Network of European Funding for Neuroscience Research

# ERA-NET NEURON

# ‘European Research Projects on Mental Disorders’ Joint Transnational Call 2010

# Impact Report

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# Abbreviations

| | |
|---|---|
| AKA | Suomen Akatemia, Academy of Finland (Finnish NEURON partner) |
| ANR | Agence Nationale de la Recherche (French NEURON partner) |
| AT | Austria |
| BMBF | Bundesministerium für Bildung und Forschung (German NEURON partner) |
| CA | Canada |
| CIHR | Canadian Institutes of Health Research |
| CNMP | National Centre for Programme Management (Romanian NEURON partner in 2009) |
| CSO-MOH | Chief-Scientist Office, Ministry of Health (Israeli NEURON partner) |
| DE | Germany |
| DLR-PT | Deutsches Zentrum für Luft- und Raumfahrt e. V. (DLR), German Aerospace Center, Project Management Agency (German NEURON partner; NEURON coordinator)[1] |
| ECS | Early-Career Scientists |
| ERA-NET | European Research Area Network |
| ES | Spain |
| FI | Finland |
| FNR | Fond National de la Recherche (Luxembourgian NEURON partner) |
| FR | France |
| FRQS | Fonds de recherche du Québec – Santé |
| FWF | Fonds zur Förderung der Wissenschaftlichen Forschung (Austrian NEURON partner) |
| IL | Israel |
| ISCIII | Instituto de Salud Carlos III (Spanish NEURON partner) |
| IT | Italy |
| JCS | Joint Call Secretariat |
| JTC | Joint Transnational Call for research proposals |
| LU | Luxembourg |
| MICINN | Ministerio de Ciencia e Innovacion (Spanish NEURON partner) |
| MOH | Ministero della Salute (Italian NEURON partner) |
| MoU | Memorandum of Understanding |
| NCBiR | Narodowe Centrum Badan i Rozwoju (Polish NEURON partner) |
| NEURON | Network of European Funding for Neuroscience Research |
| PI | Principal Investigator |
| PL | Poland |
| RO | Romania |

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# Abstract

Research into the human brain and brain-related disorders is one of the major challenges of the 21st century. Despite significant progress in understanding the mechanisms of neurological and psychiatric disorders, effective cures are still not at hand. Developing novel treatments for diseases like schizophrenia is an endeavour that lies beyond the power of single countries. The Network of European Funding for Neuroscience Research (NEURON) provides a platform for funding organisations and ministries to develop joint activities and programmes to support transnational research projects in the field of disease-related neuroscience. A key element in NEURON's scheme is the implementation of annual Joint Transnational Calls (JTC) for research proposals, in which NEURON partners from Europe, Israel and Canada participate. The JTC cover a wide range of topics in neuroscience, neurology and psychiatry.

The topic of JTC 2010 was '*European Research Projects on Mental Disorders'*. Eleven multinational research consortia were selected for funding in a peer-review process. NEURON's quality assurance measures include continuous monitoring of the projects and the evaluation of the projects' success at the end of each JTC. Key performance indicators were developed to allow a standardised evaluation. The key performance indicators measure to which extent NEURON's objectives were achieved. The overarching objectives are:

- Enhancement of cooperation between European scientists in the field of neuroscience
- Promotion of multidisciplinary and translational research
- Support of development of innovative or shared resources and technologies
- Support of development of new strategies for diagnosis, therapy, and rehabilitation.

A questionnaire was used to collect the data necessary for the analysis of the projects. The questionnaire was submitted by the projects' coordinators together with a final report at the end of the funding period. Analysis of the data revealed that, overall, JTC 2010 contributed successfully to NEURON's objectives.

Funding under JTC 2010 strengthened transnational cooperation between neuroscientists. NEURON helped both to create new collaborations and to sustain existing ones. A number of the funded projects were carried on in other funding programmes. The collaborations produced a considerable output in terms of scientific publications. In total, 189 articles were published in peer-reviewed journals; 46 of these were joint publications by collaborating PIs. 64% of the projects published in high impact journals (IF > 10). This demonstrates the high quality of the funded research.

Each project was multidisciplinary and followed a translational approach. The projects unified basic and clinical researchers. Medical doctors participated in almost all projects and 73% of the projects involved patients. Moreover, the projects produced outcomes with direct impact on health, e.g. medications and novel technological developments.

Resources were shared efficiently among the partners of the projects. There was exchange of biomaterials and clinical data. In addition, two new patient databases as well as two new biobanks were established. These resources will be available to the scientific community even after termination of the call's funding period.

The projects contributed to new medical applications. Most of the projects (80%) developed novel strategies for prevention, diagnosis or therapy; for instance, innovative deep brain stimulation protocols for the treatment of schizophrenia and identification of new target genes interacting with antidepressants.

# Introduction

Most European countries invest considerably into research, leading to major advancements in science. Still, many important questions remain unanswered and major societal challenges need to be solved which cannot be confronted on a national level alone. In order to pool resources effectively in a concerted effort to address these issues, the European Commission has initiated European Research Area Networks (ERA-NETs) in various fields of research. The aim of the ERA-NETs is the coordination of research programmes to reduce fragmentation and duplication of efforts, thereby promoting European competitiveness in research. ERA-NETs support research that is conducted across countries, allowing research groups to jointly work on specific scientific questions, exchange ideas, and benefit from transnational expertise and resources.

The Network of European Funding for Neuroscience Research (NEURON; www.neuron-eranet.eu) was initiated in 2003 as a pilot Specific Support Action. It was developed into a full-fledged ERA NET by 2007 and was funded by the European Commission in two phases: NEURON I (2007 – 2011) and NEURON II (2012 – 2015). In 2016 NEURON entered a new phase as NEURON Cofund under the EU framework programme Horizon 2020. To-date, NEURON brings together 27 funding organisations from 19 countries engaging in a joint effort to promote excellent research in disease-oriented neuroscience.

Brain-related diseases and disorders of the nervous system impose a heavy burden on society. In Europe alone more than 380 million patients are affected[2], suffering from a considerable loss of quality of life. Moreover, according to the European Brain Council, the annual costs of brain disorders amount to approx. 800 billion €[3]. Apart from the suffering of the individual patients, these numbers highlight the impact on economies and health care systems. In many cases the underlying disease mechanisms are still not well understood and no curative treatments are available.

Hence, NEURON aims to support basic, clinical and translational research paving the way for new or improved prevention, diagnosis, therapy and rehabilitation. In the long term, NEURON wants to promote the application of knowledge and new technologies to improve the situation of patients, their families and carers.

## Joint Transnational Calls for Research Proposals

Joint Transnational Calls (JTC) for research proposals are the centrepiece of NEURON's transnational activities. Since 2008, NEURON has launched annual JTCs in the field of disease-related neuroscience, addressing important areas in fundamental neuroscience, neurology, or psychiatry. Call topics are usually broad and cover various aspects of research fields, encouraging cross-disciplinary proposals. Researchers from Europe, Israel and Canada can apply with small scale research consortia (up to five research groups). Selection criteria for funding are scientific excellence (novel ideas, methodology), feasibility of the project, international competitiveness of participating groups in the field, high quality of the collaborative interaction between the groups, a clear added value of the research consortium, and, finally, high potential of the expected results for future clinical and other health-relevant applications. Further information about the peer-review process is shown below.

