

EVALUATION REPORT OF THE UNIT
NCPS - Neuropsychologie cognitive et
physiopathologie de la schizophrénie

UNDER THE SUPERVISION OF THE
FOLLOWING ESTABLISHMENTS AND
ORGANISMS:

Université de Strasbourg
INSERM

EVALUATION CAMPAIGN 2022-2023
GROUP C

Rapport publié le 06/10/2023

In the name of the expert committee¹ :

Thomas Freret Chairman of the committee

For the Hcéres² :

Stéphane Le Bouler, president par intérim

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

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

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

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

MEMBERS OF THE EXPERT COMMITTEE

Chairperson: Mr Thomas Freret, Normandie Université, Caen

Mrs Elise Bannier, Centre hospitalier universitaire de Rennes - CHU Rennes
(supporting personnel)

Experts:

Mr Eric Brunet, Centre Hospitalier de Versailles

Mrs Emilie Emilie Olie, Centre hospitalier universitaire de Montpellier

Mr. Emmanuel Poulet, Université Claude Bernard Lyon 1

HCÉRES REPRESENTATIVE

Mrs Céline Souchay

CHARACTERISATION OF THE UNIT

- Name: Neuropsychologie cognitive et physiopathologie de la schizophrénie
- Acronym: NCPS
- Label and number: INSERM U1114
- Number of teams: 2
- Composition of the executive team: Mrs Anne Giersch

SCIENTIFIC PANELS OF THE UNIT

SHS4 L'esprit humain et sa complexité

SVE5 Neurosciences et troubles du système nerveux

THEMES OF THE UNIT

The unit is historically internationally known for its research on schizophrenia and for its work on the cognitive impairments associated with this psychiatric disease. The pathology was initially investigated through two working axes, psychopharmacological and pathophysiology. The first axis of research involved mainly preclinical researchers, while the second axis was mainly composed of clinicians.

During the last five-year contract, the unit has modified its scientific approach. Indeed, schizophrenia and more particularly the cognitive disorders associated with this psychiatric disease have been investigated from a dimensional point of view. This has led the unit to broaden its field of exploration to other patients (bipolar disorders, ADHD, ...). Dimensions refer to disorders that are clinically detectable and can be shared by several psychiatric disorders (i.e. self-perception, attention, apathy). Following, the recent return of a renowned team from Canada, the unit research has been reorganised to being structured into two teams: psychiatry and addiction with both a translational approach.

HISTORIC AND GEOGRAPHICAL LOCATION OF THE UNIT

The research unit was created 28 years ago, with the aim to untangle the pathophysiological mechanisms of schizophrenia, with a translational approach. Most of the research activities are located on the same site – within the campus of the Civil Hospital of Strasbourg.

During the last five-years contract, a brand-new building (CRBS, Centre de Recherche en Biomédecine de Strasbourg) was built to host research units as well as common platforms, a few hundred metres away from the medical school building on the campus. However, several building construction constraints have delayed its opening. So far, the building is not operational, which heavily affects the research activities of the unit (both from an operational and financial point of view).

Concerning human research, it is carried out by researchers, teacher researchers or clinicians whose offices are located within the Faculty of Medicine in the same building as the psychiatric clinic – which greatly facilitates interactions between them.

Finally, the unit also integrates clinicians from the Nancy hospital Centre, the CLIP (Centre de Liaison et d'Intervention Précoce). Although located about 100 km from the main research site, the Strasbourg/Nancy link is well served, which does not hinder exchanges between the two sites.

RESEARCH ENVIRONMENT OF THE UNIT

The joint research unit (University of Strasbourg/Inserm U1114) is located on the campus of the Faculty of Medicine. As such, it belongs to – but also actively participates (one member of the unit is co-responsible for the committee) – in the scientific animation of the consortium of campus laboratories (Strasbourg Federation of Translational Medicine – FMTS).

The unit also actively participates in the structuration of research in the field of psychiatry within the University of Strasbourg, through its involvement in the Fondation Hospitalo-Universitaire (FHU, NeurogenYcs – within the unit, three persons are members of the steering committee), STRAS&ND (Excellence Centre for Strasbourg Translational Research on the Autism Spectrum & Neurodevelopmental Disorders), or the interdisciplinary thematic institute of Neurosciences (NeuroStra – the director of the unit belongs to the steering committee).

The research unit is also involved in national networks, including two GDR CNRS (Groupement National de Recherche), one on memory and the other one on Psychiatry and Addictions. Furthermore, the unit is involved in the FondaMental Foundation and actively participates to the elaboration of the F-PsyNET project (within the

French Clinical Research Infrastructure Network). Unit staff are also members of different international scientific societies (e.g. Anne Giersch was elected in 2022 as a member of the steering committee of Schizophrenia International Research Society, Fabrice Berna is the vice secretary for the Wernicke-Kleist-Leonhard Society since 2017). Researchers staff are also highly involved in scientific collaborations with German (Freiburg) and Netherland (Amsterdam) teams, which are able to ensure PhD grants (Neurotime, 244k€). This close relationship with Freiburg has also been evidenced by the award of a SeedMoney Eurocor project, but also through the involvement in a larger European project (VirtualTime). All of this networking within national and international groups of experts are likely to favour the success of the unit to its forthcoming applications 'as a leader position' to international/European/National grants.

