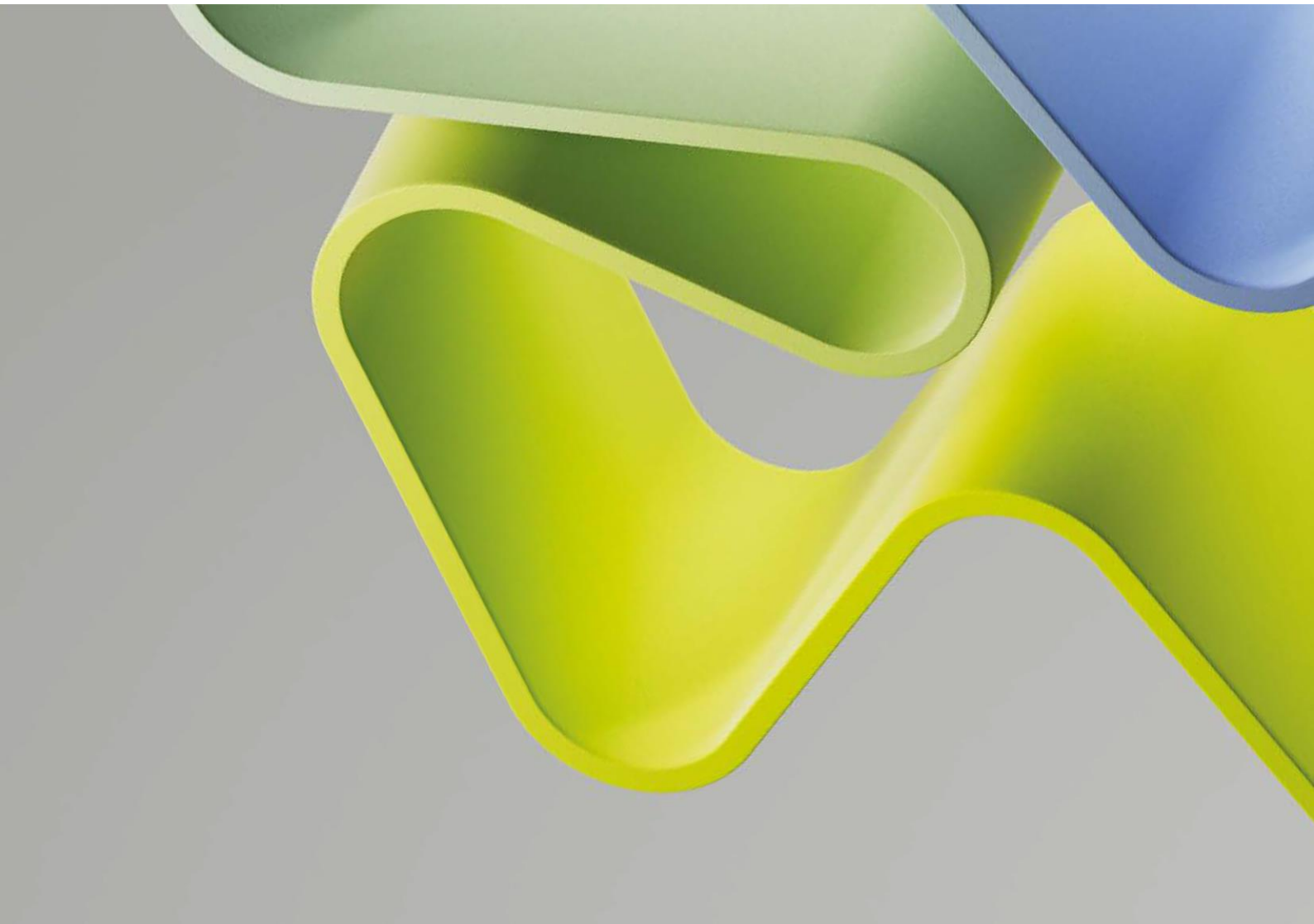
The Research Council of Norway

Evaluation of Medicine and Health 2023-2024

Evaluation report – Panel 3a_2
Research Group: Breast Cancer Research Group (FFB)
Administrative Unit: Stavanger University Hospital (SUH)
Institution: Stavanger University Hospital (SUH)



