



HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL
TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

RC-Specific Evaluation of CANBIO – Genome-Scale Cancer Biology

Seppo Saari & Antti Moilanen (Eds.)



Evaluation Panel: Medicine, Biomedicine and Health Sciences

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Title: International Evaluation of Research and Doctoral Training at the University of Helsinki 2005–2010 : RC-Specific Evaluation of CANBIO – Genome-Scale Cancer Biology	Type of publication: Evaluations
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: Cancer research, Functional cancer genomics, Translational Genome-scale cancer biology, Mouse molecular cancer genetics, Tumor Invasion and metastasis, Tumor microenvironment, Signal transduction
Participation category: 1. Research of the participating community represents the international cutting edge in its field	
RC's responsible person: Alitalo, Kari	
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 led 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 Pyhälä**

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 pharmaceuticals, 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 biochemi
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.

MSocSc 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.

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. TUHAT³ compilations on publications and other scientific activities⁴
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.

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/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.

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".

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)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.

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 |
| 2. Submission of self-evaluation materials | January–February 2011 |
| 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

The RC CANBIO is composed of 18 research groups working at Meilahti and Viikki campuses. The RC combines different aspects of cancer research ranging from basic research to translational research, diagnostics and clinical research. The RC includes some of the most prominent and internationally recognized names of Finnish medical research. Seven of the PIs are members of Finnish Centres of Excellence (2006-2011 CoE in Cancer Biology: Alitalo, Keski-Oja, Laiho, Salven; and CoE in Translational Genome-Scale Biology: Kallioniemi, Mäkelä, Ojala). Two PIs are professors of the Academy of Finland (Alitalo, Joensuu), and additional two are research directors of national research institutes (Institute for Molecular Medicine Finland (FIMM), Director Kallioniemi; Institute of Biotechnology, Director Mäkelä). In addition, core facilities such as the high-throughput services in FIMM (Kallioniemi), the Biomedicum Genomics Center (Klefström, Monni), the Biocenter Finland Genome-Wide Methods Network (Mäkelä) and the Biomedicum Imaging Unit (Co-director Laiho) are directed by principal investigators of CANBIO. Thus, **key strengths** of the RC are proven scientific excellence, a complementary combination of different aspects of cancer research and in depth knowledge of cutting edge research technologies.

The **scientific quality** of CANBIO is outstanding by international standards. Most of the RC's groups have published their results in prime journals, including Journal of Cell Biology, Journal of Clinical Oncology, Cancer Research, New England Journal of Medicine, Circulation Research, Proceedings of the National Academy of Sciences of the United States of America, EMBO Journal, Nature Genetics, Cancer Cell, Nature Cell Biology, Lancet Oncology, and Nature Methods. The RC has made important novel contributions in the fields of angiogenesis, cell-cell and cell-matrix interactions, DNA damage control, genetic basis of cancer etc., it has developed novel methods for cancer research and it has been active in clinical trials on cancer drugs, some of which have modified the existing treatment protocols.

The **overall concept** of CANBIO reflects the modern trends of cancer research, in which cutting edge research requires multiple approaches and a variety of sophisticated technologies. There is little overlap in the research focus of the different groups, rather the combination provides added value to research.

Numeric evaluation: 5 (Outstanding)

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

CANBIO has trained 15 doctoral students during the years 2005-2010, which is a rather low number for 18 research groups. Importantly, many of the students have continued their career in established international research groups. Recruitment appears to be organized by individual research groups and funding comes partly from two doctoral programs, MD/PhD program (Faculty of Medicine) and Helsinki Biomedical Graduate School, the latter of which has been coordinated at various periods by CANBIO group leaders (Keski-Oja, Mäkelä, Ojala). From 2010 on, the FIMM-affiliated groups have been part of Nordic EMBL Graduate School, which recruited two doctoral students from FIMM in the year 2010.

Training is organized mostly by the graduate schools. It is not quite clear, how established and formal training collaboration exists between the research groups within CANBIO. An area of development could be a structured PhD program, which would take into account the versatility of the RC groups and provide the trainees with different methodologies and approaches to cancer studies.

Numeric evaluation: 4 (Excellent)

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 **societal impact** does not only come from research results, which for the main part has indirect or even direct implication for cancer patients. The CANBIO members are very prominent in promoting research and translating results to the general audience, and participating in academic activities, such as committees, councils and boards. The members are also involved in organizing university infrastructure, and in science policy making. CANBIO has also well established connections to the private sector.

Numeric evaluation: 5 (Outstanding)

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

The CANBIO RC is linked to several national and international research networks. Apart from the Academy of Finland Centres of Excellence, the members are associated with four Biocenter Finland merging Infrastructure Consortia: Genetically engineered mouse models, Viral gene transfer and cell therapy, Genome-wide methods and Translational technologies platform. The RC groups are also active in international collaborations, as exemplified by EU FP7 consortium GENICA and Innovative Medicines Initiative (IMI). The FIMM-affiliated groups are part of Nordic EMBL Graduate School.

Although most PIs are of Finnish origin, two junior PIs (Kuznetsov and Verschuren) were recently recruited from US and over 40 PhD students or post-docs are of foreign nationality, which clearly exceeds the national average of foreign investigators.

Numeric evaluation: 5 (Outstanding)

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

It is quite clear that the RC is very active in providing infrastructure (including core facilities) to the biomedical research community at the University of Helsinki. Other than that, the RC has access and actively uses major infrastructure at the Meilahti and Viikki biomedical campus. When considering translational and clinical cancer research, the RC might better utilize the close connections with the largest University hospital in Finland in order to improve the transition of their seminal findings to the clinic.

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

The RC member groups are affiliated with different organizational structures: two research programs of the Faculty of Medicine, with faculty departments, with the Institute of Biotechnology or with the Institute of Molecular Medicine (FIMM). It appears that leadership and management is primarily organized via host institutes, and the RC is rather a loose academic consortium with unofficial structure. In spite of this, the RC has succeeded well in fostering successful collaborative research. It is unlikely that another level of organizational structure would provide significant benefit, rather it would just increase bureaucracy.

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

The RC has collected almost 19 Mill € of external funding during the period, of which over 5.5 Mill € is international funding. These values are excellent and indicate the high quality of research within 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 plans to adopt several new cutting-edge technologies to foster cancer research. Especially techniques related to genomics, genome-scale and chemical biology and bioinformatics will be employed. The use of fresh tissue material for in vitro tests and genomic and epigenomic analyses will be increased. Biomarker identification and validation with the aid of biobank material will be a priority. All these advances will undoubtedly close the gap between basic science and patient care.

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 1. The research of the participating community represents the international cutting edge in its field.

The CANBIO RC clearly fits within the chosen participation category 1.

Numeric evaluation: 5 (Outstanding)

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

All research groups of the RC have contributed to the evaluation material, and the tasks seem to be distributed in a fair and productive way.

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

Focus area 6: Clinical research

The research of CANBIO falls into the focus area: "health and welfare", and within several of the key focus areas: 'The basic structure of life' (systemic biology and biotechnology) and 'Clinical research' (clinical translational medicine, personalized medicine).

2.12 RC-specific main recommendations

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2.13 RC-specific conclusions

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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)



International evaluation of research and doctoral training
at the University of Helsinki 2005-2010

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW

NAME OF THE RESEARCHER COMMUNITY:

Genome-Scale Cancer Biology (CANBIO)

LEADER OF THE RESEARCHER COMMUNITY:

Academy Professor Kari Alitalo, Research Programs Unit, 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' publications 1.1.2005-31.12.2010
- TUHAT compilations of the RC members' other scientific activities 1.1.2005-31.12.2010
- Web of Science(WoS)-based bibliometrics of the RC's publications data 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)



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RC-SPECIFIC STAGE 1 MATERIAL (registration form)

1 RESPONSIBLE PERSON

Name: Alitalo, Kari

E-mail:

Phone: 09 191 25511

Affiliation: Faculty of Medicine, Resereach Programs Unit, Molecular Cancer Biology Group

Street address: Haartmaninkatu 8

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): Genome-Scale Cancer Biology

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

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): The Genome-Scale Cancer Biology Research Consortium is formed by 15 active research groups in the University of Helsinki focusing on different aspects of cancer biology. The participating groups include established groups led by Professors and an Academy Professor, more junior research groups as well as recently established research laboratories, which are in a growing phase. This consortium brings together PIs with diverse backgrounds in medicine, biochemistry, genetics, virology, as well as cell and molecular biology. The methods and approaches used by the participating groups cover a wide field of cutting edge technologies from mouse molecular genetics to signal transduction and cell biology, from clinical cancer research to high-throughput approaches and viral technologies.

The driving force for the formation of the CANBIO research consortium is the existing and extensive collaboration between the groups, which is in many cases based on the combination of complementing technological and scientific know-how of the research groups. In addition, technological facilities such as the high-throughput services in FIMM (Kallioniemi), Biomedicum Genomics (Monni, Klefström), the Biocenter Finland Genome-Wide Methods Network (Mäkela) and the Biomedicum Imaging Unit (Laiho Co-director), are directed by PIs of the CANBIO consortium, as indicated in the parenthesis. The collaboration is perhaps best exemplified in joint publications in high-profile journals.

However, the consortium also maintains an intense exchange of knowledge among the participating labs by providing methodological and scientific expertise and e.g. by providing opportunities of the doctoral students to learn new techniques via laboratory visits, which may not lead to joint publications. This change of information is straightforward and very informal between the laboratories, and occurs frequently.

Due to close research interests, many of the CANBIO PIs also serve as mentors or thesis committee members for doctoral students from other participating research groups, thus contributing to the doctoral thesis work performed within the consortium.



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3 SCIENTIFIC FIELDS OF THE RC

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

RC's scientific subfield 1: Oncology

RC's scientific subfield 2: Biochemistry and Molecular Biology

RC's scientific subfield 3: Genetics and Heredity

RC's scientific subfield 4: Cell Biology

Other, if not in the list:

4 RC'S PARTICIPATION CATEGORY

Participation category: 1. Research of the participating community represents the international cutting edge in its field

Justification for the selected participation category (MAX. 2200 characters with spaces): Researchers in the CANBIO Research Consortium perform at the leading edge of Finnish cancer biology basic research (notably Prof. Kari Alitalo) and clinical cancer biology research fields (notably Prof. Heikki Joensuu). The CANBIO group includes research directors of two most important national Translational Medicine (FIMM, Director Prof. Kallioniemi) and Biosciences institutes (Institute of Biotechnology, Director Prof. Mäkela), and includes 2 Academy of Finland Professors (KA & HJ). International cutting edge performance is evident from the involvement of 6 PIs in Finnish Centers of Excellence (Cancer Biology, KA, KO, ML; Translational Genome Scale Biology, OK, TM, PO). Furthermore, CANBIO researchers publish with high frequency in top-tier scientific journals (which include Nature, Cell and Science journals), are rewarded significant national and international research grants (Academy of Finland, Marie Curie, FP7, IMI, ESFRI) achieve prestigious prizes (including Anders Jahre Senior Medical Prize 2010 to KA; AACR Team Science Award 2008 for the development of CGH to OK) and carry significant patents for seminal discoveries and research products in the cancer biology field advancing to clinical trials. All PIs have gained training in top international institutes often in the United States, and within high profile research laboratories (Whitehead Institute, NIH, UCSF, Yale, CRUK, Stanford University, among others). This research consortium therefore represents the most competitive Finnish PIs in the field of cancer biology, hence the choice to participate in category 1.

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 CANBIO Research Consortium represents a powerful mix of principal investigators combining international cutting-edge research in the fields of cancer research. The consortium includes both senior, established group leaders and a number of recently established group leaders with significant potential. During the evaluation period, several collaborative research projects have been carried out and initiated within this consortium that brings together researchers with excellence in cell, molecular and cancer biology, model systems, and state-of-the-art genome-scale technologies. This research has made fundamental contributions to the understanding of the molecular mechanisms responsible for cancer pathogenesis and



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RC-SPECIFIC STAGE 1 MATERIAL (registration form)

progression. The ongoing and planned studies are expected to reveal novel pathways of cancer development and result in new innovative strategies for cancer therapies.

The consortium supports researcher careers at all stages. The principal investigators within this consortium have a strong track record of the leadership and management of graduate schools and all of the PIs as well as many postdoctoral researchers are actively involved in organisation of courses and international scientific symposia. The consortium provides an excellent environment for Ph.D. and postdoctoral training, where interactions between researchers and students further escalate at all levels via both national and international networks. The more formal training of the Ph.D. students is received by participation in courses provided by the Helsinki area graduate schools. As a result of these activities and excellent mentoring, several previous students and postdocs trained in the groups of this consortium are currently working as postdocs in the top-level universities and institutes in US and Europe and many hold leading positions and professorships in research institutes and university departments in Finland and abroad.

Significance of the RC's research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces): The RC has been active in supporting researcher careers at all stages. The principal investigators within this RC have a strong track record of activity in graduate schools and international training events. Several of the PIs are actively involved in the leadership and management of graduate schools and programs: PO (dean and board member of the Helsinki Biomedical Graduate School, HBGS 2007-, as well as board member in the MD/PhD program, Faculty of Medicine), TM (dean (2002-2007) and chairman of the board 2007-, HBGS), OK (board member, HBGS 2008-, board of a new Nordic-EMBL joint PhD training initiative), JK-O (dean 1998-2002, HBGS; chairman of the board, MD/PhD program, Faculty of Medicine).

The RC provides an excellent training environment, where interactions between researchers and students are enabled at all levels via both national and international networks. The graduate training activities linked to the RC have included: i) graduate and postgraduate mentoring ii) active organisation of courses and international scientific symposia iii) international researcher recruitment and training in collaboration with the Biocenter Finland and Nordic EMBL Molecular Medicine Network. The excellent mentorships within groups of the RC has allowed the transition of students and postdocs to prestigious research sites in Finland and abroad, and many now hold leading positions or professorships.

The RC has trained and educated 25 PhDs during years 2005-2010, which makes approximately 4% of dissertations within the Faculty of Medicine. The contribution of the PIs of this RC to the leadership and development of the largest biomedical graduate school in the country and the MD/PhD program has been essential to improve the quality of doctoral training within the University of Helsinki. Moreover, with its several international networks and training activities this RC has significantly contributed to the increasingly international angle of the doctoral training at the University of Helsinki.

