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agence d'évaluation de la recherche  
et de l'enseignement supérieur

Section des unités de recherche

AERES report on the unit:  
Centre de Neurosciences Cognitive  
University or school  
University Lyon 1  
CNRS

May 2010



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et de l'enseignement supérieur

Section des Unités de recherche

## AERES report on the unit

Centre de Neurosciences Cognitive

University or school

University Lyon 1

CNRS

Le Président  
de l'AERES

Jean-François Dhainaut

Section des unités  
de recherche

Le Directeur

Pierre Glorieux

May 2010



## Unit

Name of the unit: Centre de Neurosciences Cognitives

Requested label: UMR CNRS

No. in case of renewal: 5229

Unit director: M. Jean-René DUHAMEL

## Members of the expert committee

### Chairperson:

M. Michel IMBERT, University Pierre et Marie Curie, Paris

### Committee experts:

M. Alain BRUNET, University Mc Gill, Montreal (Canada)

M. Roberto CAMINITI, Sapienza Università di Roma (Italie)

Mrs. Brigitte KIEFFER (excused on the visiting day), IGBMC, Strasbourg (France)

M. Guy ORBAN, Katholieke Universiteit Leuven (Belgique)

### Experts nominated by the staff evaluation committees (CNU, CoNRS, CSS INSERM ...):

Mrs. Stefania MACCARI, CoCNRS member

M. Jacques MICHEAU, CNU member

Mrs. Marie VIDAILHET, CSS Inserm member

## Representatives present during the visit

### Scientific delegate representing AERES:

M. Jean-Pol TASSIN

### University or School representative and research organisation representative :

M. Jean-François MORNEX, University Lyon 1

Mrs. Claudine SCHMIDT-LAINE, CNRS, déléguée régionale

M. Bernard POULAIN, CNRS, Directeur Scientifique Adjoint, INSB



# Report

## 1 • Introduction

- Date and execution of the visit

The visit of this unit occurred on the 11th of February 2010. After a short closed-door meeting with the committee members and the AERES delegate, past-activities and projects were presented by the Director and by team leaders in the Conference theatre. All laboratory staff was invited. However, only the members of the team whose activities were presented, assisted. During the lunch break, many informal exchanges with all the laboratory members were possible.

- History and geographical localization of the research unit, and brief presentation of its field and scientific activities

Created in 2007 as an "Unité Mixte de Recherche" (UMR), the Cognitive Neuroscience Centre is located in the University Campus « Neuro-Cardio » in Bron near Lyon. Dedicated to research on the cerebral mechanisms of cognition and their disorders, the unit is situated close to several hospitals: Neurology Hospital, Le Vinatier, Saint-Jean-de-Dieu, Psychiatric Hospitals and the Transplantation Surgery Unit of the Edouard-Herriot Hospital.

- Management team
- Staff members

	Past	Future
N1: Number of researchers with teaching duties (Form 2.1 of the application file)	6	6
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	11	12
N3: Number of other researchers including postdoctoral fellows (Form 2.2 and 2.4 of the application file)	2	2
N4: Number of engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	6	7
N5: Number engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	3.6	3.6
N6: Number of Ph.D. students (Form 2.7 of the application file)	17	14
N7: Number of staff members with a HDR or a similar grade	11	11



## 2 • Overall appreciation on the research unit

- Summary

Five independent teams compose the CCN (5 teams come from the fusion of 2 teams over the initial 6 teams). The common interest of the different teams converges upon the study of cerebral mechanisms of cognition and of their related psychiatric disorders. Perception, multisensory processing, motor control, attention, decision making, motivation, and social cognition are approached using the most recently available techniques employed in cognitive neuroscience (functional neuroimaging, single cell recording in awake monkeys, trans-cranial magnetic stimulation, modelling...), most of the time in combination. The overall assessment is excellent, in terms of originality, fundamental and practical (clinical) impact, international visibility (an impressive publication record with high Impact Factors), strong involvement in the training of young researchers, high attractivity for visiting scientists, obtention of numerous international grants. Some differences between the five groups were noticed by the various experts during the visit (see Appreciation team by team for details), but these are merely nuances that have not any significant influence on the outstanding quality of the CNC.

- Strengths and opportunities

Multidisciplinary is the main mot d'ordre of each team; in particular, the association of two or more independent techniques, as for example, brain imaging in humans with cell recording in awake and behaving monkeys; electrophysiology, pharmacology, genetics, and classical neuropsychology are brought into use in order to explore neurological and psychiatric diseases (Parkinson's disease, Schizophrenia, eating disorders...); exploration of plasticity and brain reorganization in rare patients with hand or face grafting.

- Weaknesses and threats

Very few, except perhaps that the great number of themes and the wide range of subjects taken on could represent a threat of dispersion. However, this multifaceted activity could also lead to an advantage in promoting actual breakthroughs.

- Recommendations to the head of the research unit

- Implement as soon as possible fMRI (3T) on monkeys along with the technical support necessary for running it with enough efficiency in order to be used by all five teams;
- Implement micro-RNA in team # 4 for researchers who want to develop genetics of psychiatric disorders;
- Organize journal club not limited to a particular team, but open to everybody in order to increase cross fertilization (a specific demand coming from students).



- Production results

A1: Number of permanent researchers with teaching duties (recorded in N1) who are active in research	19
A2: Number of permanent researchers without teaching duties (recorded in N2) who are active in research	13
A3: Ratio of members who are active in research among staff members $[(A1 + A2)/(N1 + N2)]$	100%
A4: Number of HDR granted during the past 4 years	2
A5: Number of PhD granted during the past 4 years	10

### 3 • Specific comments

- Appreciation on the results

This unit has an excellent international visibility. Team # 1 superbly uses several cutting edge techniques to answer exciting and important questions in neurocognition. Team # 2 shows remarkable integration between basic science and clinical research. The two ex-groups of team # 3 have to reinforce their interactions. The group of team # 4, although promising, has to become more attractive. Team # 5 has a strong convergence between the primate and human research for exploring the physiopathological of motor and non motor disorders.

This unit has obtained excellent and very original data and is at the top in cognitive neuroscience with a strong implication for the understanding of neurological and mental disorders.