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

Permanent personnel in active employment	
Professors and associate professors	7
Lecturer and associate lecturer	2
Senior scientist (Directeur de recherche, DR) and associate	2
Scientist (Chargé de recherche, CR) and associate	3
Other scientists (Chercheurs des EPIC et autres organismes, fondations ou entreprises privées)	0
Research supporting personnel (PAR)	6
Subtotal permanent personnel in active employment	20
Non-permanent teacher researchers, researchers and associates	5
Non-permanent research supporting personnel (PAR)	8
Post-docs	2
PhD Students	11
Subtotal non-permanent personnel	26
Total	46

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

Employer	EC	C	PAR
Université de Strasbourg	7	0	1
Inserm	0	4	3
CHU Strasbourg	1	0	1
Université de Lorraine	1	0	0
CNRS	0	1	0
CHRU Nancy	0	0	1
Others			
Total	9	5	6

UNIT BUDGET

Recurrent budget excluding wage bill allocated by parent institutions (total over 6 years)	776
Own resources obtained from regional calls for projects (total over 6 years of sums obtained from AAP idex, i-site, CPER, territorial authorities, etc.)	239
Own resources obtained from national calls for projects (total over 6 years of sums obtained on AAP ONR, PIA, ANR, FRM, INCa, etc.)	2,684
Own resources obtained from international call for projects (total over 6 years of sums obtained)	3463
Own resources issued from the valorisation, transfer and industrial collaboration (total over 6 years of sums obtained through contracts, patents, service activities, services, etc.).	0
Total in euros (k €)	7,162

GLOBAL ASSESSMENT

The Cognitive Neuropsychology and Pathophysiology of Schizophrenia unit is a small-sized INSERM unit (20 permanent staff). In 2019, it welcomed a new team working on addiction and the role of opiate receptors (team 2). To this end, the team 1, which historically conducted research on cognition in schizophrenia, has slightly changed its scientific approach to explore several psychiatric diseases (Bipolar disorders, ADHD and schizophrenia), towards a dimensional exploration (perception, attention, apathy, memory). Both teams propose a translational approach.

In their respective fields of expertise (psychiatry and addictology), the two teams are at the forefront of international research. During the contract, the unit was able to strongly develop its international networks (being a member of the editorial board of international journals, elected members of international scientific societies, elected members of selection committees for foreign research institutes). The unit is also present on the European scene with its participation in two European grants, even though one could regret that it did not lead an ERC grant yet. Nevertheless, the unit worked well to ensure the financial support of its research, through diverse sources of fundings. Beyond funding from national/European institutions, the unit has successfully secured fundings from other sources such as foundations or industrial partners.

Recognition of the unit's works can also be observed through the recruitments made in recent years. Indeed, numerous high-level foreigner PhD students were recruited during the last five-year contract. Besides, it is worth mentioning the ability of the unit to train high-profile researchers, who were recruited (either in the unit or in others), through national competitions (researchers or lecturers).

Finally, the unit also plays an important role in disseminating information to the general population. The unit's communication activities are important to the general public. This activity has been strengthened in recent years and has taken on particular importance notably to reply to the general population concerns regarding the psychological consequences of the confinement due to COVID.

DETAILED EVALUATION OF THE UNIT

A – CONSIDERATION OF THE RECOMMENDATIONS IN THE PREVIOUS REPORT

Recommendations of the previous committee were mostly taken into account by the unit during the five-years contract. Those recommendations were

- **To foster the strengths of the unit and to guard the coherence within human research:** The unit has been restructured partly due to the arrival of new members. Two teams have now emerged (psychiatry and addiction). One of the strengths of the unit underlined by the previous committee, *i.e.* the translational approach, has been kept in the two teams. Overall, a scientific coherence has been guarded within human research. In fact, the clinicians (coming from the founding unit) who work in the field of psychiatry were grouped within team 1 with researcher, while the clinician specialised in addiction phenomenon has joined the group of incoming preclinical researchers within team 2.
- **To increase unit research networking (through attending to international conferences and developing international collaborations):** Significant efforts have been made by the unit to respond to the recommendations made by the previous committee (for instance board committee members for international scientific societies, such as Schizophrenia International Research Society or in European COST consortium). Hence, the unit has further increased its scientific influence and thus were solicited to collaborate on European projects calls (see next point). This also helped the research lab to access new funding (such as young China-France talents). Of note all these networking efforts were made in a difficult sanitary context that has greatly dampened in person interventions (in congress or scientific meetings).
- **To get European projects:** Being involved in two different H2020 projects (FETPROACT and PainFact), the unit has well fulfilled the recommendations of the previous evaluation committee. Moreover, being responsible for work packages within these large European Research Programs demonstrates the international visibility and recognition of the unit.
- **Concerning human resources:** the research unit has been encouraged to *recruit more foreign doctoral students/postdoctoral fellows, as well as an engineer*. During the present contract, ten foreign students (half of them in doctoral studies) have been recruited, which is five times more than during the previous five-year contract. In the same way, an engineer was recruited during the contract in order to bring a support in the realisation of the EEG and the analysis of the data. A study engineer has also just recently joined the members of the unit replacing the previous one.
- **To disseminate to the general public, patients, and health professionals at a wider level:** Great efforts were made by the unit to increase their ability to disseminate both on their research and results, at all level (general public, patients, clinicians and scientific researchers). This has been done through involvement in different patients' associations ('HyperSuper', ...), interventions in public conferences, but also through publication strategy (large audience journal). Dissemination of the unit results was also helped by involvement of the unit in different scientific networks.

