychiatry (P. Bourgin). (15' presentation + 10' questions + 5' in private PI-committee)
<u>9:30 – 10:00</u>	Presentation of Team 11: Circadian clock, sleep and homeostatic plasticity in mood disorders (T. Serchov). (15' presentation + 10' questions + 5' in private PI-committee)
<u>10:00 – 10:30</u>	Presentation of Team 4: Plasticity of pain control (P. Poisbeau). (15' presentation + 10' questions + 5' in private PI-committee)
<u>10:30 – 10:50</u>	Coffee break
<u>10:50 – 11:20</u>	Meeting with engineers, technicians and administrative personnel (in French)
<u>11:20 – 11:50</u>	Private meeting of the visiting committee (report preparation)
<u>11:50 – 1:30 p.m.</u>	Lunch (committee only)
<u>1:30 p.m. – 2 p.m.</u>	Meeting with scientists , without the team leaders and lab director
<u>2 p.m. – 2:30 p.m.</u>	Meeting with students and postdocs
<u>2:30 p.m. – 3 p.m.</u>	Meeting with team leaders , without the lab director
<u>3 p.m. – 3:20 p.m.</u>	Coffee break
<u>3:20 p.m. – 3:50 p.m.</u>	Discussion with the director, Michel Barrot
<u>4 p.m. – 4:30 p.m.</u>	Discussion with the representatives of the funding bodies
<u>4:30 p.m. – 6 p.m.</u>	Private meeting of the visiting committee (report preparation)
<u>6 p.m.</u>	End of the visit

GENERAL OBSERVATIONS OF THE SUPERVISORS

Université

de Strasbourg

Monsieur Éric Saint-Aman
Directeur du Département d'évaluation de la recherche
HCERES - Haut conseil de l'évaluation de la recherche et
de l'enseignement supérieur
2 rue Albert Einstein
75013 PARIS

Strasbourg, le 11 avril 2023

Objet : Rapport d'évaluation DER-PUR230023168 - INCI - Institut des neurosciences cellulaires et intégratives

Réf. : RB/FF/ 2023-208

Rémi Barillon

Vice-Président Recherche,
Formation doctorale et Science
ouverte

Cher Collègue,

Nous vous remercions ainsi que tous les membres du comité HCERES pour le travail d'expertise réalisé sur l'unité de recherche « Institut des neurosciences cellulaires et intégratives » (INCI – UPR 3212).

La tutelle CNRS a indiqué qu'elle n'émettrait aucune observation de portée générale suite au rapport d'évaluation transmis.

Je vous prie d'agréer, Cher Collègue, l'expression de mes cordiales salutations.

Rémi Barillon

**Direction de la Recherche et de la
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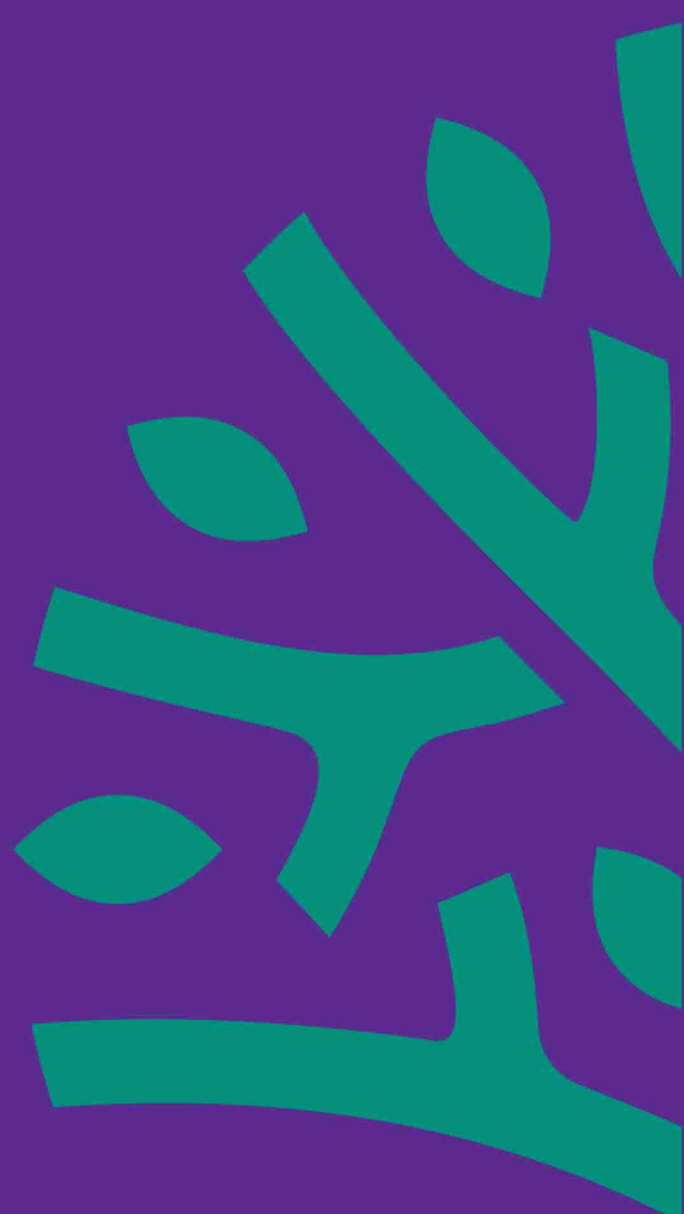
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