RC-Specific Evaluation of NEUROMED – Neuroscience research at the Institute of Biomedicine

Seppo Saari & Antti Moilanen (Eds.)
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

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Title:
International Evaluation of Research and Doctoral Training at the University of Helsinki 2005–2010: RC-Specific Evaluation of NEUROMED – Neuroscience research at the Institute of Biomedicine

Summary:
Researcher Community (RC) was a new concept of the participating unit in the evaluation. Participation in the evaluation was voluntary and the RCs had to choose one of the five characteristic categories to participate.

Evaluation of the Researcher Community was based on the answers to the evaluation questions. In addition, a list of publications and other activities were provided by the TUHAT system. The CWTS/Leiden University conducted analyses for 80 RCs and the Helsinki University Library for 66 RCs. Panellists, 49 and two special experts in five panels evaluated all the evaluation material as a whole and discussed the feedback for RC-specific reports in the panel meetings in Helsinki. The main part of this report is consisted of the feedback which is published as such in the report.

Chapters in the report:
1. Background for the evaluation
2. Evaluation feedback for the Researcher Community
3. List of publications
4. List of activities
5. Bibliometric analyses

The level of the RCs' success can be concluded from the written feedback together with the numeric evaluation of four evaluation questions and the category fitness. More conclusions of the success can be drawn based on the University-level report.

RC-specific information:
Main scientific field of research: Medicine, Biomedicine and Health Sciences

RC-specific keywords: Addiction, neuroscience, neuroimaging, pain, sleep

Participation category:
4. Research of the participating community represents an innovative opening

RC's responsible person:
Stenberg, Tarja

Keywords:
Research Evaluation, Meta-evaluation, Doctoral Training, Bibliometric Analyses, Researcher Community

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Foreword

The evaluation of research and doctoral training is being carried out in the years 2010–2012 and will end in 2012. The steering group appointed by the Rector in January 2010 set the conditions for participating in the evaluation and prepared the Terms of Reference to present the evaluation procedure and criteria. The publications and other scientific activities included in the evaluation covered the years 2005–2010.

The participating unit in the evaluation was defined as a Researcher Community (RC). To obtain a critical mass with university-level impact, the number of members was set to range from 20 to 120. The RCs were required to contain researchers in all stages of their research career, from doctoral students to principal investigators (PIs). All in all, 136 Researcher Communities participated in this voluntary evaluation, 5857 persons in total, of whom 1131 were principal investigators. PIs were allowed to participate in two communities in certain cases, and 72 of them used this opportunity and participated in two RCs.

This evaluation enabled researchers to define RCs from the “bottom up” and across disciplines. The aim of the evaluation was not to assess individual performance but a community with shared aims and researcher-training activities. The RCs were able to choose among five different categories that characterised the status and main aims of their research. The steering group considered the process of applying to participate in the evaluation to be important, which lead to the establishment of these categories. In addition, providing a service for the RCs to enable them to benchmark their research at the global level was a main goal of the evaluation.

The data for the evaluation consisted of the RCs' answers to evaluation questions on supplied e-forms and a compilation extracted from the TUHAT – Research Information System (RIS) on 12 April 2011. The compilation covered scientific and other publications as well as certain areas of scientific activities. During the process, the RCs were asked to check the list of publications and other scientific activities and make corrections if needed. These TUHAT compilations are public and available on the evaluation project sites of each RC in the TUHAT-RIS.

In addition to the e-form and TUHAT compilation, University of Leiden (CWTS) carried out bibliometric analyses from the articles included in the Web of Science (WoS). This was done on University and RC levels. In cases where the publication forums of the RC were clearly not represented by the WoS data, the Library of the University of Helsinki conducted a separate analysis of the publications. This was done for 66 RCs representing the humanities and social sciences.

The evaluation office also carried out an enquiry targeted to the supervisors and PhD candidates about the organisation of doctoral studies at the University of Helsinki. This and other documents describing the University and the Finnish higher education system were provided to the panellists.

The panel feedback for each RC is unique and presented as an entity. The first collective evaluation reports available for the whole panel were prepared in July–August 2011. The reports were accessible to all panel members via the electronic evaluation platform in August. Scoring from 1 to 5 was used to complement written feedback in association with evaluation questions 1–4 (scientific focus and quality, doctoral training, societal impact, cooperation) and in addition to the category evaluating the fitness for participation in the evaluation. Panellists used the international level as a point of comparison in the evaluation. Scoring was not expected to go along with a preset deviation.

Each of the draft reports were discussed and dealt with by the panel in meetings in Helsinki (from 11 September to 13 September or from 18 September to 20 September 2011). In these meetings the panels also examined the deviations among the scores and finalised the draft reports together.

The current RC-specific report deals shortly with the background of the evaluation and the terms of participation. The main evaluation feedback is provided in the evaluation report, organised according to the evaluation questions. The original material provided by the RCs for the panellists has been attached to these documents.
On behalf of the evaluation steering group and office, I sincerely wish to thank you warmly for your participation in this evaluation. The effort you made in submitting the data to TUHAT-RIS is gratefully acknowledged by the University. We wish that you find this panel feedback useful in many ways. The bibliometric profiles may open a new view on your publication forums and provide a perspective for discussion on your choice of forums. We especially hope that this evaluation report will help you in setting the future goals of your research.

Johanna Björkroth
Vice-Rector
Chair of the Steering Group of the Evaluation

Steering Group of the evaluation
Steering group, nominated by the Rector of the University, was responsible for the planning of the evaluation and its implementation having altogether 22 meetings between February 2010 and March 2012.

Chair
Vice-Rector, professor Johanna Björkroth

Vice-Chair
Professor Marja Airaksinen

Chief Information Specialist, Dr Maria Forsman
Professor Arto Mustajoki
University Lecturer, Dr Kirsi Pyhältö
Director of Strategic Planning and Development, Dr Ossi Tuomi
Doctoral candidate, MSocSc Jussi Vauhkonen
Panel members

CHAIR
Professor Lorenz Poellinger
Cancer biology, cell and molecular biology
Karolinska Institute, Sweden

VICE-CHAIR
Professor Cornelia van Duijn
Genetic epidemiology, Alzheimer’s disease and related disorders
Erasmus Medical Centre, the Netherlands

Professor Johanna Ivaska
Molecular cell biology, cell adhesion, cancer biology
University of Turku, VTT Technical Research Centre, Finland

Professor Olli Lassila
Immunology, medical microbiology
University of Turku, Finland

Professor Hans-Christian Pape
Neuroscience, neurophysiology
University of Münster, Germany

Professor Thomas Ruzicka
Dermatology, allergology
Ludwig-Maximilians-Universität (LMU) München, Germany

Professor Lars Terenius
Experimental alcohol and drug dependence research, mental disorders, preventive medicine
Karolinska Institute, Sweden

Professor Peter York
Physical pharmaceutics, pharmaceutical chemistry, pharmaceutical technology
University of Bradford, Great Britain

The panel, independently, evaluated all the submitted material and was responsible for the feedback of the RC-specific reports. The panel members were asked to confirm whether they had any conflict of interests with the RCs. If this was the case, the panel members disqualified themselves in discussion and report writing.

Added expertise to the evaluation was contributed by two evaluators outside the panels and by three members from the other panels.

External Experts
Professor Olli Carpén
Pathology, cancer cell metastasis
University of Turku
Finland

Professor Anders Linde
Oral biochemistry
Faculty of Odontology
Göteborg University
Sweden
Experts from the Other Panels

Professor Jan-Otto Carlsson, from the Panel of Natural Sciences
Professor Danny Huylebroek, from the Panel of Biological, Agricultural and Veterinary Sciences
Professor Holger Stark, from the Panel of Natural Sciences

EVALUATION OFFICE

Dr Seppo Saari, Doc., Senior Adviser in Evaluation, was responsible for the entire evaluation, its planning and implementation and acted as an Editor-in-chief of the reports.

Dr Eeva Sievi, Doc., Adviser, was responsible for the registration and evaluation material compilations for the panellists. She worked in the evaluation office from August 2010 to July 2011.

MScSc Paula Ranne, Planning Officer, was responsible for organising the panel meetings and all the other practical issues like agreements and fees and editing a part the RC-specific reports. She worked in the evaluation office from March 2011 to January 2012.

Mr Antti Moilanen, Project Secretary, was responsible for editing the reports. He worked in the evaluation office from January 2012 to April 2012.

TUHAT OFFICE

Provision of the publication and other scientific activity data

Mrs Aija Kaitera, Project Manager of TUHAT-RIS served the project ex officio providing the evaluation project with the updated information from TUHAT-RIS. The TUHAT office assisted in mapping the publications with CWTS/University of Leiden.

MA Liisa Ekebom, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation. She also assisted the UH/Library analyses.

BA Liisa Jäppinen, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation.

HELSINKI UNIVERSITY LIBRARY

Provision of the publication analyses

Dr Maria Forsman, Chief Information Specialist in the Helsinki University Library, managed with her 10 colleagues the bibliometric analyses in humanities, social sciences and in other fields of sciences where CWTS analyses were not applicable.
Acronyms and abbreviations applied in the report

External competitive funding
AF – Academy of Finland
TEKES - Finnish Funding Agency for Technology and Innovation
EU - European Union
ERC - European Research Council
International and national foundations
FP7/6 etc. /Framework Programmes/Funding of European Commission

Evaluation marks
Outstanding (5)
Excellent (4)
Very Good (3)
Good (2)
Sufficient (1)

Abbreviations of Bibliometric Indicators
P - Number of publications
TCS – Total number of citations
MCS - Number of citations per publication, excluding self-citations
PNC - Percentage of uncited publications
MNCS - Field-normalized number of citations per publication
MNJS - Field-normalized average journal impact
THCP10 - Field-normalized proportion highly cited publications (top 10%)
INT_COV - Internal coverage, the average amount of references covered by the WoS
WoS – Thomson Reuters Web of Science Databases

Participation category
Category 1. The research of the participating community represents the international cutting edge in its field.
Category 2. The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.
Category 3. The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.
Category 4. The research of the participating community represents an innovative opening.
Category 5. The research of the participating community has a highly significant societal impact.

Research focus areas of the University of Helsinki
Focus area 1: The basic structure, materials and natural resources of the physical world
Focus area 2: The basic structure of life
Focus area 3: The changing environment – clean water
Focus area 4: The thinking and learning human being
Focus area 5: Welfare and safety
Focus area 6: Clinical research
Focus area 7: Precise reasoning
Focus area 8: Language and culture
Focus area 9: Social justice
Focus area 10: Globalisation and social change
1 Introduction to the Evaluation

1.1 RC-specific evaluation reports

The participants in the evaluation of research and doctoral training were Researcher Communities (hereafter referred to as the RC). The RC refers to the group of researchers who registered together in the evaluation of their research and doctoral training. Preconditions in forming RCs were stated in the Guidelines for the Participating Researcher Communities. The RCs defined themselves whether their compositions should be considered well-established or new.

It is essential to emphasise that the evaluation combines both meta-evaluation1 and traditional research assessment exercise and its focus is both on the research outcomes and procedures associated with research and doctoral training. The approach to the evaluation is enhancement-led where self-evaluation constituted the main information. The answers to the evaluation questions formed together with the information of publications and other scientific activities an entity that was to be reviewed as a whole.

The present evaluation recognizes and justifies the diversity of research practices and publication traditions. Traditional Research Assessment Exercises do not necessarily value high quality research with low volumes or research distinct from mainstream research. It is challenging to expose the diversity of research to fair comparison. To understand the essence of different research practices and to do justice to their diversity was one of the main challenges of the present evaluation method. Understanding the divergent starting points of the RCs demanded sensitivity from the evaluators.

1.2 Aims and objectives in the evaluation

The aims of the evaluation are as follows:

- to improve the level of research and doctoral training at the University of Helsinki and to raise their international profile in accordance with the University’s strategic policies. The improvement of doctoral training should be compared to the University’s policy.2
- to enhance the research conducted at the University by taking into account the diversity, originality, multidisciplinary nature, success and field-specificity,
- to recognize the conditions and prerequisites under which excellent, original and high-impact research is carried out,
- to offer the academic community the opportunity to receive topical and versatile international peer feedback,
- to better recognize the University’s research potential.
- to exploit the University’s TUHAT research information system to enable transparency of publishing activities and in the production of reliable, comparable data.

1.3 Evaluation method

The evaluation can be considered as an enhancement-led evaluation. Instead of ranking, the main aim is to provide useful information for the enhancement of research and doctoral training of the participating RCs. The comparison should take into account each field of science and acknowledge their special character.

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1 The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics or comparable analyses.

2 Policies on doctoral degrees and other postgraduate degrees at the University of Helsinki.
The comparison produced information about the present status and factors that have lead to success. Also challenges in the operations and outcomes were recognized.

The evaluation approach has been designed to recognize better the significance and specific nature of researcher communities and research areas in the multidisciplinary top-level university. Furthermore, one of the aims of the evaluation is to bring to light those evaluation aspects that differ from the prevalent ones. Thus the views of various fields of research can be described and research arising from various starting points understood better. The doctoral training is integrated into the evaluation as a natural component related to research. Operational processes of doctoral training are being examined in the evaluation.

**Five stages of the evaluation method were:**
1. Registration – Stage 1
2. Self-evaluation – Stage 2
3. TUHAT\(^3\) compilations on publications and other scientific activities\(^4\)
4. External evaluation
5. Public reporting

### 1.4 Implementation of the external evaluation

**Five Evaluation Panels**

Five evaluation panels consisted of independent, renowned and highly respected experts. The main domains of the panels are:
1. biological, agricultural and veterinary sciences
2. medicine, biomedicine and health sciences
3. natural sciences
4. humanities
5. social sciences

The University invited 10 renowned scientists to act as chairs or vice-chairs of the five panels based on the suggestions of faculties and independent institutes. Besides leading the work of the panel, an additional role of the chairs was to discuss with other panel chairs in order to adopt a broadly similar approach. The panel chairs and vice-chairs had a pre-meeting on 27 May 2011 in Amsterdam.

The panel compositions were nominated by the Rector of the University 27 April 2011. The participating RCs suggested the panel members. The total number of panel members was 50. The reason for a smaller number of panellists as compared to the previous evaluations was the character of the evaluation as a meta-evaluation. The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics and comparable analyses.

The panel meetings were held in Helsinki:
- On 11–13 September 2011: (1) biological, agricultural and veterinary sciences, (2) medicine, biomedicine and health sciences and (3) natural sciences.
- On 18–20 September 2011: (4) humanities and (5) social sciences.

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\(^3\) TUHAT (acronym) of Research Information System (RIS) of the University of Helsinki

\(^4\) Supervision of thesis, prizes and awards, editorial work and peer reviews, participation in committees, boards and networks and public appearances.
1.5 Evaluation material

The main material in the evaluation was the RCs’ self-evaluations that were qualitative in character and allowed the RCs to choose what was important to mention or emphasise and what was left unmentioned.

The present evaluation is exceptional at least in the Finnish context because it is based on both the evaluation documentation (self-evaluation questions, publications and other scientific activities) and the bibliometric reports. All documents were delivered to the panellists for examination.

Traditional bibliometrics can be reasonably done mainly in medicine, biosciences and natural sciences when using the Web of Science database, for example. Bibliometrics, provided by CWTS/The Centre for Science and Technology Studies, University of Leiden, cover only the publications that include WoS identification in the TUHAT-RIS.

Traditional bibliometrics are seldom relevant in humanities and social sciences because the international comparable databases do not store every type of high quality research publications, such as books and monographs and scientific journals in other languages than English. The Helsinki University Library has done analysis to the RCs, if their publications were not well represented in the Web of Science databases (RCs should have at least 50 publications and internal coverage of publications more than 40%) – it meant 58 RCs. The bibliometric material for the evaluation panels was available in June 2011. The RC-specific bibliometric reports are attached at the end of each report.

The panels were provided with the evaluation material and all other necessary background information, such as the basic information about the University of Helsinki and the Finnish higher education system.