In order to reduce fragmentation and pool resources, NEURON aims to enhance the cooperation between European scientists in the field of neuroscience. In this effort, NEURON is clearly disease-oriented and its overarching aim is to translate new knowledge into clinical applications. Hence, the calls were intended to promote multidisciplinary and translational research as well as the development

[2] Gustavsson A, Svensson M, Jacobi F et al. (2011): Cost of disorders of the brain in Europe 2010. Eur Neuropsychopharmacol, 21(10):718-79

[3] Olesen J, Gustavsson A, Svensson M, Wittchen HU, Jönsson B; CDBE20 10 study group; European Brain Council (2012): The economic cost of brain disorders in Europe. Eur J Neurol, 19(1):155-62

of new strategies for diagnosis, therapy and rehabilitation. Apart from promoting novel research, NEURON also supports the development of shared resources and technologies to optimise the use of resources. Above all, excellence is the main selection criterion for the research projects to be funded.

Evaluating and monitoring the results of the funded consortia intends to analyse the projects' achievements compared to the expectations of NEURON partners. Key performance indicators were developed to allow a standardized analysis[4]. Feedback from the Principal Investigators (PIs) was also obtained in order to improve, if necessary, NEURON's performance towards future calls. Hence, a questionnaire was sent to the coordinators of the JTC 2010 after the end of the funding period (see Annex II). The present report is based on the analysis of the questionnaire capturing the key performance indicators.

During the first five-year phase of the ERA-NET work (NEURON I) four JTCs were implemented. They covered the topics 'Neurodegeneration', 'Technology development', 'Mental disorders', and 'Cerebrovascular diseases' (Table 1). The research projects funded under the first three calls (JTC 2008: 'Neurodegeneration'; JTC 2009: 'Technology Development', JTC 2010 'Mental Disorders') have already been completed. Results from the evaluation of JTC 2008 and JTC 2009 have been published in the years 2014 and 2015, respectively. The reports are available through the NEURON website: www.neuron-eranet.org/en/558.php and http://www.neuron-eranet.org/en/627.php. The evaluation of the JTC 2010 is the subject of the present report. An impact report about JTC 2011 will be published after completion of the projects by 2017 (Table 1). Eventually the data of all calls will be pooled for an over-all report of the projects funded under NEURON I.

**Table 1:** *List of JTCs during NEURON I*

| Year | Topic | Impact report |
|---|---|---|
| 2008 | Neurodegeneration | published in 2014 |
| 2009 | Technology development | published in 2015 |
| 2010 | Mental disorders | published in 2017 |
| 2011 | Cerebrovascular diseases | pending |

# 'European Research Projects on Mental Disorders', JTC 2010

The JTC on mental disorders was launched in January 2010 under the umbrella of NEURON I. Thirteen funding organisations from 11 countries participated in the call: Austria (FWF), Canada (CIHR, FRQS), Finland (AKA), France (ANR), Germany (BMBF/DLR-PT), Israel (CSO-MOH), Italy (MOH), Luxemburg (FNR), Poland (NCBiR), Romania (CNMP), Spain (ISCIII, MICINN). The Joint Call Secretariat (JCS) organising proposal review and funding selection was hosted by DLR-PT (Germany). For further details refer to the call text (Annex I).

## Call Topic

Mental disorders, e.g. schizophrenia, autism and mood disorders are a major cause for morbidity, mortality and impaired quality of life. Mental disorders are complex disorders with a multifactorial causation posing great challenges for treatment and research alike. Because of these complexities a multidisciplinary research approach is required. To support this, the NEURON partner organisations selected mental disorders as the topic for JTC 2010.

A workshop on mental illness and neural dysfunction was organised in May 2009. The workshop helped to shape the call in accordance with the newest scientific advances in the field and to define

[4] The key performance indicators were developed by the French National Research Agency (ANR).

research priorities. For further information about the workshop see Annex III and the NEURON newsletter 6 (www.neuron-eranet.org/_media/NL6.pdf).

## Peer-Review and project selection

A two-step procedure was applied to select the best research consortia for funding. In the first step, 103 pre-proposals were submitted. The requested budget amounted to about 80 million €. A panel of 35 international experts reviewed the pre-proposals and provided written evaluations. Following the resulting ranking list, 32 consortia (31%) were invited to submit full proposals. The full proposals were reviewed at a panel meeting by 11 peer reviewers who provided a final ranking list. The national funding organisations jointly reached a final funding decision based on this ranking list and considering the availability of financial means. Eventually, 11 research consortia were funded (34% of full proposals). Thus, the overall success rate was 11%. The granted budget amounted to about 10 million € (see Table 2), Proposal submissions per country are summarised in Fig. 1. Additional statistics of the number of coordinators and gender distribution are available on the NEURON website (www.neuron-eranet.org/en/337.php).

**Table 2:** *Submission details and results in the two review steps.*

| Step 1 | Pre-proposals | Invited for full proposal submission |
|---|---|---|
| **No. of pre-proposals** | **103** | **32** |
| Principal Investigators involved | 402 | 129 |
| Overall funding requested | 80 M€ | 26.7 M€ |
| **Pre-proposal success rate** | **31%** | |
| **Step 2** | **Full proposals** | **Funded projects** |
| **No. of full proposals** | **32** | **11** |
| Principal Investigators involved | 129 | 47 |
| Overall funding requested | 26.7 M€ | 10 M€ |
| **Full proposal success rate** | **34%** | |
| **Overall success rate** | **11%** | |

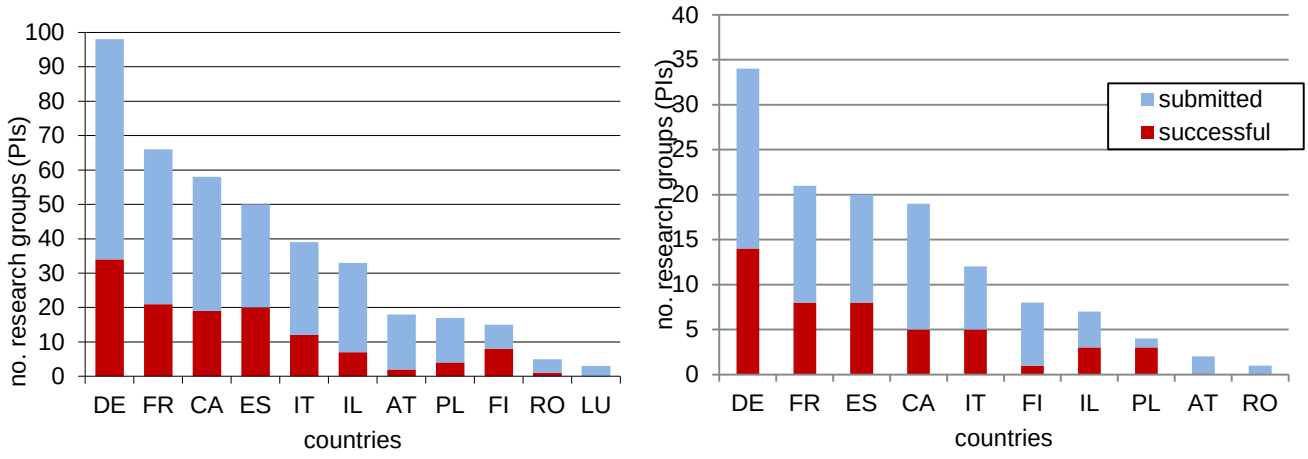


**Fig. 1:** *Number of research groups applying to JTC 2010 per country. Left panel: pre-proposals; right panel: full proposals*

## Selected Projects

The 11 projects that were selected for funding tackled different mental disorders ranging from autism to nicotine addiction, using a variety of methodological approaches. The projects are listed in Table 3.