Keywords: Cancer research, Functional cancer genomics, Translational Genome-scale cancer biology, Mouse molecular cancer genetics, Tumor Invasion and metastasis, Tumor microenvironment, Signal transduction



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6 QUALITY OF 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): At the national level, Drs Kari Alitalo, Olli Kallioniemi, Emmy Verschuren, Pipsa Saharinen and Juha Klefström (toivottav en unohtanut ektään) participate in the development of Finnish infrastructures as part of the national Biocenter Finland plan. The infrastructures Viral Gene Transfer (KA), LentiGEMM (JK - coordinator), EV, PS) and Translational Technologies (OK -coordinator) will develop new state-of-art technologies and services for in vitro and in vivo gene transfer purposes as well as biobanking and validation of novel therapeutics. An essential part of the infrastructure development is national level training for graduate students and postdocs. All infrastructure networks are committed to organise annual minisymposia featuring international experts as well as theory-based and hands-on graduate school courses at national level (usually coordinated and advertised through FinBioNet). These courses are sponsored by Biocenter Finland and local graduate schools. The coordination positions and memberships of 5 PI's of CANBIO will ensure that these training possibilities, which form cornerstones for modern molecular cancer biology research, and they will be advertised and offered for students, postdocs and PI's in the RC. Furthermore, all CANBIO PIs actively participate in the development of the University of Helsinki undergraduate and graduate school curricula (Dean Päivi Ojala). All PIs are committed to transfer significant cancer biology expertise to the research community, fostering a collaborative attitude aimed towards excellence. Students and postdocs attend and present at high-profile international cancer meetings (Keystone, Cold Spring Harbour, AACR), and often collaborate with international expert laboratories. International mobility is promoted, evident also in the involvement of CANBIO PIs in the LERU program (Paivi Ojala), the Nordic EMBL partner PhD student program (FIMM PIs) and EU Framework programs (most PIs) and the IMI public private partnership (JK, OK, EV), where postdoc supervision will be shared between, and therefore bridge, EU-wide industry and academic research.

Comments on how the RC's scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces): The scientific productivity and activity of the RC can be assessed by the level of scientific articles, reviews (international and national), grants and awards obtained, presentations at international meetings, external reviewer or advisory tasks for funding organizations and research institutes and leadership roles in scientific communities.

Doctoral training can be assessed by the number of students currently in training (undergraduate and graduate) and number of completed grades (Ph.D.). The number of graduate students participating in Academy of Finland funded graduate schools will be informative in terms of ability of the students to compete for access to top-tier training programs, and their participation in structured, mentored research training. International students and postdoctoral fellows should be listed separately, as this is an indicator of the capability of the RC to attract international talent. In addition, the participation of the PI:s in the graduate training programs as directors, other leadership and evaluation roles, and organization of graduate training activities and courses should be listed.



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The publication strategy of the RC distinctly weighs on publication of original, novel, well-designed comprehensive studies on the molecular and cellular aspects of cancer biology. The publication profile consists of high-ranking, peer-reviewed international journals.

LIST OF RC MEMBERS

NAME OF THE RESEARCHER COMMUNITY:		Genome-Scale Cancer Biology (ACRONYM: CANBIO)				
RC-LEADER		K. Alitalo				
CATEGORY		1				
	Group	Last name	First name	PI-status (TUHAT, 29.11.2010)	Title of research and teaching personnel	Affiliation
1	alitalo	Alitalo	Kari	x	Academy Professor	Faculty of Medicine, Resereach Programs Unit
2	kallioniemi	Kallioniemi	Olli	x	Professor	Institute for Molecular Medicine Finland
3	mäkelä	Mäkelä	Tomi	x	Professor	Faculty of Medicine, Resereach Programs Unit
4	lehti	Lehti	Kaisa	x	Academy Researcher	Faculty of Medicine, Resereach Programs Unit
5	saharinen	Saharinen	Pipsa	x	Academy Researcher	Faculty of Medicine, Resereach Programs Unit
6	ojala	Ojala	Päivi	x	Research Professor	Faculty of Medicine, Resereach Programs Unit
7	laiho	Laiho	Marikki	x	Professor	Faculty of Medicine, Resereach Programs Unit
8	klefstrom	Klefström	Juha	x	Academy Researcher	Faculty of Medicine, Resereach Programs Unit
9	verschuren	Verschuren	Emmy	x	Group Leader	Institute for Molecular Medicine Finland
10	laakkonen	Laakkonen	Pirjo	x	Group Leader	Faculty of Medicine, Resereach Programs Unit
11	ristimäki	Ristimäki	Ari	x	Professor	Faculty of Medicine, Resereach Programs Unit, Haartman Institute
12	keski-oja	Keski-Oja	Jorma	x	Professor	Faculty of Medicine, Resereach Programs Unit
13	joensuu	Joensuu	Heikki	x	Professor	Faculty of Medicine, Resereach Programs Unit
14	holmberg-still	Holmberg-Still	Carina	x	Academy Researcher	Faculty of Medicine, Resereach Programs Unit
15	monni	Monni	Outi	x	Academy Research Fellow	Faculty of Medicine, Resereach Programs Unit
16	salvén	Salvén	Petri	x	Group Leader	Faculty of Medicine, Resereach Programs Unit
17	kuznetsov	Kuznetsov	Sergey	x	Group Leader	Institute for Molecular Medicine Finland
18	koli	Koli	Katri	x	Group Leader	Faculty of Medicine, Resereach Programs Unit
19	alitalo	Tammela	Tuomas		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
20	alitalo	D'Amico Lago	Gabriela		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
21	alitalo	Tvorogov	Dennis		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
22	alitalo	Yamamoto	Masahiro		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
23	alitalo	Anisimov	Andrey		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
24	alitalo	Jeltsch	Michael		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
25	alitalo	Wiener	Zoltan		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
26	alitalo	Kivelä	Riikka		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
27	alitalo	Leppänen	Veli-Matti		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
28	kallioniemi	Wolf	Maija		Postdoctoral Researcher	Institute for Molecular Medicine Finland
29	mäkelä	Ekman	Niklas		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit, Finnish Medical Agency
30	mäkelä	Katajisto	Pekka		Doctoral candidate, Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit, Whitehead Institute MIT
31	mäkelä	Ollila	Saara		Postdoctoral Researcher	Institute of Biotechnology
32	mäkelä	Vallenius	Tea		Doctoral candidate, Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
33	mäkelä	Westerling	Thomas		Doctoral candidate, Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit, Dana-Farber, HMS
34	ojala	Sarek	Grzegorz		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
35	laiho	af Hällström (ent. Kiviharju)	Taija		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
36	laiho	Band	Arja		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
37	klefstrom	Saarikoski	Sirkku		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
38	klefstrom	Tervonen	Topi		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
39	verschuren	Särkioja	Merja		Postdoctoral Researcher	Institute for Molecular Medicine Finland
40	laakkonen	Rivinoja	Antti		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
41	laakkonen	Lammi	Johanna		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
42	keski-oja	Hyytiäinen	Marko		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
43	keski-oja	Makarov	Andrey		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
44	joensuu	Bono	Petri		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
45	holmberg-still	Hamer	Geert		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
46	monni	Lepikhova	Tatiana		Postdoctoral Researcher	Faculty of Medicine, Resereach Programs Unit
47	alitalo	Zheng	Wei		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
48	alitalo	Hyvönen	Ville		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
49	alitalo	Nurmi	Harri		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
50	alitalo	Heloterä	Hanna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
51	ojala	Pekkonen	Pirita		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
52	alitalo	Holopainen	Tanja		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
53	alitalo	Zarkada	Georgia		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
54	alitalo	Bry	Maija		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
55	kallioniemi	Ojala	Kalle		Doctoral candidate	Institute for Molecular Medicine Finland
56	kallioniemi	Edgren	Henrik		Doctoral candidate	Institute for Molecular Medicine Finland
57	kallioniemi	Kilpinen	Sami		Doctoral candidate	Institute for Molecular Medicine Finland
58	mäkelä	Laajanen	Kaisa		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
59	mäkelä	Helenius	Katja		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
60	mäkelä	Kuuluvainen	Emilia		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
61	mäkelä	Kovac	Bianca		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology

LIST OF RC MEMBERS

NAME OF THE RESEARCHER COMMUNITY:		Genome-Scale Cancer Biology (ACRONYM: CANBIO)				
RC-LEADER		K. Alitalo				
CATEGORY		1				
	Group	Last name	First name	PI-status (TUHAT, 29.11.2010)	Title of research and teaching personnel	Affiliation
62	mäkelä	Yang	Ying		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
63	mäkelä	Vaahomeri	Kari		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
64	mäkelä	Udd	Lina		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit, Inst. Of Biotechnology
65	mäkelä	Londesborough	Anou		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
66	mäkelä	Ventelä	Eeva		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
67	lehti	sugiyama	Nami		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
68	lehti	Meller	Pipsa		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
69	saharinen	Lampinen	Anita		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
70	ojala	Cheng	Fang		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
71	laiho	Järvinen	Päivi		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
72	laiho	Jäämaa	Sari		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
73	laiho	Peltonen	Karita		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
74	laiho	Moore (Syrjäkari)	Henna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
75	klefstrom	Eskelinen	Vilja		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
76	klefstrom	Nieminen	Anni		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
77	klefstrom	Partanen	Johanna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
78	klefstrom	Marques	Elsa		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
79	verschuren	Lahtela	Jenni		Doctoral candidate	Institute for Molecular Medicine Finland
80	laakkonen	Chernenko	Anastasiya		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
81	laakkonen	Karhemo	Piia-Riitta		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
82	ristimäki	Heinonen	Mira		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
83	ristimäki	Böckelman	Camilla		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
84	ristimäki	Thiel	Alexandra		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
85	ristimäki	Mrena	Johanna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
86	keski-oja	Tatti	Olga		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
87	joensuu	Waltari	Marika		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
88	joensuu	Sihto	Harri		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
89	joensuu	Puputti	Marjut		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
90	joensuu	Lauttia	Susanna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
91	holmberg-still	Matilainen	Olli		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
92	monni	Heinonen	Henna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
93	salvén	Fang	Shetong		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
94	salvén	Ristolainen	Heikki		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
95	salvén	Wei	Jing		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit
96	koli	Kantola	Anna		Doctoral candidate	Faculty of Medicine, Resereach Programs Unit



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BACKGROUND INFORMATION

Name of the RC's responsible person: Alitalo, Kari

E-mail of the RC's responsible person:

Name and acronym of the participating RC: Genome-Scale Cancer Biology, CANBIO

The RC's research represents the following key focus area of UH: 6. Kliininen tutkimus – Clinical research

Comments for selecting/not selecting the key focus area:

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 Genome-Scale Cancer Biology (CANBIO) Research Consortium contains 18 internationally acclaimed research groups that focus on one common goal: the discovery and validation of new mechanisms and targets in human cancer, and translation of the results into medical benefits. This research consortium represents a powerful mix of principal investigators, ranging from prominent senior group leaders to a number of recently established group leaders with significant potential, and complementary cutting-edge research and technologies in the fields of basic, translational and clinical cancer research.

It is evident that new strategies to attack cancer are increasingly based on studies of tumours in the context of their microenvironment and interactions with host tissues. Growth of blood vessels (angiogenesis) is crucial for cancer progression, and blocking this process leads to improved outcomes in some forms of human cancer. The growth of lymphatic vessels (lymphangiogenesis) is intimately associated with metastatic spread of tumour cells into lymph nodes, which may serve as launch pads for further systemic metastasis. More recently it has become evident that also other host cell types have active roles in tumour progression and that they could serve as therapeutic targets. Also cell-cell and cell-ECM interactions within the tumour have a major impact on tumour growth and malignancy as well as on cell migration, invasion, and clonal evolution of cancer. Furthermore, tumour cells in some cases take on new characteristics through cellular reprogramming and acquisition of properties of stem cells. Invasion of tumour cells can occur as a process involving many cancer cells, called collective cell invasion, which can be studied only in 3D and in vivo contexts. The CANBIO research consortium has brought together innovative in vitro, ex vivo and in vivo models (including multiple mouse cancer models and recently also simpler animal models such as *Xenopus laevis*, *Danio rerio*, and *C. elegans*) and cutting-edge high-throughput genome-scale cancer biology and chemical biology technologies to investigate the tumour in its microenvironment, to perform systematic analysis of factors contributing to cellular signalling, reprogramming, migration, and invasion upon genetic changes. Additionally, large clinical patient materials have been analyzed. The research has resulted in novel discoveries on cellular signalling including microenvironment-dependent signalling, on tumour suppressor genes, DNA damage, checkpoint regulation, angiogenesis, lymphangiogenesis, tissue remodelling and tissue/cellular reprogramming. Several prognostic markers of human malignancies have been identified and preclinical gene therapies to exploit the inherent vulnerabilities of cancer cells have been performed or are ongoing. Thus, our research consortium establishes a circuit from the discovery and analysis of oncogenic factors to testing their relevance in animal models and further to preclinical trials employing gene therapy with potential translational and therapeutic applications. Thus, the program provides a target discovery, validation and clinical translation platform for a number of excellent scientists.



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During the 2005-2010 evaluation period, the members of the CANBIO RC have made fundamental contributions to the understanding of the molecular mechanisms responsible for cancer pathogenesis and progression. The research excellence and significance is best exemplified by the number of publications in top-tier scientific journals including Science, and Nature and Cell with sub-journals or other journals with impact factor over 16.00 (26 publications) and the number of patents (approximately 80) based on seminal discoveries as well as potential drug candidates in the cancer biology field that are now advancing into clinical trials. The acquired knowledge of factors contributing to cell migration, invasion, reprogramming, and cellular signalling as a result of genetic changes provides a more integrative view of tumour pathogenesis and forms a strong basis for development of new innovative strategies for novel cancer therapies including personalized cancer care.

The CANBIO RC has extensive collaboration between the research groups, which in many cases is based on the combination of their complementary technological and scientific know-how. Researchers in the CANBIO RC work at the leading edge of Finnish and international research on basic and clinical aspects of cancer. The CANBIO RC includes research directors of two of important national research institutes (Institute for Molecular Medicine Finland (FIMM), Director Prof. Kallioniemi; Institute of Biotechnology, Director Prof. Mäkelä), and two PIs have reached the most prestigious academic positions in Finland (Professors of the Academy of Finland; Alitalo, Joensuu). International cutting-edge performance is evident from the involvement of seven principal investigators in Finnish Centers of Excellence (CoE in Cancer Biology: Alitalo, Keski-Oja, Laiho, Salven; and CoE in Translational Genome-Scale Biology: Kallioniemi, Mäkelä, Ojala). Most of the more recently established group leaders (9) have held Research Fellow positions of the Academy of Finland during this evaluation period. In addition, core facilities such as the high-throughput services in FIMM (Kallioniemi), the Biomedicum Genomics Center (Klefström, Monni), the Biocenter Finland Genome-Wide Methods Network (Mäkelä) and the Biomedicum Imaging Unit (co-director Laiho) are directed by principal investigators of the CANBIO consortium. The CANBIO principal investigators have successfully obtained competitive funding from significant national and international research funding agencies (Academy of Finland, Sigrid Juselius Foundation, Finnish Cancer Organisations, Marie Curie Program, Human Frontier Science Program, EU Framework Program 7, EU Innovative Medicines Initiative, and ESFR) and been awarded prestigious prizes (such as Anders Jahre Senior Medical Prize 2010, Alitalo; AACR Team Science Award 2008, Kallioniemi).