Evaluation material
1. Registration documents of the RCs for the background information
2. Self evaluation material – answers to the evaluation questions
3. Publications and other scientific activities based on the TUHAT RIS:
   3.1. statistics of publications
   3.2. list of publications
   3.3. statistics of other scientific activities
   3.4. list of other scientific activities
4. Bibliometrics and comparable analyses:
   4.1. Analyses of publications based on the verification of TUHAT-RIS publications with the Web of Science publications (CWTS/University of Leiden)
   4.2. Publication statistics analysed by the Helsinki University Library - mainly for humanities and social sciences
5. University level survey on doctoral training (August 2011)
6. University level analysis on publications 2005–2010 (August 2011) provided by CWTS/University of Leiden

Background material

University of Helsinki
- Basic information about the University of the Helsinki
- The structure of doctoral training at the University of Helsinki
- Previous evaluations of research at the University of Helsinki – links to the reports: 1998 and 2005

The Finnish Universities/Research Institutes
- Finnish University system
- Evaluation of the Finnish National Innovation System
- The State and Quality of Scientific Research in Finland, Publication of the Academy of Finland 9/09.

The evaluation panels were provided also with other relevant material on request before the meetings in Helsinki.
1.6 Evaluation questions and material

The participating RCs answered the following evaluation questions which are presented according to the evaluation form. In addition, TUHAT RIS was used to provide the additional material as explained. For giving the feedback to the RCs, the panellists received the evaluation feedback form constructed in line with the evaluation questions:

1. **Focus and quality of the RC's research**
   - Description of
     - the RC’s research focus.
     - the quality of the RC’s research (incl. key research questions and results)
     - the scientific significance of the RC’s research in the research field(s)
   - Identification of the ways to strengthen the focus and improve the quality of the RC’s research

The additional material: TUHAT compilation of the RC’s publications, analysis of the RC’s publications data (provided by University of Leiden and the Helsinki University Library)
A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

2. **Practises and quality of doctoral training**
   - Organising of the doctoral training in the RC. Description of the RC’s principles for:
     - recruitment and selection of doctoral candidates
     - supervision of doctoral candidates
     - collaboration with faculties, departments/institutes, and potential graduate schools/docoral programmes
     - good practises and quality assurance in doctoral training
   - Identification of the RC’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

The additional material: TUHAT compilation of the RC’s other scientific activities/supervision of doctoral dissertations
A written feedback from the aspects of: processes and good practices related to leadership and management
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

3. **The societal impact of research and doctoral training**
   - Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
   - Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training.

The additional material: TUHAT compilation of the RC’s other scientific activities.
A written feedback from the aspects of: societal impact, national and international collaboration, innovativeness
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)
4. International and national (incl. intersectoral) research collaboration and researcher mobility
   - Description of
     - the RC’s research collaborations and joint doctoral training activities
     - how the RC has promoted researcher mobility
   - Identification of the RC’s strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.
   A written feedback from the aspects of: scientific quality, national and international collaboration
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

5. Operational conditions
   - Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).
   - Identification of the RC’s strengths and challenges related to operational conditions, and the actions planned for their development.
   A written feedback from the aspects of: processes and good practices related to leadership and management
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

6. Leadership and management in the researcher community
   - Description of
     - the execution and processes of leadership in the RC
     - how the management-related responsibilities and roles are distributed in the RC
     - how the leadership- and management-related processes support
       - high quality research
       - collaboration between principal investigators and other researchers in the RC
       - the RC’s research focus
       - strengthening of the RC’s know-how
   - Identification of the RC’s strengths and challenges related to leadership and management, and the actions planned for developing the processes

7. External competitive funding of the RC
   - The RCs were asked to provide information of such external competitive funding, where:
     - the funding decisions have been made during 1.1.2005-31.12.2010, and
     - the administrator of the funding is/has been the University of Helsinki
   - On the e-form the RCs were asked to provide:
     1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organisations), and
     2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.

Competitive funding reported in the text is also to be considered when evaluating this point.
A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness, future significance
   - Strengths
   - Areas of development
   - Other remarks
   - Recommendations

8. The RC’s strategic action plan for 2011-2013
   - RC’s description of their future perspectives in relation to research and doctoral training.
   A written feedback from the aspects of: scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance
   - Strengths
   - Areas of development
• Other remarks
• Recommendations

9. Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC’s fitness to the chosen participation category
A written feedback evaluating the RC’s fitness to the chosen participation category
• Strengths
• Areas of development
• Other remarks
• Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

10. Short description of how the RC members contributed the compilation of the stage 2 material
Comments on the compilation of evaluation material

11. How the UH’s focus areas are presented in the RC’s research?
Comments if applicable

12. RC-specific main recommendations based on the previous questions 1-11

13. RC-specific conclusions

1.7 Evaluation criteria

The panellists were expected to give evaluative and analytical feedback to each evaluation question according to their aspects in order to describe and justify the quality of the submitted material. In addition, the evaluation feedback was asked to be pointed out the level of the performance according to the following classifications:

- outstanding (5)
- excellent (4)
- very good (3)
- good (2)
- sufficient (1)

Evaluation according to the criteria was to be made with thorough consideration of the entire evaluation material of the RC in question. Finally, in questions 1-4 and 9, the panellists were expected to classify their written feedback into one of the provided levels (the levels included respective descriptions, ‘criteria’). Some panels used decimals in marks. The descriptive level was interpreted according to the integers and not rounding up the decimals by the editors.

Description of criteria levels

Question 1 – FOCUS AND QUALITY OF THE RC’S RESEARCH

Classification: Criteria (level of procedures and results)

Outstanding quality of procedures and results (5)
Outstandingly strong research, also from international perspective. Attracts great international interest with a wide impact, including publications in leading journals and/or monographs published by leading international publishing houses. The research has world leading qualities. The research focus, key research questions scientific significance, societal impact and innovativeness are of outstanding quality.

In cases where the research is of a national character and, in the judgement of the evaluators, should remain so, the concepts of “international attention” or “international impact” etc. in the grading criteria above may be replaced by “international comparability”.

10
Operations and procedures are of outstanding quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality.

**Excellent quality of procedures and results (4)**

Research of excellent quality. Typically published with great impact, also internationally. Without doubt, the research has a leading position in its field in Finland.

Operations and procedures are of excellent quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality.

**Very good quality of procedures and results (3)**

The research is of such very good quality that it attracts wide national and international attention.

Operations and procedures are of very good quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

**Good quality of procedures and results (2)**

Good research attracting mainly national attention but possessing international potential, extraordinarily high relevance may motivate good research.

Operations and procedures are of good quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

**Sufficient quality of procedures and results (1)**

In some cases the research is insufficient and reports do not gain wide circulation or do not have national or international attention. Research activities should be revised.

Operations and procedures are of sufficient quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

**Question 2 – DOCTORAL TRAINING**

**Question 3 – SOCIETAL IMPACT**

**Question 4 – COLLABORATION**

**Classification: Criteria (level of procedures and results)**

**Outstanding quality of procedures and results (5)**

Procedures are of outstanding quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality. The procedures and results are regularly evaluated and the feedback has an effect on the planning.

**Excellent quality of procedures and results (4)**

Procedures are of excellent quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality. The procedures and outcomes are evaluated and the feedback has an effect on the planning.

**Very good quality of procedures and results (3)**

Procedures are of very good quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and
management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

**Good quality of procedures and results (2)**

Procedures are of good quality, shared occasionally in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

**Sufficient quality of procedures and results (1)**

Procedures are of sufficient quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

**Question 9 – CATEGORY**

**Participation category – fitness for the category chosen**

The choice and justification for the chosen category below should be reflected in the RC's responses to the evaluation questions 1–8.

1. *The research of the participating community represents the international cutting edge in its field.*
2. *The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.*
3. *The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation. The research is of high quality and has great significance and impact in its field. However, the generally used research evaluation methods do not necessarily shed sufficient light on the merits of the research.*
4. *The research of the participating community represents an innovative opening. A new opening can be an innovative combination of research fields, or it can be proven to have a special social, national or international demand or other significance. Even if the researcher community in its present composition has yet to obtain proof of international success, its members can produce convincing evidence of the high level of their previous research.*
5. *The research of the participating community has a highly significant societal impact.* The participating researcher community is able to justify the high social significance of its research. The research may relate to national legislation, media visibility or participation in social debate, or other activities promoting social development and human welfare. In addition to having societal impact, the research must be of a high standard.

**An example of outstanding fitness for category choice (5)**

The RC's representation and argumentation for the chosen category were convincing. The RC recognized its real capacity and apparent outcomes in a wider context to the research communities. The specific character of the RC was well-recognized and well stated in the responses. The RC fitted optimally for the category.

- Outstanding (5)
- Excellent (4)
- Very good (3)
- Good (2)
- Sufficient (1)

The above-mentioned definition of outstanding was only an example in order to assist the panellists in the positioning of the classification. There was no exact definition for the category fitness.

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5 The panels discussed the category fitness and made the final conclusions of the interpretation of it.
1.8 Timetable of the evaluation

The main timetable of the evaluation:

1. Registration | November 2010
3. External peer review | May–September 2011
4. Published reports | March–April 2012
   - University level public report
   - RC specific reports

The entire evaluation was implemented during the university’s strategy period 2010–2012. The preliminary results were available for the planning of the following strategy period in late autumn 2011. The evaluation reports will be published in March/April 2012. More detailed time schedule is published in the University report.

1.9 Evaluation feedback – consensus of the entire panel

The panellists evaluated all the RC-specific material before the meetings in Helsinki and mailed the draft reports to the evaluation office. The latest interim versions were on-line available to all the panellists on the Wiki-sites. In September 2011, in Helsinki the panels discussed the material, revised the first draft reports and decided the final numeric evaluation. After the meetings in Helsinki, the panels continued working and finalised the reports before the end of November 2011. The final RC-specific reports are the consensus of the entire panel.

The evaluation reports were written by the panels independently. During the editing process, the evaluation office requested some clarifications from the panels when necessary. The tone and style in the reports were not harmonized in the editing process. All the reports follow the original texts written by the panels as far as it was possible.

The original evaluation material of the RCs, provided for the panellists is attached at the end of the report. It is essential to notice that the exported lists of publications and other scientific activities depend how the data was stored in the TUHAT-RIS by the RCs.
2 Evaluation feedback

2.1 Focus and quality of the RC’s research

- Description of
  - the RC’s research focus
  - the quality of the RC’s research (incl. key research questions and results)
  - the scientific significance of the RC’s research in the research field(s)
- Identification of the ways to strengthen the focus and improve the quality of the RC’s research

ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness

Neuromed is comprised of 11 research groups at the institute of Biomedicine with an interest in neuroscience, mostly of a preclinical and some of a translational nature. The RC emphasizes that it “has come together by slow development of the opportunity rather than by goal-oriented decision”. Indeed, this is reflected by a wide range of covered topics.

Research has been grouped into three major fields – pathogenesis of neurodegenerative diseases, mechanisms of cognition, and pain/analglesia/anesthesia/addiction-, each of which collects a range of subfields and numerous topics. These topics certainly range among most important ones in the field of neuroscience, bearing significant clinical relevance. The RC is composed of single entities, some of which have made some significant contributions to the field, as for instance protein aggregation/misfolding during neurodegeneration, neuroprotective role of histamine, mGluRs in treatment of schizophrenia, role of adenosine and NO in sleep regulation, TRP and K2P channels in pain/anesthesia. However, links between groups, a convergent line of research or an overriding concept, are difficult to extract from the available information.

The overall publication output of Neuromed is fair, with an average of around 50 publications/year, with a majority (>60%) in competitive and rather good journals. Some publications (10%) have appeared in higher-rank journals of Neuroscience, some seemingly resulting from external collaborations. Overall, this marks a promising starting point, and it is evident that the RC members have the scientific and medical competence to develop the RC into a more stringent operational unit.

Numeric evaluation: 4 (Excellent)

2.2 Practises and quality of doctoral training

- Organising of the doctoral training in the RC. Description of the RC’s principles for:
  - recruitment and selection of doctoral candidates
  - supervision of doctoral candidates
  - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
  - good practises and quality assurance in doctoral training
  - assuring of good career perspectives for the doctoral candidates/fresh doctorates
- Identification of the RC’s strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.
- Additional material: TUHAT compilation of the RC’s other scientific activities/supervision of doctoral dissertations

ASPECTS: Processes and good practices related to leadership and management

Recruitment and selection of doctoral candidates is said to work via personal contacts. Students apparently participate in the Finnish Grad School of Neuroscience, the Helsinki Biomed Program, the Drug Discovery Grad School. In addition, participation in FENS, European Pain and Sleep Research Schools are
mentioned. Good scientific practice and quality assurance are provided by individual “follow-up” groups (seemingly operating similar to a thesis committee) and a dedicated PhD plan presented to the Medical Faculty.

**Overall, recruitment, training and supervision** of the students seem to follow rather traditional routes.

Planning on starting a common seminar series and a web page, as indicated, are laudable measures, but can be considered as starting points only. The RC should be encouraged to optimize recruitment and training procedures, in order to be able to succeed in the competition for creative minds, and to more optimally exploit human resources.

**Numeric evaluation: 3 (Very good)**

### 2.3 The societal impact of research and doctoral training

- **Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).**
- **Identification of the ways to strengthen the societal impact of the RC’s research and doctoral training.**
- **Additional material: TUHAT compilation of the RC’s other scientific activities.**

**ASPECTS:** Societal impact, national and international collaboration, innovativeness

The **most significant societal impact** of Neuromed results from the research relating to critical clinical issues. Neurodegenerative disorders, cognitive functions and pain management are central to health issues, and identification of underlying mechanisms by Neuromed researchers therefore is of highly significant societal impact.

The RC has well exploited the possibilities to present these issues to the **public**, as indicated by numerous media and public activities, as well as courses for physicians for medical specialization. Neuromed researches cover leading roles in Finnish Research Associations, some also on a European scale. The patent for a novel opioid indicates that Neuromed researches are on the way to progressively develop dedicated **translational approaches**. Such a strategy might generate a (positive) niche of Neuromed research, complementary to other neuroscientific research at Helsinki University.

**Numeric evaluation: 4 (Excellent)**

### 2.4 International and national (incl. intersectoral) research collaboration and researcher mobility

- **Description of**
  - the RC’s research collaborations and joint doctoral training activities
  - how the RC has promoted researcher mobility
- **Identification of the RC’s strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.**

**ASPECTS:** Scientific quality, national and international collaboration

Neuromed PIs act as coordinators of three EU consortia, contribute to European COST networks, and have coordinated a Marie Curie funded training program involving 24 students and 6 European centers. This is an appreciable effort, complemented by numerous collaborative activities based on individual contacts. Actions planned for the future focus on extension of collaborations with industry, which appears a feasible strategy.

**Numeric evaluation: 4 (Excellent)**
2.5 Operational conditions

- Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC’s strengths and challenges related to operational conditions, and the actions planned for their development.

ASPECTS: Processes and good practices related to leadership and management

The description of operational conditions is limited to a list of available equipment and core facilities, which is certainly impressive and indicates an excellent research infrastructure of Neuromed.

As to the balance of research and teaching, PIs indicate an unreasonable time spent on teaching and administrative duties, a lack of space and personnel resources, and a burden of seeking external funds for research. While this is fully understandable, the proposed strategy for solving the problem by just presenting it to the Medical Faculty and Institute of Biomedicine cannot be considered an effective one.

2.6 Leadership and management in the researcher community

- Description of
  - the execution and processes of leadership in the RC
  - how the management-related responsibilities and roles are distributed in the RC
  - how the leadership- and management-related processes support
    - high quality research
    - collaboration between principal investigators and other researchers in the RC
    - the RC’s research focus
    - strengthening of the RC’s know-how
- Identification of the RC’s strengths and challenges related to leadership and management, and the actions planned for developing the processes

ASPECTS: Processes and good practices related to leadership and management

An organizational structure (of academia, management, decision making, quality assurance) of Neuromed is not detectable in the information provided. Currently, there seems to be no system or agreement on strategical decisions in support of a common Neuromed structure. The RC seems to be aware of this, as it is planned to formalize the management structure, develop a more coherent organization, a more centralized training program, at least “to some extent”.

The RC should be strongly encouraged to take specific measures, towards a more convergent research platform (see pt. 2.1), a structured training program (see pt 2.2), a specific concept for optimized used of infrastructures and balanced duties (see pt. 2.5), and a more dedicated organization and management structure. Nomination of a coordinating PI as planned is a promising first step, but certainly must be complemented by a concerted and convergent action of all PIs.