B – EVALUATION AREAS

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

Assessment on the unit's resources

The unit's resources are good. Offices of the unit are well located, next to the clinical department, fostering exchanges between researchers and clinicians. There is an easy access to technical facilities (EEG, MRI). Support to signal and image processing is available through collaborations with ICube, but internal expertise is limited. In Strasbourg, administrative support is provided by the UMS (CRBS), and for clinical research either by the University Hospital Clinical Research Unit or, for European projects only, by Inserm, and by an independent sponsor in Nancy. Non-interventional studies are submitted to the Ethics Committee at the University of Strasbourg.

Assessment on the scientific objectives of the unit

The scientific objectives of the unit are innovative and ambitious. The unit has started to investigate the relationship between cognitive control disorders, attention deficits and apathy. This dimensional approach was meant notably to extend the field of psychiatric research investigations to other diseases than schizophrenia (for instance, bipolar disorders, ADHD, addiction). Aims were thus to investigate the cognitive mechanisms involved in these various dimensions (sense of self, attention or apathy) and altered in several psychiatric disorders, while paying attention to share/distinct properties of each pathology.

Assessment on the functioning of the unit

This is an interdisciplinary unit with full-time researchers as well as clinicians with research, teaching, and management duties. The daily research unit duties appear to run smoothly. All researchers are well integrated in the local and dynamic research environment in Strasbourg. Council meetings allow regular interactions between all permanent members, researchers as well as technical staff and involve a student representative. Students can take part in at least one international congress during the PhD, some have teaching duties, and some also take part in science outreach initiatives (Fête de la Science). Interactions between students and between both teams appeared limited. The frequency of scientific meetings and invited talks was reduced due to the sanitary situation. The research support staff is trained to provide administrative and technical support. They are associated to publications and take part in local events.

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

Strengths and possibilities linked to the context

The unit has secured several national (ANR, PHRC, Girci, IRESP,...) and international fundings (VirtualTimes, EuroCor, Neurex, PainPact at the European level and NIH fundings brought back from Montreal by Team 2) for their clinical studies. Research fundings were sufficient to cover the cost of consumables, but also human resources need. A collaborative and constructive atmosphere was apparent during a virtual visit of Hcéres committee. This is ensured through regular council meetings and informal discussions between the permanent members and team leaders. The arrival of team 2, specialised in addiction and with an impressive track record and several major funding has extended the unit's outreach at the national and international level.

Weaknesses and risks linked to the context

With the arrival of new researchers and research topics in team 2 and the increased administrative workload brought by clinical and preclinical studies, sustainable support, clinical experiments and data processing is needed. It is not yet clear how the demands to the support staff linked to the various projects of both teams will be prioritised, though.

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

Strengths and possibilities linked to the context

The unit has reorganised its scientific strategy, until then focusing on neurocognitive alterations of schizophrenia. Its dimensional approach to common disorders (apathy, self-perception, etc.) present in several psychiatric diseases has given the unit the opportunity to welcome new researchers – whose area of research focuses on opioid receptors. In fact, though evident in schizophrenic patients, similar alterations of these dimensions (apathy, self-perception,...) can also be observable in addictive disorders (which is the field of specialisation of the team 2). The unit was structured around two teams, one psychiatry and the other addiction. Having a dimensional approach of psychiatric pathologies brings scientific coherence. This reorganisation offers the possibility of consistency in the display/common presentation of the research work of the two teams within the same structure.

Weaknesses and risks linked to the context

The main risk seems to be linked to the subdivision of the unit (obvious from a scientific point of view) into two research teams. The question arises of the level of interaction between the two units in the years to come. Moreover, if they are not scientifically present, then technical exchanges seem unlikely (each team also having both preclinical and clinical researchers).

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

There is a good functioning of the unit. Human resource management in the unit is supportive: all researchers and technicians are encouraged to follow training courses and access promotion. Gender parity is respected within the permanent members of the unit (10 women and 13 men). The unit is organised so that a safe and fulfilling working environment is offered to all members. Measures are in place to provide secure data access and backup. Energy saving and travelling recommendations are followed to limit carbon footprint.

Weaknesses and risks linked to the context

The health and safety officer (ACMO: Agent Chargé de la Mise en Oeuvre des règles d'hygiène et de sécurité) has changed over the years but the position has always been fulfilled. The informatic technology support task has been delegated to the regional administration since the member in charge retired. Programming support relies on postdoc and close collaborations with a nearby research lab (ICube, Laboratoire des sciences de l'Ingénieur, de l'Informatique et de l'Imagerie, UMR7357) specialised in image-processing analysis. The recent arrival of an engineer will hopefully fulfil the expectations. The unit is aware of and open to open sciences practices. The data management plan is yet not described.

EVALUATION AREA 2: ATTRACTIVENESS

Assessment on the attractiveness of the unit

The unit has grown in the last years with the arrival of teams 2 and 3 researchers with international experience since 2019 and has welcomed seven postdocs, some of which with international experience as well, and 30 PhD Students (mostly French-speaking) since 2016. The unit has built over time its expertise on the cognitive aspects of schizophrenia. This niche but yet visible topic contributes nowadays to strengthen its attractiveness. Besides, having welcomed B. Kieffer to lead the team 2, who is internationally acknowledged for her research on addiction on the role of opioid receptors, is a real asset to the attractiveness of the unit.