There is an impressive number of excellent publications, in particular: J. Neurosci.(11) ; Cereb. Cortex (7); J. Neurophysiol. (7); Brain (8); Exp. Brain Res. (7) ; J. Neurol. (6); plus several articles in Science, PNAS, J. Cog. Neurosci., Neuron, Vision Res., PLoS ONE, BBS, Nat. Neuroscience, Phil. Trans. R. Soc. B, Neuroimage, Neuropsychologia, Psychiatry Res. J. Neurol. Lancet, N. Engl. J. Med., Schizophrenia Res., Cognition, TICS, Neuroscience, Cortex J. Comp. Neurol. and many others (see the Document for complete information).

- Appreciation on the impact, the attractiveness of the research unit and of the quality of its links with international, national and local partners

There is a good interaction with the educational environment. This unit is locally the most important customer of the CERMEP. The unit is a member of the Lyon Federative Institute of Neuroscience (IFNL) and is associated with different clusters (Handicap Vieillessement Neuroscience, Neurodis Foundation and the national network for mental health FondaMental).

Members of the unit are present in different international conferences (SFN, ENA). They have obtained a "Prix de l'Académie des Sciences".

Each team has been able to attract several long term visitors (from USA with Caltech, NIMH, MIMDS..., from Spain, England, Switzerland, Inde, Japan, Italy...)



There is a great ability to obtain external financing from HFSP, ANR, FRM, Fondation de France and patients' organizations and associations.

They have participated to the Fête de la Science, many popular conferences and have a strong implication in the hospital activity.

- **Appreciation on the strategy, management and life of the research unit**

Members of the unit are involved in various masters, at level 1 and 2 (Lyon 1, including UFR Laënnec, UFR Lyon-nord), Institut Polytechnique de Grenoble (ENPG), ENS-Lyon Neuroscience, DES of Psychiatry, Nuclear Medicine, Neuroradiology etc... Some members have teaching activities abroad, such as Italy.

Team leaders are open to suggestions for improving all aspects of their work and ready to make efforts for introducing new techniques (monkey-brain imaging, cortical micro-electrodes stimulation, micro-RNA...).

Concerning the strategy, and the governance and the life of the unit, this could be improved: Students (and technicians but not permanent researchers-see below) complain about the lack of communication between groups.

Technical staff: The centre contains 7 technical and administrative personnel with permanent position (CDI) and 7 technicians or engineers with temporary contracts. Only 6 out of the 14 technical persons are assigned to collective duties (1 administrative assistant, 2 animal technicians, 2 computer-staff and 1 engineer in experimental design) and the rest employed thanks to research project funding is under the direct responsibility of the PI or team leader. Overall, most of the staff is young and has been hired recently (since a few years). There is a person in charge of ongoing professional development and all the applications made within this frame have been accepted so far by the head of the Unit. Although all the technical personnel seem to be happy with their work, both qualitatively and quantitatively, (most of them arrived recently in the unit), they regret the paucity of the information circulation on the life of the Unit. In addition, they are barely participating to laboratory meetings. This is something that needs to be changed for the next quadrennial contract. The personnel involved in the animal care are extremely well informed and competent. They have frequent meetings with the researchers to ensure the well-being of the animals. This is an important positive point in the overall management. The overload of the administrative tasks requires a second administrative assistant.

Students, doctorants and post-doctorants: In this group (n= 35), about half is doctorant and the other half post-doctorant. Most doctorants are coming from France but five of them come from foreign countries (Liban, Italy, Brazil and India). Most of the students have performed their master degree in the Rhône-Alpes region (Lyon), but six of them come from Marseille, Paris VI, Poitiers or INPG Grenoble. Three students come from the Lyon ENS school. Most of the students receive a grant for three years (half from foundations and the other half from the Ministry of Research). Following French regulations, it is more difficult to obtain a financial support for a possible (not recommended) fourth year of Ph.D. thesis. Most of the students have done scientific studies, two are medical doctors. The committee suggests to improve the relationships between students of the different teams of the campus. Altogether, students declare that they are satisfied with their Ph.D. advisors and have the possibility to publish in first position. They indicate the small percentage of the technical staff.

Permanent scientists: In this group, the only concern is the lack of technical staff. This is particularly true for primate care, computer maintenance, development of electronic devices and the genetic studies. The lack of communication between teams, which was mentioned in the previous group does not seem to occur in the group of the permanent scientists. It is indicated that some publications are co-signed by members of different groups.

- **Appreciation on the project**

Each project presented by each team was positively assessed by members of the committee (see chapter 4). There is no problem at mid-term, however, a strong financial support will be needed for monkey IRM and DNA-theque. Each team has its own resources through research grants obtained for each specific project. The recurrent financial support comes almost exclusively from the CNRS and is allocated for shared facilities (such as animal facilities, electronic shop...).





In conclusion, this unit presents an impressive originality in its project which is multidisciplinary and brings together different approaches and techniques.

## 4 • Appreciation team by team

**Team 1:** Neurophysiology of cognitive processes

**Team leader :** M. Jean-René DUHAMEL

- Staff members

N1: Number of researchers with teaching duties (Form 2.1 of the application file)	0	0
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	3	4
N3: Number of other researchers including postdoctoral fellows (Form 2.2 and 2.4 of the application file)	4	3
N4: Number of engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	0	0
N5: Number of engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	2	2
N6: Number of Ph.D. students (Form 2.7 of the application file)	7	2
N7: Number of staff members with a HDR or a similar grade	1	1

- Appreciation on the results

This team is combining single cell recording with functional imaging, modelling and behavioral analysis. Until recently this team has concentrated on the parietal lobe studying attention processes (in LIP) and multisensory processes (in VIP).

The VIP studies have reached an end and the rules of integration of tactile and visual information are now clear. These single cell results have been nicely modelled in collaboration.

The role of LIP, and its premotor counterpart, FEF, in attention and perceptual decision continues to be a major theme of the group. They have developed an original task combining two streams of stimuli (in left and right hemifield) that allows to disentangle cue processing (related to spatial attention) and target processing (related to perceptual decision). To underline the importance of this task it is worth commenting that in an EU project including many top attention researchers, the exact task to be used is still in debate. Combining this original task with multi-unit recordings, this team has managed to disentangle the contribution of LIP and FEF to both processes and FOR the FIRST TIME shows different response patterns of the neurons in the two areas. This is a real breakthrough.

In addition, the team has developed an EXTREMELY original social neuroscience single cell study in which one of the dimensions manipulated is the degree to which reward is shared between monkeys. Only one other



group worldwide is doing similar work, but this team paradigm is more manageable and provides straightforward results.

Finally the team has managed to develop fMRI in the awaked monkey using the magnet that is at present available in Lyon (an obsolete 1.5T scanner that should be replaced).