2.7 External competitive funding of the RC

- The RCs were asked to provide information of such external competitive funding, where:
  - the funding decisions have been made during 1.1.2005–31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki
- On the e-form the RCs were asked to provide:
  1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organizations), and
2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010. Competitive funding reported in the text is also to be considered when evaluating this point.
ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness and future significance
Extra-mural funding amounts to a total of 11.9 Mill € (appr 2 Mill € p.a.). Given the involvement of 12 research groups, this is a good record, indicating the excellent national standing of individual PIs of the RC.

2.8 The RC’s strategic action plan for 2011–2013

• RC’s description of their future perspectives in relation to research and doctoral training.
ASPECTS: Scientific quality, scientific significance, societal impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

The RC “foresees a process of consolidation of the groups” in terms of allocation of funds and recruitment of excellent international researches, and strategically seeks to exploit multimodal brain imaging, the zebra fish model, mouse behavioral phenotyping, and stem cell techniques. Unfortunately, there is no specific indication of what the RC considers innovative or significant in the future, and what exactly they consider a common strategical concept. Without a concise strategic concept, however, the future perspectives of Neuromed remain unclear to the reviewers.

2.9 Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC’s fitness to the chosen participation category.
Category 4. The research of the participating community represents an innovative opening.

The overall research field and topics of Neuromed bear a large potential of innovation and clinical impact: unfortunately, how this potential will be exploited by the RC in the near future remains unclear (for details see remarks above: pts 2.1, 2.2, 2.6, 2.8).
Numeric evaluation: 3 (Very good)

2.10 Short description of how the RC members contributed the compilation of the stage 2 material

The processes employed were fair and appropriate.

2.11 How the UH’s focus areas are presented in the RC’s research

Focus area 2: The basic structure of life

Overall, research of the PIs of Neuromed certainly is assorted to UH’s focus on “Basic Structure of Life”.

18
2.12 RC-specific main recommendations

The overall research field and topics of Neuromed bear a large potential of innovation and clinical impact: unfortunately, how this potential will be exploited by the RC in the near future remains unclear. The RC should be strongly encouraged to take specific measures, towards a more convergent research platform, a structured training program, a specific concept for optimized use of infrastructures and balanced duties, and a more dedicated organization and management structure. Furthermore, in view of the indicated unreasonable time spent on teaching/administration, the lack of space/personnel resources, and a burden of seeking external funds for research, the PIs should be encouraged to specify a possible strategy for improving their specific situation, together with the involved faculties and UH.

2.13 RC-specific conclusions

This RC “has come together by slow development of the opportunity rather than by goal-oriented decision”, which is reflected by a wide range of covered topics. The three major research fields collect a range of subfields and numerous topics, which certainly range among most important ones in the field of neuroscience, bearing significant clinical relevance. Still missing is a clear scientific focus or convergent concept. Recruitment, training and supervision of the students follow rather traditional routes. The most significant societal impact of Neuromed results from the research relating to critical clinical issues, which the RC has well exploited the possibilities to present these issues to the public.

What is needed is a strategic concept and focus onto the most promising and innovative research topics, which will certainly support the RC development into a competitive unit on an international scale.
3 Appendices

A. Original evaluation material
   a. Registration material – Stage 1
   b. Answers to evaluation questions – Stage 2
   c. List of publications
   d. List of other scientific activities

B. Bibliometric analyses
   a. Analysis provided by CWTS/University of Leiden
   b. Analysis provided by Helsinki University Library (66 RCs)
NAME OF THE RESEARCHER COMMUNITY:
Neuroscience research at the institute of Biomedicine (NEUROMED)

LEADER OF THE RESEARCHER COMMUNITY:
Doc. Tarja Stenberg, Institute of Biomedicine, Faculty of Medicine

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW:

- Material submitted by the RC at stages 1 and 2 of the evaluation
  - STAGE 1 material: RC’s registration form (incl. list of RC participants in an excel table)
  - STAGE 2 material: RC’s answers to evaluation questions
- TUHAT compilations of the RC members’ other scientific activities 1.1.2005-31.12.2010
  (analysis carried out by CWTS, Leiden University)

NB! Since Web of Science(WoS)-based bibliometrics does not provide representative results for most RCs representing humanities, social sciences and computer sciences, the publications of these RCs will be analyzed by the UH Library
(results available by the end of June, 2011)
Name: Stenberg, Tarja
E-mail: tarja.stenberg@helsinki.fi
Phone: 191 25317
Affiliation: Institute of Biomedicine
Street address: Haartmanninkatu 8

Name of the participating RC (max. 30 characters): Neuroscience research at the institute of biomedicine

Acronym for the participating RC (max. 10 characters): NEUROMED

Description of the operational basis in 2005-2010 (eg. research collaboration, joint doctoral training activities) on which the RC was formed (MAX. 2200 characters with spaces): Several research groups at the Institute of Biomedicine study questions related to neurosciences. The research topics fall in the category of integrative neuroscience. This means research on brain phenomena on concerted activity of large neural networks. Although the basic neural mechanisms can be, and must be, studied in vitro, the function of extensive neural networks needs to be studied in humans or in behaving animals. The research requires application of several demanding (both technically and economically) methods that are preferably available at the same research unit. In practice this means collaboration with several research groups. The research methods include in vivo registrations in animals (rodents and zebra fish), functional brain imaging, transcranial magnetic stimulation (TMS) and registrations of vigilance. Further, many of the research activities require a functional core facility with trained personnel to pursue the basic functions (e.g. production of zebra fish and technical maintenance of special apparatuses). These circumstances, substantiated with common research interests, have led to the formation of the NEUROMED research collaboration group. All PI:s of the group have collaboration with at least one other PI of the group, most PIs have several on-going collaborative research projects. In addition to the research collaboration, an important aspect is a shared training program for young researchers (as described in item 5). The RC offers extensive training opportunities in rodent behavioral testing, with a core facility in mouse behavior, demanding in vivo measurements in rodents (e.g. in vivo microdialysis), zebra fish behavioral registration and analysis, with a zebra fish research core unit, functional brain imaging and transcranial magnetic stimulation. Systematic training in some of these methods is not available in other research institutes in Finland.

Main scientific field of the RC’s research: medicine, biomedicine and health sciences

RC’s scientific subfield 1: Neurosciences

RC’s scientific subfield 2: Pharmacology and Pharmacy
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

RC's scientific subfield 3: Physiology
RC's scientific subfield 4: Neuroimaging

Other, if not in the list:

<table>
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<th>4 RC'S PARTICIPATION CATEGORY</th>
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Participation category: 4. Research of the participating community represents an innovative opening

Justification for the selected participation category (MAX. 2200 characters with spaces): The RC in its present form is relatively new. Institute of Biomedicine moved to Biomedicum year 2001. Before that the Departments of Anatomy, Pharmacology, Physiology and Medical Chemistry had been situated in different facilities at Siltavuorenpenger. Although collaborations between the researchers existed already at that time, the move to common facilities has accelerated collaboration considerably. During the ten year period after the move from Siltavuorenpenger, 12 new professors have taken office at the Institute and many have either retired or changed position. The reorganization of research and integration of new professors to the Institute has offered new opportunities for collaborations, which has actively been accepted and made use of. However, the transition period has also to some extent slowed down systematic development of the long-term research strategy for the RC. Each researcher of the RC has conducted high quality research with excellent publication record, but the full advantage of the collaborations is yet to be achieved. The innovative aspects of the research lie in taking full advantage of the unique combination of research methods in large research projects that have common goals and that combine human research with animal models. This process is now on-going and we expect breakthrough results within the next five years.

5 DESCRIPTION OF THE RC'S RESEARCH AND DOCTORAL TRAINING

Public description of the RC's research and doctoral training (MAX. 2200 characters with spaces): The purpose of Neuromed is to promote integrative basic neuroscience research. We aim to understand brain function and its perturbations at neural network level. We study the mechanisms of normal and abnormal brain functions in the developing and adult brain and adaptations in pathophysiological conditions, and develop drug development ideas for brain diseases such as neuropathic pain, addiction, depression and anxiety. The research topics and approaches include research on pain and sleep regulation, addiction, neural plasticity, attention and memory, mechanisms of autistic disorders, anxiety and depression. Within each topic, research is conducted in collaboration with other RC PIs as well as with other national and international collaborators.

The research community is taking care of doctoral training in this emerging field of integrative neuroscience, with the aim of providing all students wide methodological training in pertinent methods. Each student that enters the training will write a study plan in collaboration with the mentor. A follow-up group for the dissertation work will be nominated, usually including at least one other member of the RC. Many of the students have been funded by the Finnish Graduate School of Neuroscience, and the RC offers several courses for the graduate school (including NeuPharm-graduate school courses and annual international hands-on courses in in vivo microdialysis). The main bulk of the training consists on daily work at the research group, mentored by the PIs. In addition, the students participate in both domestic and international training courses and scientific meetings. The aim of the training is to educate professional
neuroscientists who are provided by special skills in integrative neuroscience as well as by additional skills including presentation skills, ability to international research collaborations and ability to attract funding.

**Significance of the RC's research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces):** The RC has produced a large number of high quality research publications, some of them published in the best journals of neuroscience.

The RC has been able to attract major funding from many external sources including Academy of Finland, NIH, European Union (several research grants within Framework 6 and 7 programs), TEKES and all major Finnish private foundations including Sigrid Juselius Foundation, Finska Läkaresällskapet and Suomen Kulttuurirahasto (Finnish Cultural Fund), the Finnish Foundation for Alcohol Studies. This in itself speaks of the high quality of the research conducted by the RC.

The RC has trained about 40 PhDs and 25 post doctoral researchers during the 5 year period – most of them have gained excellent positions both internationally and nationally after the training. Some of the training topics are difficult, if not impossible for students to obtain in other research environments in Finland. The RC is unique in this respect for UH.

As Universities are evaluated based on criteria, RC will make a substantial contribution.

**Keywords:** Addiction, neuroscience, neuroimaging, pain, sleep

### JUSTIFIED ESTIMATE OF THE QUALITY OF THE RC'S RESEARCH AND DOCTORAL TRAINING

**Justified estimate of the quality of the RC's research and doctoral training at national and international level during 2005-2010 (MAX. 2200 characters with spaces):** Within this RC, doctoral students and postdoctoral fellows are trained within some of the most difficult and demanding areas of neuroscience (cell physiology, behavioral pharmacology, in vivo microdialysis, high-resolution 3D analysis of neural networks, live brain imaging – and combinations of these methods. Evaluation of the progress of doctoral students is carried out in a multidisciplinary team, where candidates get constructive criticism on all aspects of their work. The environment also encourages the young investigators to seek collaboration with each other. On national level, many of the research groups are the only within their respective areas, and many are in international top groups within their disciplines. In addition to carrying out high level research, all group leaders also contribute to teaching on undergraduate level and welcome undergraduate students to the groups. By doing this, some most talented young students are offered opportunities to learn and develop into early career scientists very early.

**Comments on how the RC's scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces):** Traditional evaluation including the number of publication with citation factors and reference index. Number of dissertations, number of dissertations accepted with honours, the success rate of the students in finding a research position after defense.

In some category, also the ability of the RC to attract outside funding should be addressed.

Publications are sent to high-quality scientific journals. An abstract of a work published in a very good journal is sent to the university press office and a press release is given out.

The proposed four categories do not appear optimal in their present form. Maybe the re-evaluation of the evaluation categories could be one outcome of the evaluation?
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

Also visiting researchers should be included in the evaluation criteria – they clearly reflect the reputation and international status of the research group. Often these persons come with their own funding, a category for such research personnel should be provided in the evaluation.
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<th>Last name</th>
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Name of the RC’s responsible person: Stenberg, Tarja
E-mail of the RC’s responsible person: tarja.stenberg@helsinki.fi
Name and acronym of the participating RC: Neuroscience research at the Institute of Biomedicine, Neuromed
The RC's research represents the following key focus area of UH: 2. Elämän perusrakenne – The basic structure of life
Comments for selecting/not selecting the key focus area: The Institute of Biomedicine hosts twelve research groups with major interest in neurobiology and basic neuroscience. These research groups together constitute the network of the Neuromed. The common research area of our consortium is closely linked to three focus areas of the University of Helsinki (The basic structure of life, The thinking and learning human being and Clinical research), of which we have selected “Basic structure of life” as the closest representing our research because it covers the topics of all research interests of the RC. Our research is closely related to clinical research, but most projects are not directly clinical (including patients) but rather either preclinical or translational in nature.

Please note: Dr. Dan Lindholm’s group is missing from the excel sheet of the stage 1 evaluation and could not be added because of technical reasons. His work is included in the present evaluation report.

1. Focus and Quality of RC’s Research (Max. 8800 Characters with Spaces)

- Description of the RC’s research focus, the quality of the RC’s research (incl. key research questions and results) and the scientific significance of the RC’s research for the research field(s).

The research focus of the RC is at revealing biomedical background of selected neurological and psychiatric illnesses. Most of the research topics fall in the category of integrative neuroscience. The RC has an emphasis on clinically relevant questions and with that aims to create basic knowledge and tools for clinical therapies. The majority of the PI:s have medical education and with that a profound understanding of clinical problems.

The quality of the research and its significance are illustrated by the achievements of the group members, listed below.

Neurodegenerative diseases

We have studied protein aggregation and cell death pathways such as ER stress and the ubiquitin-proteasome system that contribute to the pathogenesis of human neurodegenerative disorders (Lindholm et al., 2006). For these studies we have used cellular models of Huntington disease (HD) (Reijonen et al, 2008; 2010) as well as transgenic animals carrying mutant human SOD1 as a model of amyotrophic lateral sclerosis (ALS) (Wootz et al, 2006; 2010) In addition we analyze upstream cell signaling cascades in excitotoxic brain injuries (Sokka et al, 2007) and the role of anti-apoptotic and trophic factor signaling in neuroprotection (Zhu et al, 2007; Kairisalo et al, 2009).

We have studied protein misfolding causing neuronal deficit and shown that several disease related proteins are following common and predictable pathways leading to folding disturbances (Baumann et al. 2000, Kallijärvi et al. 2001, Fadika et al. 2002). These studies have led to designing and patenting lead molecules which in vitro are capable of inhibiting such misfolding (e.g. APP, Prion protein and Gelsolin)
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

(Soto et al. 1996). Recent studies have focused on a yet uncharacterized neurodegenerative disorder caused by Notch3 receptor misfolding to which a siRNA therapy is under investigation (Ihalainen et al. 2007, Shaobo et al. 2008).

We have studied the role of histamine in neuroprotection and shown that the histamine H3 receptor undergoes splice-form specific changes during limbic seizures induced by kainic acid, suggesting that histamine release may play an important role in neuroprotection. We also identified Akt/GSK3β as a new signaling system for H3 receptor.

We have created a zebra fish model of Parkinson's disease (PD). In these animals specific diencephalic dopamine neuron groups were sensitive to MPTP. Transient knockdown of the PD related gene PINK1 caused cell death and rendered the fish susceptible to subeffective doses of MPTP.

Neural mechanisms of normal and abnormal cognition

Aberrances in the regulation of survival, proliferation, and differentiation of neural stem cells are implicated in the pathophysiology of several neurological disorders. We have systematically delineated functional and morphological alterations during early differentiation of neural stem cells and mapped neurotransmitter responses to activation of G-protein coupled receptors (Kärkkäinen et al. 2009). We have shown that changes of intracellular calcium responses and gene expression in cell cultures correlate with developmental defects in the brain of the mouse model for fragile X syndrome (FXS) suggesting that changes in neural stem cells contribute to the disturbances of neuronal circuit formation and synaptic function underlying cognitive defects in FXS (Castrén et al. 2005).

We have characterized neuronal effects of agonists and antagonists for group II glutamate receptors using genetic mouse models and behavioral studies (Linden et al. 2005, 2006, 2009; Swanson et al. 2005). One analog of these agonists has shown efficacy in a phase II clinical trial for treatment of schizophrenia.