Content

Preface

The Research Council of Norway (RCN) is given the task by the Ministry of Education and Research to perform subject-specific evaluations. The primary aim of the evaluation of medicine and health (EVALMEDHELSE) 2023-2024 is to reveal and confirm the quality and relevance of research performed at Norwegian Higher Education institutions, research institutions (the institute sector) and the health trusts, in an international perspective. Such knowledge is useful for the institutions that participate in the evaluation, for the Research Council who advice the authorities on how research should be developed further, and for the authorities, who set targets and frameworks for research and higher education. Research groups submitted by their administrative unit will be assessed by 18 expert panels organised by research subjects or themes. The expert panels will assess research groups across institutions and sectors based on research group's self-assessments and examples of scholarly output. These research reports will be part of the evaluation of their belonging administrative units.

Abstract

This ‘Research Group for Breast Cancer’ or FFB is based in Stavanger (University Hospital) and was established in 2014. The Research Group for Breast Cancer (FFB; established in 2014) is very multidisciplinary clincial practice group and focuses on the entire treatment course for breast cancer patients with limited funding considering large amount of 33 members (29 clinicians and/or para-medicals -of which 4 professors- + 4 researchers (or biobanking) from 3 depts (Surgery, Pathology; Hemato- Oncology. The members have apart from their clinical also teaching duties (medicine, biological chemistry, research education). The leadership in the group is clearly very inspirational and professional with 26 PhD, 44 master and 26 bachelor student delivering excellent work to the benefit of the Norwegian society and beyond. They exchange results of ongoing projects, ideas and interdisciplinary collaborations either at the hospital or at the university but also at international gatherings. The main goal is to conduct international recognised breast cancer research to improve diagnostics, treatment and follow-up (biomarkers for early disease progression and improving quality of life).

The focus is on the entire treatment course for breast cancer patients. They collaborate with different institutions like the Haukeland University Hospital (HUS) helping in their high scientific output based on publications in top papers. They also have international collaborations and are very active in biobanking also participating the EU real-world project called REBECCA aiming to improve post-treatment in breast cancer. Their main goal is to conduct international recognised breast cancer research to improve diagnostics, treatment and follow-up (biomarkers for early disease progression and improving quality of life). The too limited funding they put forward for the 33 participating members might differ from the real funding considering the several mentioned projects. Benchmarks are increasing external funding, PhD and postdocs education, strengthening existing and establishing new collaborations, increasing scientific output, awareness of breast cancer research through local and international networks also involving user representatives. They have a more than moderate to high level of research compared to other similar national and international research groups.

Benchmarks are increasing external funding, PhD and postdocs education, strengthening existing and establishing new collaborations, increasing scientific output, awareness of breast cancer research through local and international networks also involving user representatives. They established since 2012 two biobanks, first a large regional prospective breast cancer biobank (PBCB) where the aim is to follow all included 1200 patients for 10 years (liquid biopsies, tissue samples, clinical information and PROM data) with breast cancer treatment at Haukeland University Hospital (HUS) or Stavanger University Hospital (SUH) and second, a biobank related to the EU project REBECCA. They have high level laboratory facilities for biomarker research like next generation sequencing, digital pathology, mammography, and expanded radiology for personalised medicine leading to patents (successful spin out) and several high-quality publications throughout the years. The group’s research fits with the sustainability agenda of the university with also a societal impact and applies for and already received funding facilitating participation in clinical studies and the EU biobanking project, REBECCA as well as the EU CLARIFY project. As such they are an attractive partner for national and international collaborations, industry and researchers with societal impact

Overall assessment

Strength is the strong and close multidisciplinary collaborations, national and international collaborations (EU project REBECCA) a clear goal in state-of-the-art research in diagnosing, treating and following patients with breast cancer. They are participating in many fields of important international recognised research projects: high quality clinic and basic research. Weakness is funding but this needs better reflected in the self-assessment report (although not all funding is stated in the table as there also seems to be funding resources from the projects they state), limited time spend on research as most are full time clinicians, scientific output, projects of very long duration, support from own hospital is poor, international researchers as PhD/postdoc.