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

Strengths and possibilities linked to the context

The unit has long been recognised for its original scientific production in the field of cognitive neuropsychology of schizophrenia. This recognition is attested by the regular invitations of the members of the unit to scientific conferences (European congress of Psychiatry, NIH-HEAL Workshop, ...) their solicitation to review articles in high-ranked journal (Scientific Reports, Frontiers, ...) or to be part of the editorial board of scientific societies/associations/organisations (Association Française de Psychiatrie Biologique et de Neuropsychopharmacologie, ATIP Avenir committee, Hcéres committee, German Research Foundation, ERC grants committee, selection committee for professor position in nation university of Singapore). The arrival of an internationally renowned researcher to lead one of the two teams of the unit (Addiction) was a real asset in terms of scientific publications and international influence.

Weaknesses and risks linked to the context

The two teams are led by two internationally recognised researchers (e.g. each being leader of a Work-Package in the European projects obtained). The positioning of less experienced researchers must be anticipated. A long-term strategy must be anticipated encouraging less experienced researchers to take responsibility, thereby to favour legacy and continuity of research works.

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

Strengths and possibilities linked to the context

All PhD students of the unit are supervised by one (or sometimes two) scientific/clinician researchers (at least one of them having the habilitation). The quality of the supervision of the unit staff is demonstrated through the level of publications achieved by PhD students (average of at least 2 original articles), which goes beyond the standard required by the Doctoral School (1 article). Thus, during the last five-year contract, 48 articles were signed by PhD students of the unit and sixteen PhD students defended their thesis. The same holds true for the postdoctoral students who for the most part had the opportunity to submit an article resulting from their postdoctoral training (e.g. Ben Hamida, Mol Psy 2022; Foerster, Commun Biol. 2022).

The quality of the scientific supervision is allowed through an internal publication policy of the unit which ensures from the beginning of the research work that each participant in the study will be invited to sign as an author of the article resulting from this work. The PhD student or postdoctoral fellow who initiates the work and writes the first version of the article will then be ranked as the first author; the scientific supervisor (most often the PhD director) being thus in the last author position.

Weaknesses and risks linked to the context

If the financial support provided by the University Hospitals of Strasbourg were to change, this could jeopardise (being thus a risk) the production of open access publications of the unit.

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

Strengths and possibilities linked to the context

The unit has had success in many calls for projects, of varying nature. For example, the director of the unit coordinated a project of the National Research Agency (Autotime, 256k€). In addition, the participation of members of the unit in local institutions/federations in charge of implementing major funding plans for excellence (IdEx — Initiative d'Excellence, FHU — Fédération Hospitalo-Universitaire, etc.) has also ensured a substantial financial contribution for the unit. The calls for projects (PHRC – Programme Hospitalier de Recherche Clinique, IRESP – Institut pour la Recherche en Santé Publique) in the field of clinical research are also an important financial income for the unit, notably to secure human resources. Foundations are also an important source of funding for the unit (roughly 500k€, coming from Foundation for Medical Research 297k€, Foundation Roger de Spoelberch – 50 k€, Foundation de France – 57k€, ...). Team 2 also secured several important contracts with the industry and were able to transfer those contracts to France. Finally, the unit is also involved in two European projects – one in each team (respectively, virtualTimes and PainFact).

Weaknesses and risks linked to the context

Given the influence of the unit and the quality of its researchers, one would expect the unit to apply for ERC grants (starting/advanced/consolidator) and to be able to lead more European projects.

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

Strengths and possibilities linked to the context

The unit benefit from local infrastructure and platforms (Common Service Unit of CRBS – UMS38, Imaging platform, Function exploration platform ...), but do not have any specific equipment.

Weaknesses and risks linked to the context

NA

EVALUATION AREA 3: SCIENTIFIC PRODUCTION

Assessment on the scientific production of the unit

The scientific production of the unit is of outstanding quality (with the original article in high-profile multidisciplinary journal such as Nature and Science). There is an imbalance in the production between the two teams, but this can be explained at least in part by the different profiles of their field of expertise (Human and Social Sciences and Neurosciences).

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

Strengths and possibilities linked to the context

The scientific production of the unit is highly sustained given its size. The two teams have excellent to outstanding publications track recorded, although the production of the unit is not fully balanced between the two teams. The production of team 1 has steadily increased over the contact. The production of the team 2 (since its arrivals in 2019) is clearly remarkable (44 articles, some of which in prestigious journals such as Science and Biol Psy).

Weaknesses and risks linked to the context

If the change in scientific strategies (dimensional approaches to neurocognitive alterations in psychiatric pathologies) is likely to promote access to journals with a large medical audience, this should not be done to the detriment of publication works in specialised journals that had contributed to permit the international recognition of the unit.

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

Strengths and possibilities linked to the context

The scientific production of the unit ranked excellent, with roughly 300 articles published during the five-years contract. A bit more than half of the scientific production is signed by members of the unit, either in first/last or corresponding author. Besides, more than 60% of this scientific production appears in open-access journal. Of note, 20% of the scientific production involved a PhD student as an author.

Weaknesses and risks linked to the context

There is no weakness/risk linked to the context regarding the scientific production of the unit.

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

All studies of the research unit are performed in accordance with French law, for either research in Human research (Jadé Law). Besides, the unit has a longstanding experience in implementing ethical rules, and at least two persons in each lab location (Strasbourg and Nancy) are dedicated to relationship with promoters, and to ascertain verification of the implementation of ethical rules and data collection quality.

Weaknesses and risks linked to the context

The burden represented by the administrative procedures necessary to obtain authorisations is an important issue. The simplification of the processes expected through the Jardé law does not give complete satisfaction. Studies often use the same cohort of patients. If a benefit can arise from the longitudinal follow-up of these patients, it is also important to renew certain cohorts to avoid retest bias.