At systems level neuroscience, we study neural mechanisms underlying brain plasticity (Renier et al. 2010), attention and memory (Artchakov et al. 2009). As a novel methodological approach, we combined the use of diffusion weighted magnetic resonance imaging (dwMRI), probabilistic tractography and transcranial magnetic stimulation (TMS) to investigate with high precision the physiological functions of brain areas that are involved in tactile memory. We have demonstrated that activating the neural tracts from the prefrontal to the primary somatosensory cortex with TMS facilitates tactile working memory by reducing task-irrelevant noise signals during memory maintenance (Hannula et al. 2005, 2009).

We have studied the molecular mechanisms of recovery sleep and found that adenosine and nitric oxide are the key regulators of this process. Moreover, we have localized the effects to basal forebrain and revealed that cholinergic neurons necessary for production of recovery sleep (Porkka-Heiskanen et al. 1997; Kalinchuk et al. 2006; 2008, Wigren et al. 2009). The results have significantly increased the knowledge about the molecular mechanisms of sleep regulation and stimulated new research in this area.

Pain, analgesia, anesthesia and addiction

Chronic pain has similar pathophysiological mechanisms as neurodegenerative conditions including glial activation. Opioid analgesics are effective but tolerance and addiction are major problems. Tolerance and hyperalgesia share overlapping mechanisms.
We have used functional MRI methods to study the brain effects of opioids (Leppä et al. 2006) and studied the plastic changes in the pain matrix of the brain in chronic pain patients. We have a DNA database of 1000 patients to study the genetics of chronic pain, analgesia and anesthesia. Below we describe five areas of basic research that have either arisen from clinical studies or that are likely to lead to clinical studies.

We have studied the role of microglia in opioid tolerance and pain and demonstrated that ibudilast, an inhibitor of microglia, partly restored the antinociceptive action of morphine in opioid tolerance (Lilius et al., 2009). These studies suggest that microglia may modulate the effects of opioids. The project may facilitate the development of new pharmacological therapies to patients having severe pain.

The TRPA 1 ion channel was shown to induce peripheral diabetic neuropathy indicating that a TRPA1 channel antagonist provides a selective disease modifying treatment for this frequent complication of diabetes mellitus (Wei et al., 2009). Clinical studies are currently being planned.

Leak K channels TASK1 and TASK3 are involved in anesthetic actions. We have shown reduced efficacy of inhalational anesthetics in TASK1 and TASK3 KO animals and enhanced compensatory efficacy of GABAA ligands in TASK1 KO animals (Linden et al., 2008). These results can be used in our human study on genetics of pain and anesthesia.

AMPA receptor is implicated in adaptation to drugs of abuse. We have shown that the hyperactive phenotype of GluA1 knockout animals is associated with excessive activation of hippocampus in novel environment (Procaccini et al., 2011) as well as reduced tolerance to benzodiazepines (Alitta-aho et al., 2009). A single dose of benzodiazepines induces persistent AMPA receptor activation in the VTA dopamine neurons (Heikkinen et al., 2009). We have found that several histamine H3-receptor inverse agonists inhibited alcohol reward in mice and that H3 receptor knockout mice drank significantly less alcohol (Nuutinen et al., 2010). The results suggest that H3-receptor ligands may be useful in the treatment of excessive alcohol drinking. Currently a clinical testing of proprietary drugs is being considered.

Ways to strengthen the focus and improve the quality of the RC’s research.

Increasing collaboration between the RC members has already resulted in several multidisciplinary studies, which are either published or currently in preparation. International collaborations in panEuropean consortia (funded by EU Frame Work Programs) as well as with Asian and US universities will continue and expand to relevant research programs that will promote scientific development of the RC.

Recruitment of new, highly qualified researchers to the RC will continue. An example of this is the foundation of the position of pain professor (EK) who works in close collaboration with researchers of pain mechanisms creating a strong clinically oriented pain research/therapy unit. The most recent employment of a senior researcher for alcohol research (starting March 1, 2011) will strengthen the addiction research branch.

Invitation of leading experts from the most important areas of the RC through the Biomedicum Helsinki lecture series has been successful and will continue. Presently, one of the RC PIs (KA) is responsible for the seminar program.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

2 PRACTICES AND QUALITY OF DOCTORAL TRAINING (MAX. 8800 CHARACTERS WITH SPACES)

- How is doctoral training organised in the RC? Description of the RC’s principles for recruitment and selection of doctoral candidates, supervision of doctoral candidates, collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes, good practises and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

The RC seeks to promote high-class research and doctoral training in the respective fields of Neuromed. One prominent aspect of this endeavor is to foster the translational aspects of the research by fruitful integration of preclinical and clinical research at the University of Helsinki. The general aim of the research training is to give the graduate students a high-quality education that prepares them for further research career in national and international research centers and industry. Special attention is given to training of both theoretical and practical skills such as hypothesis driven experimental design, professional technical performance as well as to training in scientific publication and presentation along with other academic activities. The international aspects of the training are promoted by international recruitment, using English as the working language in the groups and participation of the trainees in international training courses and congresses.

Recruitment and selection of doctoral candidates takes place through personal contacts and international collaborations. The consortium is participating in several public calls of those national graduate schools which are linked to the research teams in the RC. When applicable, national and international calls will be used for recruiting (e.g. in EU funded Marie Curie projects) taking advantage of e.g. FENS website, NatureJobs etc. Several of the RC teams have open access www-pages for additional distribution of open position calls. Teaching provides the researchers with a possibility to meet and select domestic students for research projects. Selection criteria include previous work experience of the candidate, academic performance, references and performance in the interview. Each student will be orally interviewed either by personal invitation or SKYPE. We aim to identify the most talented and motivated students for recruitment and offer them training that best promotes their career development.

Collaboration in supervision of doctoral students is one of the strong advances of this RC. Most of our students study in one of the regional graduate schools, including the Finnish Graduate School of Neuroscience (http://www.helsinki.fi/fgsn/), Helsinki Biomedical Graduate School (http://www.hbgs.helsinki.fi/), Drug Discovery Graduate School, national graduate school of nanoscience (NGS-NANO), national graduate school of chemical sensors and actuators (ChemSem), where they get a profound theoretical training, Center of Excellence in Systems Neuroscience and Neuroimaging Research also offer training for our students. The training collaboration is frequent also internationally. The students participate in courses arranged by FENS (Federation of European Neurosciences), IBRO (International Brain Research Organization), European Pain School of FENS, training courses of Scandinavian Association for the Study of Pain, ESRS (European Sleep Research Society) and WFSRS (World Federation of Sleep Research Societies). Student exchange programs take place between several universities, including the University of Minho, Braga, Portugal, University of Strasbourg, France, University of Zurich, Switzerland, Karolinska Institutet, Sweden, Kunming Institute of Zoology, Chinese Academy of Sciences, China. Most of the research teams in the RC have frequent international exchange visits of foreign graduate students who further link our national activities to the international forum.

Supervision of the candidates. The core of the training is described in a personal training plan. Upon registration of the PhD plan, a follow-up group is nominated. Each student has a supervisor as a primary adviser. Regular discussions with the supervisor serve as the basis for training. Practical, daily hands-on
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

Laboratory training is mostly executed by post doctoral students or senior researchers in the groups. Additional skills (e.g. language training, scientific writing, ethics training, and career development) are mostly provided on separate courses arranged either by the university or the graduate schools or internationally. Important instruments in training are weekly or biweekly group meetings where students are trained to present both their research results and journal clubs. Presentations for international meetings are also rehearsed and discussed in these meetings. International and national contacts are facilitated via attendance at scientific congresses. In many groups, due to international students, the working language is English, which is a vast advantage for the students in international communication and employment. PIs and also PhD students participate in teaching undergraduate medical students on topics of medicine that are not directly related to their research focus, giving them an opportunity to gain broader knowledge of medicine than they would otherwise get, including valuable teaching experience.

Good practices and quality assurance is emphasized through the training period. The personal study plan which will be formalized into a PhD plan that is accepted by the faculty of medicine is the core document for the follow-up of the study progress. Each PhD student will have a follow-up group. The group consists of three members - researchers that are knowledgeable in relevant area of the research - that are not otherwise involved in the training of the student and the supervisor. The follow-up group meets a minimum of once a year and receives a report from the student. The student has an opportunity to take up any problems that may have arisen in his/her work and discuss them with the follow-up group. The follow-up group monitors the progress of the work and gives recommendations for improvements when necessary. Any conflicts between the student and the supervisor can be discussed in the follow-up group meeting. As members of graduate schools students will take formal examinations e.g. in basics of neurosciences. The PhD plan includes extensive items of basic studies that are relevant for the topic of the research, ensuring adequate theoretical knowledge of the subject. Good scientific conduct is taught by requirement of keeping laboratory book. All students that work with animals must take a course in animal handling. Safety aspects of laboratory work are taken into account in every step of the training.

The good quality of the training is reflected by the excellent record of our students in finding jobs as researchers and within industry after the training period.

Career perspectives: The extensive international collaboration network puts the student in contact with high quality research laboratories already during their training period. Due to this, many students have been offered a job already before they have completed their PhD in Helsinki. The good reputation of the RC both as a producer of high quality research and well-trained students helps the students to compete of international positions. The record of students' employers include Harvard Medical School, UCLA, Karolinska Institutet, University College London, University of Washington, Max Planck Institute, Cambridge University, University of California San Diego, Burnham Institute, University of Maastricht and Georgetown University (Washington DC). Finnish pharmaceutical industry, domestic Universities and University Central Hospitals are also frequent employers of our students.

- **RC's strengths and challenges related to the practices and quality of doctoral training, and the actions planned for their development.**

The main strength of the RC is genuine multidisciplinary and internationality. Training students in high-demand fields of translational research and integrative neuroscience as well as introducing them research strategies from basic sciences to medical practise will improve their possibilities for employment. Almost all PIs have participated in pedagogic training of the faculty, ensuring the high quality of the teaching.

The main challenge is to find the best students for training. Recruitment of medical students from the research track has not been optimal, and we will take measures to improve. We plan to arrange an
introduction aimed at these students. A common webpage will serve, in addition to other goals, also this goal.

We aim to further develop collaboration within the RC by starting a program where all students within the RC, as well as their mentors, participate in common seminars that are dedicated to a) teach the students in presentation skills b) offer a common platform for evaluation groups of the students.

3 SOCIETAL IMPACT OF RESEARCH AND DOCTORAL TRAINING (MAX. 4400 CHARACTERS WITH SPACES)

- Description of how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).

The RC conducts research on areas of high public interest and visibility, like pain, learning and memory, addiction and sleep. Both media and common public (including patient organizations, schools, and different interest groups) frequently ask our researchers to give presentations on their research topics. The RC researchers have taken the challenge, and we give a large number of presentations and interviews, including several TV shows, articles and interviews in popular magazines. Some researchers have written book chapters or books aimed at common public.

Many of the PIs also give lectures on courses aimed at medical doctors for their specialization, e.g. on specialization for neurology, anesthesiology and sleep medicine (pain, memory and learning, sleep), and also give international training including training of pain specialists in medicine in Scandinavia. As clinical researcher Dr. Castren teaches clinicians, nurses and therapists, and educates laymen, parents and relatives of mentally disabled, in clinics.

Some PIs have patented their findings (Noroxymorphone, a novel opioid WO 2008/096046 A1 Patentti Eija Kalso).

The RC members have been very active in national and international research policy. Many PIs have had and continue to have an active role in research organizations, including Presidency of the International Association for the Study of Pain, two Presidencies of the Brain Research Society of Finland, Presidency of the Finnish Physiological Society, Secretary of The European Sleep Research Society, member of the Executive Committee of the International Federation of Societies for Histochemistry and Cytochemistry, Board Member of the World Federation of Sleep Research Societies, member of the general assembly of FENS, Board Member of European Society for Biomedical Research on Alcoholism (ESBRA), President of the organizing committee of the 12th meeting of ESBRA (European Society for Biomedical Research on Alcoholism) at Biomedicum Helsinki in 2009, member of the organizing committee; The workshops of ReSCUE (Research Experience of Stem Cells in Europe) Society “What is new in the field of regenerative medicine?”

Dr. Castren initiated the establishment of fragile X family organization in Finland (founded 2010) to provide educational support, promote public and professional awareness, and advance research toward improved treatments and a cure for fragile X individuals.

Dr. Kalso is a governmental advisor regarding issues on pain management in general and pharmacology in particular (National Agency for Medicines now FIMEA and National Supervisory Authority for Welfare and Health).

- Ways to strengthen the societal impact of the RC’s research and doctoral training.

We feel that the RC is already performing very well in this area. To improve their communication skills with media, some PIs of the MC have taken courses on communication with the media. This activity can be continued, and we can arrange courses also for our students.
Description of the RC’s research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.

The RC is strong in collaborations, both nationally and internationally. The PIs have acted both as coordinators of large national and international research programs as well as members in such collaborations. The level of collaboration is illustrated by one group where of the 49 publications published during the evaluation period, 25 include international collaboration. These collaborations can be best appreciated by examining the lists of publications by RC members.

A list of international collaborations of the RC PIs:

- Coordination of three EU funded consortia (QLK6-CT-2000-00499; LSHM-CT-2005-518189 and MCRTN-CT-2004-512362) (TS); the consortia consisted of 6-9 research laboratories in different European countries.

- Member in 2 European COST networks, where the PI is member of the Management Committee (PP).

- Member of one Nordforsk Network where the PI is member of the board (PP). Participated in all organized global Strategic Congresses of Zebrafish Investigators (PP).

- Collaboration between Kunming Institute of Zoology, Chinese Academy of Sciences, China; Georgetown University, Washington DC, USA, U Edinburgh, U Iowa, Carnegie Institution of Science (Baltimore), U Utah, Free U of Amsterdam, Riken (Japan) (SC)

- Collaboration with Erasmus University, Rotterdam, The Netherlands; University of Trieste, Italy, and M.I.N.D. Institute, Sacramento, California, USA. MC is a member of Nordic/UK collaboration on the Comorbidity of Down Syndrome and Autism Spectrum Diseases.

A list of national collaborations:

- Coordination of one Academy of Finland-funded program (WORK-program/FISH consortium) and participation in another program (SKIDI KID/CHILD SLEEP) (TS).

- Member of one Academy of Finland-funded consortia (PP)

- Member of a TEKES-funded consortium (PP)

- Member of Center of Excellence in Systems Neuroscience and Neuroimaging Research with Brain Research Unit and AMI-Center in Aalto University and Neuroscience Unit in the Institute of Biomedicine/physiology, UH (SC)

- Neuroscience Center, University of Helsinki (MC, PP, DL)

On-going collaborations among groups of the RC:

- Collaborations within the RC are frequent including projects:
  - Chronic pain mechanisms (AP with the EK and PR groups),
  - Study of the attention and memory mechanisms in humans (AP with SC group)
  - FragileX and hypersensitivity (AP with the M.Castren group)
  - RFamide-related peptides and pain: (AP with PP E. Kalso and ERK groups),

4 INTERNATIONAL AND NATIONAL (INCL. INTERSECTORAL) RESEARCH COLLABORATION AND RESEARCHER MOBILITY (MAX. 4400 CHARACTERS WITH SPACES)
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

Role of histamine and monoamines in regulation of sleep (TS with PP)
Sleep in zebra fish (TS with PP)
Ca+ imaging in cholinergic cells (TS with KÅ)
Ca+ imaging in neural stem cells modelling neurodevelopmental diseases (MC with KÅ),
Role and mechanisms of hypersensitivity in Fragile X syndrome (AP with MC group)
Mechanisms of addiction (PP with EKorpi group)
Pharmacological fMRI (E. Kalso and SC groups)
Behavioural characterization of transgenic mouse lines (AML with ERK)

Promotion of researcher mobility: One PI has coordinated a Marie Curie funded training program with 24 students involved in 6 European training centers; and has been member of the ESRS training program leading group (160 students trained in a 4 year program) and is responsible for the WFSRS training programs (TS). Students participate in internat

- RC’s strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

The RC has a rich network of both national and international collaborations initiated by the active PI:s. These research networks have been a foundation for several research grants. We will actively foster these collaborations also in future, and create new when applicable. The RC has a well developed communication with international researchers and research groups that we actively use for creating new research and funding ideas. Collaboration with industry through TEKES funding and with clinical work through e.g. EVO funding is ongoing. We have excellent collaborations with the Finnish research centres like the National Institute of Health and Welfare and the Finnish Institute of Occupational Health. We already have many international researchers within the RC, and continue to recruit more when available. After PhD degree, our students frequently choose international employment.