Grading:

Dimensions	**Score**
Organisational dimension (How adequate the organisational environment is in supporting the production of excellent research).	4
Quality dimension (Research and publication quality/Research group's contribution)	3/3
Societal impact dimension (Research group’s societal contribution/User involvement)	2/2

Recommendations

The primary challenge they face are the scarcity of human resources and equipment. Although not so clear, twenty of 33 researchers are part of multiple research group (dual appointments) at the administrative unit which might affect research leadership overviewing projects and available time to write grant applications. Increase collaborative efforts, exploiting synergies (knowledge, techniques, instrumentation, clinical specimen and data biobanking, better funding and use of available resources) also involving other departments (imaging, gynaecology, physiotherapy). Attract funding from industry for quality-of-life research in breast cancer patients. Collaboration with pharma is another source of funding. It might help if they involve joint PhD students (now 2 PhD students 50%) and postdocs (now 1 post docs 50%) who would work between collaborating basic and clinical research laboratories translating into meaningful scientific advance with new projects based on information from biobanking. The formation of clusters should facilitate the common acquisition and use of resources leading to savings. The clearest opportunity for expansion is associated to the nature of the collaboration with industry and the competitive access to grants. They should also improve the visibility of their societal contributions (table 7 NA).

1. Strategy, resources and organisation

1.1 Research group's organisation and strategy

The multidisciplinary Research Group for Breast Cancer (FFB; 2014), focuses on the entire treatment course for breast cancer patients. 29 clinicians and/or para-medicals -of which 4 professors- + 4 full time researchers (or biobanking) from 3 departments: Surgery, Pathology and Hemato-Oncology. The main goal is to conduct internationally recognised breast cancer research to improve diagnostics, treatment and follow-up (biomarkers for early disease progression and improving quality of life). Their strategy is building on infrastructure for biobanking and lab facilities. Since 2012 they participate in two biobanks, the PBCB (prospective breast cancer biobank; 1200 pt with 10-year FU data (liquid biopsies, tissue samples, clinical information and PROM data) breast cancer pts treated at Haukeland University Hospital (HUS) or Stavanger University Hospital (SUH)) and second a biobank related to the EU project REBECCA. The group applies for and already received funding facilitating participation in clinical studies and the EU biobanking project, REBECCA which makes them an attractive partner for national and international collaborations and researchers. Apart from increasing resources from external funding, FFB has other benchmarks like PhD and postdocs education, strengthening existing and establishing new collaborations, increasing scientific output, awareness of breast cancer research through local and international networks also involving user representatives. They rely on host institution's 'administrative unit' for support to the research group (i.e., research infrastructure for biobanking and lab facilities, access to databases, administrative support, approval of research projects, contracts, biostatistics, etc.). They supervised 26 PhD, 44 master and 26 bachelor students. They now already biobank with other local and regional hospitals

The research group's organisation, composition and strategy is adequate and suitable to conduct its research activities. Collaborations (interdisciplinary, national, international, non-academic) are strong with numerous genuine multidisciplinary interactions. However, they are challenged by lack of human resources and the sharing of lab facilities and advanced equipment. The clinical duties of the researchers when planning and conducting clinical trials result in a lack of time to dedicate to research endeavors. The benchmarks are relevant and can be achieved but all depend on funding and available time they invest in research. As such, this needs more than 4 full-time researchers over 3 departments. The institution/administrative unit provides resources, including personnel, facilities and infrastructures, but resources are an important weakness in their self-assessment report.