The joint publication record of the CANBIO consortium reflects the extensive collaborations among member laboratories during 2005-2010 (56 joint publications). The focus and quality of the research in the CANBIO consortium will be further improved during the coming years, as a result of the recent and/or ongoing establishment of state-of-the-art infrastructure core facilities, technology platforms and research models by members of the consortium. Additionally, as one third of the 18 member groups have been established after 2005 (Holmberg-Still, Koli, Kuznetsov, Lehti, Saharinen, Verschuren), several research projects and collaborations are still at their early stages, yet provide significant potential to contribute to the common future goals of the CANBIO consortium on excellence in cancer biology research.

- **Ways to strengthen the focus and improve the quality of the RC's research.**

The CANBIO groups will organise frequent bilateral as well as less official meetings on scientific topics. Along with the host organizations, we will organize 2-3 scientific symposia annually on special interest topics. In addition, there will be an annual scientific meeting, where all members of the respective groups are expected to present their results. To facilitate and ensure scientific interaction between the PIs, the number of joint publications and joint research projects will be monitored. Thus, we believe that this consortium has significant capacity for renewal, and a capability to achieve scientific breakthroughs through interdisciplinary research collaborations.



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2 PRACTISES 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 doctoral candidates of the CANBIO RC have been recruited by distributing website or e-mail announcements of open position within the national (e.g. FinBioNet - Finnish Graduate School Network in Life Sciences) and international networks (e.g. via the Nordic EMBL Molecular Medicine Network). Multiple applicants directly applied to the research groups after finalizing their B.Sc. or M.Sc. degrees. The initial selection of the candidates is based on interviews, references by previous mentors/supervisors, and a probationary period of three to four months. The students selected to the CANBIO RC groups will then prepare, together with the PI, a research proposal of their PhD project, and can apply for admission to a suitable graduate school. Most of the graduate schools relevant for the CANBIO RC open a call for four-year doctoral training positions once a year in the fall. The online application includes an application form filled by the student, a research proposal, supervisor's form filled by the PI of the CANBIO RC, and an optional letter of recommendation for example by the student's Master's thesis supervisor. The student applications are graded by a graduate school admission panel that selects the best students to their program via evaluation of the scientific significance and feasibility of the suggested project, and the ability of the student to carry out the suggested PhD project.

The CANBIO RC has focused on training of inter- and multidisciplinary scientists that are increasingly required for progress of biomedical sciences. The integrative research projects of the CANBIO RC have provided a fertile training platform for the next generation of scientists with multidisciplinary skills and expertise in translational research for biology, medicine and industry. The primary supervision is carried out by the PI together with senior staff scientists or postdoctoral fellows who provide training-through-research on a daily basis in a supportive and inspiring training environment. All scientists in the CANBIO RC are committed to long-term and in-depth graduate training with ambitious goals. The CANBIO RC has been active in supporting researcher careers at all stages, and the principal investigators within this CANBIO RC have a strong track record of activity in graduate schools and international training events. Moreover, the doctoral candidates of the CANBIO RC have built a curriculum that is based on various types of courses in which they actively participate. Some of these are obligatory, but others are optional courses considered suitable for the PhD project area.

Several of the PIs are actively involved in the leadership and management of graduate schools and programs: Ojala (dean and board member of the Helsinki Biomedical Graduate School, HBGS 2007-, as well as board member in the MD/PhD program, Faculty of Medicine), Mäkelä (dean 2002-2007 and chairman of the board of HBGS 2007-), Kallioniemi (board member, HBGS 2008-, board of a new Nordic-EMBL joint PhD training initiative), Keski-Oja (HBGS dean 1998-2002; chairman of the board, MD/PhD program, Faculty of Medicine), Salven (professor in charge 2009-2010, The Master's Degree Program in Translational Medicine, Faculty of Medicine).

The doctoral candidates are assigned a personal Thesis Committee that functions as the quality and progress evaluation system of PhD projects in the CANBIO RC. The purpose of the regular thesis committee meeting is to evaluate the progress and future plans of the PhD project and to support the student and supervisor for successful continuation of the project. The Thesis Committee has helped to



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design a personalized training portfolio for the student in the first thesis committee meeting. The Thesis Committee includes the student, the supervisor(s), and at least two external senior members. The mentoring is available all year round and the student submits a report annually. The Thesis Committee also advises and mentors the doctoral candidate on one's choice of a post-doctoral career.

The doctoral candidates and fresh doctorates within the CANBIO RC have been exposed to training of complementary skills such as scientific writing and presentation skills, research ethics, IP protection, technology transfer and industrial collaborations as well as entrepreneurial opportunities. The national and international scientific contacts and collaborations of the CANBIO RC PIs, including several national Centers of Excellence and EU research projects (both STREPs and IPs), have provided excellent support for promotion of research careers for the doctoral candidates/fresh doctorates and for international researcher mobility. CANBIO is thus able to give its students and post doctoral fellows a state-of-the-art scientific and methodological training at the highest professional level, and provide indispensable contacts with the international scientific community. These skill sets, scientific contacts, and motivations will be essential to meet sectoral needs of both academia and industry & health care thus giving the trained researchers the best possible future career prospects.

Strengths

The CANBIO RC provides an excellent training environment, where interactions between postdoctoral researchers and students are encouraged at all levels, including national and international networks. The training environment has been particularly good for graduate students, who have the possibility to learn advanced technologies, and to directly contribute to top-level science. Publication of top-level science is the best way to disseminate the knowledge and promote career development. Through the extensive collaborations within the CANBIO RC, graduate students have gained access to other laboratories and international research institutes, scientific conferences/workshops and short researcher exchanges (secondments). These have in part offered them with opportunities for postdoctoral studies. The PIs of the CANBIO RC have supervised over 15 Ph.D. dissertations in the University of Helsinki during the years 2005-2010, several of which have won national and international thesis-awards. The PIs thereby have a significant track record in promoting career development of PhD student-level scientists. As a result of these activities and excellent mentoring, several previous students and postdocs trained in the groups of the CANBIO RC are currently working as post-docs in the top-level universities and institutes in the US and Europe and many hold leading positions and professorships in research institutes and university departments in Finland and abroad.

Challenges

One particular challenge in need for more effective solutions is the decreasing interest amongst Finnish medical students towards a scientific career, or towards combining the careers of a researcher and a clinician (an article about this problem has recently been published Suomen Lääkärilehti (Finnish Medical Journal) vol.17;2009,p.1542-1544). Consequently, only few young M.D.'s currently enter research careers. The situation is especially worrying considering the current era of molecular medicine and genomics when there is a strong need for talented young clinicians capable of working at the interface of basic biomedical science and clinical research. This situation may delay the translation of the results of biomedical research from the bench to the bedside. Another issue is the relative lack of promising future career development options for the newly graduated Ph.D.s (of both M.Sc. or MD backgrounds). This is especially the case for those that want to continue in academic research.

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

Planned actions



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The CANBIO RC combines researchers with exceptional experience in basic and translational research, and in clinical work in the Helsinki University Hospital. The CANBIO RC members have a good perspective and understanding of current problems. They can, and should, contribute to the efforts of our medical school to attract medical students to research, and they can provide active support to the MD/PhD program. These contributions are provided by the direct efforts of the CANBIO RC PIs themselves, as well as by the knowledgeable and gifted teaching personnel of the CANBIO RC research group members. Further development of the university's current efforts in creating tenured research position system is another high priority goal of the CANBIO RC.

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 CANBIO RC research area has a highly significant societal impact. Cancer is a clinically debilitating disease, a major cause of morbidity and mortality in our western European society, with an increasing incidence especially in the aging population. Our patient population expects improved therapies, diagnostics and preventive measures. The society at large needs to cope with the increased costs associated with the treatment of the diseases and with the decision-making regarding types of therapeutic strategies offered.

The CANBIO RC members have a long track record in cancer research, and are in an excellent position to provide expert opinion on the importance of scientific discoveries and emerging and new types of treatments. The CANBIO RC represents an instrument for the translation of the significance of its own scientific innovations, and those of others, to the wider community. The scientific achievements of the CANBIO RC are communicated at different levels, targeting scientists, academic institutions, industry and the general public.

The CANBIO RC members contribute to raising awareness of scientific cancer progress, science policy and ethical issues by participation in public and more focused forums, writing editorials and other general format publications. The CANBIO RC members are committed to transmitting important findings to the public, through proactive communication with the public media.

Several patient target groups, with unique needs and characteristics, will directly benefit from CANBIO's research. The majority of cancer patients are diagnosed in the aged population, which is expanding. The CANBIO RC contributes to the societal health objectives, and furthermore provides service to otherwise under-represented patient groups at increased risk of cancer. The benefit to these patient groups will have a larger effect on families and work environments as a whole.

Accompanying the identification and functional characterization of genes involved in cancer, opportunities and challenges emerge to improve health and to stimulate industrial applications, particularly in diagnostics, health technology, and drug development. Based on its discovery-focused projects, the CANBIO RC should provide tools and small-molecule lead molecules of interest for the biotechnology industry. Biotechnology companies are increasingly using genetically defined animal models that recapitulate the natural history and mechanistic events of human neoplasias to test their drugs before engaging in costly clinical trials. The dissemination of these tools and technologies to industrial partners will be promoted to attract potential biomedical industrial partners interested in the exploitation of the CANBIO results. The pharmaceutical industry has great interest to develop therapies aimed at inhibiting tumour growth and metastasis, for which they seek academic collaborations to promote knowledge on candidate cancer targets. The CANBIO project is thereby expected to yield



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significant new Intellectual Property. The validation of novel and biologically relevant targets for inhibition of cancer will also include proof-of-principle evaluation of the targetability and drugability of the candidate molecules.

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

A significant improvement over and above the current CANBIO RC activities would be realized by founding a Comprehensive Cancer Center, which is currently lacking in Finland. The main focus of a Comprehensive Cancer Center would constitute an academic discovery base, coupled with clinical research in cancer. These activities should be associated with training of scientists for basic and clinical cancer research, as well as cancer prevention. It should also provide continuing education and training of health care professionals, offer a spectrum of state-of-the-art cancer care and services, with a particular focus on the cancer prevention methods and on accrual of patients to cancer clinical trials. This would further facilitate the distribution of knowledge of the cancer problem, and its solutions, to the community, engage narrative discussions of special or underserved populations and wide distribution of pertinent cancer incidence and mortality data. Further, such formal structures should advance collaborations with non-profit or for-profit outreach programs and organizations.

4 INTERNATIONAL AND NATIONAL (INCL. INTERSECTORAL) RESEARCH COLLABORATION AND RESEARCHER MOBILITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.

The translation of basic biology discoveries to the clinic requires a broad range of expertise, emphasising the need for collaborations between different groups. Collaborations within the CANBIO RC have been established and resulted in at least 52 joint peer-reviewed publications, many of them in top tier international journals, involving at least two PIs mentioned above during the period 2005-2010. Four PIs from the CANBIO RC (Alitalo, Keski-Oja, Laiho, and Salven) also formed a core of the highly successful Center of Excellence (CoE) in Cancer Biology operating during 2000-2011 that primarily focused on cancer invasion, metastasis, angiogenesis, DNA damage and colon cancer. Nine research groups from CANBIO RC were involved in the Molecular Cancer Biology Program at the Faculty of Medicine coordinated by Academy Professors Kari Alitalo and Lauri Aaltonen and Professor Tomi Mäkelä. Seven of these PIs are also involved in the Research Program in Genome-Scale Biology focusing on genome-scale, high-throughput biological research and its translation into medical benefits. Four PIs, Klefström, Verschuren, Kuznetsov, and Saharinen together with others joined to form a Biocenter Finland Infrastructure Emerging Technology consortium for 2011-2012 aiming to develop a lentiviral platform to create somatic Genetically Engineered Mouse Models (coordinator – J. Klefström). Kari Alitalo is involved in the Viral gene transfer and cell therapy network, while T. Mäkelä and O. Kallioniemi are coordinators for the Genome-wide methods and Translational technologies platforms, respectively. Participating PIs of the CANBIO RC were also involved in several major international collaborations such as European FP7 consortia (GENICA – Kallioniemi, Kuznetsov), most noticeably the Innovative Medicines Initiative Joint Undertaking (IMI, coordinator – Verschuren). In the latest IMI project, Finland is represented by 4 PIs (Verschuren, Klefström, Monni, Kallioniemi), and all of them are participating in the CANBIO RC.

A total of 15 postgraduate students from CANBIO RC participating groups defended their PhD thesis in 2005-2010. Students in CANBIO participating groups are mostly affiliated with the Helsinki Biomedical Graduate School (HBGS) and the Helsinki Graduate Program in Biotechnology and Molecular Biology with the former one largely steered by the CANBIO PIs. HBGS is currently headed by Päivi Ojala. Other CANBIO PIs participate in building the curriculum of the school, which enrolls approximately twenty



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students each year for a 4-year study corresponding to the highest educational standards. Starting in 2010, a new joint PhD program, Nordic EMBL Graduate School was established between three nordic EMBL-affiliated institutes: the Institute for Molecular Medicine Finland (FIMM, Helsinki), Centre for Molecular Medicine Norway (NCMM, Oslo), and Molecular Infection Medicine Sweden (MIMS, Umea). Students selected in the program (2 students for FIMM in 2010) first go through two three-month rotations in different labs, and then choose the lab for the main PhD study. Students receive a salary during the first year from the host institute after which they are expected to enroll in one of the local graduate schools.

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

CANBIO promoted research mobility through multiple routes during '05-'10. First, individual CANBIO participating PIs encouraged their successful PhD student to venture overseas for postdoctoral studies. About 20 individuals from CANBIO groups took postdoctoral positions outside Finland after receiving a PhD. Second, CANBIO PIs recruited over 40 foreign students and postdocs during the same period. Most noticeably, two junior international PIs (Kuznetsov and Verschuren) from prestigious US institutions such as NIH and Genentech, have been recruited to FIMM and joined the CANBIO. The Nordic EMBL Graduate program described above also contributes to the research mobility as the recruitment to the program is carried out on the international scale and jointly coordinated between 3 Nordic research centers.

To further promote international research mobility, the Nordic EMBL centers are preparing a Marie Curie Initial Training Networks funding application. If approved, this grant will support internationally competitive students to carry out a collaborative research between the EMBL sites.