We can improve collaborations with industry and we will actively further develop collaborations within the RC.

5 OPERATIONAL CONDITIONS (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the operational conditions in the RC’s research environment (e.g. research infrastructure, balance between research and teaching duties).

The RC has good facilities available. Biomedicum Helsinki is a modern research environment where research groups enter by competition. The building was originally planned for research activities, which is reflected in many important facets of research from flexibility of the research spaces to modern communication facilities. Each research group has both own equipments and access to both core facilities and equipments in other research groups. This arrangement covers most research needs for equipment.

Core facilities are available for many important research activities of the RC. These include zebra fish unit and assessment of rodent behavior and (animal) imaging. Behavioral mouse phenotyping unit with equipments and protocols for wide screening of mouse behaviors: Including two set ups of Ethovision behavioral detection systems, rotarods, home cage running wheels with detection, CatWalk for step pattern detection, hot plate, tail flick apparatus, elevated plus maze, light-dark box, T-maze, water maze, fear conditioning units, prepulse inhibition units, shuttle box avoidance units, conditional place
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

preference/aversion cages, tail suspension and forced swim test equipments, operant self-administration units, stereotaxic frame with mouse adaptors, transcardial perfusion set up. Behavioral mouse phenotyping unit is operated by groups of Korpi and Linden and also other groups within RC. The following facilities are available for collaboration through individual groups: 4 spaces for rodent EEG recording, two provided with in vivo microdialysis facilities, HPLC core unit with 6 pumps and detectors (UV and electrochemical), freezing microtomes, RCID imaging system for quantifying gene expression and radioligand binding on film, Leica SP2 AOBS and 2-photon system for 3D imaging of deep structures in the brain, and two research microscopes, qRT-PCR analysis system, MEG and fMRI, navigated transtemporal magnetic stimulation for human research, modern facilities for electrophysiology including patch clamp.

The core techniques within the RC include live cell imaging and electrophysiology, pain behaviour (rodents), somatosensory psychophysics (humans), electrophysiology of the pain/somatosensory system (at single unit level in rodents), microinjections/stimulations/lesions in the brain (rodents), blood flow measurements (rodents/humans), navigated TMS (humans) and sleep recordings in rodents.

The RC has several mouse models available, including GluA1 KO mice – deficient in GluA1 subunit of AMPA receptors, GABAA delta subunit KO mice – deficient in extrasynaptic tonic inhibition, transgenic Thy1alpha6 mice – overexpression of GABAA receptor alpha6 subunit in inhibitory extrasynaptic receptors in the forebrain, GABAA gamma2(I77) knockin mice – altered pharmacology of synaptic GABAA receptors in comparison to WT gamma2(F77), transgenic TH-EGFP mice – labeling of tyrosine hydroxylase –positive neurons by EGFP for e.g. localisation of DA neurons for ephys and LCM. We also have KO mice which lack neuropeptide FF, a morphine-modulating peptide important in pain and autonomic regulation, mice lacking histidine decarboxylase, H1 receptor and H3 receptor. We also have an HDC-Cre mouse, which can be used to selectively knock out or replace genes in histami

RC’s strengths and challenges related to operational conditions, and the actions planned for their development.

Strengths: The basic equipments are readily available and there is reasonable competitive funding available for relatively large purchase. Although most PI:s have teaching responsibilities, the time allocated to this activity is not unreasonable.

Challenges: Lack of space for experimental animal studies is developing towards a serious restriction for research. Core facilities need more personnel resources- ideally each core facility has a dedicated person who is responsible for the maintenance and teaching of the facility. It is difficult to find money for maintenance and updating of the equipments, as well as for buying small instruments. Most PI:s, particularly professors, are heavily burdened with administrational duties. Leaders of large research groups spend unreasonable portion of their time for seeking funds and reporting of the allocated funds.

We will draw attention to these problems at the level of faculty of medicine and at the level of institute of biomedicine.

6 LEADERSHIP AND MANAGEMENT IN THE RESEARCHER COMMUNITY (MAX. 4400 CHARACTERS WITH SPACES)

• Description of the execution and processes of leadership in the RC, how the management-related responsibilities and roles are distributed in the RC and how the leadership- and management-related processes support high quality research, collaboration between principal investigators and other researchers in the RC, the RC’s research focus and strengthening of the RC’s know-how.

The RC operates within the Institute of Biomedicine and consists of the members of the faculty – professors, senior teachers and researchers. It must be emphasized that this RC has come together by
slow development of the opportunity rather than by goal-oriented decision: when previous professors of the institute retired, the new professors that were elected had interest in neuroscience research. Collaborations have started based on mutual scientific interest and the members of the RC have not formalized these actions. Common needs for equipment and animal facilities have consolidated collaboration between the researchers, as well as common interest in teaching activities.

The researchers of the RC form the general assembly of the research groups, which comes together to discuss general questions; no formal decisions have been taken or even proposed. So far this has not been a problem, but we recognize that a more formal organization will in future be useful.

- **RC’s strengths and challenges related to leadership and management, and the actions planned for developing the processes.**

We regard the flexible organization as an advantage – the focus stays on the content of the research and research collaborations.

However, in the changing university structure we do see a need to some extent formalize the management structure and develop a more coherent organization. This need originates from the decision to increasingly apply common funding for projects within the RC.

Another important development will be a more centralized training program for our PhD students (see Item 2). For this purpose we will nominate one PI in the RC as responsible for coordinating the training activities. His/her work will be supported by a group of 5 senior researchers, three within the RC and two outside. These positions will be filled in the meeting of the general assembly.

### 7 External competitive funding of the RC

- **Listing of the RCs external competitive funding, where:**
  - the funding decisions have been made during 1.1.2005-31.12.2010, and
  - the administrator of the funding is/has been the University of Helsinki

- **Academy of Finland (AF)** - total amount of funding (in euros) AF has decided to allocate to the RC members during 1.1.2005-31.12.2010: **4143000**

- **Finnish Funding Agency for Technology and Innovation (TEKES)** - total amount of funding (in euros) TEKES has decided to allocate to the RC members during 1.1.2005-31.12.2010: **627000**

- **European Union (EU)** - total amount of funding (in euros) EU has decided to allocate to the RC members during 1.1.2005-31.12.2010: **1046000**

- **European Research Council (ERC)** - total amount of funding (in euros) ERC has decided to allocate to the RC members during 1.1.2005-31.12.2010:

- **International and national foundations** - names of international and national foundations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
  - names of the foundations: Sigrid Juselius Foundation, Magnus Ehrnrooths Foundation, Finska Läkaresällskapet, Alkoholitutkimussäätiö, Suomen Parkinson-säätiö, Orion-FarmosSuomen kulttuurirahasto, University of Helsinki Arvo and Lea Ylppö Foundation, Signe & Ane Gyllenberg
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

Foundation Cancer Foundation CIMO The Finnish work Environment fundYrjö Jahnsson FoundationOrion
- total amount of funding (in euros) from the above-mentioned foundations: 4057000

- Other international funding - names of other international funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros)
  - names of the funding organizations:
  - total amount of funding (in euros) from the above-mentioned funding organizations:

- Other national funding (incl. EVO funding and Ministry of Education and Culture funded doctoral programme positions) - names of other national funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros)
  - names of the funding organizations: EVO fundingBiocenter HelsinkiMinistry of Education and culture
  - total amount of funding (in euros) from the above-mentioned funding organizations: 2149000

8 RC’S STRATEGIC ACTION PLAN FOR 2011–2013 (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC’s future perspectives in respect to research and doctoral training.
  The RC foresees a process of consolidation of the groups under an organized management. Research collaboration within the RC will increase and we aim for consolidated, externally funded (e.g. EU, NIH, Academy of Finland Research Programs, TEKES..) research funding applications. In this discussion we will recognize research topics that will be further developed within the RC. The RC will also actively promote recruitment of high quality researchers internationally, in line with the policy of the Helsinki University. In this process the large international network of the RC will no doubt be helpful.

  Several new openings in research are foreseen. The RC has strong tradition in human brain imaging, recognized e.g. by the Academy of Finland as top research status for the group. An important topic for development is the multimodal brain imaging (TMS, fMRI, DW-MRI, EEG/MEG) to study cognitive brain functions and functional brain anatomy with high precision by e.g. combining TMS, diffusion-weighted MRI and tractography. This line of research is cutting edge research and will be of significant interest also internationally.

  The zebra fish model will be used increasingly in research questions that previously have been assessed in other model systems. Particularly, the screening of functions of genes that have been identified in human genomic research will be executed in this model with fewer expenses and faster than in rodent models, which will be used for genes that have passed the zebra fish screening phase. The large international research network established by the core unit leader will guarantee that the latest methods and developments will be distributed effectively and without delay to the researchers of the RC. The histamine research is moving towards human studies. We have already found that histamine H3 receptor expression and signaling is abnormal in the prefrontal cortex of schizophrenics. There is now evidence that histamine is involved in Tourette syndrome (GTS) and ADHD, and GTS is the first human neurological condition where histamine is directly causally important. We are in the process of initiating a postmortem study on Tourette syndrome patients to characterize histaminergic system in the globus pallidus and cortex, and will also carry out a study on histamine metabolism in GTS patients to find out if the histamine system in altered in also those cases where histidine decarboxylase is not mutated. We will also expand the H3 receptor study to human alcoholists, and are currently planning a clinical trial with a company and some clinical addiction specialists.
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

The mouse behavioral phenotyping unit which is already now actively functioning is now ready to be established as a core unit with a responsible person instructing and supporting researchers, maintaining equipments and developing new methods. This service unit will strengthen research opportunities within RC and other research projects within UH. The behavioral unit will also organize theoretical courses and demonstrations for PhD students and other researchers.

As a part of the integrative neuroscience we will use novel stem cell techniques in studies investigating molecular mechanisms underlying defects in neurobehavioral and cognitive function. Neural stem cells provide us a tool to study differentiation of neuronal cells under normal and pathological conditions. The effects of pharmacological interventions targeting disordered molecular mechanisms can be investigated in cell cultures and primary findings in vitro will be verified in animal models in vivo. Current methods allow reprogramming of somatic cells including fibroblasts to produce induced pluripotent stem (iPS) cells. It is possible to obtain iPS cells of human origin and the patient-specific cells will be used to model genetic disorders in addition to the transgenic mouse models.

The strong tradition of the RC in conduction translational research is illustrated e.g. by the pain research group, where neurotransmitters and neuronal mechanisms underlying chronic pain in experimental rodent models are identified and the results will be made use of in collaboration with clinical work and pharmacology. In this connection, experimental setups with naturalistic stimuli and tasks will be developed.

The RC general assembly had three meeting where all PI:s participated. In the first meeting the plan for evaluation was thoroughly discussed and the decision to take part in the evaluation was taken. At that meeting also the person responsible for collecting the material from the RC members and compiling it to the format of the first evaluation round was elected (TS). In the second meeting all RC PI:s presented their key research results and the plan for evaluation report was discussed. A plan for collecting the material was decided upon and it was decided that TS continues as responsible for material collection and compilation work. In the third meeting the evaluation report draft was discussed and finalized. All members of the RC have taken the evaluation process seriously and provided the collector with necessary information, as well as critically reviewed the drafts for evaluation report. An important outcome of the evaluation procedure has been that the RC has now decided to formalize its existence and consolidate training structures in addition to existing research structures.
<table>
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<tr>
<th>Authors</th>
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<tr>
<td>Aitta-aho T, Vekovischeva OY, Neuvonen TJ, Korpi ER</td>
<td>Reduced benzodiazepine tolerance, but increased flumazenil-precipitated withdrawal in AMPA-receptor GluR-A subunit-deficient mice</td>
<td>Pharmacol Biochem Behav</td>
<td>2009</td>
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<td>Artchakov D, Tikhonov D, Ma Y, Neuvonen T, Limankoski J, Carlson S</td>
<td>Distractors impair and create working memory-related neuronal activity in the prefrontal cortex</td>
<td>Cereb Cortex</td>
<td>2009</td>
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<td>Baumann, M., Kalljärvi, J., Soto, C. and Halla, M.</td>
<td>Apolipoprotein E includes a binding site which is recognized by several amyloidogenic polypeptides</td>
<td>Biochem J</td>
<td>2000</td>
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<td>Fadika, G. and Baumann, M</td>
<td>Aggregation properties and complex formation with Apolipoprotein E are controlled by the conformational stage of the gelsolin-derived amyloid (AGel)</td>
<td>Amyloid</td>
<td>2002</td>
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<td>Hannula H, Neuvonen T, Savolainen P, Hillunen J, Ma YY, Antila H, Salonen O, Carlson S, Pertovaara A.</td>
<td>Increasing top-down suppression from prefrontal cortex facilitates tactile working memory</td>
<td>Neuromage</td>
<td>2010</td>
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<td>Hassinen AE, Möykynen TP, Korpi ER</td>
<td>Long-lasting modulation of glutamatergic transmission in VTA dopamine neurons after a single dose of benzodiazepine agonists</td>
<td>Neuropsychopharmacology</td>
<td>2009</td>
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<td>Liitos TO, Rautala PV, Kambur O, Kalso E.A.</td>
<td>Modulation of morphine-induced antinociception in acute and chronic opioid treatment by ibudilast</td>
<td>Anesthesiology</td>
<td>2009</td>
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<td>Linden AM, Alter MB, Leppä E, Rosenberg PH, Widsten W, Korpi ER</td>
<td>K+ channel TASK-1 knockout mice show enhanced sensitivities to ataxic and hypnotic effects of GABA(A)/ receptor ligands</td>
<td>J Pharmacol Exp Ther</td>
<td>2008</td>
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<td>Linden AM, Bergeron M, Schopp TD</td>
<td>Comparison of c-Fos induction in the brain by the mGlu2/3 receptor antagonist LY341495 and agonist LY354740: evidence for widespread endogenous tone at brain mGlu2/3 receptors in vivo</td>
<td>Neuropsychopharmacology</td>
<td>2005</td>
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<td>Linden AM, Shannon H, Baez M, Yu JL, Krueger A, Schopp DD</td>
<td>Anxiolytic-like activity of the mGlu2/3 receptor agonist LY354740 in the elevated plus maze test is disrupted in metabotropic glutamate receptor 2 and 3 knock-out mice</td>
<td>Psychopharmacology (Berlin)</td>
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<td>Effects of mGlu2 or mGlu3 receptor deletions on mGlu2/3 receptor agonist</td>
<td>Neuropharmacology</td>
<td>2006</td>
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<td>Metabotropic glutamate receptor targets for neuropsychiatric disorders</td>
<td>Drug Discovery Today, Therapeutic Strategies</td>
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<td>Use of MGLUR2 and MGLUR3 knockout mice to explore in vivo receptor specificity of the MGLUR2/3 selective antagonist LY341495</td>
<td>Neuropharmacology</td>
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<td>Effects of histamine H3 receptor ligands on the rewarding, stimulant and motor-imparing effects of ethanol in DBA/2J mice</td>
<td>Neuropharmacology (in press)</td>
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<td>Adrenomedullin: A mediator of the sleep-inducing effects of prolonged wakefulness</td>
<td>Science</td>
<td>1997</td>
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<td>Excessive novelty-induced c-Fos expression and altered neurogenesis in the hippocampus of GluA1 knockout mice</td>
<td>Eur J Neurosci</td>
<td>2011</td>
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<td>Inhibition of endoplasmic reticulum stress counteracts neuronal cell death and protein aggregation caused by N-terminal mutant huntingtin proteins</td>
<td>Exp Cell Res</td>
<td>2008</td>
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<td>Downregulation of NF-κB signaling by N-terminal mutant huntingtin proteins induces oxidative stress and increased cell death</td>
<td>Cell Mol Life Sci</td>
<td>2010</td>
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<td>Preserved functional specialization for spatial processing in the middle occipital gyrus of the early blind</td>
<td>Neuron</td>
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<td>Notch signaling regulates PDGF-receptor beta expression in vascular smooth muscle cells</td>
<td>Circ Res</td>
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<td>Metabotropic glutamate receptors as novel targets for anxiety and stress disorders</td>
<td>Nat Rev Drug Discov.</td>
<td>2005</td>
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<td>Attenuation of mechanical hypersensitivity by an antagonist of the TRPA1 ion channel in diabetic animals</td>
<td>Anesthesiaology</td>
<td>2009</td>
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<td>Aging attenuates basal forebrain lactate release and promotion of cortical arousal during prolonged wakefulness</td>
<td>J Neurosci</td>
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<td>Reduced VGLUT2 expression increases motor neuron viability in ALS-Sod1G93A mice</td>
<td>Exp Cell Res</td>
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<td>XMAP reduces oxidative stress after cerebral ischemia or hypoxia-ischemia through up-regulation of mitochondrial antioxidants</td>
<td>Eur J Neurosci</td>
<td>2007</td>
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### 1 Analysis of publications

- Associated person is one of Tarja Stenberg, tarja.stenberg@helsinki.fi, Natalia Gass, natalia.gass@helsinki.fi, Natalia Gass, Natalia.Gass@helsinki.fi, Andrey Kostin, Andrey.Kostin@helsinki.fi, Kirsi-Marja Rytkönen, Kirsi-Marja.Rytkonen@helsinki.fi, Anna Sofia Urrila, Anna.Urrila@helsinki.fi, Henna-Viisa Kuusela, Henna-Kaisa.Wigren@helsinki.fi, Juha Gogulski, Juha.Gogulski@helsinki.fi, Hong Wei, Hong.Wei@helsinki.fi, Juha Gogulski, Juha.Gogulski@helsinki.fi, Pia Backström, Pia.Backstrom@helsinki.fi, Lauri Halonen, Lauri.Halonen@helsinki.fi, Kati Susanna Hellsten, Kati.Susanna.Hellsten@helsinki.fi, Eija Kalso, Eija.Kalso@helsinki.fi, Vesa Kontinen, Vesa.Kontinen@helsinki.fi, Katri Niemi, Katri.Niemi@helsinki.fi, and Enzo Scifo, Enzo.Scifo@helsinki.fi.