Recommendations

Collaborations between clinicians is not enough as "research" is a full-time job. They want to build on infrastructure for biobanking and state of the art lab facilities which require extra funding and probably also extra collaborations. Collaborations with industry might also help. Work with other groups like physiotherapy and diet specialists for translational research (bringing basic research into the clinic referring to project on glucose and tumor proliferation).

1.2 Research group's resources

The 4 research goals for this multidisciplinary team are better diagnostics, treatment, follow-up, QoL. The group is led by a breast cancer surgeon, professor at University of Bergen since 2011.

The participants have a rather heterogeneous composition and activities but not easy to find out from the table. 29 + 4 are in 17 different 'position by category', most are clinicians and 4 researchers. This contrasts with 20 for n° of researchers who are also part of other research groups (confusing). Funding portfolio of the research group for the last five years (2018-2022) is mainly from local funds, not immense and project based using biobank material. It is not so clear how research is organised. There is little central funding to support its activities. There was more funding in 2020 than in 2021 and 2022. They received 10 million NOK for 2023-2027 (SR bank). Extra funding for REBECCA (EU project) and CLARIFY (Cloud artificial intelligence for pathology). Unclear how the external funding is spent to which goals and whether they achieve goals.

Recommendations

Attract funding from industry for quality-of-life research in breast cancer patients. Collaboration with pharma is another source of funding. It might help if they involve joint PhD students (now 2 PhD students 50%) and postdocs (now 1 post docs 50%) who would work between collaborating basic and clinical research laboratories translating into meaningful scientific advance with new projects based on information from biobanking. The formation of clusters should facilitate the common acquisition and use of resources leading to savings. The clearest opportunity for expansion is associated to the nature of the collaboration with industry and the competitive access to grants.

1.3 Relevance to the institution

The Breast Cancer Research Group have contributed to several goals in the institutional strategies. Biobanking, is an institutional and national strategy and also leads to more institutional funding. The overall institutional strategies and objectives, and how they relate to the research group's benchmark are not so clearly stated but biobanking, international funding from EU projects, involving patients in clinical trial will also benefit the institution.

The research group's contribution and relevance to the institution are considered as goals (also to be achieved in the future) and will lead to more collaborations, publications in high ranked journals, etc. It is clear that funding through the 2 big EU projects has now already increased the share of external and international funding.

Recommendations

The institute can benefit more from the research group if they involve more disciplines than surgery, pathology and medical oncology. Opportunities from other disciplines like radiology, gynaecology, physiotherapy, and others might lead to a more diverse approach also leading to more funding and personnel. Several of the projects are designed to better treat patients and to improve efficacy of follow-up to detect relapse but lack projects to improve patient care and QoL.

2. Research quality

2.1 Research group's scientific quality

The research group´s scientific quality is strong with 'interdisciplinary collaboration between surgery, pathology and oncology' with activities like biobanking, biomarker research, national and international collaborations (Skagen group; ESTRO-ACRO, UEMS section radiation oncology, European Liquid biopsy Society), clinical studies, patient organisation engagement.

a) List of 10 projects (mainly collaborative and PI from institution) with dates from 1998-2045 (PerMoBreCan (Personalised Monitoring in Breast Cancer; circulating biomarker) and PEtreMAC (Personalised Treatment of high risk MAmmary Cancer); Rebecca (RWD), Clarify (pathology digital imaging and AI); molecular detection of minimal residual disease (finished in 2019), prognostic and predictive biomarkers Ki-67; mRNA; ICART (TNBC); …
b) List of 14 publications; BMJ Open (1st), BMC Cancer (3x 1st), Mol Oncol (last; low endoxifen levels in premenopausal women and outcome), Ann Oncol (co-authors PARP in TNBC paper), BCRT (co-author), Clin Epidem (1st), Plos Comp Biology (co), JCO (2x co-author), Acta Oncol (1st), Clin Transl Radiat Oncol (co) ; Cancer Metastasis Rev (co)
c) list of monographs/scientific books. 2 titles