**Table 3:** *Projects funded in the frame of JTC 2010.*

| Acronym | Project Title (short) | Coordinators and Principal Investigators | Project Keywords | Pathology |
|---|---|---|---|---|
| AMRePACELL | Development of new experimental models for mental retardation and autism | **C. Sala (IT)**<br>P. Billuart (FR)<br>E. Gundelfinger (DE)<br>J. Jaworski (PL) | Molecular, cellular and genetic approaches | autism, intellectual disabilities |
| AUSZ_EUCan | genetic mechanisms underlying brain dysfunction and structural phenotypes in schizophrenia and autistic spectrum disorders | **M.-O. Krebs (FR)**<br>K.-A. Nave (DE)<br>G. Rouleau (CA)<br>M. Parellada (ES)<br>L. Fananas (ES) | Imaging techniques, Molecular, cellular and genetic approaches, Animal models | autism, schizophrenia |
| DBS_F20rat | Describing pathophysiology to promote focal therapy in treatment of schizophrenia – an animal experimental study | **C. Winter (DE)**<br>G. Juckel (DE)<br>C. Hamani (CA)<br>I. Weiner (IL)<br>J. Pascau (ES) | Imaging techniques, Brain stimulation, Animal models, Behavioural | schizophrenia |
| EUHFAUTISM | European High-functioning Autism network | **T. Bourgeron (FR)**<br>M. Leboyer (FR)<br>A. Brice (FR)<br>C. M. Freitag (DE)<br>F. Gómez Scholl (ES) | Molecular, cellular and genetic approaches | autism |
| NeuConnect | Novel strategies for the treatment of schizophrenia | **R. Gerardy-Schahn (DE)**<br>H. Ehrenreich (DE)<br>J. Nacher (ES)<br>C. Caltagirone (IT)<br>J. Kuznicki (PL) | Imaging techniques, Electrophysiology, Molecular, cellular and genetic approaches, Pharmacology | schizophrenia |
| NICO-GENE | Modeling human polymorphisms for nicotine addiction in mice | **U. Maskos (FR)**<br>P. Robledo (ES)<br>S. Fucile (IT) | Imaging techniques, Electrophysiology, Molecular, cellular and genetic approaches, Pharmacologyl | nicotine addiction |
| PADRE | Pharmacogenomics of Antidepressant Drug Response | **J. Kirchheiner (DE)**<br>D. Gurwitz (IL)<br>A. Serretti (IT)<br>A. Pilc (PL) | Molecular, cellular and genetic approaches, Pharmacology, Pharmacogenomics | depression |
| POSEIDON | Pre-, peri- and postnatal Stress in human and non-human offspring | **M. Deuschle (DE)**<br>P.Gass (DE)<br>M. Szyf (CA)<br>G. Racagni (IT) | Epigenetics, Early life adversity, Molecular, cellular and genetic approaches, Animal models, Behavioural | depression |
| STNDBS-ICD | Subthalamic Nucleus Deep Brain Stimulation for the treatment of Impulse Control Disorders | **C. Baunez (FR)**<br>C.A. Winstanley (CA)<br>M.C. Rodriguez Oroz (ES) | Imaging techniques, Brain stimulation, Animal models, Behavioural | impulse control disorder |
| SuppHab | Improvement of treatment resistant depression by suppression of lateral habenula activity | **A. Sartorius (DE)**<br>J.-C. Cassel (FR)<br>M. Walter (DE)<br>G. Goelman (IL) | Imaging techniques, Brain stimulation, Animal models, Behavioural | depression |
| TRANSALC | Translational neuroimaging in alcoholism | **W. Sommer (DE)**<br>K.Mann (DE)<br>S. Dursun (CA)<br>P. Hyytiä (FI)<br>S. Canals (ES) | Substance use disorders, Imaging techniques, Pharmacology, Animal models | alcohol addiction |

# Impact Analysis of JTC 2010

The progress of the projects was continuously monitored during the runtime of the projects. Monitoring comprised several measures. The consortia delivered brief annual reports and presented progress and results of their projects at a mid-term and final symposium. After termination of the projects, the consortia submitted final reports summarising the most important results and achievements of the projects. Together with the final report the consortia returned a questionnaire (see Annex II) that builds the basis for this impact analysis.

The questionnaire was used as an instrument to measure key performance indicators related to NEURON's main objectives (see Table 4). Additional information was extracted from the final reports. The analysis was performed analogous to the impact analyses of JTC 2008 and 2009. These analyses allow a standardized evaluation of NEURON's funding activities and provide support for short- and long-term strategic planning. The results will help to improve NEURON's future performance.

**Table 4:** The k*ey performance indicators in relation to the objectives of the funding programme. The number of the respective question in the questionnaire is given in brackets. (Note that the order of questions in the questionnaire follows a different logic than the order of objectives to ease filling in for the researchers)*

| Objective of the Funding Programme | Key performance indicators | Measures (i.e. questions in the questionnaire) |
|---|---|---|
| 1. Enhance cooperation between European scientists working in the field of neuroscience | NEURON JTC as starter of new collaboration | Have the partners participating in the NEURON project collaborated before applying for the NEURON JTC2010? (*Question 3.1)* |
| | New research groups from other countries joining the consortium | During the life time of the project has the consortium established collaboration(s) with other teams (not already participating in the JTC 2010 project)? (*Question 3.2)* |
| | Sustainability of the collaboration (obtaining further funding for the same consortium) | Have the results led to new initiatives in other types of funding programmes? (*Question 3.3)* |
| | Intensity of collaboration (meetings, mobility) | List of meetings, lab visits/exchange of researchers, and training within the consortium (*Question 3.4)* |
| | Level of excellence of the funded research | Use of bibliometric indicators (IF, other indicators)<br>List of publications (*Question 1.2)* |
| 2. Promote multidisciplinary consortia and to encourage translational research proposals (from bench to bedside) | Composition of the consortium | List of research groups |
| | Involvement of patients | Analysis of full proposals and final reports |
| | List of patents and other outcomes with impact to health | Patents and other outcomes with impact to health (*Question 2)* |
| 3. Support development of innovative or shared resources and technologies | Evaluation of the development and the use of new resources | Has the consortium created a new or further developed an existing transnational patient registry, database or biobank? Have the consortium partners exchanged biomaterials (DNA, tissues, cells, animals)? (*Questions 4.1 and 4.2)* |
| 4. Support research to develop new strategies for diagnosis, therapy, and rehabilitation procedures | Evaluation of the development of new strategies for diagnosis, therapy, and rehabilitation procedures | Have the results of the NEURON research projects allowed the development of new strategies for: diagnosis, therapy (preparation of clinical trials), rehabilitation procedures, prevention or anything else? (*Question 5.1)* |
| | Major achievements | Please list the major achievement of the consortium. *(Question 5.2)* |

## Objective 1: Enhance Cooperation between European Scientists Working in Neuroscience

***Indicator: The NEURON JTC as a Starter of New Collaboration***

This indicator was measured through question 3.1 in the impact questionnaire: 'Have the partners participating in the NEURON project collaborated before applying to the NEURON JTC 2010? If so, please indicate the partner numbers of teams that previously collaborated.'

Two consortia (18%) included research groups that had not collaborated before applying to the NEURON JTC 2010; these are named 'new consortia' (Fig. 2). The remaining nine consortia (82%) were 'pre-existing', i.e. at least two partners of the consortium had previously worked together. In most of the pre-existing consortia (7/9) only part of the partners had previously collaborated. Only in two consortia all partners had worked together before the NEURON call. In 64% of pre-existing consortia the coordinator participated in previous collaborations.

**In summary,** the JTC 2010 supported researchers in establishing new collaborations. In addition, existing collaborations could be sustained and enlarged.