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<td>B3 Unrefereed article in conference proceedings</td>
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<td>D2 Article in professional hand or guide book or in a professional data system, or text book material</td>
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<td>E1 Popular article, newspaper article</td>
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<td>E2 Popular monograph</td>
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2 Listing of publications

A1 Refereed journal article

2005


Chandra, D, Korpi, ER, Miralles, C, Blas, AD, Homanics, G 2005, 'GABAA receptor (gamma2) subunit knockdown mice have enhanced anxiety-like behavior but unaltered hypnic response to benzodiazepines', *BMC Neuroscience*, vol 6, no. 1.


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INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

NEUROMED/Stenberg


Linden, A, Baaz, M, Bergeron, M, Schoepp, D 2006, 'Effects of mGlur2 or mGlur3 receptor deletions on mGlur2/3 receptor agonist (LY354740)-induced brain c-Fos expression: specific roles for mGlur2 in the amygdala and subcortical nuclei, and mGlur3 in the hippocampus', *Neuropsychopharmacology*, vol 51, pp. 213-228.


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2007


NEUROMED/Stenberg


2008


2009


Artschakov, D, Tikhonravov, D, Ma, Y, Neuvonen, T, Linnankoski, I, Carlson, S 2009, 'Distracters impair and create working memory-related neuronal activity in the prefrontal cortex', *Cerebral Cortex*, vol 19, pp. 2680-2689.


Extracellular Acidification: Potential Co-Regulators of Osteoclast Morphology',

Contribution of adenosine related genes to the risk of depression with disturbed sleep',
Determines Endoplasmic Reticulum Exit of AMPA Receptors',
Interactions',
Agonist Muscimol Acts Preferentially Through Forebrain High-Affinity Binding Sites',

Changes in brain function and morphology in patients with unilateral chronic pain',

Attenuation of mechanical hypersensitivity by an antagonist of the TRPA1 ion channel in diabetic animals',
Anesthesiology, vol 109, no. 4, pp. 147-154.

Basal forebrain lactate release and promotion of cortical arousal during prolonged waking is attenuated in aging',

Evolutionary scenarios of Notch proteins',
Molecular and Cellular Proteomics, vol 9, no. 3, pp. 411-427.

Identification of a hormone-regulated Dynamic Nuclear Actin Network Associated with Estrrogen Receptor alpha in Human Breast Cancer Cell Nuclei',

Calcium Gluconate in Phosphate Buffered Saline Increases Gene Delivery with Adenovirus Type 5',
PLoS One, vol 5, no. 9, Article Number: e13103.

Prolonged waking is attenuated in aging',

Evolutionary scenarios of Notch proteins',
Molecular and Cellular Proteomics, vol 9, no. 3, pp. 411-427.

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Basal forebrain lactate release and promotion of cortical arousal during prolonged waking is attenuated in aging',
Journal of Neuroscience, vol 29, no. 37, pp. 11698-11707.

Evolutionary scenarios of Notch proteins',
Molecular and Cellular Proteomics, vol 9, no. 3, pp. 411-427.

Identification of a hormone-regulated Dynamic Nuclear Actin Network Associated with Estrrogen Receptor alpha in Human Breast Cancer Cell Nuclei',

Calcium Gluconate in Phosphate Buffered Saline Increases Gene Delivery with Adenovirus Type 5',
PLoS One, vol 5, no. 9, Article Number: e13103.

Prolonged waking is attenuated in aging',

Evolutionary scenarios of Notch proteins',
Molecular and Cellular Proteomics, vol 9, no. 3, pp. 411-427.

Identification of a hormone-regulated Dynamic Nuclear Actin Network Associated with Estrrogen Receptor alpha in Human Breast Cancer Cell Nuclei',

Calcium Gluconate in Phosphate Buffered Saline Increases Gene Delivery with Adenovirus Type 5',
PLoS One, vol 5, no. 9, Article Number: e13103.

Prolonged waking is attenuated in aging',

Evolutionary scenarios of Notch proteins',
Molecular and Cellular Proteomics, vol 9, no. 3, pp. 411-427.

Identification of a hormone-regulated Dynamic Nuclear Actin Network Associated with Estrrogen Receptor alpha in Human Breast Cancer Cell Nuclei',

Calcium Gluconate in Phosphate Buffered Saline Increases Gene Delivery with Adenovirus Type 5',
PLoS One, vol 5, no. 9, Article Number: e13103.

Prolonged waking is attenuated in aging',
Letters
Neuropsychiatric genetics Based Association Study of Candidate Genes for Depression and Sleep Disturbance', Utge, S, Soronen, P, Partonen, T, Loukola, A, Kronholm, E, Pirkola, S, Nyman, E, Porkka-Heiskanen, T, Paunio, T
PLoS One
Analysis of Circadian Genes in a Population-Based Sample Reveals Association of TIMELESS with Depression and Sleep Disturbance', Vainio, M, Siltanen, M, Hieta, T, Halonen, L
memantine on a mismatch negativity-like response in anesthetized rats', Journal of Physical Chemistry C
Sciences Related Factors and Mobility in Older Men and Women', Sälli, E, Hänninen, V, Halonen, L
Sittanen, M, Vainio, M, Halonen, L 2010, 'Pump-tunable continuous-wave singly resonant optical parametric oscillator from 2.5 to 4.4 mu m', Optics Express, vol 18, pp. 14087-14092.

Viisanen, H, Pertovaara, A 2010, ‘Roles of the rostroventromedial medulla and the spinal 5-HT1A receptor in descending antinociception induced by motor cortex stimulation in the neuropathic rat’, *Neuroscience Letters*, vol 476, pp. 133-137.


A2 Review in scientific journal

2005


2006


2007


2008


2010

Moore, RA, Derry, S, McQuay, HJ, Straube, S, Aldington, D, Wiffen, P, Bell, RF, Kalso, E, Rowbotham, MC, IASP Special Interest Grp Systemat 2010, ‘Clinical effectiveness. An approach to clinical trial design more relevant to clinical practice, acknowledging the importance of individual differences’, Pain : the journal of the International association for the study of pain, vol 149, no. 2, pp. 173-176.


A3 Contribution to book/other compilations (refereed)

2005


2006


2007


2008


2009


2010

Kalso, E 2010. 'Drugs that act against opioid tolerance', in PBGRE O (ed.), Cancer Pain: from Molecules to Suffering , IASP Press.

A4 Article in conference publication (refereed)

2007


B1 Un refereed journal article

2005


2006


INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

NEUROMED/Stenberg


2007


2008


2009
Kalso, E 2009, 'Kyllä se kipu hoidetaan - rauhoittukaa: lääkärien näkemykset syöpäkivun hoidosta : [pääkirjoitus]', Suomen lääkärilehti, vol 64, no. 41, pp. 3397.


2010


B2 Contribution to book/other compilations (non-refereed)

2007

B3 Unrefered article in conference proceedings

2007

2008


2009
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

NEUROMED/Stenberg

Ng, YP, Kalimo, H, Baumann, M 2009. Stable expression of mutated and non-mutated mouse NOTCH3 in C2C12 mouse myoblast, Journal of the Neurological Sciences 283 ELSEVIER BV.

2010

C2 Edited book, compilation, conference proceeding or special issue of journal

2006

2008

2009
Kalso, E, Paakkari, P, Forsell, M (eds) 2009. Opioidit: pitkäkestoisessa kivussa. 2. uud. p edn, Lääkelaitos, [Helsinki].

2010
Paice, J, Bell, R, Kalso, E, Soyowo, O 2010, Cancer pain: from molecules to suffering, IASP Press.

D2 Article in professional hand or guide book or in a professional data system, or text book material

2007

2008

2010

E1 Popular article, newspaper article

2005

2006

2008
NEUROMED/Stenberg

2009

**E2 Popular monograph**

2007

**I1 Audiovisual materials**

2010
Clinical Pharmacology of pain
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

NEUROMED/Stenberg

1 Analysis of activities 2005-2010

- Associated person is one of Tarja Stenberg, tarja.stenberg@helsinki.fi, Natalia Gass, natalia.gass@helsinki.fi, Andrey Kostin, Kirsi-Marja Rytkönen, kirsi-marja.rytkonen@helsinki.fi, Natalia Gass, natalia.gass@helsinki.fi, Andrey Kostin, Kirsi-Marja Rytkönen, kirsi-marja.rytkonen@helsinki.fi, Anna Sofia Urrila, Anna.Urrila@helsinki.fi, Henna-Viiva Pipi, henna.viiva@helsinki.fi, Inna Anurova, inna.anurova@helsinki.fi, Denis Archakov, Denis.Archakov@helsinki.fi, Robert Alexander Boldt, robert.boldt@helsinki.fi, Ping Jiang, ping.jiang@helsinki.fi, Patxi Laxoianaren @helsinki.fi, Virve Aiste Vuento, Virve.Vuento@helsinki.fi, Karl Alkman, karl.alkman@helsinki.fi, Linda Chustama Jansso, linda.jansso@helsinki.fi, Tommy Nordstrom, tommy.nordstrom@helsinki.fi, Lauri Louhivuori, lauri.louhivuori@helsinki.fi, Marko Uutela, Marko.Uutela@helsinki.fi, Vesa Louhivuori, vesa.louhivuori@helsinki.fi, Esa Kroos @helsinki.fi, Teemu Aitta-Aho, Teemu.Aitta-aho@helsinki.fi, Piia Bäckström, piia.backstrom@helsinki.fi, Lauri Halonen, lauri.halonen@helsinki.fi, Kati Heikkinen, kati.heikkinen@helsinki.fi, Elii Leppä, Elii.Leppa@helsinki.fi, Tommi Petteri Mäkynen, Tommi.Mäkynen@helsinki.fi, Anne Patelainen, anne.patelainen@helsinki.fi, Satu Tapio Sirkkula, Satu.Sirkkula@helsinki.fi, Elena Vachichkina, Elena.Vachichkina@helsinki.fi, Olga Yurinna Velichkocher, Olga.Velichkocher@helsinki.fi, Pelosa Ruuhala, Pelosa.Ruuhala@helsinki.fi, Teemu Henrik Hellkamaa, Teemu.Hellkamaa@helsinki.fi, Johannes Villanen, Johannes.Villanen@helsinki.fi, Antti-Maaja Linden, Antti-Maaja.Linden@helsinki.fi, Chandra Procamai, Chandra.Procamai@helsinki.fi, Eija Kalo, Eija.Kalo@helsinki.fi, Vesla Kontinen, Vesla.Kontinen@helsinki.fi, Kim Krämer Lamberg, Kim.Kramer.Lamberg@helsinki.fi, Pertti Panula, Pertti.Panula@helsinki.fi, Congyu Jin, Congyu.Jin@helsinki.fi, Kaj Karlstedt, kaj.karlstedt@helsinki.fi, Saara Nousiainen, Saara.Nousiainen@helsinki.fi, Stanislav Rozov, Marc Baumann, Marc.Baumann@helsinki.fi, Zusana Demanovova, Zusana.Demanovova@helsinki.fi, Ville Petteri Johinen, ville.p.johinen@helsinki.fi, Maciej Latoński, maciej.latonski@helsinki.fi, Martina Lorey, martina.lorey@helsinki.fi, Kati Niemi, Kati.Niemi@helsinki.fi, Enzo Scioli, enzo.scioli@helsinki.fi

<table>
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<th>Activity type</th>
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<td>Supervisor or co-supervisor of doctoral thesis</td>
<td>41</td>
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<tr>
<td>Prizes and awards</td>
<td>8</td>
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<tr>
<td>Editor of research journal</td>
<td>135</td>
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<td>Editor of research anthology/collection/conference proceedings</td>
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<td>Peer review of manuscripts</td>
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<td>Assessment of candidates for academic posts</td>
<td>11</td>
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<td>Membership or other role in review committee</td>
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<td>Membership or other role in research network</td>
<td>8</td>
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<td>Membership or other role in national/international committee, council, board</td>
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<td>Membership or other role in public Finnish or international organization</td>
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<td>Membership or other role of body in private company/organisation</td>
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<tr>
<td>Participation in interview for written media</td>
<td>26</td>
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<tr>
<td>Participation in radio programme</td>
<td>3</td>
</tr>
<tr>
<td>Participation in TV programme</td>
<td>5</td>
</tr>
</tbody>
</table>
2 Listing of activities 2005-2010

Supervisor or co-supervisor of doctoral thesis

Tarja Stenberg, tarja.stenberg@helsinki.fi
Supervision of academic dissertation, Tarja Stenberg, 1999 → 2005, Finland
Supervision of academic dissertation, Tarja Stenberg, 2001 → 2007, Finland
Supervision of academic dissertation, Tarja Stenberg, 2002 → 2009, Finland
Supervision of academic dissertation, Tarja Stenberg, 2004 → 2010, Finland

Antti Pertovaara, Antti.Pertovaara@helsinki.fi

Karl Åkerman, karl.akerman@helsinki.fi
Supervised 14 doctoral theses, Karl Åkerman, 1991 → ...

Maija Castrén, Maija.Castrén@helsinki.fi
Thesis supervisor, Maija Castrén, 2002 → 2007, Finland

Esa Risto Korpi, Esa.Korpi@helsinki.fi
Supervision of PhD student Anne Panhelaenen, University of Helsinki, Esa Risto Korpi, 2005 → ...
Supervision of PhD student Kati Hallsten, University of Helsinki, Esa Risto Korpi, 2005 → ...
Supervision of PhD student Teemu Aitla-aho, University of Helsinki, Esa Risto Korpi, 2005 → ...
Supervision of PhD student Elli Leppä, University of Helsinki, Esa Risto Korpi, 2006 → ...
Supervision of PhD student Kimmo Ingman, University of Turku, Esa Risto Korpi, 08.06.2007
Supervision of PhD student Elena Vashchinkina, University of Helsinki, Esa Risto Korpi, 2008 → ...
Supervision of PhD student Tommi Mäkynen, University of Helsinki, Esa Risto Korpi, 05.06.2009
Supervision of PhD student Milica Maksimovic, University of Helsinki, Esa Risto Korpi, 2010 → ...