The productivity and quality of the research group is high based on projects more than when based on scientific output. The international cooperation and profile of the research group, including interdisciplinary collaboration are clear through the international consortium for advancing research on Z-Endoxifen in premeno- and postmenopausal women, in TNBC and in EU projects. The listed projects are at the forefront of science and maintain international high scientific quality. They are up-to-date in breast cancer diagnosis, treatment and follow-up with high level lab facilities and biobanking. The listed publications maintain a high international scientific quality but research output is mainly in low IF peer reviewed journals but with high international scientific quality. They do collaborate with international groups and as such reach high IF papers. The scientific quality of the listed monographs/scientific books are on liquid biopsy (which group member were involved?) in pancreas (cancer?) and on AI (high level).

Recommendations

- Keep up with collaborative studies to improve IF of scientific output.
- Try to participate in clinical trials organised by the IBCSG and BIG.

2.2 Research group’s societal contribution

The research group organises education of researchers, health personnel, patients, relatives and public both at national and international level. Members of the group present their research work in a populist manner at various events such as the "research days" (Forskningsdagene), the Cancer Society's member meetings, public events organised by the Folke Hermansen's foundation, the Pint of Science festival. They use patient brochures, present at meetings in patient organisations such as the Cancer Society and the breast cancer school, Training of the public is carried out through dissemination of results online and through interviews/presentations in the media (TV and radio). From an economic point of view more precise diagnostics and treatment are expected to result in earlier detection of the cancer, fewer side effects and better rehabilitation, which will save the society for enormous costs. The patients will also have improved chances of survival. As such, their research indirectly leads to a reduced societal cost of cancer treatment and also stimulate economic growth by using new and innovative methods/technologies in the diagnosis and treatment of breast cancer There are no user-oriented publications, products (including patents, software or process innovations stated.

The authors do not list user-oriented publications nor products that contribute to the research group's societal impact. They are however engaged in knowledge transfer using media, public events, public training and the importance of these actions for societal development in Norway seems proven.

Recommendations

The panel recommends this research group should not overestimate the economic societal consequences of better biomarker research in breast cancer as clinical applications are scare and disappointing so far. Continue teaching and engagement with patient organisations.

Appendices

The Research Council of Norway

Evaluation of Life Sciences in Norway 2022-2024

Evaluation of Medicine and Health 2023-2024

Mandate Expert panels

The Research Council of Norway (RCN) is given the task by the Ministry of Education and Research to perform subject-specific evaluations. The Portfolio board for Life Sciences in the Research Council of Norway has decided to carry out an evaluation of medicine and health in 2023-2024 as the second of two evaluations within Life Sciences. The evaluation of biosciences takes place in 2022-2023.

1. The objective of the evaluation

The primary aim of the evaluation of Life Sciences is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), by the institute sector and by health trusts.

The results of the evaluation will be used as recommendations to the institutions, the Research Council, and the ministries.

2. Tasks of the expert panels

The panels are requested to:

- evaluate the strategy, resources and organisation of/for the research groups.
- evaluate research production and quality of the research groups.
- grade and write a short evaluation text to the evaluated research groups.

Each of the expert panels will write a brief report with evaluations of the different research groups as well as specific recommendations.

3. Time schedule

Digital panel meetings will take place in the period March 15. - June 15. 2024.
Deadline for submitting panel report to the Research Council: June 15. 2024.

4. Miscellaneous

Other important aspects of Norwegian life sciences research that ought to be given consideration.