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 CANBIO RC consists of 18 groups located in the Meilahti Biomedical Campus in the Research program's Unit (RPU) at Biomedicum Helsinki and in the Institute of Molecular Medicine Finland (FIMM), and in the Institute of Biotechnology (BI) in the Viikki Bioscience Campus. Within CANBIO each group forms an independent unit responsible for its own funding and research, while having committed to actively participate in joint activities of the RC.

The infrastructure for the CANBIO RC is excellent. FIMM (director Kallioniemi), BI (director Mäkelä), and Biocentrum Helsinki (Alitalo, Kallioniemi, Mäkelä) operate key local and national infrastructures, such as the FIMM hosted advanced high-throughput screening systems. The CANBIO RCs PIs are key contributors to Biocenter Finland networks (www.biocenter.fi) of Genome-wide methods (coordinator Mäkelä), Translational technologies (coordinator Kallioniemi), Viral gene transfer (Alitalo) and Lentiviral platform for creating somatic genetically engineered mouse models (LentiGEMM, coordinator Klefström; Kuznetsov, Saharinen, Verschuren). The CANBIO RC groups have access to local core facilities including animal facilities, genotyping, next-gen sequencing (Illumina GAI x 3, Hiseq, Solid 2), microarrays (Affymetrix, Illumina, Agilent), chemical biology, high-throughput screening of siRNAs/ORFs, lenti/retro/adeno-associated virus vector units (e.g. via Biomedicum Genomics, www.biomedicumgenomics.fi/home, directed by Monni, Klefström), iPSC laboratory, proteomics, metabolomics, molecular imaging unit with cell/animal/tissue imaging, bioinformatics, tissue



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microarrays, biobanks and translational technologies (e.g. www.biomedicum.fi, www.fimm.fi/en/technologycentre/, www.helsinki.fi/biocentrum/core.htm).

In addition to research duties, PIs of the CANBIO RC participate in teaching and have strong track records of activity in graduate schools and international training events. Several of the PIs are actively involved in the management of graduate schools; Ojala (dean & board member of HBGS '07-), Mäkelä (dean '02-'07, chairman of the board '07-, HBGS), Kallioniemi (board member, HBGS '08-, board of a new Nordic-EMBL joint PhD training initiative). In addition, all PIs participate in various teaching activities at undergraduate levels (Depts. of Pathology and of Biomedicine), or in the graduate schools, varying from 10 to 30 hours per term, and organize regular student progress follow-up meetings (e.g. Cancer Biology Progress Reports). In addition, the groups have their own meetings.

The strengths of the CANBIO RC are the high level of competence of the PIs, both scientifically and via cutting-edge technology development, as well as their success in obtaining grants and academic positions. The CANBIO RC bridges three institutes and departments at the University of Helsinki (RPU, FIMM-EMBL, BI) bringing access to a collection of state-of-the-art technological facilities shared without barriers between the laboratories. A critical mass of scientific expertise (over 100 researchers), with diverse backgrounds in medicine, biochemistry, genetics, virology, as well as cell and molecular biology, is created in cancer research within the CANBIO RC, something that is very important in a small country.

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

Significant challenges are the short duration of the research positions (only 2 to 5 yrs; often non-renewable in spite of scientific success), and of research funding. This results in the threat of losing seminal young scientists abroad or to other universities. Indeed, most PIs have temporary (2-5 yr) positions, and permanent (or tenured) positions are very rare. Due to the short-term, unpredictable funding, a very significant part of the work needs to be devoted to writing reports and new grant applications. In addition, the university administration is exhaustive. The laboratory space is limiting, and in the Biomedicum Helsinki, the space allocation is not optimal. The group sizes and funding levels change frequently, which imposes new arrangements.

The CANBIO RC will continue to invest their best efforts to maintain technology service units in the institutions at the global frontline, but in addition to new technology development, outside funding is required. The challenges related to short-term research funding and positions require actions at a higher level than the CANBIO RC.

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.

Participating groups of the CANBIO RC are parts of three research institutes at the University of Helsinki, including the Research Programs Unit of the Medical Faculty, the Institute for Molecular Medicine Finland (FIMM-EMBL partnership) and the Institute for Biotechnology. The majority of the groups in the CANBIO RC participate in centers of excellence (Cancer Biology (CB), Translational Genome Scale Biology (TGSB) and/or in common research programs (Molecular Cancer Biology (MCB), Genome Scale Biology (GSB)). The PIs within this CANBIO RC have a strong track record of scientific leadership and management



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of graduate schools and all PIs, as well as many postdoctoral researchers, are actively involved in organization of courses and international scientific symposia.

CANBIO RC primarily represents an academic consortium with a goal to ensure critical mass and stimulate new ideas and collaborations and foster outstanding science. Therefore the management framework is aimed to link project components and enable efficient communication between the research groups, with primary responsibility with the coordinator. In the 2005-2010 period there has not been administrative assistance, but see also strategic plans. The CANBIO groups organise frequent bilateral as well as less official meetings on scientific topics, and have been active in arranging scientific symposia (not listed in the evaluated activities) including one larger national meeting annually. The PIs independently apply for research funding and have a solid record of directing independent research. The PIs take active part in coordination of and participation in international research programs (EU frameworks, European Strategy Forum on Research Infrastructures). The PIs have a strong track of activity in graduate schools, in international training events and in the leadership and management of research programs. Financial and administrative management of CANBIO RC activities are the responsibility of administration units of host institutes.

The majority of the groups in the CANBIO RC maintain extensive collaborations as participants of centers of excellence and/or in common research programs. Collaborations involve cooperative projects (joint publications in high-profile journals), technology transfer (methodological and scientific expertise exchange between labs), sharing resources (mice, reagents, common MTAs), common technology platforms (siRNA and ORF libraries, lentviral expression, high throughput and high-content screening). PIs also serve as mentors or thesis committee members for doctoral students from other participating research groups, thus contributing to the doctoral thesis work performed within the CANBIO RC.

The PIs have broad expertise in molecular and cell biology, mouse models of cancer, structural biology and cancer therapeutic concepts and possess in-depth know-how of genomics, proteomic and bioinformatics. The high-throughput and translational infrastructure of the CANBIO RC provides an excellent platform for seminal scientific discoveries and their ultimate translation into cancer diagnostics and treatment. The CANBIO RC includes research directors of two national Translational Medicine (FIMM) and Biosciences institutes (Institute of Biotechnology).

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

Specific care must be taken that novel technologies and scientific endeavors are propagated across the CANBIO RC. In order to effectively contribute to the CANBIO's success, problem solving sessions and scientific meetings are held regularly as integral parts of the research programs (CB, GSB). The challenges involved include the fact that the collaborative plans and efforts may not optimally meet objectives of individual groups. To facilitate and ensure scientific interaction between the participants, the number of joint publications and joint research projects will be monitored.

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



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- 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: 15600586
- 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: 2291772
- 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: 4911032
- 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: Magnus Ehrnrooth Foundation
 - Sigrid Jusélius Foundation
 - Liv och Hälsa
 - Johansson Foundation
 - HY rahastot
 - Syöpäjärjestöt
 - Association for International Cancer Research
 - Emil Aaltonen
 - Tieteellisten seurain valtuuskunta
 - Yrjö Jahnesson Foundation
 - Magnus Ehrnrooth foundation
 - STVY-foundation
 - Sydäntutkimussäätiö
 - total amount of funding (in euros) from the above-mentioned foundations: 6851204
- 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: mdRNA
 - The International Human Frontier Science Program Organization
 - ESF Cost
 - total amount of funding (in euros) from the above-mentioned funding organizations: 652468
- 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: Biocentrum Helsinki
 - Biokeskus Suomi



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- CIMO Kansainvälisen liikkuvuuden ja yhteistyön keskus
- Ministry of Education and Culture funded doctoral programme positions
- University of Helsinki Funds
- Institute of Molecular Medicine Finland
- HUS
- total amount of funding (in euros) from the above-mentioned funding organizations: 18991088

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 CANBIO RC research will increasingly employ state of the art infrastructures for genomics, genome-scale and chemical biology, bioinformatics, and translational research. In addition, the RC will continue to develop technologies for high-content cancer cell biological assays. The early-stage application of these new types of cell array technologies to the questions posed by the CANBIO RC investigators will provide new discovery opportunities for the CANBIO RC. Conversely, the biological questions posed by the CANBIO RC investigators will help drive the technology development. We will explore newer 3D cancer model systems, co-cultures mimicking support from the tumour microenvironment, short term primary cultures and ex-vivo tissue implants as well as animal model systems to validate the drug testing and chemical biology discoveries. Together, these efforts will generate model systems to facilitate translational therapeutic studies as well as in vivo validated leads and personalized medicine strategies for clinical trials. We will also apply integrative bioinformatics to link the genome-scale biology exploration with the cancer genomics, epigenomics and transcriptomics studies of human uncultured tumours in order to prioritize genes for further biological studies based on both in vitro causal evidence and potential in vivo relevance. Bioinformatic predictions and basic research discoveries will be validated in clinical specimens, using e.g. immunohistochemical staining of the target proteins in large-scale arrayed biobanks applying tissue microarray technology and web microscopy. Collaborations with the Helsinki University Central Hospital (HUS) Oncology clinic and the Pathology Laboratories are strong and crucial for translation of cancer research breakthroughs at the level of human tissue specimens, for advancement of personalized medicine and discussion of clinical trial ideas.

The CANBIO RC focuses on taking advantage of critical mass and facilitation of scientific collaboration. The management framework links all project components and enables efficient communication between the research groups in an environment where all PIs have multiple funding sources and often multiple reporting obligations; the CANBIO RC participants span several University of Helsinki organizations (Research Programs Unit of the Faculty of Medicine, FIMM, Institute of Biotechnology). The scientific coordinator (Alitalo) holds overall responsibility of progress. Daily management of CANBIO activities will be the responsibility of an administrative coordinator with financial, administrative, scientific, educational and technological overview. Internal management of CANBIO activities and resources takes place within the CANBIO Steering Group consisting of the coordinator and all Principal Investigators. The Steering Group will discuss scientific collaborations and managerial issues including any possible alterations occurring in personnel or other resources of the CANBIO members. These include situations where there would be an interest to recruit a new PI/team into the CANBIO RC. All PIs will be committed to the CANBIO work including common tasks in reporting and arranging internal scientific activities.

We believe that this consortium will be able to tackle key questions in cancer biology in a much deeper way than would be possible by one or two laboratories. The CANBIO RC presents a networked structure that is essential in a small country to reach an international world-class level. The research models and



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technological capabilities will be shared without barriers between the laboratories. This will provide an excellent intellectual environment ideal for creativity as well as for researcher training. All biological material generated within the CANBIO-funded activities will be made available to larger scientific communities within e.g. Biocenter Finland or deposited in international repositories for e.g. open access plasmids and mouse strains. Protection of Intellectual Property is encouraged according to the host organizations regulations. The involvement of multiple institutions brings access to an impressive collection of state-of-the-art technological core facilities and the RC will also facilitate the new technology development needed for maintaining technology service units in the institutions in the global frontline.

9 SHORT DESCRIPTION OF HOW THE RC MEMBERS HAVE CONTRIBUTED TO THE COMPILATION OF THE STAGE 2 MATERIALS (MAX. 1100 CHARACTERS WITH SPACES).

All the consortium members have contributed to the compilation of the material for the stage 2 evaluation. Alitalo, Joensuu and Holmberg compiled information from all the consortium members on the focus and quality of the research. Ojala and Salven compiled the information on the practices and quality of doctoral training, Laiho and Klefström on the societal impact of research and doctoral training, and Kallioniemi, Verschuren, and Kuznetsov on international and national research collaboration and researcher mobility. Keski-Oja, Saharinen, and Lehti wrote the section on operational conditions, Mäkelä and Laakonen on leadership and management in the researcher community, and Alitalo contributed to the RC's strategic action plan for 2011–2013. All the RC members provided information on their external competitive funding. Monni, Ristimäki, and Koli assembled the information on the contribution of RC members to the compilation of the stage 2 materials.



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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CANBIO/Alitalo

1 Analysis of publications

- Associated person is one of Kari Alitalo , Olli-Pekka Kallioniemi , Tomi Mäkelä , Kaisa
Irene Lehti , Juha Klefström , Pipsa Ilona Saharinen , Päivi Ojala , Marikki Laiho ,
Ari Ristimäki , Emmy Verschuren , Pirjo Maarit Laakkonen ,
Carina Holmberg-Still , Outi Monni , Jorma Keski-Oja , Heikki Joensuu , Sergey Kuznetsov ,
Katri Koli , Petri Salven , Tuomas Tammela ,
Gabriela Veronica D Amico Lago , Masahiro Yamamoto , Andrei Anisimov , Michael Jeltsch ,
Zoltan Wiener , Milla Ritikka Kivelä , Veli-Matti Leppänen ,
Maaja Wolf , Niklas Karl Ekman , Pekka Katajisto , Saara Ollila ,
Tea Kaarina Vallenius , Thomas Orjan Westerling , Grzegorz Sarek , Taja Maria af
Hällström , Arja Band , Sirkku Talvikki Saarikoski , Topi
Tervonen , Merja Annikki Särkioja , Antti Rivojola , Johanna Lammi ,
Marko Timo Tapio Hyytiäinen , Petri Bono , Geert Hamer
Tatiana Lepikhova , Wei Zheng , Ville Hyvönen , Harri Juhani
Nurmi , Hanna Heloterä , Pirita Maria Pekkonen , Tanja Talvikki Holopainen ,
Georgia Zarkada , Maija-Elina Bry , Kalle Ojala , Henrik Edgren
Sami Kalevi Kilpinen , Kaisa Laajanen , Katja Pirita Helenius ,
Emilia Kuuluvainen , Ying Yang , Kari Vahtomeri , Lina
Viveca Udd , Eeva Sofia Ojanen , Nami Sugiyama , Pipsa Meller ,
Anita Lampinen , Fang Cheng , Päivi Järvinen , Sari Susanna Jäämaa ,
Karita Dolores Peltonen , Henna Maarja Moore ,
Viija Maria Eskelinen , Anni Irmeli Nieminen , Johanna Inkeri Partanen ,
Elsa De Oliveira Marques , Jenni Salla Pauliina Lahtela , Anastasiya Chemenko ,
Piia-Riitta Karhemo , Mira Marie Heinonen , Camilla Böckelman ,
Alexandra Thiel , Johanna Mrena, Olga Tatti , Marika Johanna
Waltari , Harri Sihto , Marjut Puputti , Susanna Lauttia , Olli
Matilainen , Henna Kristiina Heinonen , Heikki Ristolainen , Jing Wei ,
Anna Kantola ,

Publication year

Publication type	Publication year						Total Count 2005 - 2010
	2005	2006	2007	2008	2009	2010	
A1 Refereed journal article	68	69	65	84	74	82	442
A2 Review in scientific journal	2	4	2	2	3	6	19
A3 Contribution to book/other compilations (refereed)			3	3	2		8
A4 Article in conference publication (refereed)	1	2	2	2	2	2	11
B1 Unrefereed journal article	5	5	6	4	3	6	29
B2 Contribution to book/other compilations (non-refereed)				2	2		4
B3 Unrefereed article in conference proceedings		1			2	1	4
C2 Edited book, compilation, conference proceeding or special issue of journal			1				1
D1 Article in professional journal		1	1			1	3
D2 Article in professional hand or guide book or in a professional data system, or text book material						2	2
E1 Popular article, newspaper article				1			1
H1 Patents	1	1	1	1			4



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2 Listing of publications

A1 Refereed journal article

2005

- Alhopuro, P, Ylisaukko-oja, S, Koskinen, W, Bono, P, Arola, J, Järvinen, HJ, Mecklin, J, Atula, T, Kontio, R, Mäkitie, A, Suominen, S, Leivo, I, Vahteristo, P, Aaltonen, L, Aaltonen, LA, Suominen, S **2005**, 'The MDM2 promoter polymorphism SNP309T-->G and the risk of uterine leiomyosarcoma, colorectal cancer, and squamous cell carcinoma of the head and neck', **Journal of Medical Genetics**, vol 42, no. 9, pp. 694-698.
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Tammela, T, Enholm, B, Alitalo, K, Paavonen, K **2005**, 'The biology of vascular endothelial growth factors: [review]', **Cardiovascular Research**, vol 65, no. 13, pp. 550-563.