This team has been extremely productive in the past four years. They have published several publications in high impact factor journals, in particular 4 papers in the journal of Neuroscience, the best overall neuroscience journal. Other major publications appeared in Neuron, Nat. Neuroscience and Science. Several manuscripts are under review or in preparation, demonstrating sustained productivity of the group. The team also communicates intensively at international conferences, and through book chapters. Finally PhD thesis have been produced regularly. Altogether, this team has an outstanding publication record.

This team has also a number of longstanding collaborations with Belgian and English groups.

- **Appreciation on the impact, the attractiveness of the team and of the quality of its links with international, national and local partners**

The team leader and the other senior researchers participate in many international conferences and attend SFN meetings. Moreover, they have attracted several PhD students and postdoctorants from abroad, they have raised funding regularly for their research. In particular the team has several ANR grants that are rather competitive.

The team leader participates in a HFSP consortium, which is extremely competitive.

- **Appreciation on the strategy, management and life of the team**

The team follows an excellent strategy in order that the young researchers gradually take on responsibilities: this constitutes an excellent deployment of research efforts but also a good management of the career of young people.

The team leader is the director of the institute and contributes to teaching modestly. This is a big job which is well done.

- **Appreciation on the project**

Technically superb mix of multi-electrode recording in several areas simultaneously, inactivation studies, monkey fMRI and modelling (long tradition).

Thematically excellent mixture of well known themes, such as attention and multisensory processing, but also very new exciting themes: targeting hippocampus in the monkey is an excellent move as rat hippocampus tells us little about human hippocampus (dominant input is visual not olfactory); this has been identified as one of the most pressing needs in systems neuroscience; also revisiting the convergence of monkey calls and faces at the identity level is a clever move.

Brilliant link with the schizophrenia team of the same institute.

They should try to do the same with the team # 3 which would benefit enormously as human fMRI, on its own, has so many shortcomings.

The policy for allocation of resources is clearly in place.

Projects 1 (executive functions: selection of action) and 2 (multisensory processing) are top projects building on earlier superb work (see above) but with extremely original new developments (especially the links with schizophrenia group in project 1).

Activity in project 2 adds a decoding dimension to the other projects which are very welcome and novel.

Projects 3 (processing of allo-and egocentric space) and 4 (social neuroscience) are cutting edge, because of the originality of the questions investigated.



- Conclusion :

A premium Cognitive Neuroscience team that is competitive at the world level. It has the potential to grow even higher with the implementation of monkey fMRI at 3 Teslas. This is important not just for the team but also to link the more clinically oriented teams with this basic neuroscience team.

**Team 2** : Neuropsychology of action

**Team leader:** Mrs. Angela SIRIGU

- Staff members

	Past	Future
N1: Number of researchers with teaching duties (Form 2.1 of the application file)	0	1
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	3	2
N3: Number of other researchers including postdoctoral fellows (Form 2.2 and 2.4 of the application file)	2	2
N4: Number of engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	1	1
N5: Number of engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	2	2
N6: Number of Ph.D. students (Form 2.7 of the application file)	5	5
N7: Number of staff members with a HDR or a similar grade	4	4

- Appreciation on the results

This multidisciplinary team has 3 main lines of research:

The first concerns the cortical representation of movement in neurological patients with a special interest in the prediction and intention of movement. In this field, a multimodal approach is used to explore the role of the premotor and parietal regions in the intention and awareness of movement. In close collaboration within the research centre and with the clinical teams, these researchers have been very successful and creative and the new projects are in line with the past work.

The second major research interest of this team relates to adult plasticity: this was mainly explored through a careful study of rare patients and a clever handling of opportunities coming from surgical breakthroughs (hands or face grafts). This topic will be expanded by the study of motor plasticity (role of the cerebellum) and plasticity for speech. These studies have prompted a rather profound revision on the nature and mechanism underlying motor representation in the motor cortex of normal subjects and on the degree of reorganization of these maps after injury to the motor periphery. Main results here is that the cortical motor representation of movement of any given body's, after amputation does not disappears as the results of the invasion by adjacent representation, but can still evoke phantom movements. This team took advantage of the first case in the world of double hand allograft to show that the motor cortex of amputees is able to modify the cortical reorganization induced by the amputation to better integrate the transplanted hands.

The third study concerns the higher-order cognitive and emotional mechanisms underlying decision-making and social interactions and preference. The fields of neuro-economy and of the neural basis of social



behaviour are very hot topics at the moment. The exploration of the potential role of oxytocine is a clever and original approach of the subject. They have shown, in neuropsychological and fMRI studies done in collaboration with the team # 3, that patients with orbitofrontal lesions are impaired in experiencing emotions such as regret, which is in keeping with the observation that the experience of regret evokes BOLD changes in the same brain region. Very recently, the demonstration of the power of oxtocin in enhancing social behaviour of patients suffering from social disorders, such as autism or Asperger syndrome, opens a new interesting field of study.

This team has been extremely productive in the past four years (44 papers over the 2005-2009 period) and has published several publications in high impact factor journals, such as 2 in Science (2009 (IF= 28.1)), 1 in N. Engl J Med, 1 in PNAS (IF= 9.38), 1 in Nat Neuroscience (with Coricelli), 4 papers in Brain (IF= 9.6), Cerebral Cortex and Neuroscientist (IF=5.9), Neuroimage (IF= 5.7) and 3 TICS (IF=10.98) ... demonstrating uninterrupted productivity of the group from 2005 to 2010. The team also communicates intensively at international conferences, and through book chapters. Finally, PhD thesis have been produced constantly. Altogether, this team has an outstanding publication record.

High originality of the research with a clever analysis of patients and close collaboration with the other members of the Research Centre. Coherence between the different types of research: a) Parietal premotor network for movement (for limb movement and speech) Science 2009. b) reorganisation of the cortical maps and plasticity (limbs and face) using amputees and grafted patients. c) social behaviour and decision making (with the role of oxytocine), a new and currently attractive topic.

This team used a multimodal approach (fMRI, Intra-cerebral recordings, EEG, TMS and experimental psychology, taking advantage of a rich scientific and clinical environment and a solid technical (both human and platforms) support. This team is very creative and the impact of their findings is important with a high citation impact (26/item)

Very good productivity. Very original results. One paper in Science 2009, 3 TICS, 1 PNAS, 4 Brain, 1 NEJM, 1 Neurology and papers in Cerebral Cortex, Cortex, Exp Brain Research, Neuroimage, J Neurophysiol. In most of these papers, the researchers of this group are the leading authors (first of last authors).