EVALMEDHELSE 2023-2024 – Panel group description – January 2024

Panel group	Description	Panel no.
Group 1 PHYSIOLOGY Physiology-related disciplines (human physiology), including corresponding translational research	Anatomy, physiology, embryology, nutritional physiology, pathology, basic odontological research, exercise physiology, neurobiology, toxicology, pharmacology, medicinal chemistry, chemistry, biology, pathology.	Panel 1a Panel 1b
Group 2 MOLECULAR BIOLOGY Molecular Biology, including corresponding translational research	Microbiology, bacteriology, inflammation and infection disease research, forensic medicine, genetics, immunology, vaccine development, microbiological diagnostics, pharmaceutical microbiology, cell biology, molecular medicine and -biophysics, medical biochemistry, omics, organoids, imaging, toxicology, pathology, drug development, cancer research, translational research, systems biology, personalized medicine, biomarkers, oncology, genetics, genomics, epigenetics, proteomics, bioinformatics-/statistics, computational science, AI, biology, virology, radiology, ionisation, molecular biology, microbiology, pharmacology, pharmacogenomics, regenerative medicine and related subjects.	Panel 2a Panel 2b Panel 2c
Group 3a CLINICAL RESEARCH	Clinical Research, including surgery and translational research within: paediatrics, women's health, gynaecology, otorhinolaryngology, head and neck surgery, oncology, haematology, radiology and medical imaging.	Panel 3a_1 Panel 3b_2
Group 3b CLINICAL RESEARCH	Clinical Research, including surgery and translational research within: general medicine, emergency medicine, anaesthesiology, neurology, geriatric medicine, rehabilitation medicine, cardiology, nephrology/urology, endocrinology, pulmonary medicine, orthopaedics, rheumatology, Infection, gastroenterology.	Panel 3b_1 Panel 3b_2 Panel 3b_3
Group 4 PUBLIC HEALTH Public Health and Health-related Research	Public health, community research, epidemiology, preventive medicine, mental health, behavioural research and ethics, medical statistics, environment, nutrition, preventive medicine, physiotherapy, sports medicine, implementation research, public health, health care services research, global health, nursing	Panel 4a Panel 4b Panel 4c

	sciences, rehabilitation sciences, public health systems, digital health care services, ICT, HTA, health competence, genetic and epigenetic epidemiology, non-communicable diseases, pharmacology, nursing research, professional research, occupational medicine.	Panel 4d Panel 4e Panel 4f
Group 5 PSYCHOLOGY Psychology and Psychiatry	Clinical psychology, personality psychology, developmental psychology, cognitive psychology, biological psychology and forensic psychology, psychiatry, including geriatric psychiatry, child and adolescent psychiatry and biological psychiatry, social-, community- and workplace psychology, organizational psychology, developmental psychology, behavioural and health psychology, health promotion and well-being.	Panel 5a Panel 5b

Panel group 3a CLINICAL RESEARCH

Expert panel 3_2

Name	Title	Institution
Andres Cervantes (chair)	Professor	University of Valencia
Henrik Engblom	Professor	Lund University
Patrick Neven	Professor	UV Leuven
Hans Ringertz	Professor emeritus	

Andres Cervantes had a conflict of interest with the evaluation of the Department of Oncology, medical physics and of gynecological oncology (DOO) at the Devision of Cancer Medicine (report 11). This meant that for those evaluations he did not have access to the self assessments or survey data and he did not participate in the discussion of the research group, nor did he participate in the preparation and completion of the evaluation report.

Evaluation of Medicine and Health (EVALMEDHELSE) 2023-2024

Self-assessment for research groups

Date of dispatch: **15. September 2023**
Deadline for submission: **31. January 2024**

Updated: **13. October 2023**

Institution (name and short name):_____
Administrative unit (name and short name):_____
Research group (name and short name):_____
Date: _____
Contact person: _____
Contact details (email): _____

Content

Introduction

The primary aim of the evaluation is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), the institute sector and the health trusts. These institutions will henceforth be collectively referred to as research performing organisations (RPOs). The evaluation report(s) will provide a set of recommendations to the RPOs, the Research Council of Norway (RCN) and the responsible and concerned ministries. The results of the evaluation will also be disseminated for the benefit of potential students, users of research and society at large.