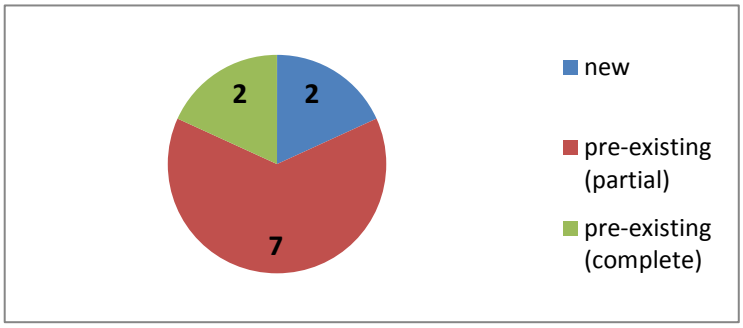


**Fig. 2:** *Initiation of new collaboration. Two consortia were composed of partners who had not collaborated before (new). In nine consortia, partners had previously collaborated; either part of the partners (pre-existing partial) or all partners (pre-existing complete) were involved in previous collaborations albeit in different subsets and in no case in a single consortium.*

***Indicator: New Research Groups from other Countries Joining the Consortium***

This indicator was measured through question 3.2 in the impact questionnaire: 'During the lifetime of the project, has the consortium established collaboration(s) with other team(s) (not already participating in the JTC 2010 project)? If so, please name the institutions and countries.'

More than half of the consortia (6/11) acquired new research groups during the runtime of the NEURON projects. Three consortia included countries that were initially not represented in the consortium. Of these, one research group came from a country that did not participate in this call, namely the United Kingdom.

**In summary**, NEURON's funding helps to extend transnational collaboration, even beyond the countries participating in a particular call. The reasons were not covered in this survey. When necessary, acquiring new partners may add resources and help to answer questions that arose during the progression of the project. The NEURON funding mechanism offers flexibility to react to those needs.

***Indicator: Sustainability of the Collaboration***

One way to measure the sustainability of NEURON-funded consortia is by counting the number of consortia that applied for further transnational funding during the lifetime of the NEURON project. This indicator was measured through question 3.3: 'Have the results led to new initiatives in other types of funding programmes?'

The majority of consortia (8/11) reported applications for further funding in other programmes.

In total, 17 new grant applications were based on the project funded by NEURON. In more than half (59%) of these applications at least two partners of the consortium participated (joint application). On average three partners were involved in joint applications.

Eight consortia submitted new grant applications. Five out of these eight consortia (63%) had joint applications. This form of sustainable collaboration occurred both in pre-existing (40%) and newly formed (60%) consortia.

New grant applications comprised both national (8) and transnational (9) funding programmes. The transnational programmes are listed below:

- EU Framework Programme 'Horizon 2020' (4)
- ERASYS App 2014 (1)
- NEURON JTC2013 (2)
- NEURON JTC2014 (1)
- NEURON JTC2015 (1)

**In summary**, the data underlines the fact that NEURON may pave the way for sustainable transnational collaboration beyond NEURON's funding period.

***Indicator: Intensity of Collaboration (Meeting, Mobility and joint publications)***

This indicator was measured by the number of meetings including two or more research groups of each individual consortium, number of lab visits/ exchange of researchers as well as number of joint publications.

All funded consortia participated in the mid-term and final symposia which were organized by NEURON. Each consortium had several meetings during the lifetime of the project. On average six meetings took place (range 4 – 13). In total, there were 65 consortium meetings. More than one third of these meetings (37%) were attended by the complete consortium (Fig. 3).

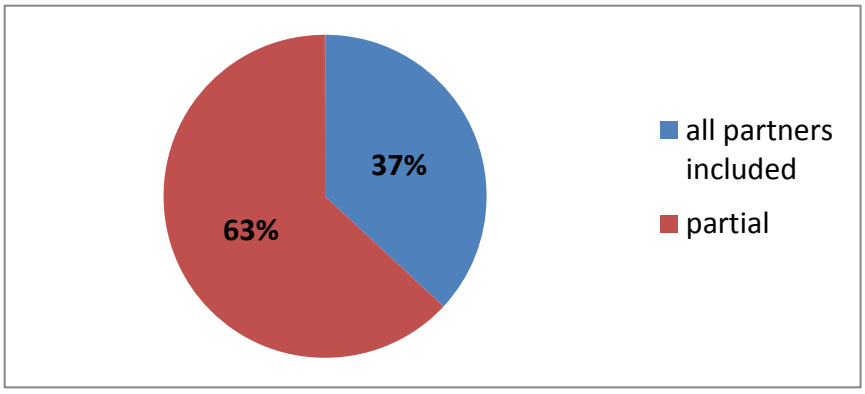


**Fig. 3:** *Participation in consortia meetings as a measure of collaboration intensity. All partners included: proportion of meetings that were attended by all partners of a given consortium; partial: proportion of meetings that were not attended by all partners*

Additionally, mobility was assessed by the number of international lab visits or exchange of researchers within the consortia. More than half of the consortia (55%) reported cross-border exchanges of personnel. Three lab visits took place on average in these "mobile" consortia.

Supporting Early-Career Scientists (ECS) is one of NEURON's major objectives. Therefore, the involvement of ECS in the projects was analysed. Overall, 44 postdocs, 75 PhD students and 10 master students worked in the projects. Most cases of exchange mentioned above were done by this group of ECS. Moreover, a total of 22 dissertations were completed within the scope of the projects.

To further assess the intensity to cooperation the number of 'joint publications' was counted. Publications that were authored by at least two research partners were defined as joint publications. In total, 46 joint publications (24% of all publications) were issued during the time period that could be covered

by this survey. All but one consortium reported joint publications. On average, each consortium had five joint publications (range: 1 – 9). Both pre-existing as well as new consortia published jointly.

**In summary**, the number of meetings and mutual lab visits indicate close collaboration within the consortia. This is also reflected in the high proportion of joint publications. In addition, many PhD students could complete their dissertations in the projects. This shows that in this way NEURON creates opportunities for ECS to advance their academic careers.

***Indicator: Level of Excellence of Funded Research***

Despite the well-known limitations of assessing publication numbers and Impact Factors, one way to measure this indicator is by analysing the lists of publications (Question 1: Please indicate the number of publications and communications in which NEURON support was acknowledged).

The NEURON-funded consortia were very productive and successful in terms of dissemination of results: Each of the consortia published articles in peer-reviewed scientific journals. In total, 189 peer-reviewed publications were reported (due date: six months after termination of project runtime) in which NEURON funding was acknowledged. On average each consortium published 17 peer-reviewed articles (range: 6 – 35).

The articles were published in peer-reviewed journals with an average impact factor of 5.74 (range: 1.10 – 42.35). Altogether, seven of the funded consortia published 23 articles (12% of all publications) in high impact journals (impact factor > 10). Below, the journals with IF > 15 are listed:

- Nature (2)
- Nature Cell Biology (1)
- Nature Medicine (1)
- Nature Neuroscience (1)
- Neuron (4)
- Physiological Reviews (1)

Apart from scientific articles, 82% of the consortia (9/11) presented their results at scientific congresses. In total, 192 communications were reported. Moreover, three consortia reported that they disseminated their results in articles dedicated to the general public. Taken together, 10 articles for the general public were published.

**In summary,** the number of publications highlights the productivity of the funded projects. Moreover, the relatively high number of publications in high impact journals demonstrates that the NEURON procedures and additional quality measures ensure excellence of the funded research. Moreover, the impact reaches beyond the scientific community as results were also disseminated among the general public.

## Objective 2: Promote Multi-disciplinary Consortia and Translational Research Proposals (from Bench to Bedside)

***Indicator: Composition of the Consortium***

To strengthen the bench to bedside approach it is important that clinicians collaborate with fundamental researchers. As an indicator for this, the number of medical doctors involved in the projects was analysed. All but one consortium included at least one medical doctor. In total, 22 PIs were medical doctors (47% of PIs). The majority of consortia (73%) were coordinated by a medical doctor.

The PIs mainly worked in basic research laboratories (68% of PIs), but also in clinical research laboratories (21%) and in hospitals (11%, Fig. 4).

All consortia applied a multidisciplinary research approach. The researchers covered different disciplines ranging from molecular biology, through psychology to psychiatry and neurology.