EVALUATION AREA 4: CONTRIBUTION OF RESEARCH ACTIVITIES TO SOCIETY

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

The unit has a good expertise in communicating with the general public (and intensified its activity during the last research contract), but also has strong links with industrial partners. Although present in both teams, these skills are more marked in team 1 compared to team 2.

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

Strengths and possibilities linked to the context

The unit has set up partnerships with the socio-economic world, either with a private company (BioSerenity, Psious) or non-profit organisation (UGECAM). This partnership translates in practice into funding for research works or funding for thesis students – ANRT-CIFRE. The aims are the development of tools for diagnosis and therapeutic purposes (team 1) as well as the development of new methodologies for pharmaceutical MRI in living rodents (team 2).

Weaknesses and risks linked to the context

There is no weakness linked to the context. The team has generated and set up partnership with the industrial world, which is quite new (at least for the team 1).

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

Strengths and possibilities linked to the context

The team developments are highly original and innovative and reflect the creativity of the team. For instance, the unit has participated to the evaluation of D.C.R (Drugs Consumption Rooms), that have been implemented in France in 2016 (Paris and Strasbourg).

Weaknesses and risks linked to the context

Some of the research programs have led to the development of early diagnosis tools and demonstrated their effectiveness. It is not clear whether the unit really gets benefits from the intellectual property payoffs (for instance, to ensure medium/long-term return on the investment of research time).

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

Strengths and possibilities linked to the context

Several members of the unit took part in Science outreach events (Fête de la Science, Ciné Psy, semaine du cerveau, à votre santé!,...). This activity was reduced through the pandemic but will hopefully resume in the coming months. Conversely, the unit has drastically increased its presence in the media and on the internet (YouTube), also updating its webpage. Besides, due to the pandemic situation, the unit was highly solicited to communicate about the effect of a lockdown on mental health. This was a real opportunity for the unit to improve their ability and skills to communicate and disseminate knowledge to the general public.

Weaknesses and risks linked to the context

There is no mention of training in the media for the unit's early career researchers (whether doctoral or postdoctoral students) in order to avoid the pitfalls linked to such activities, while conversely significant efforts were made to improve senior researchers ability to communicate with the general public.

C – RECOMMENDATIONS TO THE UNIT

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

The committee suggests that the two teams could enhance collaborative research projects – For example, a project on a symptomatic dimension (such as impulsivity for instance) and with a bench to bedside approach could be a win-win situation for the two teams and strengthen the links of their respective PhD students within the unit.

The committee encourages training of support staff members. Indeed, the evolution of data analysis techniques requires a continuous training. The recent recruitment of an engineer to answer the need for IT support and expertise in data analysis (EEG and later MRI) for both teams should be sustained.

The committee proposes to favour internal research seminars bringing together all members of the unit. Through the pandemic, scientific meetings were less regular and their weekly frequency should be reinstated to allow students or invited speakers to present their work and animate scientific exchanges. This would also contribute to developing connections between both teams also at the student level.

Recommendations regarding the Evaluation Area 2: Attractiveness

The committee would like to encourage a better balance of strengths within each of the two teams. The translational research (bedside to bench and reciprocally) that is allowed in each of the two teams is a major asset that strongly contributes to the attractiveness of the unit as it is organized. This would then require to recruit postdoctoral fellows and hence to maintain the attractiveness of the unit for both non-clinician researchers (team 1) and full clinicians (team 2).

The committee encourages the unit to appoint more PhD students: Given the amount of research habilitations (n=5) passed during the last contract, the unit should benefit from this and increase the number of PhD students. This should help to further strengthen scientific productions of the unit (already excellent), but also spread abroad its research (when leaving of PhD students for a postdoctoral stage) and thus help gained attractiveness and visibility.

The committee encourages the unit to use its industrial partnerships (new or consolidated) to recruit more PhD students with added funding. This could be a way to reply to increase need of PhD grants, given the increase in number of researchers with habilitation (HDR) and thus avoid the consecutive drop in the HDR/Student ratio.

The committee encourages the unit to be advised by its supervising instances (University or Inserm) in regards to its policy for intellectual property payoffs. The unit has generated (or at least participated in the development of) new tools for early diagnosis. A fairly shared payoff (between private and public partners) of any forthcoming innovative tools would be an opportunity to ensure medium/long-term return on the investment of research time.

Recommendations regarding Evaluation Area 3: Scientific Production

The committee recommends the unit (in particular Team 1) to favour publications (original article/review) in the journal having a broad medical or psychiatric audience. The scientific production of the unit is clearly excellent. Nevertheless, the increase of publications of the original article in large audience journals would help the unit to gain worldwide visibility and attractiveness.

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

The committee would like to suggest to the unit to capitalise on the high activity of communication lead during the pandemic crisis. This should help the unit to strengthen its research activity participative and inclusive, notably through the patient associations with which the unit is beginning to forge links.

TEAM-BY-TEAM ASSESSMENT

Team 1: Psychiatry
 Name of the supervisor: Prof. Anne Giersch

THEMES OF THE TEAM

Team 1 is in the historical continuity of the unit which studied cognitive neuropsychology of schizophrenia and enriched its themes (for instance on impulsivity and ADHD). The team's activities encompass a translational and transnosographic (schizophrenia, ADHD, bipolar disorder), approach on attention/impulsivity, apathy, sense of self-using methods from neuroscience, human research. They cover several fields: cognitive sciences (autobiographical memory, timing and sense of self), therapeutic innovation, visual perception biomarkers, and consequences of the Covid-19 pandemic. Research methods have also been diversified with embedded technologies (portable cameras), brain mapping techniques (EEG, fMRI), or stimulation methods (rTMS, TDCS).