You have been invited to complete this self-assessment as a research group. The self-assessment contains questions regarding the group's research- and innovation related activities and developments over the years 2012-2022. All submitted data will be evaluated by expert panels.

Deadline for submitting the self- assessment to your administrative unit – 26 January 2024
The administrative unit will submit the research groups' completed self-assessments and the administrative unit's own completed self-assessment to the Research Council within 31 January 2024. Please submit completed self- assessment to the administrative unit no later than 26 January 2024.

Please use the following format when naming your document: [short name of the institution]_[short name of the administrative unit]_[short name of the research group], e.g. *UiT_DepPsy_Short name of the research group*.

For questions concerning the self-assessment or EVALMEDHELSE in general, please contact RCN at evalmedhelse@forskningsradet.no.

Thank you!

Guidelines for completing the self-assessment

- Please read the entire self-assessment document before answering.
- The evaluation language is English.
- Please link to websites/documents in the self-assessment where relevant.
- Please be sure that all documents linked to in the self- assessment are written in English and are accessible.
- The page format must be A4 with 2 cm margins, single spacing and Calibri and 11-point font.
- The self-assessment follows the same structure as the evaluation protocol. In order to be evaluated on the two evaluation criteria described in the evaluation protocol, the research group must answer all questions.
    - ⇨ Provide information – provide documents and other relevant data or figures about the research group, for example strategy and other planning documents, as well as data on R&D expenditure, sources of income and results and outcomes of research
    - ⇨ Describe – explain and present using contextual information about the research group and inform the reader about the research group.
    - ⇨ Reflect – comment in a reflective and evaluative manner how the research group operates.
- Data on personnel should refer to data reported to DBH on 1 October 2022 for HEIs and to the yearly reporting for 2022 for the institute sector and the health authorities. Other data should refer to 31 December 2022 if not specified otherwise.
- It is possible to extend the textboxes when filling in the form. **NB!** A completed self- assessment form cannot exceed 25 pages (pdf file). Expert panels are not requested to read more than the maximum of 25 pages. Pages exceeding maximum limit of 25 pages **might not** be evaluated.
- Submit the self- assessment as a pdf (max 25 pages) to the administrative unit within **26 January 2024**. Before submission, please be sure that all text are readable after the conversion of the document to pdf. The self- assessment should be sent from the administrative unit to evalmedhelse@forskningsradet.no within **31 January 2024.**

Please note that information your write in the self assessment and the links to documents/websites in the self-assessment are the only available information for the expert panel.

In exceptional cases, documents/publications that are not openly available must be submitted as attachment(s) to the self- assessment (pdf file(s)).

1. Organisation and strategy

1.1 Research group´s organisation

Describe the establishment and the development of the research group, including its leadership (e.g. centralised or distributed etc.), researcher roles (e.g. technical staff, PhD, post docs, junior positions, senior positions or other researcher positions), the group's role in researcher training, mobility and how research is organised (e.g. core funding organisation versus project based organisation etc.).

Table 1. List of number of personnel by categories
Instructions: Please provide number of your personnel by categories.
For institutions in the higher education sector, please use the categories used in DBH, https://dbh.hkdir.no/datainnhold/kodeverk/stillingskoder. Please add new lines or delete lines which are not in use.

	Position by category	**No. of researcher per category**	**Share of women per category (%)**	**No. of researchers who are part of multiple (other) research groups at the admin unit**	**No. of temporary positions**
No. of Personnel by position	Position A (Fill in)				
	Position B (Fill in)				
	Position C (Fill in)				
	Position D (Fill in)				

1.2 Research group´s strategy

a) Describe the research group's main goals, objectives and strategies to obtain these (e.g. funding, plans for recruitment, internationalization etc.) within the period 2012-2022.

b) Please describe the benchmark of the research group. The benchmark for the research group should be written by the administrative unit in collaboration with the research group. The benchmark can be a reference to an academic level of performance (national or international) or to the group's contributions to other institutional or sectoral purposes.