Stable and effective partnership within the Research Centre, with national and International teams with very high level publications.

- **Appreciation on the impact, the attractiveness of the team and of the quality of its links with international, national and local partners**

Attractiveness of the research group: brilliant young CR (first author in several first rate papers). International collaborations (Caltech USA, Spain, England). Members of the team are invited worldwide for conferences.

The team leader had an award from French Académie des Sciences.

The team leader is a member of the Council of the "Ecole Doctorale Neuroscience and Cognition" Lyon 1 and of 2 other Doctoral School in Italy. Member of Comité National du CNRS and of FRM.

The team leader is also the coordinator of a Human Frontier Science Program Research grant.

Numerous reviews for national grants such as ANR, NeRF, FRM etc and for international institutions (NIH)

Members of the team are invited worldwide for conferences.

Recruitment of PhD and post-Doc at the national (n=3) and international (India and Italy) level. Recent (2007) recruitment of CR that are young and brilliant researchers (one of the CR, born in 72, has already 18 publications in the 2005-2008 period)

Very effective fund raising: 2 ANR grants (one in 2006 and one in 2009), fondation de France and FRM.

Stable collaborations within the research centre and at the national level.

Additional collaborations with research centres in Italy, and USA (Caltech). Productive collaboration with both scientists and clinicians.



- **Appreciation on the strategy, management and life of the team**

Coherent strategy and focus on few projects with multimodal approach and a very effective management of individual projects.

Very good quality of management with a high production. The team follows a very good strategy of expansion based on the integration of some very experienced researchers, of encouragement to young researchers to assume responsibilities, the collaboration with important neurosurgery centres. This constitutes an excellent deployment of the available assets, but also a good care of the career of young scientists who are involved in the activity of the team.

The team members are involved in the scientific animation within the centre (teaching at the Ecole Doctorale).

- **Appreciation on the project**

There is no doubt on the relevance and feasibility of a long term (4 years) scientific project highly competitive at the international level. From the methodological point of view, the team is able to manage a very good mix of neuropsychology, brain stimulation and recording (icEEG), and imaging techniques.

Thematically the group handles a very good mixture of well known themes, such as cognitive-motor control, but also new exciting themes, such as the role of hormones in social behaviour.

Promising is the collaboration with the “neuroeconomy” team of the same institute.

The funding of research projects are clearly present and well performed

Original research, elegantly and attractively presented.

Project 1. Neural basis of Prediction, Intention and Movement. Projects on these issues are original and innovative, especially those concerning the development of the motor system in humans. These projects will benefit from a variety of methodological approaches, including TMS, electrical stimulation, neuropsychological assessment.

Project 2. Cortical Maps and Brain Plasticity in Humans. These projects are very interesting and original and concern studies on the body scheme in congenital amputees, and on the perception and production of speech in patients who have received face allografts. Very little is known on adult plasticity, therefore similar studies are welcome.

Project 3. Neurobiology of Social Cognition. This project is made by subprojects using different techniques for different questions concerning the neural bases of social preference and exclusion (fMRI), social pain (intracortical EEG), role of hormones such as oxytocin in the neurobiology of affiliation (a very audacious project!), and the brain mechanisms i.e., the adverse effect that negative stereotypes can have performances in man and women.

- **Conclusion :**

Original research with a strong integration between basic science and clinical collaborations. Numerous techniques with multimodal approach (fMRI, electrophysiology, intra-cranial recordings, experimental psychology). An excellent Cognitive Neuroscience team, competitive at the international level. It has the potential to improve the quality of the scientific production through joint-projects with the behavioral neurophysiology teams operating in the same institute at a more basic science level.

- **Strengths and opportunities**

The strengths of this team are a) multidisciplinary team, b) quick and easy access to rare patients and to intra-operative recordings, c) multimodal explorations. Integration in a primate centre (animal models) and close connexions with clinic and basic science throughout the Centre. The researchers are young and talented, with numerous PhD. The productivity is good and original. The funding is solid and the fund rising is remarkably successful.



– Weaknesses and threats

Almost none. The mere weakness of this team is also its strength with a wide range of subjects of explorations.

– Recommendations to the head of the team

Overall, the research projects, publications and quality of the researchers are excellent. As a consequence, this team should make sure to continue to concentrate on a few research lines.

**Team 3** : Reward, decision making and neuroeconomics

**Team leaders:** M. Jean-Claude DREHER and M. Giorgio CORICELLI

	Past	Future
N1: Number of researchers with teaching duties (Form 2.1 of the application file)	1	1
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	2	3
N3: Number of other researchers including postdoctoral fellows (Form 2.2 and 2.4 of the application file)	1	1
N4: Number of engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	0	0
N5: Number of engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	1	1
N6: Number of Ph.D. students (Form 2.7 of the application file)	7	7
N7: Number of staff members with a HDR or a similar grade	2	3

The new team # 3 results from the merge of 2 former teams of the Unit that were independent during the last quadrennial. Former team # 3 (Reward and decision making) has merged with team 6 (Neuroeconomics). Therefore the new team 3 includes three full time researchers, one clinician (PU-PH), 1 postdoctoral fellow, 7 PhD students and 1 engineer (IE). Their main scientific interest is to understand decision making either under the influence of hormonal state or in social context.

- Appreciation on the results

One team leader is combining functional neuroimaging, neuropsychology and network modelling in humans to study reward processing, motivation and decision-making. A particular focus is on prefrontal cortex and the dopaminergic system, and their dysfunction in aging, schizophrenia, Parkinson’s disease, pathological gambling and anorexia nervosa. First, the team showed that fronto-polar cortex lesions affect multitasking (PLoS ONE, 2008). Second, in terms of reward processing, the team has demonstrated that error prediction and uncertainty are dissociated, and encoded by prefrontal cortex and ventral striatum, respectively (Cerebral Cortex 2006). They also demonstrated that positive and negative reinforcements of distinct nature are processed in distinct brain areas (in preparation). In another study they showed an antero-posterior dissociation within the orbitofrontal cortex, depending on whether the reward was primary (erotic picture) or secondary (money) in nature (under review). An electrophysiological study led to the original finding that uncertainty is also encoded by the hippocampus (J. Neurosci., 2009), and magneto encephalographic study allowed describing the precise spatiotemporal dynamics of reward probability encoding (in preparation). Third, in terms of decision-making, the team showed that interactions between the anterior cingulate and the fronto-parietal cortex underlie



perceptual decision-making (under review), and demonstrated that the brain engages distinct mechanisms in evaluating passive versus active costs (Trends in Cognitive Sciences, 2007 and under review). The latter finding has major implications in current theories of value computation. Finally, an important aspect of this team's activity is the influence of hormones and genetic variance on reward processing. The team demonstrated an influence of menstrual cycle on reward processing in women (PNAS, 2007). Using a combined PET and fMRI design, the team characterized alterations of dopaminergic function in the reward system during normal aging. The team finally showed that polymorphism in genes from the dopaminergic system (COMT and DAT) is associated with differences in reward processing, suggesting that these genetic variations may contribute to individual differences in reward seeking (PNAS, 2009). Altogether, this team has used its unique expertise in human neuropsychology and imaging to provide important novel insights on different aspects of reward processing and decision making. The data are undoubtedly novel and original in the field.