Tammela, T, Petrova, T, Alitalo, K **2005**, 'Molecular lymphangiogenesis: new players : [review]', **Trends in Cell Biology**, vol 15, no. 8, pp. 434-441.

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2006

Bono, P, Joensuu, H **2006**, 'Angiogeneesin esto syövän hoidossa - ei enää pelkkiä lupauksia', **Duodecim**, vol 122, no. 9, pp. 1037-1044.

Joensuu, H, Reichardt, P **2006**, 'Imatinib and altered bone and mineral metabolism: [to the editor, correspondence]', **New England Journal of Medicine**, vol 355, no. 6, pp. 628.

Joensuu, H, Bono, P **2006**, 'Trastuzumab treatment in breast cancer: [correspondence, authors reply]', **New England Journal of Medicine**, vol 354, no. 20, pp. 2186.

Lehtonen, A, Ojala, P **2006**, 'Herpesvirukset ja immuunijärjestelmä: virusperäisen syövän alkulähteillä : [katsaus]', **Duodecim**, vol 122, pp. 1759-1766.

Patja, K, Jousilahti, PJ, Hu, G, Vallenius, TK, Qiao, Q, Tuomilehto, J **2006**, 'Tobacco smoke, systemic inflammation and the risk of type 2 diabetes', **Journal of Internal Medicine**, vol 259, pp. 333.

2007

Bono, P **2007**, 'Uutta toivoa levinneen munuaissyövän hoitoon: [pääkirjoitus]', **Suomen lääkärilehti**, vol 62, no. 1/2, pp. 27.

Bono, P, Hietanen, P **2007**, 'Rintasyövän vasta-ainehoidot - lupaava lisä yksilölliseen hoitoon: [pääkirjoitus]', **Suomen lääkärilehti**, vol 62, no. 20/21, pp. 2027-2028.

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Laiho, M, Saksela, E **2007**, 'Perimän vauriot, vanheneminen ja syöpä - erottamaton kolmikko: [pääkirjoitus]', **Duodecim**, vol 123, no. 13, pp. 1535-1536.

Ristimäki, A **2007**, 'Stamcellshypotesen och bröstcancer', **Finska Läkaresällskapets Handlingar**, vol 167, no. 2, pp. 74-77.

Sarek, G, Kurki, S, Enbäck, J, Iotzova, G, Haas, J, Laakkonen, PM, Laiho, M, Ojala, PM **2007**, 'p53-kasvurajoitteen aktivaatio - uusi mahdollisuus virusperäisen lymfooman hoitoon: [J Clin Invest in press]', **Duodecim**, vol 123, no. 8, pp. 869-870.

2008

Katajisto, P, Vaahteri, K, Ekman, N, Ventelä, E, Ristimäki, A, Bardeesy, N, Feil, R, DePinho, R, Mäkelä, T **2008**, 'Mutaatiot kasvaimen tukisoluissa polyypin aiheuttajina: [referaatti Nature Genetics -lehden artikkelista]', **Duodecim**, vol 124, pp. 600-601.

Lauttia, S, Palm, J, Rossi, D, Kaskenpää, N, Rajantie, I, Ylä-Herttua, S, Alitalo, K, Weissman, I, Salven, P **2008**, 'Aikuisen luuytimen kantasoluilla ei roolia verisuonten endoteelin uudismuodostuksessa ja kiinteiden kasvaimien kehittämisessä: [referaatti Proc Natl Acad Sci -lehden artikkelista]', **Duodecim**, vol 124, pp. 1083.

Salven, P, Lauttia, S, Rossi, D, Ylä-Herttua, S, Alitalo, K, Weissman, I **2008**, 'Reply to Kerbel et al.: EPCs are again claimed to be essential in yet other models despite the irreproducibility of the original experiments introducing them: letter', **Proceedings of the National Academy of Sciences of the United States of America**, vol 105, no. 34, pp. E55.

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2009

Aebbersold, R, Kallioniemi, O, Zupan, B **2009**, 'Report on EU-USA workshop: how systems biology can advance cancer research (27 October 2008)', **Molecular oncology**, vol 3, no. 1, pp. 9-17.

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Joensuu, H **2009**, 'Predicting recurrence-free survival after surgery for GIST', **Lancet Oncology**, vol 10, no. 11, pp. 1025.

2010

D'Amico, G, Alitalo, K **2010**, 'Inside bloody lymphatics', **Blood**, vol 116, no. 4, pp. 512-513.

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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

CANBIO/Alitalo

Joensuu, H, Bono, P, Kellokumpu-Lehtinen, P **2010**, 'Two Important Determinants May Play a Role in the Success of the FinHer Trial - Reply to M. Isik et al', **Journal of Clinical Oncology**, vol 28, pp. 335-336.

Mäkelä, T **2010**, 'VIRKISTYSTÄ SYÖVÄN LÄÄKEKEHITYKSEN ALKULÄHTEILTÄ: METABOLINEN MUUTOS', **Dosis**, vol 26, no. 2, pp. 64-67.

Pesonen, S, Helin, H, Nokisalmi, P, Escutenaire, S, Ribacka, C, Särkioja, M, Cerullo, V, Guse, K, Bauerschmitz, G, Laasonen, L, Kantola, T, Ristimäki, A, Rajceck, M, Oksanen, M, Haavisto, E, Kanerva, A, Joensuu, T, Hemminki, A **2010**, 'Oncolytic adenovirus treatment of a patient with refractory neuroblastoma', **Acta Oncologica**, vol 49, pp. 117-119.

Ristimäki, A **2010**, 'Tumor suppressor effect of the microRNA miR-519 is mediated via the mRNA-binding protein HuR', **Cell Cycle**, vol 9, no. 7, pp. 1234-1234.

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

2008

Band, A, Laiho, M **2008**, 'Proteasome in the control of TGF- β signaling during development and cancer', in SB Jakowlew (ed.), **Transforming Growth Factor-Beta in Cancer Therapy, Volume I, Humana Press**, pp. 243-257.

Saharinen, PI, Eklund, L, Alitalo, K **2008**, 'Angiopoietins and the Tie receptors.', in W Figg, J Folkman (eds), **Angiogenesis: An integrative approach from science to medicine, Springer**.

2009

Heckman, CA, Holopainen, TT, Alitalo, K **2009**, 'Molecular Targeting of Lymphangiogenesis and Tumor Metastasis', in L Stanley (ed.), **From Local Invasion to Metastatic Cancer, Humana Press**, pp. 283-295.

Stacker, S, Achen, M, Haiko, P, Alitalo, K **2009**, 'Lymphangiogenesis in Health and Disease – An Overview', in SA Stacker, MG Achen (eds), **Lymphangiogenesis in Cancer Metastasis, Springer**.

B3 Unrefereed article in conference proceedings

2006

Dransfield, D, Laakkonen, P, Jussila, M, Arulanandam, A, Huang, L, Devy, L, Chen, J, Chang, Q, Pazmany, C, Rookey, K, Viswanathan, M, Mullberg, J, Schaus, J, Schoonbroodt, S, Steukers, M, Ladner, R, Wood, C, Alitalo, K **2006**, 'Targeting tie-1 inhibits the growth of tumor xenografts as a monotherapy and has increased activity in combination with a VEGF inhibitor', in **18th EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics**, pp. 34-34.

2009

Ristimäki, A **2009**, 'Ruokatorven syövän ja mahasyövän syyt ja luonne', in **Ruokatorven syöpä ja mahasyöpä: Syöpäsäätiön XXXVI Symposiumi 5.–6.2.2009**, pp. 17-21 **Focus Oncologiae**, vol. 10.

Salven, P **2009**, *Bone marrow derived progenitor cells in angiogenesis and tumor growth.*, Paper presented at **2nd International Kloster Seeon Meeting "Cellular and Molecular Mechanisms of Tumor Progression and Metastasis"**, Kloster Seeon, Germany. 19. - 22. September, 2009. *Journal of Vascular Research* 46 S./KARGER AG.

2010

Laiho, M, Jäämaa, SS, af Hällström, TM, Sankila, A, Rantanen, V, Zhang, Z, Yang, Z, De Marzo, AM, Ruutu, M, Andersson, LC **2010**, *DNA Damage Recognition via Activated ATM Pathway in Non-proliferating Human Prostate Tissue: Proceedings of the 52nd Annual ASTRO Meeting.*, *International Journal of Radiation: Oncology - Biology - Physics* 78 3; suppl. 1 ELSEVIER INC..

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

2007

Joensuu, H, Aalberg, V, Tenhunen, M (eds) **2007**, *Syöpätaudit*, 3. p edn, **Duodecim, Helsinki**.

D1 Article in professional journal

2006

Koli, K, Myllärniemi, M, Vuorinen, K, Salmenkivi, K, Ryyänen, M, Kinnula, V, Keski-Oja, J **2006**, 'Uusi mekanistinen näkökulma idiopaattiseen keuhkofibroosiin: BMP-4:n estäjän gremliniin voimakas indusoituminen: [referaatti Am J Pathol artikkelista]', **Duodecim**, vol 122 (2006), no. 14, pp. 1713-1714.

2007



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

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CANBIO/Alitalo

Moore, HM, Latonen, LM **2007**, 'Tumajyväset solujen stressitilanteissa', **Solubiologi**.

2010

Leidenius, MH, Joensuu, H **2010**, 'Rintasyövästä paranee yhä useampi, mutta paraneeko myös elämänlaatu?', **Duodecim**, vol 126, no. 10, pp. 1195-6.

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

2010

Hukkanen, V, Seppänen, M, Lautenschlager, I, Ojala, P **2010**, 'Herpesvirusten ryhmä', in K Hedman, T Heikkinen, P Huovinen, A Järvinen, S Meri, M Vaara (eds), **Mikrobiologia, Kustannus Oy Duodecim**, pp. 524-568.

Vaheri, A, Ojala, P **2010**, 'Virukset ja syöpä', in K Hedman et al. (ed.), **Mikrobiologia. mikrobiologia, immunologia ja infektiosairaudet. kirja 1., Kustannus Oy Duodecim, Helsinki**, pp. 689-697.

E1 Popular article, newspaper article

2008

Alitalo, K, Otonkoski, TPJ **2008**, 'Vieraskynä/Pääkirjoitus: Kantasolukeksintö mahdollistaa henkilökohtaiset soluvärosat', **Helsingin Sanomat**.

H1 Patents

2005

Alitalo, K, Eriksson, U, Achen, M, Gregory Renner, C, Stacker, S, Li, H, Laakkonen, PM **2005**, *Multivalent antibody materials and methods for VEGF/PDGF family of growth factors*, 2005087812.

2006

Alitalo, K, Laakkonen, PM, Kubo, H, Sainio, K **2006**, *Tie Receptor And Tie Ligand Materials And Methods For Modulating Female Fertility*, 2006002854.

2007

Laakkonen, PM, Porkka, K, Hoffman, JA, Ruoslahti, E **2007**, *Peptides that home to tumor lymphatic vasculature and methods of using same*, 7671021.

2008

Laakkonen, PM, Bergers, G, Ruoslahti, E **2008**, *A tumor homing peptide with potential as a pharmaceutical for cancer treatment and imaging*, 20085427.