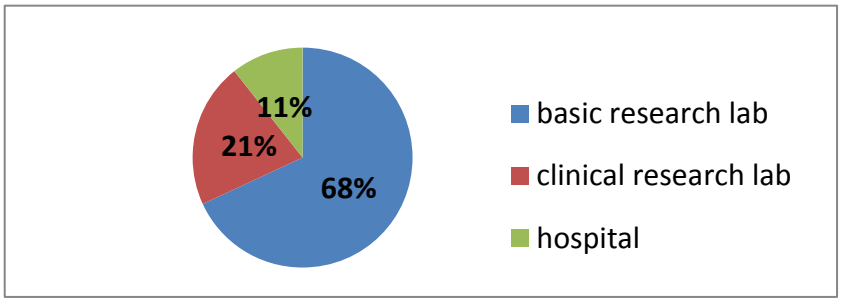


**Fig. 4:** *Composition of the consortia. The figure shows the proportion of basic and clinical research laboratories as well as hospitals that were involved in the projects.*

**In summary**, all projects funded under JTC 2010 were truly multidisciplinary. They brought together basic research labs with clinical research labs and hospitals. There was a high number of medical doctors involved who also played an important role in coordinating the projects. In this way NEURON promoted a bench to bedside approach.

### *Indicator: Involvement of Patients*

For a successful bench to bedside approach and translation of research results into clinical application, it is crucial to combine research in animal models with research in patients. This was implemented in more than half of the projects: Six projects used both animal models and performed human studies, three projects exclusively worked with animals while one project only performed a human study. Overall, animal models were used in 91%, and patients were involved in 73% of the projects.

**In summary**, patients were involved in a high number of projects. The combination of studies in animals and studies in humans fosters the translation of results from basic research into clinical application.

### *Indicator: Patents and Other Outcomes with Impact to Health*

An indicator for the degree of transfer of research results into application is the number of patents. Two consortia submitted an EU or international patent. One patent was about a new medication for anxiety disorders. The other patent was about a novel method for determining neurocircuitries and effects of neuroactive compounds by means of MRI techniques.

Another important outcome with impact to health was the creation of a firm that offers experimental designs to test pharmacological treatments of psychiatric and neurological disorders (www.neuropharmatest.com). Moreover, one consortium launched a new openly accessible database for synaptic proteins (www.synprot.de). Outcomes with impact to health included also the development of software and prototypes. For instance, the development of a new microstimulator for the application of chronic deep brain stimulation.

**In summary**, the outcome emphasizes the impact of this transnational funding scheme beyond scientific utilization of the results. The approach to encourage multidisciplinary work and translational research was fruitful in promoting substantial outcomes with an impact to health.

## Objective 3: Support Innovative or Shared Resources and Technology

***Indicator: Evaluation of the Development and the Use of New Resources***

The indicator chosen to assess this objective was the number of consortia that effectively developed and/or shared innovative resources or technology. This was measured through questions 4.1 and 4.2.

Patient databases and biobanks were established by three consortia. In total two patient databases and two biobanks were formed. Of these, one database and one biobank were entirely new set-ups, while the other database and biobank were established based on existing national resources. Likewise, patient recruitment involved both existing networks of clinicians as well as newly acquired collaborations.

All but one consortium (90%) exchanged clinical data and/or biomaterials between the partners. Clinical data was shared by more than half of the consortia (55%). Exchange of biomaterials included DNA, tissues, cells, animals. For an overview see Fig. 5.

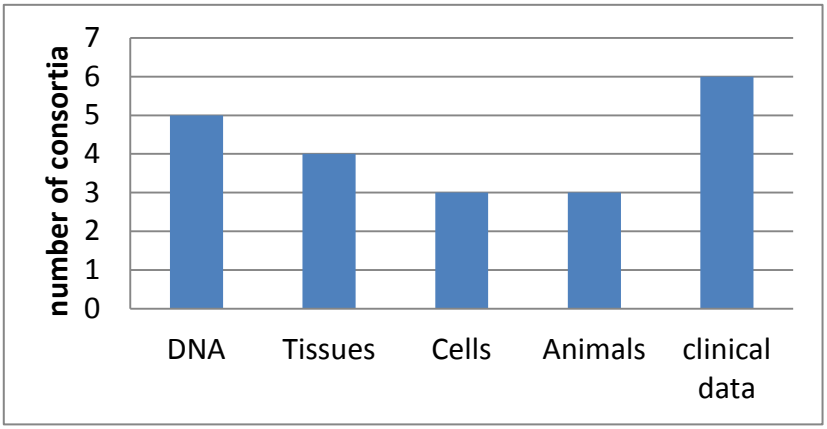


**Fig. 5:** *Exchange of biomaterials and clinical data among the consortia. Bars indicate the number of consortia reporting exchanges.*

**In summary**, resources were efficiently used within the consortia by exchanging data and materials. Moreover, both databases as well as biobanks were established. This shows that NEURON's funding scheme is suited to initiate the development of such infrastructures that can be used to collect and distribute data. Information was, however, not available if the databases and biobanks were openly accessible. It is also evident that establishing new infrastructures may require additional resources from other parties as well as already existing data and networks.

## Objective 4: Develop New Strategies for Diagnosis, Therapy, and Rehabilitation Procedures

***Indicator: Development of New Strategies for Diagnosis and Therapy, and Rehabilitation Procedures (Question 5.1)***

The majority of consortia (80%) reported the development of new strategies for prevention, diagnosis or therapy. More than half of the consortia (six, 55%) reported the development of **novel strategies for therapies**, including:

- advances in deep brain stimulation for the treatment of different mental disorders (schizophrenia, impulse control disorders and depression)
- the identification of genes associated with the individual responsiveness to antidepressive medication,
- a better understanding of the brain circuits underlying impulse control deficits in patients with Parkinson's disease.

Four consortia (36%) reported advancements towards **new diagnostic strategies**. These included:

- the establishment of a database of the clinical (incl. genotyping) and cognitive assessment of a large cohort of patients with autism spectrum disorders,
- the identification of a new candidate gene (MORC1) associated with stress related disorders,
- the characterisation of epigenetic changes related to early life stress.

Three consortia (27%) reported that their results allowed the development of **new prevention strategies**. These included:

- pharmacological treatment with the antipsychotic drug (lurasidone) during a critical time window to prevent neoplastic dysfunction after early life stress,
- the application of chronic deep brain stimulation in juvenile rats to prevent the manifestation of schizophrenia in later life,
- new findings about the role of specific receptor subunits (B4 nicotinic receptors) in nicotine addiction.

**In summary**, the funded consortia contributed to the improvement of prevention, diagnosis and therapy of mental disorders. Rehabilitation was, however, not addressed by the consortia. As for many mental disorders, like schizophrenia, effective therapies are still lacking, finding new ways for cure is highly important. Yet, in particular patients suffering from long-term conditions also need rehabilitation to improve their quality of life. This aspect could be considered in future funding measures.

***Indicator: Major Achievements of the Funded Consortia***

From a list in the questionnaire the researchers could pick themes that described the major achievements of their consortia (Question 5.2)

The consortia reported a broad spectrum of major achievements from the generation of new model systems to the development of innovative therapies (Fig. 6).