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

To foster the strengths of the unit, including the original approach on the exploration of the sense of self and its continuity in time, as well as the translational approach. The team conducted a thorough investigation of the sense of the self and time continuity as reported by several publications (>15; see, for instance, 10.1016/j.comppsy.2016.05.001; 10.3389/fnhum.2016.00303 or 10.3389/fnhum.2018.00132) from in collaboration with several of their members. This research counts amongst the flagships of this unit and was strengthened by the recruitment of a postdoc/PhD students. They extended the scope of their investigations to other clinical situations (ADHD), neuropsychological constructs (attention) and methods (EEG, fMRI, rTMS). The translational approach from rats to humans was pursued.

To keep the coherence within human research. The fact that more than 30% of the papers co-signed by two PIs show the effort of researchers to work together. However, it has been hard to maintain coherence in a changing context, impacted by COVID, the relocation of offices, and the integration of a new team.

To increase international audience, attractiveness and contacts. Several international conferences were attended to, the recruitment of five PhD/seven postdoctoral students worldwide and new contacts with China, Québec or the USA (funding, and publications). European funding has been obtained: virtualTimes (FETPROACT-01-2008) and SeedMoney Eucor Project.

To disseminate research to a wider public. The team communicated their research to different audiences, such as patients or families' associations (UNAFAM, SCHIZO'OUI, HyperSuper).

The recruitment of an engineer to manage laboratory devices. The difficulty of maintaining or extend these competencies on the long term has not been solved.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	0
Lecturer and associate lecturer	0
Senior scientist (Directeur de recherche, DR) and associate	1
Scientist (Chargé de recherche, CR) and associate	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	1
Non-permanent research supporting personnel (PAR)	5
Post-docs	2
PhD Students	9
Subtotal non-permanent personnel	17
Total	19

EVALUATION

Overall assessment of the team

Team 1 benefits from a disciplinary recognition. It has widely diversified its translational and integrative approach, with a strong cognitive neuroscience component and methodological excellence. The team has been very dynamic in the search for funding, international collaborations, communications, publications, and supervision of students. It has maintained its disciplinary identity in a quality institutional context with local research structures and institutes (e.g. I-CUBE, CRBM Building) that offer high-quality methodological equipment.

Strengths and possibilities linked to the context

The team has the benefit of a long history and a recognised production in the field of cognitive neuropsychology of schizophrenia, which allows it to be continuously identified in the French academic and clinical environment. It is a multidisciplinary team (psychiatry, psychology, biology, pharmacology) promoting robust translational research, organised around a management team and personalities actively involved in the structuring of research in psychiatry and recognised by their peers.

This team has been able to diversify its interests (attentional disorders and apathy, visual perception and psychosis - 10.1016/j.schres.2019.07.007- 10.1016/j.schres.2019.07.007, impact of COVID pandemic - 10.3389/fpsy.2021.566740) and investigation methods (EEG, MRI, virtual reality), which allowed it to be up to date in the use of cutting-edge techniques or in applied research on therapeutic intervention. The broadening of the scope of clinical categories (ADHD, autism), allowed by a more assertive dimensional approach, participates to the transversality of knowledge (for instance, the use of same verbal fluency tasks to better understanding of mechanisms at role in ADHD, hypomania, bipolar disorders ... – see 10.1016/j.jad.2021.12.060). It is also an asset to contribute to a disciplinary field at the interface of many domains (neurosciences, psychology, biology, clinical medicine, etc.). Original areas of research are proposed such as the effects of cannabis on electroretinographic measurements in schizophrenic patients. It brings to light candidate biomarkers to be checked against clinical correlates, globally improving our understanding of biological

mechanisms in a translational perspective. Moreover, the research unit is in the clinical ward which facilitates interactions between clinicians and researchers as well as recruitment of subjects.

The scientific production is sustained throughout the five years with 119 research articles (between 17 and 19 articles/years) (not including syntheses or co-authored publications of FondaMental) of which the first/last or corresponding authors belong to the team published in high rank peer-reviewed journals (Psychol Med, TICS, Biol Psy).

The research team has an important record of training and acquisition of academic degrees: five HDR amongst whom four medical doctors. The unit has supervised more than fifteen PhD students and eleven are ongoing plus an average of four master students per year. This appears to be a good record giving good attractiveness for future recruits.

The fundings are important, coming from quite diverse sources with a clear prevalence of national and international organisations (the resources of team #1 during the contract were evaluated as follows: International/European: 920 k€ (European commission, Neurex, Bernstein centre Freiburg, Eucor), National : 1766 k€ (ANR, 3 PHRC, MILDECA, etc.), Local: 200 k€, Private/fondations : 476 k€ (FRM, Fondation de France, Fondation FondaMental).

Members of the team are deeply involved in recognised local and national networks such as Interdisciplinary Thematic Institute of Neurosciences Neurostra (A. Giersch is a member of the research and scientific steering committee of Neurostra) or Fondation FondaMental (F Berna is Co-chair of the national network of the Expert Centres Schizophrenia of the Fondation FondaMental), helping the setup of collaborative nationwide study.