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

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

CANBIO/Alitalo

1 Analysis of activities 2005-2010

- Associated person is one of Kari Alitalo , Olli-Pekka Kallioniemi , Tomi Mäkelä , Kaisa
Irene Lehti , Juha Klefström , Pipsa Ilona Saharinen , Päivi Ojala , Marikki Laiho ,
Ari Ristimäki , Emmy Verschuren , Pirjo Maarit Laakkonen ,
Carina Holmberg-Still , Outi Monni , Jorma Keski-Oja , Heikki Joensuu , Sergey Kuznetsov ,
Gabriela Veronica D Amico Lago , Katri Koli , Petri Salven , Tuomas Tammela , Michael Jeltsch ,
Masahiro Yamamoto , Andrei Anisimov , Niklas Karl Ekman , Pekka Katajisto , Saara Ollila ,
Zoltan Wiener , Milla Riikka Kivelä , Veli-Matti Leppänen ,
Maija Wolf , Thomas Orjan Westerling , Grzegorz Sarek , Sirku Talvikki Saarikoski ,
Tea Kaarina Vallenius , Arja Band , Merja Annikki Särkioja , Antti Rivinoja , Johanna Lammi ,
Hällström , Marko Timo Tapio Hyytiäinen , Petri Bono , Geert Hamer
Tervonen , Tatiana Lepikhova , Wei Zheng , Ville Hyvönen , Harri Juhani
Nummi , Hanna Heloterä , Pirta Maria Pekkonen , Tanja Talvikki Holopainen ,
Georgia Zarkada , Maija-Elina Bry , Kalle Ojala , Henrik Edgren
Sami Kalevi Kilpinen , Kaisa Laajanen , Katja Pirta Helenius ,
Emilia Kuuluvainen , Ying Yang , Kari Vahtomeri , Lina
Viveca Udd , Eeva Sofia Ojanen , Nami Sugiyama , Pipsa Meller ,
Anita Lampinen , Fang Cheng , Päivi Järvinen , Sari Susanna Jäämaa ,
Karita Dolores Peltonen , Henna Maarja Moore ,
Vilja Maria Eskelinen , Anni Imeli Nieminen , Johanna Inkeri Partanen ,
Elsa De Oliveira Marques , Jenni Salla Pauliina Lahtela , Anastasiya Chemenko ,
Piia-Riitta Karhemo , Mira Marie Heinonen , Camilla Böckelman ,
Alexandra Thiel , Johanna Mrena , Olga Tatti , Marika Johanna
Waltari , Harri Sihto , Marjut Puputti , Susanna Lauttia , Olli
Matilainen , Henna Kristiina Heinonen , Heikki Ristolainen , Jing Wei ,
Anna Kantola ,

Activity type

Supervisor or co-supervisor of doctoral thesis	60
Prizes and awards	27
Editor of research journal	16
Peer review of manuscripts	64
Assessment of candidates for academic posts	14
Membership or other role in review committee	27
Membership or other role in research network	13
Membership or other role in national/international committee, council, board	103
Membership or other role in public Finnish or international organization	18
Membership or other role of body in private company/organisation	3
Other tasks of an expert in private sector	2
Participation in interview for written media	22
Participation in radio programme	7
Participation in TV programme	11
Participation in interview for web based media	2



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

CANBIO/Alitalo

Listing of activities 2005-2010

Supervisor or co-supervisor of doctoral thesis

Kari Alitalo ,

Supervision of PhD thesis/Tanja Holopainen, Kari Alitalo, 2004 → ...
Supervision of PhD thesis/Hanna Heloterä, Kari Alitalo, 2006 → ...
Supervision of PhD thesis/Terhi Kärpänen, Kari Alitalo, 2006
Supervision of PhD thesis/Georgija Zarkada, Kari Alitalo, 2007 → ...
Supervision of PhD thesis/Maria Wirzenius, Kari Alitalo, 2007
Supervision of PhD thesis/Wei Zheng, Kari Alitalo, 2007 → ...
Supervision of PhD thesis/Maija Bry, Kari Alitalo, 2008 → ...
Supervision of PhD thesis/Marja Lohela, Kari Alitalo, 2008
Supervision of PhD thesis/Paula Haiko, Kari Alitalo, 2008
Supervision of PhD thesis/Tuomas Tammela, Kari Alitalo, 2008
Supervision of PhD thesis/Camilla Norrmén, Kari Alitalo, 2009
Supervision of PhD thesis/Harri Nurmi, Kari Alitalo, 2009 → ...
Supervision of PhD thesis/Ville Hyvönen, Kari Alitalo, 2009 → ...
Supervision of PhD thesis/Emilia Korhonen, Kari Alitalo, 2010 → ...
Supervision of PhD thesis/Miia Taavitsainen, Kari Alitalo, 2010 → ...

Tomi Mäkelä ,

Supervision of PhD thesis/Helenius Katja, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Kovac Bianca, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Kuuluvainen Emilia, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Laajanen Kaisa, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Udd Lina, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Vaahntomeri Kari, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Ying Yang, Tomi Mäkelä, 2005 → ...
Supervision of PhD thesis/Westerling, Thomas, Tomi Mäkelä, 2006
Supervision of PhD thesis/Katajisto, Pekka, Tomi Mäkelä, 2008

Kaisa Irene Lehti ,

Supervision of PhD thesis/Nami Sugiyama, Kaisa Irene Lehti, 2007 → ...
Thesis review, Kaisa Irene Lehti, 2010, Finland

Pipsa Ilona Saharinen ,

Supervision of PhD thesis/Hanna Heloterä, Pipsa Ilona Saharinen, 2006 → ...
Supervision of PhD thesis/Anita Lampinen, Pipsa Ilona Saharinen, 2010 → ...

Päivi Ojala ,

Doctoral thesis supervision, Päivi Ojala, 27.11.2007, Finland
Doctoral thesis supervision, Päivi Ojala, 14.05.2010, Finland

Marikki Laiho ,

Mentoring: pre-doctoral, Marikki Laiho, 2000 → ...
Mentoring: pre-doctoral, Marikki Laiho, 2001 → ...



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

CANBIO/Alitalo

Mentoring: pre-doctoral, Marikki Laiho, 2001 → ...

Mentoring: pre-doctoral, Marikki Laiho, 2001 → ...

Mentoring: pre-doctoral, Marikki Laiho, 2005 → ...

Mentoring: pre-doctoral, Marikki Laiho, 2007 → ...

Supervision of PhD thesis, Marikki Laiho, 2007

Supervision of PhD thesis, Marikki Laiho, 2007

Juha Klefström ,

Doctoral thesis supervision / Nieminen, Juha Klefström, 2005 → ..., Finland

Doctoral thesis supervision / Partanen, Juha Klefström, 2005 → ..., Finland

Emmy Verschuren ,

Mentoring a PhD student/Jenni Lahtela, Emmy Verschuren, 2009 → ...

Mentoring a PhD student/Rita Cerejeira Matos, Emmy Verschuren, 2010 → ...

Ari Ristimäki ,

Supervision of doctoral thesis / Erkinheimo, Ari Ristimäki, 2005

Supervision of doctoral thesis / Sivula, Ari Ristimäki, 2005

Jorma Keski-Oja ,

Supervision of PhD thesis/Olga Tatti, Jorma Keski-Oja, 2007 → ...

Supervision of academic dissertation, Jorma Keski-Oja, 2007

Supervision of PhD thesis/Yizhou Hu, Jorma Keski-Oja, 2008 → ...

Supervision of PhD thesis/Irene Ylivinkka, Jorma Keski-Oja, 2009 → ...

Supervision of academic dissertation, Jorma Keski-Oja, 2010

Supervision of academic dissertation, Jorma Keski-Oja, 2010

Petri Salven ,

Doctoral thesis supervision / Lauttia, Petri Salven, 2007 → ..., Finland

Doctoral thesis supervision / Fang, Petri Salven, 01.01.2010 → ..., Finland

Sergey Kuznetsov ,

Mentoring a PhD student Manuela Tumiati, Sergey Kuznetsov, 2009 → ...

Mentoring a PhD student Yuexi Gu, Sergey Kuznetsov, 2009 → ...

Katri Koli ,

Supervision of PhD thesis, Katri Koli, 2010

Tuomas Tammela ,

Supervision of PhD thesis/Georgia Zarkada, Tuomas Tammela, 2007 → ...

Supervision of PhD thesis/Harri Nurmi, Tuomas Tammela, 2009 → ...

Milla Riikka Kivelä ,

Supervision of PhD thesis/Miia Taavitsainen, Milla Riikka Kivelä, 2010 → ...

Marko Timo Tapio Hyytiäinen ,

Supervision of PhD thesis/Yizhou Hu, Marko Timo Tapio Hyytiäinen, 2008 → ...

Supervision of PhD thesis/Irene Ylivinkka, Marko Timo Tapio Hyytiäinen, 2009 → ...

Prizes and awards

Kari Alitalo ,

Eric K Fernström Foundation's Nordic Prize, Kari Alitalo, 2005, Sweden



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

CANBIO/Alitalo

Pfizer Advances in Oncology Award, Kari Alitalo, 2005
Louis-Jeantet Prize For Medicine, Kari Alitalo, 2006, Switzerland
Suomen tiedeseuran jäsen, Kari Alitalo, 17.12.2007 → ..., Finland
The InBev-Baillet Latour Health Prize, Kari Alitalo, 2009, Belgium
Biomedicum Helsinki lecture and Medal 2010, Kari Alitalo, 19.10.2010
The Anders Jahre Senior Medical Prize, Kari Alitalo, 08.10.2010, Norway
The Michael O'Connor Award, Kari Alitalo, 2010, United States

Olli-Pekka Kallioniemi ,

AACR Team Science Award, Olli-Pekka Kallioniemi, 2008
IFCC Abbott Award, Olli-Pekka Kallioniemi, 2008

Tomi Mäkelä ,

Membership of the Finnish Academy of Science and Letters, Tomi Mäkelä, 2002 → ...
Anders Jahre Young Investigator Award, Tomi Mäkelä, 01.01.2005, Norway

Marikki Laiho ,

Membership of the Finnish Academy of Science and Letters, Marikki Laiho, 2008 → ...

Pirjo Maarit Laakkonen ,

The Best Poster Award, Pirjo Maarit Laakkonen, 2008
Best presentation and poster award, Pirjo Maarit Laakkonen, 12.05.2009
The Best Poster Award, Pirjo Maarit Laakkonen, 2009

Jorma Keski-Oja ,

Member, Finnish Science Academy (Finnish Acad. Sci & Lett.), Jorma Keski-Oja, 2002 → ...
Member, Societas scientiarum Fennica (Finnish Soc. Sci & Lett.), Jorma Keski-Oja, 2008 → ..., Finland

Heikki Joensuu ,

Fellow of the European Academy of Cancer Sciences, Heikki Joensuu, 2010
GIST Hall of Fame Award, Heikki Joensuu, 2010
The Finnish Medical Foundation 50-year Anniversary Prize, Heikki Joensuu, 2010

Tuomas Tammela ,

The Lymphatic Research Foundation Andrew Moissif Young Investigator Award, Tuomas Tammela, 2006, United States
The Faculty of Medicine Thesis of the Year Award, Tuomas Tammela, 2009
The Werner Risau Prize, Tuomas Tammela, 2009, Germany

Maija-Elina Bry ,

Biomedicum Helsinki Foundation Young Scientist Award 2010, Maija-Elina Bry, 2010, Finland

Emilia Kuuluvainen ,

Helsingin Yliopiston Biotieteellisen Tiedekunnan Pro Gradu palkinto 2007, Emilia Kuuluvainen, 2007, Finland

Ying Yang ,

The 1st prize for the poster, GSBM 2008 annual graduate student meeting, Ying Yang, 2008, Finland

Editor of research journal

Tomi Mäkelä ,

Editorial Board Member/Duodecim, Tomi Mäkelä, 2001 → ...
Biomedicine editor, Finnish Medical Journal Duodecim, Tomi Mäkelä, 01.01.2002 → 31.12.2009, Finland
Editorial Board Member, "Scientific Reports", Nature Publishing Group, Tomi Mäkelä, 06.12.2010 → ..., United Kingdom



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

CANBIO/Alitalo

Marikki Laiho ,

Annals of Medicine, Member of Editorial Board, Marikki Laiho, 2002 → 2007

Ad Hoc Reviewer, several journals, Marikki Laiho, 2005 → ...

Juha Klefström ,

Academic editor for PLoS One, Juha Klefström, 2007

Pirjo Maarit Laakkonen ,

Annals Medicine, Pirjo Maarit Laakkonen, 01.01.2005 → 31.12.2005, Finland

Ari Ristimäki ,

Prostaglandins and Other Lipid Mediators., Ari Ristimäki, 2003 → ..., United States

Heikki Joensuu ,

Member of the Editorial Board/Acta Oncologica, Heikki Joensuu, 2004 → ...

Member of the Editorial Board/Lancet Oncology, Heikki Joensuu, 2006 → 2009

Member of the Editorial Board/The Open Clinical Cancer Journal, Heikki Joensuu, 2007 → ...

Member of the Editorial Board/The General and Internal Medicine Journal, Heikki Joensuu, 2007 → ...

Petri Salven ,

Editorial board membership / Stem Cell Review Letters, Petri Salven, 2009 → ...

Tea Kaarina Vallenius ,

Duodecim, Tea Kaarina Vallenius, 01.01.2005 → 31.12.2005, Finland

Esperimental Cell Research, Tea Kaarina Vallenius, 01.01.2005 → 31.12.2005, Finland

Duodecim, Tea Kaarina Vallenius, 01.01.2006 → 31.12.2006

Peer review of manuscripts

Tomi Mäkelä ,

Ad hoc referee: Science, Molecular Cell, Nature Genetics; EMBO Journal; Molecular Biology of the Cell; Oncogene; Drug Discovery Today; FEBS Letters; EMBO Reports; Human Molecular Genetics; PNAS, Journal of Cell Science; GUT; Gastroenterology, Tomi Mäkelä, 2005 → ...

Kaisa Irene Lehti ,

Peer reviewer for Annal of Medicine, Kaisa Irene Lehti, 2005

Peer reviewer for Journal of Biological Chemistry, Kaisa Irene Lehti, 2005

Peer reviewer for EMBO Journal, Kaisa Irene Lehti, 2006

Peer reviewer for International Journal of Cancer, Kaisa Irene Lehti, 2007

Peer reviewer for Cell & Tissue Research, Kaisa Irene Lehti, 2009

Peer reviewer for International Journal of Cancer, Kaisa Irene Lehti, 2009

Peer reviewer for Matrix Biology, Kaisa Irene Lehti, 2010

Päivi Ojala ,

Sodium butyrate induces apoptosis and cell cycle arrest in primary effusion lymphoma cells independently of oxidative stress and p21 CIP1/WAF1 induction, Päivi Ojala, 05.08.2005, United States

Expert Review of Anticancer Therapy, Päivi Ojala, 30.11.2006, United Kingdom

A nuclear role for Kaposi's sarcoma associated herpesvirus-encoded K13 protein in gene regulation, Päivi Ojala, 09.11.2007, United States

Induction of paclitaxel resistance by the KSHV latent protein LANA2, Päivi Ojala, 12.04.2007, United States

The chemokine receptor RDC1/CXCR7 in Kaposi's sarcoma, Päivi Ojala, 22.09.2008, United States

Cyclin-Dependent Kinase-like Function is Shared by the Beta- and Gamma- Subset of the Conserved Herpesvirus Protein Kinases., Päivi Ojala, 06.07.2009, United States



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Pim-3 Protects against Cardiomyocyte Apoptosis in Anoxia/reoxygenation Injury via p38-mediated Signal Pathway, Päivi Ojala, 07.05.2009, United States

Plasmacytoid and myeloid dendritic cells efficiently mediate Kaposi's sarcoma-associated herpesvirus (KSHV) infection of primary B-cells in vitro, Päivi Ojala, 24.09.2009, United States

RAPID AND QUANTITATIVE ASSESSMENT OF KSHV LANA MEDIATED DNA REPLICATION, Päivi Ojala, 27.12.2010, Germany

The lytic transcriptome of KSHV reveals extensive transcription of noncoding regions, including regions antisense to important genes, Päivi Ojala, 04.01.2010, United States

Juha Klefström ,

Peer review for Apoptosis, Juha Klefström, 2005 → ...

Peer review for Duodecim, Juha Klefström, 2005 → ...

Peer review for Journal of Cellular Biochemistry, Juha Klefström, 2005 → ...

Peer review for Molecular and Cellular Biology, Juha Klefström, 2005 → ...

Peer review for PLoS One, Juha Klefström, 2005 → ...

Peer review for PNAS, Juha Klefström, 2005 → ...

Peer review for Science, Juha Klefström, 2005 → ...