Former team 6 condensed to one permanent staff, 3 PhD students (one shared with team 5) and doctoral student was interested in understanding the role of emotions in decision making especially in subjective feeling like "regret" and in social context centred on social interactions. The activity research has led to the publication of 13 papers some of them with a high impact factor. Therefore, the research activity is pretty good but only one student on the three has presently published 2 papers with one team leader.

This team has been extremely productive in the past four years. The team has published several publications in high impact factor journals, best examples being recent J. Neurosci. (2009) and PNAS (2007, 2008, 2009). Other manuscripts are under review or in preparation, demonstrating sustained productivity of the group. The team also communicates intensively at international conferences, through book chapters, and in the press for lay public. Altogether, this team has an outstanding publication record.

Publication record of the other team leader that was impressive during his collaboration with team 2 (Science, Nature Neurosci., TICS) and appears after slowing down, to regain in quality if we rely on impact factors (PNAS, Phil. Trans. R. Soc. B, Schizophrenia Res.).

- **Appreciation on the impact, the attractiveness of the team and of the quality of its links with international, national and local partners**

In 2005, one team leader has received the FRM young investigator award to start his research. Since then, he has presented more than twenty invited conferences and organized two symposia, both at national and international levels. He is also ad-hoc invited reviewer for several prestigious journals.

7 PHD students and one post-doc are presently working in this team.

One team leader has raised funding regularly for his research. Support comes from non-profit organizations (FRM, Fyssen) or institutional sources (EU FP6, Lyon Hospital, the MILDT and the "région"). In addition, the other team leader has recently obtained an ANR "Jeune Chercheur".

One team leader has established collaborations internationally (NIMH USA; NINDS USA; Trinity College Dublin) and the other team leader keeps a strong connection with the University of Minnesota (USA)

One team leader shows an impressive number of communications to the lay public.

- **Appreciation on the strategy, management and life of the team**

One team leader contributes to teaching modestly (Neuroscience master 2, 1 course), the other team leader has some teaching experience but mainly in Italian universities. Implication in research organization at local level is not apparent.

- **Appreciation on the project**

Both team leaders propose to join and form a single group for the new project. They will pursue their previous research lines, and also propose novel orientations.

Project 1 : This will be a study on the impact of emotions on cognitive performances. This study will use intracranial electrophysiological recordings, and potentially form the basis for an interesting novel research line.



However, the researcher in charge of the intracranial physiological recording will soon retire, meaning that the group needs to find a solution to pursue this very exciting research.

Project 2 : this project will keep on developing the hormone/gene aspect of his research on reward processing, and will move to pathological situations. The PI will use previous knowledge that the team has acquired on the reward neurocircuitry to address interesting groups of patients. The project will (i) address hormonal modulation of reward using pharmacological manipulations in healthy woman, or in ageing woman under hormonal replacement therapy ; (ii) compare Parkinsonian patients with or without impulse control disorders ; (iii) examine primary and secondary reward processing in schizophrenic patients ; (iv) study the effect of stress on reward systems in patients with distinct COMT and DAT gene variants ; (v) investigate reward processing and decision making in patients showing pathological gambling, possibly in association with COMT and DAT polymorphisms ; (vi) compare loss aversion for monetary or food reward in healthy individuals and anorexic patients ; (vii) study how image motivation influences decision-making. The latter goal is entirely new, and an interesting paradigm will be developed.

Project 3 : The first part of the project will develop computational models of fictive/regret learning, to be further tested on healthy volunteers or lesion patients by intracranial EEG recordings or fMRI. The second part will use address the decision-making process in either individual or social context, using fMRI to measure brain activity. Neural imaging will also be used in the third part of the project, to investigate reputation building, an important aspect of social interactions.

Projects 1 and 2 are cutting edge, because of the unique combination of functional neuroimaging, genetics and original psychological tasks.

- **Conclusion :**

The proposed team 3 gathers two excellent groups' leaders. Both have published extensively, and at the best level, in the past funding period, and there is no doubt that their activities should be ranked at top level. An obvious common interest in these research programs lies in understanding decision-making processes and emotional learning.

It is unclear how the two ex-groups will synergize in a single team. Especially because one scientist and the fourth member of the team do not seem to participate to any research project (it sounds that he is now more involved in clinical activities). One team leader has been mainly working with US and spanish collaborators in the past, and will continue to do so. There is no joined publication between the two teams, both teams will continue along their on-going research lines, and both PIs will remain PIs. Both teams also interact with other teams of the centre. Whether the two teams appear jointly or separately in the next organigram of the Unit does not indeed make any difference.





## Team 4 : Psychopathology: A neurocognitive approach to psychoses

Team leader: Mrs. Caroline DEMILY

- Staff members

	Past	Future
N1: Number of researchers with teaching duties (Form 2.1 of the application file)	4	4
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	0	0
N3: Number of other researchers including postdoctoral fellows (Form 2.2 and 2.4 of the application file)	0	0
N4: Number of engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	0	0
N5: Number of engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	0	0
N6: Number of Ph.D. students (Form 2.7 of the application file)	0	0
N7: Number of staff members with a HDR or a similar grade	2	3

This research group is composed of three scientist-practitioners (2 PU-PH, 1 PH) and 1 lecturer (MCU), most of them with clinical and teaching duties responsibilities and the right to supervise graduate students (HDR). The team has 1 doctoral student, 2 master students and 0 post-doc. One neuropsychologist is currently under contract.