The geographical proximity with Germany seems to have been put to good use, notably with a partnership in the European VirtualTimes project (A. Giersch is responsible for the work package dealing with research on time and virtual reality in individuals with schizophrenia). This border situation with Austria or Switzerland, which are very advanced in psychiatric research (psychotherapies, rehabilitation), is a favourable asset for the setting up of projects, the hosting and movement of researchers, and increasing the leadership in these projects.

Weaknesses and risks linked to the context

The elements provided in Team 1's portfolio indicate several points that may have affected its results. First, the multiplication of areas of research with highly diversified, translational methodologies may have generated some difficulties in maintaining highly specialised skills over time, in allowing in-depth exchanges between researchers of different disciplines, and even to an archipelization into unconnected sub-teams. Second, the issue of the fragmentation of the structures is raised with the Early Intervention and Liaison Centre (CLIP) of Nancy. Third, the team's competences for signal analysis (EEG, fMRI) may not meet the needs of the team due to the acceleration of the technical advance in these fields and should be either reinforced within the Team and/or maintained with local neuroimaging centres (I-CUBE) in a contractualized way. Fourth, the committee was concerned with the absence of a computer engineer. Fifth, the integration of team 2 aimed to increase neuroscientific skills of team 1 at molecular level, imaging levels and to improve the interface between human and pre-clinical models. This aim has not been reached.

RECOMMENDATIONS TO THE TEAM

The committee recommends that the team keeps on working with innovative technologies (multimodal neuroimaging, Virtual Reality, machine learning) while increasing the size of the samples to better understand the variability of patients and more generally of individuals (research on individual differences). It will be important, after having highlighted a chain of pathological causalities (neurobiological anomalies, information processing deficits, etc.) to verify the impact on patients' outcomes to justify the new interventions. This requires work to stabilise the means of access to multi-centre patient recruitment on a local or broader scale.

The production of the team is sustained but the committee notices that the journals are essentially specialised by pathologies or in neurosciences excluding the large medical or psychiatric journals of clinical audience. It is advisable to publish in journals with a broad medical audience for research on clinical issues as said in the previous item.

As EEG equipment has benefited of substantial investments, technical support and technological follow-up should be maintained, especially as analyses and methods are progressing rapidly.

Concerning fMRI (activation, resting, DTI, etc.), access to these techniques should be secured, including for clinical populations, as well as for a level of competence in data processing.

The committee recommends that the team continues the successful effort to integrate international programs, while striving to be well represented in terms of valorisation, display/communication and project governance. The leadership of such projects could follow participation in international consortia and should be looked for.

The Team should also maintain their attractiveness for non-clinician researchers and recruit more postdoctoral fellows.

Finally, the committee recommends that the team finds a way to better interact with team 2, for instance on the dimension of impulsivity or on dual diagnosis.

Team 2: Addiction
 SUPERVISOR Mrs Brigitte KIEFFER

THEMES OF THE TEAM

The team proposes to pursue projects concerning the role of opioid receptors and other G protein-coupled receptors in reward processing for a better understanding of addictive disorders. They use a preclinical approach studying receptor reactivity and brain networks coupling behavioural, imaging and molecular approaches. They are developing translational research thanks to an internal collaboration between a full-time researcher and a PUPH in addictology and thanks to an external collaboration financed by a European grant for pain and affective disorders. Team 2 was built on the work carried out by B. Kieffer at McGill University.

CONSIDERATION OF THE RECOMMENDATIONS OF THE PREVIOUS REPORT

There are no previous recommendations as the team has been created in 2019.

WORKFORCE OF THE TEAM

Permanent personnel in active employment	
Professors and associate professors	7
Lecturer and associate lecturer	2
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)	6
Subtotal permanent personnel in active employment	18
Non-permanent teacher researchers, researchers and associates	4
Non-permanent research supporting personnel (PAR)	3
Post-docs	0
PhD Students	2
Subtotal non-permanent personnel	9
Total	27

EVALUATION

Overall assessment of the team

The team has a long-lasting expertise on opioid system and addiction based on preclinical data. The scientific production is of high quality and relies on a large amount of data. The financial support and human resources are adequate. The inclusion of a clinical researcher offers opportunities for translational research and transnosographic collaborations with Team 1. The team is attractive as shown by the fact that researchers followed B. Kieffer from Montreal to Strasbourg. Nevertheless, the succession of the supervision of the team deserves to be soon thought.

Strengths and possibilities linked to the context

The team 2 was built in the continuity of the work carried out by its leader at McGill University; it has a strong experience and builds on previously acquired expertise on opioid receptors in the context of reward and aversion. Previous work and collaborations with industry show the degree of leaders' expertise in the field of pharmacological approaches.

Beyond preclinical approach, the team includes Pr. L. Lalanne, who is a full Professor of Psychiatry and Addictology. She also had a postdoctoral position in B. Kieffer's lab in Montreal to acquire preclinical skills. She has an easy access to recruit addict patients.

The team benefits from the transfer of previous funding obtained in Canada, in particular by the National Institute of Health (NIH). Since its creation in Strasbourg, the team has obtained national funding of 212K€ and international grants of 2500K€ including participation in a Horizon 2020 project (PAINFACT). National public health grants in the field of addictology (IRES, MILDECA). This financial support ensures the continuity of ongoing projects and security in the start-up phase. The team's fundraising ability is excellent.