Pirjo Maarit Laakkonen ,

Annals Medicine, Pirjo Maarit Laakkonen, 01.01.2005 → 31.12.2005, Finland

International Journal of Cancer, Pirjo Maarit Laakkonen, 2008

Journal of Pathology, Pirjo Maarit Laakkonen, 2008

Bioconjugate Chemistry, Pirjo Maarit Laakkonen, 2009

FASEB Journal, Pirjo Maarit Laakkonen, 2009 → 2010

Ari Ristimäki ,

APMIS, Ari Ristimäki, 2009 → 2010

Acta Obstetrica et Gynecologica Scandinavica, Ari Ristimäki, 2009

BMC Cancer, Ari Ristimäki, 2009

Carcinogenesis, Ari Ristimäki, 2009 → 2010

European Journal of Cancer, Ari Ristimäki, 2009

GUT, Ari Ristimäki, 2009 → 2010

Human Genetics, Ari Ristimäki, 2009

International Journal of Cancer, Ari Ristimäki, 2009

Prostaglandins and Other Lipid Mediators, Ari Ristimäki, 2009 → 2010

Histology and Histopathology, Ari Ristimäki, 2010

Journal of Molecular Histology, Ari Ristimäki, 2010

Heikki Joensuu ,

Referee for Several Journals in 2010, Heikki Joensuu, 2010

Carina Holmberg-Still ,

Aging Cell, Carina Holmberg-Still, 2010

PLoS One, Carina Holmberg-Still, 2010

Petri Salven ,

Peer review for American Journal of Pathology, Petri Salven, 2005 → ...

Peer review for Arteriosclerosis, Thrombosis, and Vascular Biology, Petri Salven, 2005 → ...

Peer review for Biochimica et Biophysica Acta (BBA - Reviews on Cancer), Petri Salven, 2005 → ...



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Peer review for Blood, Petri Salven, 2005 → ...
Peer review for British Journal of Cancer, Petri Salven, 2005 → ...
Peer review for Critical Reviews in Oncology/Hematology, Petri Salven, 2005 → ...
Peer review for Cytokine, Petri Salven, 2005 → ...
Peer review for European Journal of Endocrinology, Petri Salven, 2005 → ...
Peer review for European Journal of Haematology, Petri Salven, 2005 → ...
Peer review for European Journal of Immunology, Petri Salven, 2005 → ...
Peer review for International Journal of Cancer, Petri Salven, 2005 → ...
Peer review for Investigative Ophthalmology & Visual Science (IOVS), Petri Salven, 2005 → ...
Peer review for Journal of Leukocyte Biology, Petri Salven, 2005 → ...
Peer review for Journal of Thrombosis and Haemostasis, Petri Salven, 2005 → ...
Peer review for Laboratory Investigation, Petri Salven, 2005 → ...
Peer review for Leukemia, Petri Salven, 2005 → ...
Peer review for Leukemia Research, Petri Salven, 2005 → ...
Peer review for Oncology, Petri Salven, 2005 → ...
Peer review for Thrombosis and Haemostasis, Petri Salven, 2005 → ...

Katri Koli ,

Peer Review - several journals, Katri Koli, 2005 → ...

Assessment of candidates for academic posts

Tomi Mäkelä ,

Docent review, 6 times 2005-2010 in Finnish universities, Tomi Mäkelä, 2005 → 2010, Falkland Islands
EMBO Long-term Fellowship assessment: 2005, 2007, Tomi Mäkelä, 2005 → 2007
ERC grant reviewer, Tomi Mäkelä, 10.2010 → 31.12.2013

Päivi Ojala ,

Conferment of title of Professor, Päivi Ojala, 2010, United Kingdom
John D. and Catherine T. MacArthur Foundation Fellowship, Päivi Ojala, 18.08.2010, United States

Juha Klefström ,

Reviewer for docentship / Holmström, Juha Klefström, 2009 → ..., Finland

Pirjo Maarit Laakkonen ,

Assessment of candidates for academic posts, Pirjo Maarit Laakkonen, 2006, United States
Evaluation for Docentship/Arja Kaitera, Pirjo Maarit Laakkonen, 2006

Ari Ristimäki ,

Evaluation for Associate Research Professorship, Ari Ristimäki, 2008 → 2009, United States
Evaluation for Docentship / Kiuru, Ari Ristimäki, 2010, Finland
Evaluation for Docentship / Sundström, Ari Ristimäki, 2010, Finland

Jorma Keski-Oja ,

Evaluator (Promotion to Full Professor), Jorma Keski-Oja, 03.2010

Petri Salven ,

Examiner for an Adjunct Professorship, Petri Salven, 2007, Finland
Examiner for an Associate Professorship, Petri Salven, 2007, United States



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Membership or other role in review committee

Tomi Mäkelä ,

Chairman, review committee for UH Medical Fund, Tomi Mäkelä, 2004 → 2005
Instrumentarium Science Foundation Review Committee, Tomi Mäkelä, 2007 → 2030
Dutch Digestive Foundation, Grant Reviewer 2008, Tomi Mäkelä, 2008

Kaisa Irene Lehti ,

PhD committee member, Kaisa Irene Lehti, 2009 → ..., Finland

Päivi Ojala ,

Grant evaluation, Päivi Ojala, 12.01.2006, United Kingdom
Grant reviews, Päivi Ojala, 2007 → 2010, Italy
Grant reviews, Päivi Ojala, 12.06.2007, Lithuania
Grant evaluation, Päivi Ojala, 02.08.2009, United Kingdom
Grant reviewer, Päivi Ojala, 06.10.2009 → 08.10.2011, Finland
Grant reviewer, Päivi Ojala, 03.12.2010, Finland

Juha Klefström ,

Reveier of scientific position / UCSF Comprehensive Cancer Center, Juha Klefström, 2005, United States
Expert review for research program grants, Juha Klefström, 2007 → 2010, Norway
Reviewer for scientific position in USCIS/Genentech Inc, Juha Klefström, 2008, United States
Reviewer for ERC Advanced Grant, Juha Klefström, 2010

Pirjo Maarit Laakkonen ,

FWIS, L'oreal-Unesco Women in Science fellowship, Pirjo Maarit Laakkonen, 2008, Finland
Reviewer of grants, Pirjo Maarit Laakkonen, 2008, Switzerland
Reviewer of grants, Pirjo Maarit Laakkonen, 2009, Netherlands
Reviewer of grants, Pirjo Maarit Laakkonen, 2009, Taiwan
Reviewer of grants, Pirjo Maarit Laakkonen, 2009, Georgia
FWIS, L'oreal-Unesco Women in Science fellowship, Pirjo Maarit Laakkonen, 2010, Finland
Reviewer of grants, Pirjo Maarit Laakkonen, 2010, United Kingdom

Heikki Joensuu ,

Memeber of Assessment Board, Heikki Joensuu, 2007 → ...

Carina Holmberg-Still ,

Evaluation panel member, Carina Holmberg-Still, 2010
Member of evaluation committee, Carina Holmberg-Still, 2010

Petri Salven ,

Doctoral committee member, Petri Salven, 2010 → ..., Finland

Katri Koli ,

Reviewing of docent application, Katri Koli, 08.08.2006
Reviewing of a grant application, Katri Koli, 2010

Membership or other role in research network

Tomi Mäkelä ,

Coordinator, Biocentrum Helsinki Systems Biology Initiative, Tomi Mäkelä, 01.01.2005 → 01.01.2007
ENFIN FP6 Network of Excellence, Tomi Mäkelä, 2006 → 2011



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Vice Director, Center of Excellence in Translational Genome-Scale Biology, Tomi Mäkelä, 2006 → 2011

Chair, Biocenter Finland Genome-Wide Methods Network, Tomi Mäkelä, 2007 → 2012

Juha Klefström ,

Chairman of the FinQB3 joint steering committee, Juha Klefström, 2007 → 2011

Membership in Innovative Medicines Initiative - PREDECT, Juha Klefström, 2007 → ...

Membership in Nordforsk network Chromatin, Transcription and Cancer, Juha Klefström, 2007 → ..., Sweden

Member of Viral Gene Transfer and Cell Therapy Network, Juha Klefström, 2009 → ..., Finland

Pirjo Maarit Laakkonen ,

Management Coordinator, Pirjo Maarit Laakkonen, 01.05.2004 → 31.10.2009, Finland

Carina Holmberg-Still ,

Position of trust, Carina Holmberg-Still, 2010

Sergey Kuznetsov ,

LentiGEMM consortium, Emerging technologies network of Biocenter Finland 2010-2012, Sergey Kuznetsov, 01.01.2010 → 31.12.2012, Finland

Katri Koli ,

Member of American Society for Cell Biology, Katri Koli, 1999 → ...

Member of Finnish Connective Tissue Society, Katri Koli, 2005 → ...

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

Kari Alitalo ,

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 1999 → ...

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 2001 → ..., Italy

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 2001 → 2005, Belgium

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 2002 → ..., France

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 2007 → ...

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 2008 → ..., United States

SCIENTIFIC ADVISORY BOARD MEMBER, Kari Alitalo, 2009 → ..., Finland

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

EDITORIAL BOARD MEMBERSHIP, Kari Alitalo, 2010

Olli-Pekka Kallioniemi ,

AACR, Olli-Pekka Kallioniemi, 2001 → ..., United States

Human Protein Atlas Initiative, Olli-Pekka Kallioniemi, 2006 → ..., Sweden

CREATE-Health, Olli-Pekka Kallioniemi, 2007 → ..., Sweden

International Cancer Genome Sequencing Consortium, Olli-Pekka Kallioniemi, 2007 → 2008

Biocenter Finland, Olli-Pekka Kallioniemi, 2008 → ..., Finland

Biocentrum Helsinki, Board member, Olli-Pekka Kallioniemi, 2008 → ..., Finland



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ESFRI, Olli-Pekka Kallioniemi, 2008 → ...
HBGS, Olli-Pekka Kallioniemi, 2008 → ..., Finland
Nordic EMBL, Olli-Pekka Kallioniemi, 2008 → ...
Oslo Cancer Biomedicine Consortium, Olli-Pekka Kallioniemi, 2008 → ..., Norway
University of Helsinki, Olli-Pekka Kallioniemi, 2008 → ..., Finland
AACR, Olli-Pekka Kallioniemi, 2009 → ..., United States
EBI-EMBL, Olli-Pekka Kallioniemi, 2009 → ...
ERI-ICP, Olli-Pekka Kallioniemi, 2009 → ...
European Academy of Cancer Societies, Olli-Pekka Kallioniemi, 2009 → ...
WIN Consortium, Olli-Pekka Kallioniemi, 2009 → ...
AACR, Olli-Pekka Kallioniemi, 2010 → ..., United States
BF, Drug Discovery and Chemical Biology Initiative DDCB, Olli-Pekka Kallioniemi, 2010 → ..., Finland
German Consortium for Translational Cancer Research, Olli-Pekka Kallioniemi, 2010 → 2011, Germany

Tomi Mäkelä ,

Steering Group member, MD PhD program, Faculty of Medicine, Tomi Mäkelä, 01.01.1996 → 31.12.2007, Finland
Member, Biocentrum Helsinki, Tomi Mäkelä, 1998 → 31.12.2013, Finland
Board Member, Meilahti Animal Facility, Tomi Mäkelä, 01.01.2001 → 31.12.2006, Finland
Faculty of Medicine Postgraduate Education Committee, Tomi Mäkelä, 01.01.2003 → 31.12.2006, Finland
SAB, Wihuri Research Foundation, Tomi Mäkelä, 01.01.2003 → 31.12.2011, Finland
Scientific Advisory Board Member, Tomi Mäkelä, 2003 → ...
Faculty of Medicine Research Council, Tomi Mäkelä, 01.01.2004 → 30.06.2009, Finland
SAB, Finnish Cancer Institute, Tomi Mäkelä, 01.01.2004 → 31.12.2011, Finland
Scientific Advisory Board Member, Tomi Mäkelä, 2004 → ...
Chair, organizing committee, BioFinland 2005, Tomi Mäkelä, 26.04.2005 → 27.04.2005
FinnSight2015 National Health Panel Member, Tomi Mäkelä, 01.01.2005 → 31.12.2005, Finland
Steering Group, Masters Program in Bioinformatics, UH, Tomi Mäkelä, 01.01.2005 → 31.12.2011, Finland
Center of Excellence in Translational Genome-Scale Biology, Tomi Mäkelä, 01.01.2006 → 31.12.2011, Finland
Graduate School System Planning Group, HEA, Ireland, Tomi Mäkelä, 28.02.2006 → 21.09.2006, Ireland
Initiator, LERU Biomedical Graduate Program, Tomi Mäkelä, 2006 → 2007, Finland
Initiator, joint doctoral degree program, Karolinska-UH, Tomi Mäkelä, 2006 → 2007, Sweden
Member of FinnSight2015 National Health Panel, Tomi Mäkelä, 2006
Support Group for EU FP7 Health Area in Finland, Tomi Mäkelä, 2006 → ...
UH Research Information System TUHAT: chair 06-08, coordination group 10-, Tomi Mäkelä, 2006 → 2011
Chairman of the Board, Helsinki Biomedical Graduate School, Tomi Mäkelä, 2007 → ...
Member of the steering committee for The Master's Degree Program in Translational Medicine, Tomi Mäkelä, 2008 → 2013
Organizing committee, CNIO Cancer Conference: signalling upstream of mTOR, Tomi Mäkelä, 03.11.2008 → 05.11.2008, Spain
TRANSMED Translational Masters Program, multiple roles, Tomi Mäkelä, 2008
Chairman, JURE task force for national publication registry in Finland, Tomi Mäkelä, 2009 → ...
Board member of the Bioinformatics Masters Program, Tomi Mäkelä, 2010
Host, UH Honorary Doctor Robert A. Weinberg, Tomi Mäkelä, 03.06.2010
Organizing committee, ENFIN-EMBRACE workshop, Tomi Mäkelä, 05.10.2010 → 06.10.2010, Finland



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Päivi Ojala ,

Center of Excellence in Translational Genome-Scale Biology, Päivi Ojala, 01.01.2006 → 31.12.2010, Finland

EU-integrated project INCA, Päivi Ojala, 01.01.2006 → 31.12.2009

Helsinki Biomedical Graduate School Board, Päivi Ojala, 03.04.2007 → 31.08.2008, Finland

Helsinki Biomedical Graduate School Board, Päivi Ojala, 01.09.2008 → ..., Finland

Marikki Laiho ,

Graduate Program Member, Marikki Laiho, 2008 → ..., United States

Graduate Program Member, Marikki Laiho, 2009 → ..., United States

Juha Klefström ,

Board of Gene Technology reviewer, Juha Klefström, 2007, Finland

Pirjo Maarit Laakkonen ,

Member of the Board, Pirjo Maarit Laakkonen, 2007 → ...