The team recently underwent a leadership change, with a very productive leader remaining in the team but stepping down in favour of a promising, but relatively young and inexperienced, replacement. This has raised serious reservations from some members of the evaluation team as to the appropriateness of this change of leadership. On the positive side, it is noted that the team will be better positioned (eventually) to conduct more neurobiological and genetic research that is highly desirable in schizophrenia research and in the context of belonging to the current research unit.

Within the research unit, Team 4 plays a crucial role since it is the only team that comes from psychiatry. Having scientists from that field is important since other researchers from the UMR wish to apply some of their findings to Parkinson's disease, eating disorders, movement disorders, autism, obsessive-compulsive disorder, and so on.

- Appreciation on the results

The goal of this team is to improve our understanding of schizophrenia and its treatment mainly by understanding the cognitive dysfunctions associated with the disorder.

The team has explored, among other things, the cognitive control (topic I) and processing of face information (topic II) in patients with schizophrenia using Koechlin's (2003) multistage model of prefrontal executive functions. Unfortunately, based on their written account it is unclear who in the team does what, and what are the publications related to those two topics. Nonetheless, overall there seems to be a good cohesion and complementarity in the team members' areas of research.



The new team leader aims at coupling genetic research needs to be coupled with the study of cognitive symptoms as phenotype in schizophrenia, an interesting idea. The emphasis on social cognition deficits is an interesting and promising line of research, which is shared in part of researchers within the team and with researchers from other teams of the UMR.

The former team leader has been working mostly on cognitive control in schizophrenia and on cognitive remediation. Cognitive remediation is a very strong point for the team because it has the capacity to translate research findings into therapeutics, and because it has the potential to influence other scientist and practitioners across the world.

One seasoned researcher studies the sensorimotor control in healthy Ss, in schizophrenia (deficit in inhibitory control), and in Parkinson disease, which allows for collaboration with other teams from the Unit. This exciting line of research suggests that differences in DMN (default mode network) activity may be relevant to understand opposite deficits like impulsivity and akinesia, as seen in psychiatric and neurological disorders.

Another seasoned researcher studies schizophrenia and autism from the perspective of neuropsychology, neurobiology, social cognition and cognitive neuropsychology.

The research techniques used by the team include : neurocognitive testing, MRI/fMRI, genetics, ERP, EMG, and EEG.

The impact of the research is manifested mainly via the publication dossier and the cognitive remediation work. The impact of the team in the field of schizophrenia is not yet apparent but, this young team appears to be in a position to achieve this in the future.

Overall, the number of peer-reviewed papers in journals with moderate to high impact factors produced by the team is considered above average for the field of psychiatry. This is especially true considering that virtually all team members have labor-intensive clinical and teaching responsibilities. Therefore, their productivity is quite impressive considering that the team is underfunded and has little capacity to hire and dispatch lower-level and time-consuming tasks related to data collection, for example.

Between 2005 and 2009, the productivity of the team, in number and quality of papers is on the rise. Several papers have been published in specialized high impact-factor journals by the team as first or last author, such as *Psychiatry Research* (2005), *Neuropsychologia* (2006), *British Journal of Psychiatry* (2007), *Schizophrenia Research* (2007, 2009), *Brain* (2007), *Neuroimage* (2008), *Archives of General Psychiatry* (2009), *Annals of Neurology* (2009), to name a few...

The team members report national (Paris, Marseille, Rouen) and international (Italy, the US, and Switzerland) collaborations, although it remains until to what extent those collaborations are formalized.

- **Appreciation on the impact, the attractiveness of the research unit and of the quality of its links with international, national and local partners**

There has been an organization of an international francophone conference on cognitive remediation and invitation as a reviewer in prestigious journals.

The team has 1 doctoral and 2 masters students. This is not satisfactory considering that 3 out of 4 team members have HDR. The team has no post-doc and has not attracted an international student yet.

Not all researchers have shown a capacity to obtain grants at the national level. This is a weakness of the team. It remains unclear whether this team has received an ANR grant and another support (the amount not being indicated) for a MOPSY (?) project.

The team is not really well known outside its region according to the information available to the reviewer. This is expected for a young team. The team reports some international collaborations and the international association (francophone) for cognitive remediation is a step in the right direction to increase visibility.

The francophone association for cognitive remediation is a wonderful example of knowledge transfer. This is also seen as an excellent vector to make the team more notorious.



The team has published a lot at the national level in French journals and it has also produced a lot of 'tutorial publications'. This is an important part of research that should not be underestimated.

- **Appreciation on the strategy, management and life of the research unit**

All team members have clinical responsibilities at Hôpital Vinatier and St-Jean-de-Dieu. Three out of four team members have teaching responsibilities at Lyon University. The contribution to the structuration of research is not apparent to the reviewer.

- **Project assessment:**

The projects are distributed along 4 axes

I. Cognitive control in schizophrenia and Parkinson's disease (with 3 members from team 5). Patients with those pathologies present with a deficit in inhibitory control that may account for apparently opposite deficits. This line of research that includes research on the default mode network is considered as cutting edge. An animal model is also being considered with the team # 1.

II. Emotional production in schizophrenia. Information processing of faces is impaired in schizophrenia. Patients may not be aware of this.

III. Reward related learning in schizophrenia. This research draws upon the expertise of members of the team number 3. It involves a strong genetic component. This research is considered original and cutting edge, as it builds bridges between theories of social cognition and theories of mind, as applied to schizophrenia.

There is also a project of creating a DNA Library (DNA-theque).

IV. Cognitive remediation. Projects related to cognitive remediation is considered cutting edge and bridge research with its applications in real life.

The team definitely has cutting edge projects which should led to continued high quality publications in the future. This was far clearer for project 1 than for project 3, which was not clearly worked out. Not to be aware of micro-RNA does not bode well for somebody who wants to work in genetics of psychiatric diseases. Perhaps it is too early for the proposed team leader to take the head of this unit ; it is recommended that she first does a post doc in a good neurogenetics lab.

- **Conclusion:**

With the proposed change in leadership, a more biological stance is being taken by the team. While this is desirable considering the overall goals of the UMR and the zeitgeist in schizophrenia research and the new leader has a good publication dossier and lots of projects and ideas, it seems premature at this point.

The former leader remains very productive and should remain officially the leader until the proposed PI has done a post-doc abroad. And the setting up of the cognitive remediation association is a great development to increase the visibility of the team and its impact of the field.

In the future, the team definitely needs to obtain more grants and the productivity of each researcher should be outstanding. One way of doing so would consist in publishing more (and having more collaborative projects) with the other teams of the UMR. The team needs to become more attractive and train more students.