The team 2 conducts a high-level research as shown by the scientific production since its creation in 2019 :44 articles between 2019 and 2021 demonstrate the international recognising of the molecular research carried out by B. Kieffer and E. Darcq with publications in major journals cited more than eight times per year (e.g. amongst those Otsu, Science 2019 Welsch, Biol Psy 2019) with openings towards other pathologies in a translational approach (e.g.: ADHD – Ben Hamida, Mol Psy 2022, alcoholism – Degiorgis Bio Psy 2022).

The possibilities and opportunities consist of the acquisition of a large dataset which has been partially analysed during the COVID pandemic, the collaboration with neuroimaging platforms (ICube) and the future discussion with team 1 on relevant dimensions in addiction such as impulsivity.

Weaknesses and risks linked to the context

The COVID pandemic has been an obstacle to develop the team 2 project and first to integrate all the current team members. The transfer of funding from North America to France has been effortful and time consuming. Similarly, although the team members mention impulsivity as a dimension of collaboration between the two teams, the research interactions are currently poorly identified.

The team has still not moved to this structure. This is a criterion of fragility that does not facilitate the construction of new scientific projects.

There is a risk concerning human resources between now and the end of the next contract (2 full researchers with a potential early departure). A recruitment strategy is already underway with a candidate identified for next year.

RECOMMENDATIONS TO THE TEAM

Team 2 is still developing, and the pandemic context has slowed its growth. However, it benefits from a highly scientific level that the recruitment of a new researcher will allow consolidating. Its attractiveness will be a facilitating element. Although the team can already count on research budgets, particularly in the context of the collaboration with ICUBE, a structuring, translational project strengthening the links between clinical aspects in humans and molecular or imaging aspects would be interesting.

Concerning integration within the unit and collaboration with team 1, we recommend working on a collaborative research project on a symptomatic dimension such as impulsivity. Within the framework of a 'bench to bed' approach, an ATIP Avenir competitive project would be a major asset.

Given the number of HDR and postdoctoral students, an increase in the number of doctoral students would increase the productivity of the team and its influence.

CONDUCT OF THE INTERVIEWS

Date(s)

Start: 10 octobre 2022 à 8 h

End: 10 octobre 2022 à 18 h

Interview conducted: online

INTERVIEW SCHEDULE

8:30-9:00 Huis clos du comité en présence de la Conseillère Scientifique HCERES

Anne Giersch vous invite à une réunion Zoom planifiée.
<https://us02web.zoom.us/j/87113007630?pwd=YldQYzI3MVU4UkISV2Z4TkNEShdQZz09>
 ID de réunion : 871 1300 7630
 Code secret : 4x1f5F

9 h - 9 h 10 Présentation du processus d'évaluation par la Conseillère Scientifique HCERES
9:10-10 : 50 Bilan administratif et scientifique par le directeur d'unité-Présentation plénière
 (20 minutes présentation + 20 minutes questions)

Pause café (10 minutes)

11 h - 12 h 30 Présentation des équipes (25 minutes présentation + 20 minutes questions)

11 h - 11 h 45 Psychiatrie
 11:45-12 : 30 Addiction

Pause déjeuner du comité (1 h)

Lien zoom
 Céline Souchay vous invite à une réunion Zoom planifiée.
<https://hceres-fr.zoom.us/j/3866922336?pwd=bVJMZ3ZPcFlwemVwUHpfUC8wRk5MQT09>
 ID de réunion : 386 692 2336
 Code secret : 572 662

13:30-14 : 30 Huis clos comité en présence de la Conseillère Scientifique HCERES

14:30-15 : 00 Huis clos avec les tutelles
15 h - 15 h 30 Huis clos avec les doctorants et postdoctorants
15:30-16 : 00 Huis clos avec les personnels d'appuis à la recherche

Pause café (15 minutes)

16 h 15 - 17 h 45 Huis clos avec les enseignants-chercheurs, praticiens hospitaliers
16:45-17 : 00 Huis clos avec les chefs d'équipes
17:00 - 17 h 30 Huis clos avec le directeur d'unité

17:30-18 : 30 Huis clos du comité de visite

18 : 30 Fin de la visite

PARTICULAR POINT TO BE MENTIONNED

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 9 juin 2023

Objet : Rapport DER-PUR230023321 - NCPS - Neuropsychologie cognitive et physiopathologie de la schizophrénie

Réf. : RB/FF/ 2023-375

Rémi Barillon

Vice-Président Recherche,
Formation doctorale et Science
ouverte

Cher Collègue,

L'université de Strasbourg vous remercie ainsi que tous les membres du comité HCERES pour le travail d'expertise réalisé sur l'unité de recherche « Neuropsychologie cognitive et physiopathologie de la schizophrénie » (NCPS – UMR_S 1114).

Vous trouverez ci-après les observations formulées dans le cadre de ce rapport.

- Concernant la remarque suivante en page 4 du rapport :

" However, several building construction constraints have delayed its opening. So far, the building is not operational, which heavily affects the research activities of the unit (both from an operational and financial point of view) "

At the time of the transmission of the Hceres report, the construction work of the animal facility has been completed and is now resuming its activities. During the construction delays, the University of Strasbourg has provided the research teams with supplementary funding for outsourcing the mice models.

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

**Direction de la recherche et de la
valorisation**

4 Rue Blaise Pascal
CS 90032
F-67081 STRASBOURG CEDEX
Tél. : +33 (0)3 68 85 15 80
Fax : +33 (0)3 68 85 12 62
www.unistra.fr

Rémi Barillon

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

Evaluation of Universities and Schools

Evaluation of research units

Evaluation of the academic formations

Evaluation of the national research organisms

Evaluation and International accreditation



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

hceres.com

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

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