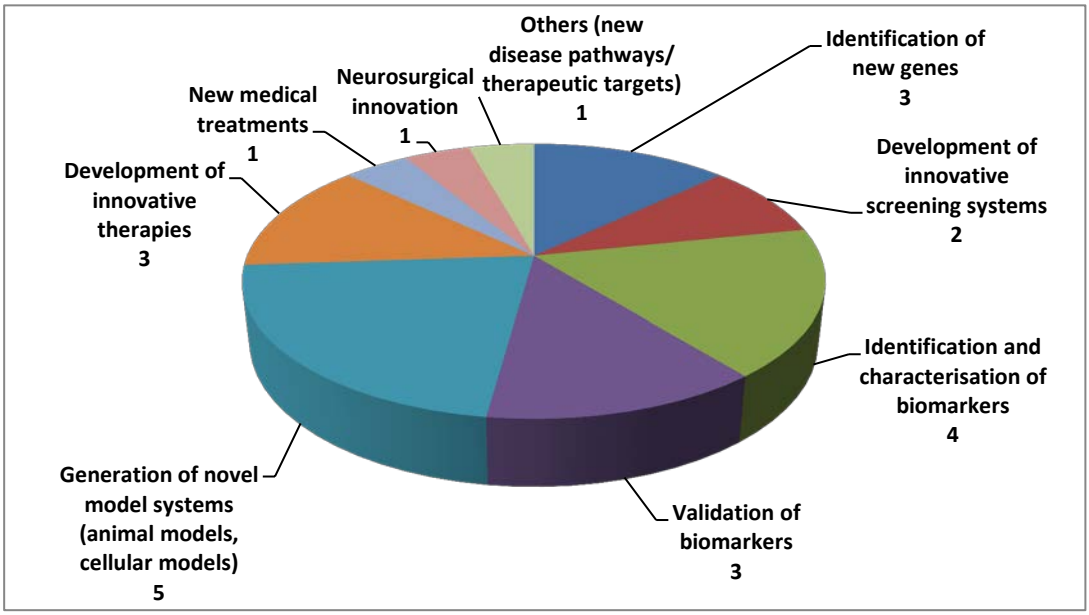


**Fig. 6:** *Major achievements. The numbers in the pie-chart indicate the number of consortia reporting a given achievement.*

**In summary**, the major achievements of the consortia span the way from bench to bedside demonstrating the translational character of NEURON's funding scheme. The consortia improved our understanding of the pathophysiology of mental disorders, i.e. by investigating disease pathways. Based on such pre-clinical findings, the consortia validated biomarkers and further developed new treatments that will potentially be translated into clinical application. In sum, the outcome of the funded research promises to significantly impact on health research.

## Final Symposium

The consortia had the opportunity to present their projects at a final symposium that was held in Lisbon in January 2014. The results of the projects were presented in short talks given by the coordinators and in a poster session by the early career scientists.

Two members of the original review panel of this call attended the symposium to evaluate the projects' results. Both reviewers expressed their content about the progress and the results of the projects. They rated the quality of the projects as excellent and concluded that the aims of the call were achieved. The reviewers also noted that a major break-through in terms of therapy could not be expected within the limited run time of three years.

The projects' PIs were also asked to comment on NEURON's funding scheme in general and the implementation of JTC 2010 in particular along following guiding questions:

- Is funding of this kind in the neuroscience field useful and is there an added value of the collaboration?
- Was the call topic appropriate?
- Were the procedures (application, review, communication with the JCS, and national procedures) suitable?

In general, the PIs were enthusiastic about the NEURON funding initiative. It was also pointed out by several scientists that they were very satisfied with the support from their national contact points and from the JCS. Also, the low administrative effort during the application process was specifically mentioned. Additionally, many researchers pointed out that the collaborative approach, the sharing of facilities and expertise was a key element for the success of their projects.

The PIs controversially discussed the impact of research funding on society and the value of applied vs. basic science. It was pointed out that the application of research results is crucial for the development of novel diagnostics and therapies. It was stressed that pre-clinical research is equally important as it lays the foundation for subsequent steps to clinical application. It was noted that the timeline for visible achievements is usually longer than the project run time of NEURON-funded projects. Hence, the direct impact of NEURON's funding scheme on health is difficult to assess.

The PIs suggested repeating call topics regularly so that (existing) consortia could re-apply for new projects. A three-year run time is relatively short and many projects gained momentum towards the end of the regular funding period.

There was a general agreement that the review and JCS related processes were quick and did not involve much bureaucracy. The PIs, however, criticized that national requirements were not standardized and that the available national budgets were in some cases too low to hire staff.

In conclusion, NEURON's funding scheme was rated very positive by the funded PIs, although some aspects may be improved. The PIs and reviewers agreed that NEURON's aim of funding high level research projects towards the development of clinical applications was achieved.

# Overview of all Results and Conclusions

The analysis of the key performance indicators reveals that the four principal objectives of NEURON were achieved with the implementation of JTC 2010 'Mental Disorders'. NEURON's funding enhanced the collaboration between researchers in Europe and beyond. New transnational consortia were formed. New collaborations extended even beyond the range of countries participating in the call. At the same time JTC 2010 offered the opportunity for PIs to sustain existing collaborations. The new collaborations initiated by NEURON are sustainable. Many researchers continued working together and jointly applied for grants in other funding programmes. The output in terms of number and quality of publications underline the excellence of the funded collaborations.

Moreover, the funded consortia were truly multidisciplinary and applied a translational approach. This is reflected in a high number of medical doctors participating in the consortia as well as the involvement of patients in most of the projects. The projects yielded outcomes that have a positive impact on health, e.g. prototypes as well as patents for new medication and novel methods.

NEURON also promoted the development of innovative and shared resources and technologies. New databases and biobanks were established. The researches also exchanged both biomaterial and data with their consortium partners thus effectively using the funding provided by NEURON. It remains unclear in how far data and materials were made openly accessible. This aspect should be covered in future evaluations of the NEURON calls.

Finally, NEURON's funding supported the development of new strategies for diagnosis, therapy and prevention. The results obtained by the consortia are promising to lead to new approaches and medical application. For instance, advances in deep brain stimulation and identification of genes associated with the individual responsiveness to antidepressive medication may be applied for better therapies of mental disorders.

The direct feedback given by the researches during the final symposium demonstrates that NEURON is very positively received by the scientific community despite some criticism concerning national administrative regulations and budgets.

**Table 5:** *Quantified responses by funded research consortia*

| Objective of the Funding Programme | Key performance indicators | Results (percent of funded consortia, if not specified). |
|---|---|---|
| **1. Enhance cooperation between European scientists working in the field of neuroscience** | NEURON JTC as starter of new collaboration | → 18% were newly formed consortia<br>→ 64% pre-existing consortia (part of PIs collaborated before)<br>→ 18% pre-existing consortia (all PIs collaborated before) |
| | New research groups from other countries joining the consortium | → 55% acquired new collaborations during the lifetime of the project. |
| | Sustainability of the collaboration (obtaining further funding for the same consortium) | → 45% had at least 2 PIs applying jointly for further funding.<br>→ 40% of these were newly formed consortia |
| | Intensity of collaboration (meetings, mobility, joint publications) | → 100% attended the mid-term and final NEURON symposia<br>→ On average each consortium held 6 meetings; 35% of the meetings were attended by all partners<br>→ 46 articles (24% of all publications) were published jointly in peer-reviewed journals |
| | Level of excellence of the funded research | → 64% published at least one primary research publication in a peer-reviewed journal with an Impact Factor above 10 (in total 23 articles) |
| **2. Promote multidisciplinary consortia and to encourage translational research proposals (from bench to beside)** | Composition of the consortium | → In 73% the coordinator was a medical doctor.<br>→ In 91% at least one PI was a medical doctor.<br>→ PIs worked in basic (68% of PIs) and clinical (21% of PIs) research labs as well as hospitals (11% of PIs) |
| | Involvement of patients | → Patients were involved in 73% of the projects. |
| | Patents and other outcomes with impact to health | → 18% submitted at least one European or international patent; other outcomes with impact to health comprise development of software and prototypes, the launch of services and platforms |
| **3. Support development of innovative or shared resources and technologies** | Development and the use of new resources | → 90% exchanged biomaterials and data (DNA: 45%, tissues: 36%, cells: 27%, animals 27%, clinical data: 55%) |
| **4. Support research to develop new strategies for diagnosis, therapy, and rehabilitation procedures** | Development of new strategies | → 27% developed new strategies for prevention<br>→ 36% developed new strategies for diagnosis<br>→ 55% developed new strategies for therapy |
| | Major achievements | → The major achievements that were most frequently reported include: novel model systems (45%) biomarkers (36%) and development of innovative therapies (27%) |