Lauri Halonen, Lauri.Halonen@helsinki.fi
PhD thesis supervision, Lauri Halonen, 07.06.2006

Anni-Maija Linden, Anni-Maija.Linden@helsinki.fi
Co-supervisor of PhD student, Anni-Maija Linden, 2004 → ..., Finland
Supervisor of PhD student, Anni-Maija Linden, 2007 → ..., Finland

Eija Kalso, Elja.Kalso@helsinki.fi
Supervision of doctoral thesis, Eija Kalso, 01.01.2001 → 03.11.2006, Norway
Supervision of doctoral thesis, Eija Kalso, 2004 → 2012, Finland
Supervision of doctoral thesis, Eija Kalso, 2008 → 2012, Finland
Supervision of doctoral thesis, Eija Kalso, 2007 → 2012, Finland
Supervision of doctoral thesis, Eija Kalso, 2009 → 2012, Finland
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

NEUROMED/Stenberg

Pertti Panula, Pertti.Panula@helsinki.fi
Supervisor of doctoral thesis: Maria Sundvik, Pertti Panula, 2005 → …, Finland
Thesis supervision: Adrian Flores Lozada, Pertti Panula, 02.09.2005, Finland
Thesis supervision: CongYu Jin, Pertti Panula, 03.06.2005, Finland
Thesis supervision: Kimmo Michelsen, Pertti Panula, 26.08.2005, Finland
Supervisor of doctoral thesis: Madhusmita Priyadarshini, Pertti Panula, 2007 → …
Supervisor of doctoral thesis: Stanislav Rozov, Pertti Panula, 2007 → …
Supervisor of doctoral thesis: Raphaela Kaisler, Pertti Panula, 2008 → 2010
Thesis supervision: Ville Sallinen, Pertti Panula, 22.06.2009, Finland
Supervisor of doctoral thesis: Jenni Vanhanen, Pertti Panula, 2010 → …

Prizes and awards

Henna-Kaisa Wigren, Henna-Kaisa.Wigren@helsinki.fi
Suomen Fysiologiyhdistyksen väitöskirjapalkinto 2010, Henna-Kaisa Wigren, 19.03.2010

Esa Risto Korpi, Esa.Korpi@helsinki.fi
Oswald Schmiedeberg lecture, Esa Risto Korpi, 06.10.2005, Estonia
Member of the Finnish Academy of Science and Letters, Esa Risto Korpi, 2007, Finland
"Boss of the Year 2006" at the University of Helsinki, Esa Risto Korpi, 2006, Finland

Eija Kalso, Eija.Kalso@helsinki.fi
Konrad RejtoWaara Prize, Eija Kalso, 12.2007
Finska Läkaresällskapet: best textbook in Finnish, Eija Kalso, 01.2010
Member of the Finnish Academy of Sciences, Eija Kalso, 04.2010

Saara Nuutinen, Saara.Nuutinen@helsinki.fi
2nd Prize at the Young Investigator Competition, Saara Nuutinen, 15.07.2010, United Kingdom

Editor of research journal

Tarja Stenberg, tarja.stenberg@helsinki.fi
invalid, Tarja Stenberg, 2006
invalid, Tarja Stenberg, 2006
Associate editor of "Journal of Sleep Research", Tarja Stenberg, 01.01.2007 → …, United Kingdom
Associate editor of journal "Sleep", Tarja Stenberg, 2007 → …, United States

Anna Sofia Urrila, Anna.Urrila@helsinki.fi
Cellular and Molecular Life Sciences, Anna Sofia Urrila, 01.01.2006 → 31.12.2006
Psychiatry Research - Neuroimaging, Anna Sofia Urrila, 01.01.2006 → 31.12.2006

Antti Pertovaara, Antti.Pertovaara@helsinki.fi
European Journal of Pharmacology, Antti Pertovaara, 2002 → …, Netherlands
Pain, Antti Pertovaara, 2005 → …, Netherlands
CNS Neuroscience & Therapeutics, Antti Pertovaara, 2006 → …, United Kingdom
The Open Anesthesiology Journal, Antti Pertovaara, 2007 → …
European Journal of Pain, Antti Pertovaara, 2008 → …, Netherlands
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

NEUROMED/Stenberg

The Open Pain Journal, Antti Pertovaara, 2008 → ..., Netherlands
Scandinavian Journal of Pain, Antti Pertovaara, 2009 → ..., Netherlands

Karl Åkerman, karl.akerman@helsinki.fi
editor of Acta Physiologica, Karl Åkerman, 1996 → ..., Sweden

Maija Castrén, Maija.Castrén@helsinki.fi
European Journal of Neuroscience, Maija Castrén, 01.01.2006 → 31.12.2006, United States
Molecular Biology Reports, Maija Castrén, 20.08.2006 → 31.12.2006, United States
Neurobiology of Disease, Maija Castrén, 05.07.2006 → 31.12.2006, United States
Neurobiology of Disease, Maija Castrén, 05.07.2006 → 31.12.2006, United States

Esa Risto Korpi, Esa.Korpi@helsinki.fi
Alcohol, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Alcohol and Alcoholism, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Alcoholism: Clinical and Experimental Research, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Cerebellum, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Journal of Neuroscience Research, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Molecular Pharmacology, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Neurobiology of Disease, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Neurochemical Research, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Neuropharmacology, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Neuroscience Letters, Esa Risto Korpi, 01.01.2005 → 31.12.2005
Alcohol, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Alcohol and Alcoholism, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Alcoholism: Clinical and Experimental Research, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Biological Psychiatry, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Cerebellum, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Genes, Brain and Behavior, Esa Risto Korpi, 01.01.2006 → 31.12.2006
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

NEUROMED/Stenberg

Journal of Neuroscience, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Journal of Neuroscience Research, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neurochemical Research, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neurochemical Research, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neuropharmacology, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neuropsychopharmacology, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neuroscience, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neuroscience, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Neuroscience & Biobehavioral Reviews, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Pharmacology & Therapeutics, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Synapse, Esa Risto Korpi, 01.01.2006 → 31.12.2006
Alcohol, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Alcohol, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Alcohol, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Alcohol, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Cerebellum, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Cerebral Cortex, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Cerebral Cortex, Esa Risto Korpi, 14.01.2007 → 31.12.2011
Genes, Brain and Behavior, Esa Risto Korpi, 14.01.2007 → 31.12.2011
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

NEUROMED/Stenberg

Lauri Halonen, Lauri.Halonen@helsinki.fi
Journal of Chemical Physics, Lauri Halonen, 01.01.2005 → 31.12.2005
Physical Chemistry Chemical Physics, Lauri Halonen, 01.01.2005 → 31.12.2005
THEOCHEM, Lauri Halonen, 01.01.2005 → 31.12.2005
Journal of Chemical Physics, Lauri Halonen, 01.01.2006 → 31.12.2006
Molecular Physics, Lauri Halonen, 01.01.2006 → 31.12.2006
THEOCHEM, Lauri Halonen, 01.01.2006 → 31.12.2006
Chemical Physics, Lauri Halonen, 01.01.2007 → 31.12.2007
Journal of Chemical Physics (JCP), Lauri Halonen, 01.01.2007 → 31.12.2007
Journal of Molecular Spectroscopy, Lauri Halonen, 01.01.2007 → 31.12.2007
Molecular Physics, Lauri Halonen, 01.01.2007 → 31.12.2007

Pekka Rauhala, Pekka.Rauhala@helsinki.fi
Free Radical Biology of Medicine, Pekka Rauhala, 01.01.2005 → 31.12.2005
Neurochemical Research, Pekka Rauhala, 01.01.2005 → 31.12.2005
Brain Research, Pekka Rauhala, 01.08.2007 → 31.12.2011, United States

Anni-Maija Linden, Anni-Maija.Linden@helsinki.fi
European Journal of Neuroscience, Anni-Maija Linden, 01.01.2005 → 31.12.2005
Synapse, Anni-Maija Linden, 04.03.2008 → 31.12.2011

Eija Kalso, Eija.Kalso@helsinki.fi
European Journal of Pain, Eija Kalso, 01.01.1997 → …
The Journal of Pain, Eija Kalso, 01.01.1997 → 31.12.2007
Pain, Eija Kalso, 01.01.2004 → 31.12.2011

Pertti Panula, Pertti.Panula@helsinki.fi
Acta Histochemica, Pertti Panula, 01.01.2004 → 31.12.2010, Netherlands
Journal of Neurochemistry, Pertti Panula, 01.01.2004 → 31.12.2010
Cell and Tissue Research, Pertti Panula, 01.01.2005 → 31.12.2010, Germany
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

NEUROMED/Stenberg

Histochemistry and Cell Biology, Pertti Panula, 01.01.2005 → 31.12.2010, Germany
Journal of Chemical Neuroanatomy, Pertti Panula, 01.01.2005 → 31.12.2010, Netherlands
Acta Physiologica, Pertti Panula, 2009, Netherlands
European Journal of Neuroscience, Pertti Panula, 2009

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Editor of research anthology/collection/conference proceedings
Eija Kalso, Eija.Kalso@helsinki.fi
Proceedings of the 11th World Congress on Pain, Eija Kalso, 01.03.2005 → 31.12.2005, United States
Systematic Reviews in Pain Research: Methodology Refined, Eija Kalso, 01.01.2006 → 31.05.2008
Cancer Pain: From Molecules to Suffering, Eija Kalso, 01.12.2008 → 31.03.2010

Peer review of manuscripts
Henna-Kaisa Wigren, Henna-Kaisa.Wigren@helsinki.fi
Peer-reviewer for Behavioural Brain Research, Henna-Kaisa Wigren, 2009 → ...
Peer-reviewer for Neuroscience Letters, Henna-Kaisa Wigren, 2009
Peer-reviewer for Physiology & Behaviour, Henna-Kaisa Wigren, 2010 → ...

Antti Pertovaara, Antti.Pertovaara@helsinki.fi
Peer review of 55-65 manuscripts annually for international scientific journals, Antti Pertovaara, 2005 → ...

Maija Castrén, Maija.Castrén@helsinki.fi
Peer review of a manuscript in Nature, Maija Castrén, 2009
Peer review of a manuscript in Neuropediatrics, Maija Castrén, 2009
Peer review of a manuscript in Brain Research, Maija Castrén, 2009
Peer review of a manuscript in American Journal of Human Genetics, Maija Castrén, 2010
Peer review of a manuscript in Neurogenetics, Maija Castrén, 2010
Peer review of a manuscript in Neuropsychopharmacology, Maija Castrén, 2010

Esa Risto Korpi, Esa.Korpi@helsinki.fi
Alcohol, editorial board member, Esa Risto Korpi, 1998 → ..., United States
Neurochemical Research, editorial board member, Esa Risto Korpi, 1999 → 2008, United States
The Cerebellum, editorial board member, Esa Risto Korpi, 2001 → ...
Peer review of scientific manuscripts in pharmacology and neuroscience, 10-30 per year, Esa Risto Korpi, 2002 → ...
Frontiers in Molecular Neuroscience, Neuropharmacology, reviewing editor, Esa Risto Korpi, 2008 → ..., Switzerland
Basic & Clinical Pharmacology & Toxicology, editorial advisor, Esa Risto Korpi, 2009 → ..., Denmark

Anni-Maija Linden, Anni-Maija.Linden@helsinki.fi
Peer reviewer of manuscript for European Journal of Neuroscience, Anni-Maija Linden, 2005
Peer reviewer of manuscript for Genes, Brain and Behavior, Anni-Maija Linden, 2006
Peer reviewer of manuscript for Journal of Pharmacology and Experimental Therapeutics, Anni-Maija Linden, 2006
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

NEUROMED/Stenberg

Peer reviewer of manuscript for European Journal of Neuroscience, Anni-Maija Linden, 2007
Peer reviewer of manuscript for European Journal of Pharmacology, Anni-Maija Linden, 2007
Peer reviewer of manuscript for Journal of Pharmacology and Experimental Therapeutics, Anni-Maija Linden, 2007
Peer reviewer of manuscript for Pharmacology, Biochemistry and Behavior, Anni-Maija Linden, 2007
Peer reviewer of European Journal of Anaesthesiology, Anni-Maija Linden, 2008
Peer reviewer of manuscript for Journal of Neurochemistry, Anni-Maija Linden, 2008
Peer reviewer of manuscript for Methods and Findings in Experimental and Clinical Pharmacology, Anni-Maija Linden, 2008
Peer reviewer of manuscript for Neuropharmacology, Anni-Maija Linden, 2008
Peer reviewer of manuscript for Synapse, Anni-Maija Linden, 2008
Peer reviewer of manuscript for Biological Psychiatry, Anni-Maija Linden, 12.2009
Peer reviewer of manuscript for European Neuropsychopharmacology, Anni-Maija Linden, 2009
Peer reviewer of manuscript for Neuropharmacology, Anni-Maija Linden, 2009
Peer reviewer of manuscript for Scandinavian Journal of Laboratory Animal Science, Anni-Maija Linden, 2009
Peer reviewer of manuscript for Neuropharmacology, Anni-Maija Linden, 03.2010
Peer reviewer of manuscript for Pharmacological reports, Anni-Maija Linden, 2010

Eija Kalso, Eija.Kalso@helsinki.fi
Anesthesia and Analgesia, Eija Kalso, 01.01.2000 → 31.12.2011, United States
British Medical Journal, Eija Kalso, 01.01.2003 → 31.12.2011
Acta Anaesthesiologica Scandinavica, Eija Kalso, 01.01.2004 → 31.01.2011
Journal of Pain and Symptom Management, Eija Kalso, 01.01.2004 → 31.12.2011
Anesthesia and Analgesia, Eija Kalso, 01.01.2005 → 31.12.2011, United States
Anesthesiology, Eija Kalso, 01.01.2005 → 31.12.2011, United States
Journal of Pain, Eija Kalso, 01.01.2008 → 31.12.2011
Proceedings of the National Academy of Sciences, Eija Kalso, 01.01.2010 → 31.12.2010

Pertti Panula, Pertti.Panula@helsinki.fi
Biochemical Pharmacology, Pertti Panula, 2006
Peptides, Pertti Panula, 2006
Proceedings of the National Academy of USA, Pertti Panula, 2006
Acta histochemica, Pertti Panula, 2007 → 2008
Cell and Tissue Research, Pertti Panula, 2007 → 2008
Histochemistry and Cell Biology, Pertti Panula, 2007 → 2008
Journal of Neurochemistry, Pertti Panula, 2007 → 2008
Neuroscience, Pertti Panula, 2007
British Journal of Pharmacology, Pertti Panula, 2008
European Journal of Neuroscience, Pertti Panula, 2008 → 2009
Journal of Chemical Neuroanatomy, Pertti Panula, 2008
Brain Research, Pertti Panula, 2009
Epilepsy Research, Pertti Panula, 2009
Neurobiology of Disease, Pertti Panula, 2009
Neuroscience, Pertti Panula, 2009

8
NEUROMED/STENBERG

Aquatic Toxicology, Pertti Panula, 19.12.2010
Brain Pathology, Pertti Panula, 27.12.2010
Brain Structure and Function, Pertti Panula, 10.12.2010
British Journal of Pharmacology, Pertti Panula, 10.11.2010
CNS neuroscience &amp; Therapeutics, Pertti Panula, 10.04.2010
Frontiers in Neuroscience, Pertti Panula, 2010
Journal of Chemical Neuroanatomy, Pertti Panula, 10.07.2010
Journal of Comparative Neurology, Pertti Panula, 20.07.2010
Journal of Neurochemistry, Pertti Panula, 10.05.2010
Neuropathology and Applied Neurobiology, Pertti Panula, 2010
Psychopharmacology, Pertti Panula, 01.11.2010

Saara Nuutinen, Saara.Nuutinen@helsinki.fi
Journal of Neurochemistry, Saara Nuutinen, 09.02.2009 → 02.03.2009
Current Medicinal Chemistry, Saara Nuutinen, 28.06.2010 → 19.07.2010
Psychopharmacology, Saara Nuutinen, 21.10.2010 → ...