## Team 5 : Physiopathology of the basal ganglia

Team leader: M. Léon TREMBLAY

- Staff members

	Past	Future
N1: Number of researchers with teaching duties (Form 2.1 of the application file)	2	2
N2: Number of full time researchers from research organizations (Form 2.3 of the application file)	2	3
N3: Number of other researchers including postdoctoral fellows (Form 2.2 and 2.4 of the application file)	2	1
N4: Number of engineers, technicians and administrative staff with a tenured position (Form 2.5 of the application file)	0	0
N5: Number of engineers, technicians and administrative staff without a tenured position (Form 2.6 of the application file)	2	2
N6: Number of Ph.D. students (Form 2.7 of the application file)	1	1
N7: Number of staff members with a HDR or a similar grade	4	4

- Appreciation on the results

This is the youngest team of the CNC, established in 2008. The team has three research lines : (i) study Parkinson disease and compensatory mechanisms to dopamine depletion, (ii) study non-motor functions and dysfunctions of the basal ganglia, addressing non-motor aspects of PD, Gilles de la Tourette syndrome, Obsessive Compulsive Disorders (OCD) and depression/apathy and (iii) develop deep brain stimulation for the treatment of basal ganglia disorders. Strength of the team is the triple human/monkey/rat approach, which allows combining multiple levels of experimentation and analysis This is a very homogeneous team in term of quality and international connections and notoriety. Moreover, the researchers benefit from each other backgrounds. Their projects are perfectly integrated in Research Centre.

Good and steady production: 85 papers (including clinical papers) over the 2005-2009 period including clinical papers (Ann. Neurol, 9.9)J. cerebral Blod flow metabolism, IF= 5.7, Neuroimage, 5.4) and more basic science ones (Nat. Neurosci., IF= 14.16, Brain, IF= 9.6, Cerebral Cortex, IF= 5.9, J. Neurosci., IF= 7.9)

- Appreciation on the scientific quality of the output:

The primate program research (2005-2009) period was supported by an ANR grant and was very original and well conducted. A careful anatomical and functional mapping of the basal ganglia (mainly GPe and striatum) allowed to identifying a wide range of motor disorders and behaviours, some of them mimicking motor or behavioural abnormalities observed in humans such as dyskinesias or stereotyped disorders. A careful study of the networks underlying these behaviours was performed. A PET study in primates was performed to identify the networks involved in those behaviours and analysis is currently performed. These projects have a large impact on the pathophysiology of AD-HD and OCD disorders (animal models) as the networks involved in primates and humans are similar (2 papers in Brain, IF= 9 and several papers in preparation). Apathy is also explored.



This work is in line with the research program in humans with an exploration of Dopamine release (PET scan) in the meso-cortico-limbic network in apathetic PD patients treated with STN stimulation. This group has a strong experience in PET functional imaging with a high productivity and a national and international visibility.

Very original results. Good productivity (see above). In most of these papers, the researchers of this group are the leading authors (first of last authors).

Stable and effective partnership within the Research Centre, with national and International teams.

- **Appreciation on the impact, the attractiveness of the research unit and of the quality of its links with international, national and local partners**

- National networks and International collaborations with a lab in the USA and one in Japan.
- Members of the team (both on the clinical part and primate part) are invited for conferences in France and in Europe.
- Recruitment of a young CR1 who was previously in Grenoble. Recruitment of PhD and Post-doc at the national level.
- Effective fund raising (1 ANR grant) and Grants from regional PHRC or Patient's associations.
- National collaboration with the group of Primate imaging in Orsay) and International collaborations. For the clinical part, involvement in several networks including the Parkinson's Study Group, the Dystonia Network;
- Only few invited conferences.

- **Appreciation on the strategy, management and life of the research unit**

- Coherent strategy and focus on few projects with a combined primate and clinical approach;
- Very good quality of management;
- Development of electrophysiology combined with pharmacology (focussed micro-injections);
- Involvement in the scientific animation within the centre (teaching at the Ecole Doctorale).

- **Appreciation on the project**

The proposed project includes:

1. Studies addressing non-motor symptoms of PD, with a particular new focus on serotonergic system. In humans, serotonergic modifications will be studied by PET in PD patients, at several stages of the disease. In monkeys, both behavioural and pharmacology will be used.

2. Studies addressing non-motor symptoms of PD, with a focus on cognition and motivation disorders. The pathology of depression and apathy will be modelled in monkeys using ventral striatal lesions, or MDMA intoxication, and both behavioural and electrophysiological approaches will be used.

3. Deep brain stimulation studies will continue. In monkeys, attempts will be performed to diminish apathy induced by micro lesion or MDMA depletion. In humans, PET for the serotonergic system will be combined to DBS in both implanted PD and Tourette syndrome patients.

4. New research directions, including the analysis of noradrenergic systems, and the study of postural versus gait disturbance in PD. These will be run in collaboration.

Altogether, the project is a continuation of previous work with interesting novel proposals. As for previous work, future work is supported by ANR, which is a good indicator of the high quality level of the research proposal.



The research projects are funded.

Original research, elegantly and attractively presented. There is a real strength in the association of a primate and clinical team. Animal models and clinical studies can be explored in parallel and complement each other.

- **Conclusion :**

No problem of scientific productivity in this team, which is excellent. As far as can be judged, projects are innovative and use at best the unique human/monkey environment. The rat studies performed in the past were sound and adequate, but will apparently not be pursued. There is a strong parallel between the primate and patients' studies with a combined approach by pharmacology and neuro-imaging. The strength of the primate research is the exploration of the basal-ganglia and cortical networks and the combination of pharmacological manipulations and electrophysiological recordings. With this strong convergence between the primate and human research, this team will have powerful tools to explore the patho-physiology of motor and non-motor disorders and develop new concepts.

- **Strengths and opportunities**

The strengths of this team are a) the association between a team working on primates and a clinical and neuro-imaging team. They can explore animal models of human diseases with multiple tools in primate (anatomy, physiology, behaviour). Moreover, b) they may obtain additional information in humans using clinical assessment, deep brain stimulation and PET imaging.

The 2 teams are equally excellent, with a very good interaction and synergy. Both of them benefit from a strong environment (primate facilities in the Research Centre) and imaging facilities (PET, MR for humans and animals).

There is, in addition, a strong and very productive collaboration with the Rhone-Alpes groups.

- **Weaknesses and threats**

None. There is an impressive production of papers on the clinical side. The primate and clinical researchers should tend to publish companion papers and target very high impact factor journals.