**Table 6:** *Summary of the results per project.*

| Indicator/Measure | AMRe-PACELL | AUSZ_EUCan | DBS_F20rat | EUHFAU HFAU-TISM | Neu-Connect | NICO-GENE | PADRE | POSEI-DON | STNDBS-ICD | SuppHab | TRANS-ALC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **New consortium** | no | no | no | no | no | yes | no | no | no | yes | no |
| **Addition of research group** | yes | yes | no | yes | no | yes | no | yes | yes | no | no |
| **Subsequent applications** | no | yes | yes | yes | yes | yes | no | yes | yes | no | yes |
| **Intensity of collaboration** | | | | | | | | | | | |
| - number of meetings | 4 | 11 | 7 | 3 | 5 | 5 | 2 | 5 | 4 | 6 | 13 |
| - meetings with all partners | 1 | 2 | 1 | 2 | 5 | 0 | 1 | 3 | 5 | 1 | 3 |
| - number of lab visits | 2 | 6 | 3 | | 3 | - | 2 | 2 | - | - | - |
| **Excellence** | | | | | | | | | | | |
| - total number of publications | 22 | 35 | 9 | 27 | 25 | 15 | 10 | 7 | 6 | 20 | 13 |
| - number of joint publications | 1 | 8 | 5 | 9 | 6 | 4 | 5 | 4 | 2 | 0 | 2 |
| - number of journals IF > 10 | 7 | 3 | 0 | 4 | 1 | 5 | 0 | 0 | 0 | 1 | 2 |
| **Composition of consortia** | | | | | | | | | | | |
| - COO is a medical doctor | yes | yes | yes | no | no | yes | yes | yes | no | yes | yes |
| - number medical doctors | 1 | 2 | 4 | 3 | 2 | 1 | 2 | 2 | 0 | 2 | 3 |
| - basic research labs involved | 3 | 2 | 3 | 3 | 4 | 3 | 3 | 2 | 2 | 3 | 4 |
| - clinical research labs involved | 1 | 1 | 0 | 1 | 1 | | 1 | 2 | 1 | 1 | 1 |
| - hospitals involved | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Involvement of patients** | yes | yes | yes | yes | yes | no | yes | no | yes | yes | yes |
| **Number of patents** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **Number of databases/registries/biobanks** | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| **Exchange of:** | | | | | | | | | | | |
| - DNA | no | yes | no | no | yes | yes | no | yes | no | no | yes |
| - tissues | no | no | yes | no | yes | yes | no | yes | no | no | no |
| - cells | yes | no | no | no | no | yes | no | yes | no | no | no |
| - animals | no | no | no | no | yes | yes | no | no | no | yes | no |
| - clinical data | no | yes | no | yes | yes | no | yes | yes | no | no | yes |
| **Novel strategies for:** | | | | | | | | | | | |
| - diagnosis | no | yes | no | yes | no | yes | no | yes | no | no | no |
| - therapy | no | yes | yes | no | no | yes | yes | no | yes | yes | no |
| - rehabilitation | no | no | no | no | no | no | no | no | no | no | no |
| - prevention | no | no | yes | no | no | yes | no | yes | no | no | no |
| **Major achievements:** | | | | | | | | | | | |
| - identification of new genes | no | yes | no | yes | no | no | yes | no | no | no | no |
| - screening systems | no | yes | no | no | yes | no | no | no | no | no | no |
| - identification of biomarkers | no | no | yes | no | yes | no | yes | no | yes | no | no |
| - validation of biomarkers | no | yes | no | no | no | no | yes | no | yes | no | no |
| - novel model systems | yes | yes | no | no | yes | yes | no | no | yes | no | no |
| - innovative therapies | no | yes | yes | no | no | no | no | no | no | yes | no |
| - new medical treatments | no | no | no | no | no | yes | no | no | no | no | no |
| - new medical devices | no | no | no | no | no | no | no | no | no | no | no |
| - neurosurgical innovation | no | no | no | no | no | no | no | no | yes | no | no |
| - Others | no | no | no | no | no | no | no | no | no | no | yes |

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# Annex I - Excerpt of the Call Text JTC 2010

## 1. Purpose

The maintenance, improvement and restoration of human health are of fundamental importance and priority in all countries. Biomedical and health research provide an important basis for the improvement of healthy living. Among the many diseases affecting human health, disorders of the brain are major causes of morbidity, mortality and impaired quality of life. According to estimates by the World Health Organisation (World Health Report 2001), more than one billion people suffer from disorders of the central nervous system. In Europe, disorders of the brain account for approximately one-third of the total burden of all diseases. Thus, neuroscience research and its translation into diagnostic and therapeutic measures are of high priority.
In this context, the 'Network of European Funding for Neuroscience Research' (NEURON) has been established under the ERA-Net scheme of the European Commission (http://www.neuron-eranet.eu). The goal of the ERA-Net NEURON is to coordinate the research efforts and funding programmes of European countries in the field of disease related neuroscience.
Under the umbrella of NEURON, a joint transnational call is launched in the field of mental disorders. The following funding organisations have agreed to fund the joint call for multinational research projects in this scientific area. The call will be conducted simultaneously by the funding organisations in their respective countries and coordinated centrally by the Joint Call Secretariat (JCS).

- Austrian Science Fund (FWF), Austria
- Canadian Institutes of Health Research (CIHR), Canada
- Fonds de la Recherche en Santé du Québec (FRSQ), Canada
- Academy of Finland (AKA), Finland
- National Funding Agency for Research (ANR), France
- Federal Ministry of Education and Research (BMBF), Germany
- Chief Scientist Office, Israel Ministry of Health (CSO-MOH), Israel
- Ministry of Health (MOH), Italy
- National Research Fund (FNR), Luxembourg
- National Centre for Research and Development (NCBiR), Poland
- National Centre for Programme Management (CNMP), Romania
- Ministry of Science and Innovation (MICINN), Spain
- Institute of Health Carlos III (ISCIII) , Spain

## 2. Aim of the call

The aim of the call is to enable multi-national, collaborative research projects that will address important questions relating to mental disorders. The call may receive proposals within the breadth of research from understanding basic mechanisms of disease through proof-of-concept clinical studies in man. These may include research on depression and bipolar disorders, phobia and anxiety disorders, schizophrenia and psychotic disorders, substance use disorders, and other mental disorders. Research on dementia is not included in the present call.
The ERA-Net NEURON funding organisations particularly wish to promote **multi-disciplinary work** and to encourage **translational research proposals** that combine basic and clinical approaches.
Research proposals should cover at least one of the following areas:
a) Fundamental research on the pathogenesis and aetiology of mental disorders. This may include the development of innovative or shared resources and technologies. The relevance of the research to disease must be clearly indicated.
b) Research to develop new strategies for (early) diagnosis, therapy, and rehabilitation procedures for mental disorders.
The individual components of joint applications should be complementary and contain novel, ambitious ideas. There should be clear added value in funding the collaboration over the individual projects.
[…]

## 4. Evaluation and decision

[…]

### 4.2 Peer-review of proposals

The reviewers will carry out the evaluation according to specific evaluation criteria:

1. Relevance to the aim(s) of the call

2. Scientific quality of the proposal (innovation potential, methodology)
3. International competitiveness of participating research groups in the field(s) of the proposal (previous work in the field, expertise of the research groups)
4. Feasibility of the project (adequacy of project work plan, budgetary and other resources, time schedule)
5. Quality of collaborative interaction between the groups, and added value, on both levels scientific and transnational, of the research consortium. Consortia not meeting this criterion will be downgraded.
6. Potential of the expected results for future clinical and other health relevant applications.