Editor of special theme number
Eija Kalso, Eija.Kalso@helsinki.fi
Drug Discovery Today: Disease Mechanisms, Eija Kalso, 01.01.2005 → 31.01.2005, Netherlands

Assessment of candidates for academic posts
Tarja Stenberg, tarja.stenberg@helsinki.fi
Assessment for academic position, Tarja Stenberg, 2010, Finland
Assessment for promotion, Tarja Stenberg, 2010, United States
Antti Pertovaara, Antti.Pertovaara@helsinki.fi
Assessment of a candidate for a Docentship in Psychophysiology; Antti Raninen, Antti Pertovaara, 2007, Finland
Assessment of a candidate for a Professorship in Physiology, Antti Pertovaara, 2008, Malaysia
Esa Risto Korpi, Esa.Korpi@helsinki.fi
Assessor for a Professorship of Anesthesiology (and Pharmacology), Esa Risto Korpi, 2007, United States
Assessor for a Professorship of Pharmacology and Experimental Therapeutics, Esa Risto Korpi, 2007, United States
Assessor for a Professorship of Biochemistry, Esa Risto Korpi, 2009, Hong Kong
Pertti Panula, Pertti.Panula@helsinki.fi
Examiner of the docent application, Pertti Panula, 15.02.2006, Finland
Evaluation of candidates for professorship, Pertti Panula, 2009, United States
Evaluation of a candidate for Volwiler Research Fellow, Pertti Panula, 2010 → ..., United States
Evaluation of assistant professor for tenure, Pertti Panula, 2010, United States

Membership or other role in review committee
Tarja Stenberg, tarja.stenberg@helsinki.fi
Evaluation of proposals, Tarja Stenberg, 2009, Norway
Proposal evaluation, Tarja Stenberg, 2009, Belgium
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

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Antti Pertovaara, Antti.Pertovaara@helsinki.fi
Member of the Scientific Advisory Board: NZ Neurological Fdn, Antti Pertovaara, 1995 → ..., New Zealand
Member of the Scientific Advisory Board: Danish Inst Pain Res, Antti Pertovaara, 1999 → ..., Denmark
Member of the Scientific Advisory Board: Finnish Pain Res Soc, Antti Pertovaara, 1999 → ..., Finland
Grant Reviewer: Georgian NSF, Antti Pertovaara, 2008 → 2009, Georgia
Grant Reviewer: Parkinson's Dis Soc, Antti Pertovaara, 2008, United Kingdom
Grant Reviewer: NSF Luxembourg, Antti Pertovaara, 2009 → 2011, Luxembourg
Grant Reviewer: Wellcome Trust, Antti Pertovaara, 2008, United Kingdom
Grant Reviewer: MRC UK, Antti Pertovaara, 2010, United Kingdom

Esa Risto Korpi, Esa.Korpi@helsinki.fi
President of the lab review committee, Aeres, France, Esa Risto Korpi, 2009, France

Pertti Panula, Pertti.Panula@helsinki.fi
ANR/INSERM, Pertti Panula, 2009, France
ATIP: Creation D’Equipe, Pertti Panula, 2009, France

Membership or other role in research network

Tarja Stenberg, tarja.stenberg@helsinki.fi
Coordinator of the consortium "Sleep Restriction", Tarja Stenberg, 2005 → 2008
Coordinator of the consortium "Enough Sleep", Tarja Stenberg, 2006 → 2008
Coordinator of the FISH consortium, Tarja Stenberg, 2009 → 2011, Finland

Antti Pertovaara, Antti.Pertovaara@helsinki.fi
Mentor/lecturer at the European Pain School, Siena, Italy, Antti Pertovaara, 2008, Italy

Maija Castrén, Maija.Castren@helsinki.fi
Research Consortium for ERA-NET Neuron, Maija Castrén, 2010 → ...

Pertti Panula, Pertti.Panula@helsinki.fi
EU COST BM0804 EuFishBiomedNet, Pertti Panula, 24.06.2009 → 23.06.2013
EU COST BM0806 Recent advances in histamine receptor H4R research, Pertti Panula, 09.04.2009 → 08.04.2013

Membership or other role in national/international committee, council, board

Tarja Stenberg, tarja.stenberg@helsinki.fi
Board member of Brain Research Society of Finland, Tarja Stenberg, 2003 → 2010, Finland
Board member, Tarja Stenberg, 2006 → 2011
Chair of the ERSRS Research Committee, Tarja Stenberg, 2006 → 2010
invalid, Tarja Stenberg, 2006 → 2007
ESRS chair of the EU committee, Tarja Stenberg, 01.01.2007 → 31.12.2010, Israel
invalid, Tarja Stenberg, 2008 → 2010

Henna-Kaisa Wigren, Henna-Kaisa.Wigren@helsinki.fi
Tieteilinen seuran sihteeri, Henna-Kaisa Wigren, 2006 → 2008, Finland

Antti Pertovaara, Antti.Pertovaara@helsinki.fi
Member of the Executive Board: ScandPhys, Antti Pertovaara, 2000 → 2008
Member of the Executive Board of the Institute of Biomedicine, Antti Pertovaara, 2004 → 2007, Finland
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

NEUROMED/Stenberg

Helsingin yliopiston rahastot, Antti Pertovaara, 01.01.2005 → 31.12.2005, Finland
Member of the Nominating Committee: FEPS, Antti Pertovaara, 2006 → …
Member of the Organizing Committee of the Annual SASP Meeting, Turku, 2008, Antti Pertovaara, 2008, Finland
Member of the Executive Board: SASP, Antti Pertovaara, 2009 → …
Chairman of the Search Committee for the Professorship in Anatomy, Antti Pertovaara, 2010 → 2011, Finland
Member of the Committee Assessing Doctoral Theses, Antti Pertovaara, 2010 → …, Finland

Karl Åkerman, karl.akerman@helsinki.fi

Member of the Research Council, Karl Åkerman, 1999 → 2009
Member of the Research Council for Bio- and Environmental Sciences, Karl Åkerman, 2003 → 2009

Esa Risto Korpi, Esa.Korpi@helsinki.fi

Society for Neuroscience, Esa Risto Korpi, 01.01.1985 → 31.12.2011, United States
Finnish Pharmacological Society (SFY), Esa Risto Korpi, 2002 → 2010, Finland
NorFA-sponsored Membrane Transport Network, Esa Risto Korpi, 2003 → 2008
Research Council of Norway, Esa Risto Korpi, 01.01.2004 → 31.12.2006, Norway
Association Francaise contre les Myopathies, Esa Risto Korpi, 01.01.2005 → 31.12.2005, France
Human Frontier Science Program, Esa Risto Korpi, 01.01.2005 → 31.12.2005
NorFA Membrane Transport-net, Esa Risto Korpi, 01.01.2005 → 31.12.2005
British Journal of Anaesthesiology/Research Council of Anesthesia, Esa Risto Korpi, 01.01.2008 → 31.12.2006, United Kingdom
Foundation for Drug Research, Esa Risto Korpi, 2006 → 2008
Swiss National Science Foundation, Esa Risto Korpi, 01.01.2006 → 31.12.2006, Switzerland
Suomen tiedeakatemia, Finnish Academy of Science and Letters, Esa Risto Korpi, 01.05.2007 → 31.12.2011, Finland
Finnish Foundation for Alcohol Studies, Esa Risto Korpi, 2008 → …
European Society for Biomedical Research on Alcoholism (ESBRA), Esa Risto Korpi, 2009 → …, Belgium

Teemu Alttu-Aho, Teemu.Alttu-aho@helsinki.fi

Brain Research Society of Finland, Teemu Alttu-Aho, 01.01.2006 → 31.12.2011, Finland
Suomen farmakologiyhdistys, Teemu Alttu-Aho, 01.01.2006 → 31.12.2011, Finland

Anne Panhelainen, anne.panhelainen@helsinki.fi

Brain Research Society of Finland, Anne Panhelainen, 16.01.2005 → 31.12.2011, Finland
Finnish Pharmacological Society, Anne Panhelainen, 01.01.2006 → 31.12.2011, Finland

Anni-Maija Linden, Anni-Maija.Linden@helsinki.fi

Suomen Aivotutkimusseura, Anni-Maija Linden, 01.12.1999 → 31.12.2011, Finland
Suomen farmaseuttinen yhdistys, Anni-Maija Linden, 01.12.2008 → 31.12.2011, Finland

Eija Kalso, Eija.Kalso@helsinki.fi

Suomen Kivuntutkimusyhdistys, tutkimustoimikunnan pj, Eija Kalso, 01.01.2001 → 31.12.2011, Finland
Scandinavian Society for Anaesthesiology and Intensive Care Medicine, Postgraduate Course in Pain Management, board member, Eija Kalso, 01.01.2002 → 31.12.2010
International Association for the Study of Pain, councillor, Eija Kalso, 01.01.2003 → 31.12.2008, United States
International Association for the Study of Pain, president, Eija Kalso, 01.01.2009 → 31.12.2014, United States
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

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Pertti Panula , Pertti.Panula@helsinki.fi
International federation of societies for histochemistry and cytochemistry, Pertti Panula, 01.02.2001 → 30.08.2008
Suomen Histokemian ja solubiologian seura, Pertti Panula, 2001 → 2010, Finland
European Histochemistry Research Society, Pertti Panula, 2005 → 2007

Saara Nuutinen , Saara.Nuutinen@helsinki.fi
European Histamine Research Society, Saara Nuutinen, 01.05.2007 → 31.12.2011
Brain Research Society of Finland, Saara Nuutinen, 01.01.2008 → 31.12.2011
European Society for Biomedical Research on Alcoholism, Saara Nuutinen, 01.01.2009 → 31.12.2011
Vice member of the Neuroscience Center Board; Univ. of Helsinki, Saara Nuutinen, 28.05.2010 → …

Katri Niemi , Katri.Niemi@helsinki.fi
Societas biochemica, biophysica et microbiologica Fenniae, Katri Niemi, 20.11.2006 → 31.12.2011, Finland

Membership or other role in public Finnish or international organization

Tarja Stenberg , tarja.stenberg@helsinki.fi
President of the Brain Research Society of Finland, Tarja Stenberg, 2006 → 2010
Board member, Tarja Stenberg, 2010 → …, Finland

Esa Risto Korpi , Esa.Korpi@helsinki.fi

Eija Kalso , Eija.Kalso@helsinki.fi
Lääketalous/FIMEA, Eija Kalso, 01.01.2004 → 31.12.2011, Finland
Terveydenhuollon oikeusturvakeskus, Eija Kalso, 01.01.2004 → 30.11.2008
Potilastutkimuslaitokset, Eija Kalso, 03.04.2005 → 04.04.2005, United States
University of Rochester: Neuropathic pain treatment guidelines, Eija Kalso, 01.01.2008 → 12.09.2009, Finland
HUSLabin hallitukset, Eija Kalso, 01.01.2009 → 31.12.2012, Finland

Membership or other role of body in private company/organisation

Maija Castrén , Maija.Castren@helsinki.fi
Senior Research Scientist, Maija Castrén, 01.09.2007 → 31.01.2009, Finland
Rinnokodin Kehitysvammatutkimuksen Kannatusyhdistyksen jäsen, Maija Castrén, 2010 → …

Esa Risto Korpi , Esa.Korpi@helsinki.fi
Lääketutkimussäätiö, Esa Risto Korpi, 01.01.2006 → 31.12.2006, Finland
Lääketutkimussäätiö, Esa Risto Korpi, 01.01.2007 → 31.12.2011, Finland

Eija Kalso , Eija.Kalso@helsinki.fi
International Association for the Study of Pain, Eija Kalso, 22.08.2002 → 31.12.2011, United States
European Opioid Conference, Eija Kalso, 14.02.2005 → 31.12.2011, United Kingdom

Katri Niemi , Katri.Niemi@helsinki.fi
Societas biochemica, biophysica et microbiologica Fenniae, Katri Niemi, 20.11.2006 → 31.12.2011, Finland
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

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Participation in interview for written media
Tarja Stenberg , tarja.stenberg@helsinki.fi
Aivojen salaisuudet: unen arvotukset, Tarja Stenberg, 2008, Finland
Aivot rakastavat rautia, Tarja Stenberg, 2008, Finland
Oman rytmän jäljillä, Tarja Stenberg, 12.2009, Finland
Press conference, Tarja Stenberg, 24.09.2009, Finland
Päivä käynnyistysty puolunessa, Tarja Stenberg, 2009, Finland
Så gå dog i seng, Tarja Stenberg, 06.2009, Denmark
Unihiekkaa purkista, Tarja Stenberg, 2009, Finland
10 faktaa unesta, Tarja Stenberg, 2010, Finland
Alas aamuviikujen valta, Tarja Stenberg, 11.2010, Finland
Hujaa aivot pireksi kofeiinilla, Tarja Stenberg, 10.2010, Finland
Miksi ongelmat ratkeavat aina öiseen aikaan, Tarja Stenberg, 2010, Finland
Tule hyvä uni, Tarja Stenberg, 2010, Finland
Uni pitää ihmisen hengissä, Tarja Stenberg, 2010, Finland
Unihiekkaa purkista, Tarja Stenberg, 2009, Finland
Vaihtelu virkistää aivot, Tarja Stenberg, 2010, Finland
Tule hyvä uni, Tarja Stenberg, 2010, Finland
Miksi ongelmat ratkeavat aina öiseen aikaan, Tarja Stenberg, 2010, Finland
10 faktaa unesta, Tarja Stenberg, 2010, Finland

Henna-Kaisa Wigren , Henna-Kaisa.Wigren@helsinki.fi
Haastattelu Apu-lehteen valveen laadun vaikutuksesta uneen, Henna-Kaisa Wigren, 2010 → ...

Maija Castrén , Maija.Castren@helsinki.fi
7th European Congress of Epileptology, Maija Castrén, 04.07.2006 → 31.12.2011, Finland
Alkovälivä, Heureka, Maija Castrén, 19.03.2006, Finland
Alkovälivä, Heureka, Maija Castrén, 04.07.2006 → 31.12.2011, Finland
Kriarmessut, Turku, Maija Castrén, 04.07.2006 → 31.12.2011, United States

Esa Risto Korpi , Esa.Korpi@helsinki.fi
Kauneus & Terveys 8/2006; asiantuntijahaastattelu, Esa Risto Korpi, 2006, Finland
STT uutinen/Verkkouutiset 25.2.2006, Esa Risto Korpi, 2006, Finland
Tiede 2/2006 asiantuntijahaastattelu, Esa Risto Korpi, 2006, Finland

Eija Kalso , Eija.Kalso@helsinki.fi
Participation in radio programme
Henna-Kaisa Wigren , Henna-Kaisa.Wigren@helsinki.fi
Radiohaastattelu valveen laadun vaikutuksesta uneen, Henna-Kaisa Wigren, 2009 → ..., Sweden

Eija Kalso , Eija.Kalso@helsinki.fi
YLE Radio Peili, Eija Kalso, 02.06.2006 → 31.12.2011, Finland
Participation in TV programme

Maija Castrén, Maija.Castren@helsinki.fi
Asiantuntija, Maija Castrén, 2006, Finland
Hauska tietää! Ylen aamu-TV-ohjelma, Maija Castrén, 07.07.2006 → 31.12.2011, Finland
Hauska tietää! Ylen aamu-TV-ohjelma, Maija Castrén, 04.07.2006 → 31.12.2011, Finland

Esa Risto Korpi, Esa.Korpi@helsinki.fi
TV1 Aamu-TV lähetys, Esa Risto Korpi, 13.04.2006 → 31.12.2011, Finland

Pertti Panula, Pertti.Panula@helsinki.fi
Significance of animal models in alcohol research, Pertti Panula, 06.10.2010
Research Group: Stenberg T

**Basic statistics**

- Number of publications (P) 284
- Number of citations (TCS) 2,044
- Number of citations per publication (MCS) 7.28
- Percentage of uncited publications 21%
- Field-normalized number of citations per publication (MNCS) 1.10
- Field-normalized average journal impact (MNJS) 1.16
- Field-normalized proportion highly cited publications (top 10%) .97
- Internal coverage .91

**Trend analyses**

- MNCS
- THCP10
- MNJS

**Collaboration**

- Performance (MNCS) by collaboration type
INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING
AT THE UNIVERSITY OF HELSINKI
by CWTS, Leiden University, the Netherlands

Research profile

[Bar chart showing research profile with categories such as Neurosciences, Pharmacology & Pharmacy, Anesthesiology, Clinical Neurology, etc., with bars indicating their prominence.]

Threshold: P >= 5