Member of the Board, Pirjo Maarit Laakkonen, 01.01.2007, Finland

Member of the Board, Pirjo Maarit Laakkonen, 01.01.2008 → 16.02.2011, Finland

Member of the Organizing Committee, Pirjo Maarit Laakkonen, 2008, Finland

Organizer, Pirjo Maarit Laakkonen, 2009, Finland

Vice Member of the Board, Pirjo Maarit Laakkonen, 01.04.2010, Finland

Ari Ristimäki ,

Board member of Helsinki Biomedical Graduate School (HBGS), Ari Ristimäki, 1999 → ..., Finland

European Helicobacter Study Group, Ari Ristimäki, 2008 → ...

International Academy of Pathology (IAP) Finnish division, Ari Ristimäki, 2008 → ...

Future trends committee, UEGF, Ari Ristimäki, 2010 → ...

R&D of HUSLAB molecular pathology, Ari Ristimäki, 2010 → ...

Jorma Keski-Oja ,

Board Member, Jorma Keski-Oja, 2000 → 2012

Chair of the Grant evaluation board, Jorma Keski-Oja, 2008 → ...

Chair of the M.D. & Ph.D. program of the Faculty of Medicine, Jorma Keski-Oja, 2008 → ...

Scientific board member, Jorma Keski-Oja, 2009 → ...

Tieteellisen neuvoston jäsenyys, Jorma Keski-Oja, 12.03.2010 → 31.12.2012

Heikki Joensuu ,

Member of the Board, Heikki Joensuu, 2001 → ...

Member of the Scientific Board, Heikki Joensuu, 2005 → 2007

Member, Heikki Joensuu, 2010

Member, Heikki Joensuu, 2010

Member, Heikki Joensuu, 2010

Member, Heikki Joensuu, 2010

Member, Heikki Joensuu, 2010

Member, Heikki Joensuu, 2010

Scientific Committee Membership, Heikki Joensuu, 2010, Belgium

Scientific Committee Membership, Heikki Joensuu, 2010, Belgium



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CANBIO/Alitalo

Petri Salven ,

Coordination committee member in Medical Technology Infrastructure Network, Petri Salven, 2007 → ..., Finland

Expert member in Biomedicine and Molecular Biosciences (BMBS) Domain Committee, COST, Petri Salven, 2010 → ...

Marko Timo Tapio Hyytiäinen ,

Member of the board; Finnish Connective Tissue Society, Marko Timo Tapio Hyytiäinen, 2008 → ...

Petri Bono ,

Membership in professional organization, Petri Bono, 2010 → ..., United States

Membership in professional organization, Petri Bono, 2010 → ...

Membership in professional organization, Petri Bono, 2010 → ...

Membership in professional organization, Petri Bono, 2010 → ...

Lina Viveca Udd ,

Helsingin yliopiston tutkijalääkäriinjan johtoryhmä, Lina Viveca Udd, 31.08.2006 → 31.12.2006, Finland

Piia-Riitta Karhemo ,

FinnProt, Piia-Riitta Karhemo, 2008, Finland

Membership or other role in public Finnish or international organization

Tomi Mäkelä ,

Finnish Medical Foundation, Member, Tomi Mäkelä, 01.01.1996 → ...

Head, Meilahti Transgenic Unit, Tomi Mäkelä, 2001 → 2008

Director, Helsinki Biomedical Graduate School, Tomi Mäkelä, 2002 → 2007

Finnish Academy of Science and Letters, Member, Tomi Mäkelä, 01.01.2002 → 31.12.2011, Finland

EMBO Member, Tomi Mäkelä, 16.02.2003 → 31.12.2030, Finland

Director (acting), Biomedicum Helsinki, Tomi Mäkelä, 11.2004 → 11.2005

Chairman of the Board, Finnish Medical Foundation, Tomi Mäkelä, 2005 → 2010

Dean of Research, Faculty of Medicine, Tomi Mäkelä, 2007 → 2009

Board Member, Biocenter Finland, Tomi Mäkelä, 01.01.2010 → ...

Juha Klefström ,

Founder and director of Biomedicum Virus Core Facility, Juha Klefström, 11.2002 → ..., Finland

Research director of Biomedicum Functional Genomics Unit, Juha Klefström, 2006 → ...

Jorma Keski-Oja ,

Suomen Akatemian terveyden tutkimuksen toimikunnan jäsen, Jorma Keski-Oja, 01.01.2004 → 31.12.2006, Finland

Heikki Joensuu ,

Vice-chair, Heikki Joensuu, 2003 → ...

Vice-chair, Heikki Joensuu, 2003 → 2010

Expert member, Heikki Joensuu, 01.01.2009 → ...

Member of the Board, Heikki Joensuu, 2009 → 2011

Chair, Heikki Joensuu, 2010 → ...

Outi Monni ,

Research director of Biomedicum Functional Genomics Unit, Outi Monni, 2006 → ..., Finland



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CANBIO/Alitalo

Membership or other role of body in private company/organisation

Juha Klefström ,

Chairman of the board in Biomedicum Genomics Ltd, Juha Klefström, 07.2007 → 2009, Finland

Board membership in Biomedicum Genomics Ltd, Juha Klefström, 2009 → ...

Jorma Keski-Oja ,

Etelä-Pohjalainen osakunta: inspehtori, Jorma Keski-Oja, 01.01.2006 → 31.12.2006, Finland

Other tasks of an expert in private sector

Juha Klefström ,

Coordinator of LentiGEMM Emerging Technology Platform, Juha Klefström, 2010 → ..., Finland

Pirjo Maarit Laakkonen ,

Coordinator of the Pharma meets Academia -event, Pirjo Maarit Laakkonen, 12.05.2009, Finland

Participation in interview for written media

Kari Alitalo ,

Ei mikään yhden miehen show, Kari Alitalo, 2009, Finland

Participation in interview/ Perspektiv: Infoblad om Helsingfors universitet, Kari Alitalo, 2009

Olli-Pekka Kallioniemi ,

New law to set up genetic bank, Olli-Pekka Kallioniemi, 04.2009, Finland

Academy of Finland, Science Breakfast: Henkilökohtainen lääketiede avaa tietä yksilöllisille hoidoille, Olli-Pekka Kallioniemi, 18.11.2010, Finland

Maaailman tutkituin syöpä, Olli-Pekka Kallioniemi, 15.10.2010, Finland

Syövän hoitoa räätälöidyisti, Olli-Pekka Kallioniemi, 07.2010, Finland

Tomi Mäkelä ,

Participation in several interviews/Helsingin Sanomat, Tomi Mäkelä, 1996 → 2010

Interview, Marita Räsänen, LÄÄKÄRIN AMMATTITAITO (book), Tomi Mäkelä, 15.06.2005

Science Days Finland 2005: "Oncogenes", Tomi Mäkelä, 14.01.2005

Science Days Finland 2005: professor on call, Tomi Mäkelä, 14.01.2005

Science Days Finland 2007: Opportunities from Cancer Biology, Tomi Mäkelä, 10.01.2007

Kiinnostus tutkijan työhön uhkaa hiipua, Tomi Mäkelä, 2009, Finland

Juha Klefström ,

Participation in a journal interview, Juha Klefström, 2007, Finland

Participation in interview for NordForsk Magasin, Juha Klefström, 2008

Participation in interview for APU magazine, Juha Klefström, 2009, Finland

Heikki Joensuu ,

Participation in several interviews/Helsingin Sanomat, Heikki Joensuu, 22.11.2004 → 01.11.2010

Syöpäpotilaat hyötynyt uudesta sädehoidosta, Heikki Joensuu, 02.12.2006

Lääketutkimus ei enää houkuttele nuoria tutkijoita, Heikki Joensuu, 01.11.2010

Tuomas Tammela ,

Participation in several interviews/Helsingin Sanomat, Tuomas Tammela, 2007 → ...

Petri Bono ,

Participation in interview, Petri Bono, 03.2008



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CANBIO/Alitalo

Participation in interview, Petri Bono, 04.2009

Maija-Elina Bry ,

Participation in interview/ Perspektiv: Infoblad om Helsingfors universitet, Maija-Elina Bry, 2009

Participation in radio programme

Tomi Mäkelä ,

Radiaattori: Transkriptiosta Nobelin palkinto/Sisko Loikkanen, Tomi Mäkelä, 11.10.2006

Radiaattori: telomeraasista Nobel / Sisko Loikkanen, Tomi Mäkelä, 21.10.2010

Petri Salven ,

Participation in radio program / Tiedelinko, Petri Salven, 12.10.2007, Finland

Participation in radio program / YLE Radio 1 Tiede uutiset, Petri Salven, 23.04.2008, Finland

Participation in radio program / Yle Radio 1 Reseptori, Petri Salven, 29.05.2008

Participation in radio program / Yle Radio 1 Tiede, Petri Salven, 29.05.2008, Finland

Tuomas Tammela ,

Radio Interview/Päivän peili, Tuomas Tammela, 25.06.2008

Participation in TV programme

Päivi Ojala ,

Interview, Päivi Ojala, 21.03.2007, Finland

Juha Klefström ,

Participation in TV program / Yle Teema, Juha Klefström, 25.07.2006, Finland

Participation in TV program on the Goodwill Gala Concert, Juha Klefström, 14.11.2009, Finland

Heikki Joensuu ,

FinXX tutkimus ja kapasitaatiini syöpälääkkeenä, Heikki Joensuu, 23.09.2009

Syövän hyvät hoitotulokset Suomessa, Heikki Joensuu, 07.05.2009, Sweden

Kliinisen tutkimuksen ongelmat, Heikki Joensuu, 11.01.2010

Rintasyövän hoitotulokset, Heikki Joensuu, 12.08.2010

Uudet syöpähoidot, SOLD, FinHer ja FinXX, Heikki Joensuu, 27.01.2010

Uudet syöpähoidot, SOLD, FinHer ja FinXX, Heikki Joensuu, 27.01.2010

Petri Salven ,

Participation in TV program / Prisma Studio, Petri Salven, 01.02.2006, Finland

Petri Bono ,

Aamu-tv, Petri Bono, 25.01.2010

Participation in interview for web based media

Tomi Mäkelä ,

Tomi Mäkelä Helsingin biotekniikan instituutin johtoon, Tomi Mäkelä, 16.01.2009

Annual Centre of Excellence seminar: Peer review easier in life sciences, Tomi Mäkelä, 14.12.2010



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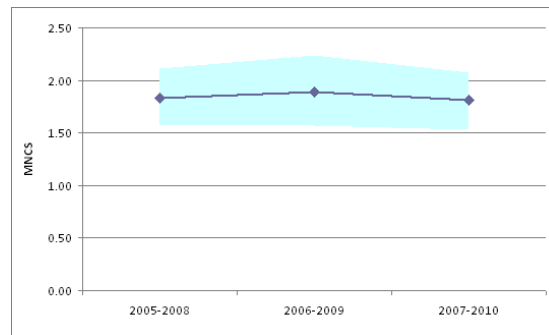
Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010
by CWTS, Leiden University, the Netherlands

Research Group: Alitalo K

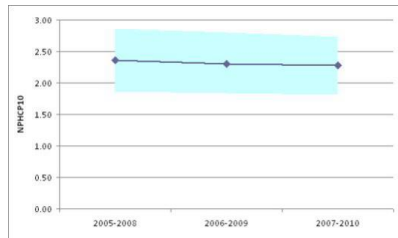
Basic statistics

Number of publications (P)	433
Number of citations (TCS)	7,255
Number of citations per publication (MCS)	17.08
Percentage of uncited publications	16%
Field-normalized number of citations per publication (MNCS)	1.86
Field-normalized average journal impact (MNJS)	1.71
Field-normalized proportion highly cited publications (top 10%)	2.40
Internal coverage	.95

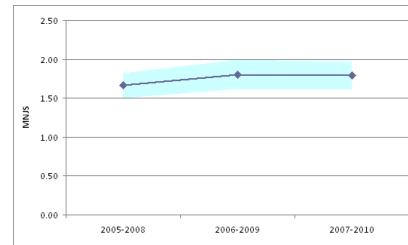
Trend analyses



MNCS

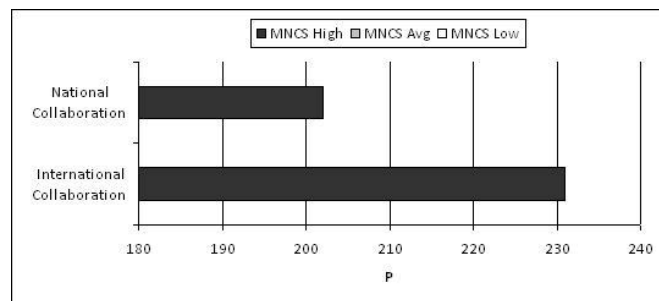


THCP10



MNJS

Collaboration



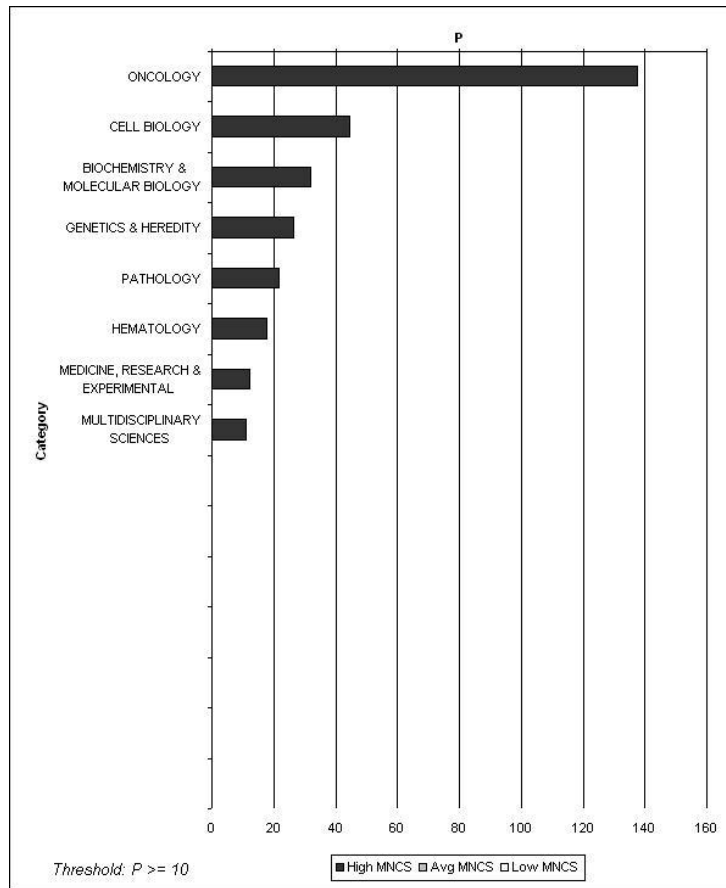
Performance (MNCS) by collaboration type



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

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