### 4.3 Decision

[…]
The international Joint Peer Review Panel will establish a ranking list of the proposals. Based on this ranking list, the Call Steering Committee will suggest the projects to be funded. Based on these recommendations, final decisions will be made by the national funding agencies and will be subject to budgetary considerations.

[…]

# Annex II- Questionnaire / Impact of the Project

Results of this questionnaire may be published in an anonymised way to give an overview of each call's general output.

### Q.1 Publications and communications

*Please indicate the number of publications and communications in which NEURON support was **acknowledged**. Please do not mention publications anterior to the start of the project.*

Q.1.1 Number of publications and communications

| Type of publication | Total N° |
|---|---|
| Peer reviewed articles | |
| Books or book's chapters | |
| Reviews | |
| Articles dedicated to general public | |
| Communications in scientific congresses | |
| Dissertations | |
| Others | |

*Add lines as appropriate*

### Q.1.2 List of publications and communications

*Please list the publications that result from the funded project. Please group them according to the categories presented in the table above. In column 1, please underline the name of the NEURON-funded partners. In column 2, please point out the project partners involved by using the numbering applied in section I General information (e.g. partner 1 or P1).*

| **Publication** (authors, title, journal, year, issue, pp.) | Partner(s) | Impact factor |
|---|---|---|
| | | |
| | | |

*Add lines as appropriate*

### Q.2 Patents and other outputs with impact to health

### Q.2.1 Number of patents, licences and other outputs

| Type of patent or licence | N° Submitted | N° Obtained |
|---|---|---|
| International patents | | |
| EU patents | | |
| National patents | | |
| Licences (of exploitation/cession) | | |
| Creation of firm (entreprise) | | |
| Other (specify) | | |

*Add lines as appropriate*

### Q.2.2 List of patents

*If details regarding patents need to be treated confidentially, please indicate as such.*
*In column 2, please point out the project partners involved by using the numbering applied in section I General information (e.g. partner 1 or P1)*

| Patent description | Partner(s) involved | Main partner (moderator) |
|---|---|---|
| | | |
| | | |

*Add lines as appropriate*

### Q.2.3 List of other outputs with impact to health

*Please list below:*

| | Category: if applicable, please specify | Partner(s) |
|---|---|---|
| ☐ | software and other prototypes: | |
| ☐ | launching of a product or service, new project or contract: | |
| ☐ | creation of a platform available to a community: | |
| ☐ | creation of a firm, fundraising: | |
| ☐ | others (please specify): | |

### Q.3 Consortium – collaboration and sustainability

*Please tick when applicable*

***Q.3.1*** Have the partners participating in the NEURON project collaborated before applying for NEURON JTC 2010? YES ☐ NO ☐

►**If YES**, please indicate the partner numbers of teams that previously collaborated:

……

***Q.3.2*** During the lifetime of the project has the consortium established collaboration(s) with other team(s) (not already participating in the JTC 2010 project)? YES ☐ NO ☐

►**If YES**, please name the institutions and countries:

…..

***Q.3.3*** Have the results led to new initiatives in other types of funding programmes (e.g. grants, grant applications) ? YES ☐ NO ☐

►**If YES,** please specify the partners who applied (partner numbers) and the corresponding programme (FP7, etc.) :

……

### Q.3.4 Intensity of collaboration: Meetings, human mobility and training within the consortium

**A. Collaboration meetings**

| **Meetings involving at least two partners of the project** (e.g. consortium meetings, WP meetings, workshops, or others) | **Partners involved** |
|---|---|
| | |
| | |

*Add lines as appropriate*

**B Young scientists' involvement in the project, training and mobility between partners**
*1. Please list academic staff involved in the project. Please also list postdocs, PhD students, master students, undergrad students…*
*2. Furthermore, please indicate if lab visits or longer-term exchanges between partners happened based on NEURON funding.*

| **Partner #** | **Career stage** | **Academic dissertation** (year, degree) | **Year of birth** | **Name, Gender** | **Exchange from / to** (country) | **Duration of Exchange** weeks / months |
|---|---|---|---|---|---|---|
| | | | | | From … to ... | |
| | | | | | | |

**Q.4 Development of innovative or shared resources and technologies**

***Q.4.1*** Has the consortium created a new or further developed an existing transnational…

Patient registry ☐ Patient database ☐ Biobank ☐ N/A ☐ ?

►**If YES, please complete** (repeat this section as many times as necessary):

- Name of the registry/database/biobank: ……
- How was the registrydatabase/biobank created?

  Totally new set-up ☐ By compiling national sources that existed already ☐

- How were new patients recruited?
  - o Via already existing network of clinicians ☐
  - o By the establishment of contact with NEW networks of clinicians ☐
- Please specify how the registry/database/biobank will be maintained/financed after the end of this projects ……..

***Q.4.2*** Have the consortium partners exchanged bioresources (DNA, tissues, cells, animals)?

DNA ☐ tissues ☐ cells ☐ animals ☐ clinical data ☐ N/A ☐

►**If YES, please specify:**

- Were there enough samples in order to reach the goal? YES ☐ NO ☐
- Have the samples allowed common studies? YES ☐ NO ☐

## Q.5 Potential health impact / achievements

***Q.5.1*** Have the results of the NEURON research projects allowed the development of new strategies for:

- Diagnosis ☐
- Therapy (Preparation of clinical trials) ☐
- Rehabilitation procedures ☐
- Prevention ☐
- Other (please specify) ……. ☐

***Q.5.2*** Please list the major achievements of the consortium

| Achievements | | Please specify |
|---|---|---|
| Identification of new genes | ☐ | |
| Development of innovative screening systems | ☐ | |
| Identification and characterisation of biomarkers | ☐ | |
| Validation of biomarkers | | |
| Generation of novel model systems (animal models, cellular models) | ☐ | |
| Development of innovative therapies | ☐ | |
| New medical treatments | ☐ | |
| New medical devices | ☐ | |
| Neurosurgical innovation | ☐ | |
| Others | ☐ | |

*Add lines as appropriate*

# Annex III - Workshop “Mental illness and neural dysfunction”

The workshop “Mental illness and neural dysfunction” was held in Paris in May 2009 to delineate the challenges facing the scientific community, and to define the priorities for research into mental disorders. Eight internationally renowned experts shed light on bipolar disorders, schizophrenia, autism, and drug addiction. The workshop provided pivotal input that helped to shape the call text.

Presentations at the workshop:

- Dr Marlies Dorlöchter, Germany, NEURON coordinator: "*The ERA-Net NEURON*"
- Prof. Guy Goodwin, UK: "*Bipolar disorder: neurobiology, challenge of early detection and treatment"*
- Prof. Eduard Vieta,Spain: *"Neurocognition and functional outcome in bipolar disorder"*
- Prof. Thomas Bourgeron, France: *"Genetic basis of autism? Is autism a synaptopathy?"*
- Prof. Andreas Meyer-Lindenberg, Germany: *"Neurogenetic mechanisms of Schizophrenia"*
- Prof. Celso Arrango Lopez, Spain: *"Schizophrenia, a neurodegenartive disorder?"*
- Prof. Paul Bebbington, UK: *"Epidemiology of mental illnesses"*
- Prof. Véronique Deroche-Gamonet, France: *"Questions about addictions that can or should be addressed by experimental research"*
- Prof. Elizabeth Kuipers, UK: *"Cognitive behavioural and family therapy for psychosis"*

For further information see the foresight report and NEURON newsletter 6 that are published on the NEURON website (report: www.neuron-eranet.org/_media/Paris_Workshop_Report_May_2009.pdf, newsletter: www.neuron-eranet.org/_media/NL6.pdf).