- **Recommendations to the head of the team**

Overall, the research projects, publications and quality of the researchers are excellent. As a consequence, this team should make sure to continue to concentrate on a few research lines.

Note de l'unité	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A+	A+	A+	A+	A+



Nom de l'équipe : Neurophysiologie des processus cognitifs

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A+	A+	A+	A+	A+

Nom de l'équipe : Neuropsychologie de l'action

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A+	A+	A+	A	A+

Nom de l'équipe : Neuroéconomie, neuroimagerie, émotions, prise de décision et récompense

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A+	A+	A+	A	A+

Nom de l'équipe : Psychopathologie

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A	A	A	A	A



Nom de l'équipe : Physiopathologie des ganglions de la base

Note de l'équipe	Qualité scientifique et production	Rayonnement et attractivité, intégration dans l'environnement	Stratégie, gouvernance et vie du laboratoire	Appréciation du projet
A+	A+	A+	A+	A+



Villeurbanne, le 23 Avril 2010

M. Pierre GLORIEUX  
Directeur de la section des unités de l'AERES  
20 rue Vivienne

75002 PARIS

Monsieur le Directeur,

Je vous remercie pour l'envoi du rapport du comité de visite concernant l'unité de recherche :

«Centre de Neurosciences Cognitives» rattachée à mon établissement.

Ce rapport n'appelle pas de commentaire particulier de la part de l'université.

Je vous prie de croire, Monsieur le Directeur, à l'expression de ma meilleure considération.

Le Président de l'Université



Lionel Collet

## Response to AERES report on the Centre de Neurosciences Cognitives (UMR-5229)

### Observations

We would like to thank the members of the committee for their thorough evaluation of our scientific project. We are extremely pleased by the overall highly positive assessment of our laboratory's activity. In particular, we are satisfied with the positive assessment concerning the originality and quality of the scientific production, the international attractivity and visibility, and the strong integration of fundamental and clinical work which we try to maintain and promote. Below are the responses we wish to make regarding some of the remarks present in the AERES report.

#### Comments from Team #3

a) In their conclusion, the committee states: *“There is no indication on whether one of the team leaders has raised specific funding for his research activity”*.

We find that this conclusion is not justified and even contradicts an earlier passage from the report: *“One team leader has raised funding regularly for his research. Support comes from non-profit organizations (FRM, Fyssen) or institutional sources (EU FP6, Lyon Hospital, the MILDT and the “région”). In addition, the other team leader has recently obtained an ANR “Jeune Chercheur”.*”

#### Comments from Team #4

a) This team aims to develop research in an important yet neglected field (at least in France): the study of neurocognitive bases of mental disorders. It is composed exclusively of researchers with teaching and (for 3 out of 4 members) clinical duties. Maintaining continuous and active leadership and student supervision is a real challenge, which obviously this team has been able to sustain in view of the positive assessment of the team's scientific production. However, a new leadership was proposed, with a relatively junior researcher, C. Demily, replacing the former leader, N. Franck, whose

teaching and clinical activities have substantially increased in recent years. The committee pointed out the lack of experience of the proposed new leader, while recognizing that she will bring novel neurobiological and genetic aspects to the team. We are well aware that there might be a delicate transition period and, taking into account the committee's remark, now propose a joint management of the team.

b) Regarding research topic 1 (cognitive control), the experts were not clear about who were the scientists involved, what were the publications related to this topic and where the financial support came from. Answer: Topic I is under the responsibility of Ph. Boulinguez. This project is supported by an ANR grant (Maladies Neurologiques et Psychiatriques) for the 2010-2012 period.

c) Later on, the committee writes: *“Not all researchers have shown a capacity to obtain grants at the national level. This is a weakness of the team. It remains unclear whether this team has received an ANR grant and another support (the amount not being indicated) for a MOPSY (?) project.”*

This statement is incorrect. Again, Project 1 is supported by an ANR grant to Ph. Boulinguez (ANR-09-MNPS-039-01; 512 K€, 2010-2012). MOPSY is supported by a grant from “Association d'aide au dépistage des maladies neurogénétiques” and a grant from Saint Jean de Dieu Hospital, Lyon to C. Demily (200 K€).

#### Other Teams of the unit

Researchers from Teams #1 (Duhamel), #2 (Sirigu) and #5 (Tremblay) were satisfied with the assessment of their respective team's scientific project and have no specific comments or concerns to address to AERES.

#### Management and life of the research unit.

Some of the comments made in this section of the report give the impression that there could be a lack of communication within the lab: *“[technical staff] regret the paucity of the information circulation on the life of the Unit, [...] are barely participating to laboratory meetings”; “[Students and post-docs] complain about the lack of communication between groups”*. It is suggested by the committee to *“Organize research seminar and journal club not limited to a particular team, but open to everybody in order to increase cross fertilization”*. The perception conveyed by these comments needs to be addressed.

a) Lab management is a difficult, time consuming task. We recognized that we may have neglected some aspects of information dissemination. As pointed out by the committee,

there is a real overload of administrative work upon the lab management team. The CNRS has acknowledged this and recently granted us a second administrative assistant. This should bring some needed improvements. We will also increase the frequency of lab meetings.

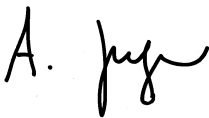
b) As for the issue of between group communication, we are somewhat surprised by the remark. This perception is not shared by the permanent scientists (as noted in the report) and from what we could tell after discussing this within our teams, it could reflect the personal point of view of some, but not all students. The large number of joint publications (>25) over the past four years shows that there are intense and productive exchanges between the teams. Most teams have their own team meetings and/or journal clubs - a normal and desirable cohesion-building practice in any group – and we hold regular seminars with invited speakers that are open to the entire lab as well as to other Lyonnais neuroscience labs. In order to exchange more formally on research conducted within the lab, we have initiated in September 2009 a bi-monthly meeting, alternating with regular seminars, during which lab members present their ongoing projects and preliminary results, a much appreciated initiative.

Lyon, 2010-04-19



Jean-René Duhamel

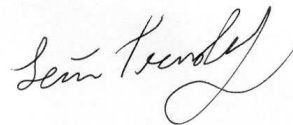
Director



Angela Sirigu



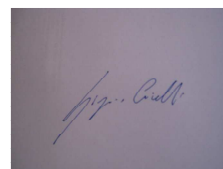
Jean-Claude Dreher



Léon Tremblay



Caroline Demily



Giorgio Coricelli