Example: A benchmark for a research group is related to the research groups' aim which again is included in the strategy for the administrative unit. A guidance for the administrative unit to set a benchmark for the research group(s) can e.g. be: What do the administrative unit expect from the research group(s)?

c) Describe the research group`s contribution to education (master´s degree and/or PhD).

d) Describe the support the host institution provides to the research group (i.e., research infrastructure, access to databases, administrative support etc.).

1.3 Relevance to the institutions

Describe the role of the research group within the administrative unit. Consider the research group's contribution towards the institutional strategies and objectives, and relate the research group`s benchmark to these.

1.4 Research group´s resources

Describe the funding portfolio of the research group for the last five years (2018-2022).

Table 2. Describe the sources of R&D funding for the research group in the period 2018-2022.

	2018 (NOK)	2019 (NOK)	2020 (NOK)	2021 (NOK)	2022 (NOK)
Basic funding					
Funding from industry and other private sector sources					
Commissioned research for public sector					
Research Council of Norway					
Grant funding from other national sources					
International funding e.g. NIH, NSF, EU framework programmes					
Other					

1.5 Research group´s infrastructures

Research infrastructures are facilities that provide resources and services for the research communities to conduct research and foster innovation in their fields. These include major equipment or sets of instruments, knowledge-related facilities such as collections, archives or scientific data infrastructures, computing systems communication networks. Include both internal and external infrastructures.

a) Describe which national infrastructures the research group manages or co-manages.

b) Describe the most important research infrastructures used by the research group**.**

1.6 Research group´s cooperations

Table 3. Reflect on the current interactions of the research group with other disciplines, non-academic stakeholders and the potential importance of these for the research (e.g. informing research questions, access to competence, data and infrastructure, broadening the perspectives, short/long-term relations).

Interdisciplinary (within and beyond the group)	About 1/3 page
Collaboration with other research sectors e.g. higher education, research institutes, health trusts and industry.	About 1/3 page
Transdisciplinary (including non academic stakeholders) *Transdisciplinary research involves the integration of knowledge from different science disciplines and (non-academic) stakeholder communities with the aim to help address complex societal challenges.*	About 1/3 page

2. Research quality

2.1 Research group's scientific quality

Describe the research profile of the research group and the activities that contribute to the research group´s scientific quality. Consider how the research group's work contributes to the wider research within the research group's field nationally and internationally.

Please add a link to the research group`s website:

Table 4. List of projects

Instructions: Please select 5-10 projects you consider to be representative/the best of the work in the period 1 January 2012 – 31 December 2022. The list may include projects lead by other institutions nationally or internationally. Please delete tables that are not used.

Project 1 -10: *Project title/Project period (year from – year to)*	**Project owner(s)** (project leaders organisation)	
	Total budget and share allocated to research group	
	Objectives and outcomes (planned or actual) **and link to website**	

Table 5. Research group's contribution to publications

Instructions: Please select 5-15 publications from the last 5 years (2018-2022) with emphasis on recent publications where group members have a significant role. **If the publication is not openly available, it should be submitted as a pdf file attached to the self-assessment.** We invite you to refer to the Contributor Roles Taxonomy in your description: https://credit.niso.org/.

Cf. Table 1. List of personell by categories: Research groups up to 15 group members: 5 publications. Research groups up to 30 group members: 10 publications. Research groups above 30 group members: 15 publications.

Please delete tables that are not used.

Publication 1 -15: *Project title/Journal/Year/DOI/URL*	**Authors** (Please highlight group members)	
	Short description	
	Research group's contribution	

Table 6. Please add a list with the research group´s monographs/scientific books.
Please delete lines which are not used.

1	Title - Authors (Please highlight group members)- link to webpage (if possible)
2	

2.2 Research group´s societal contribution

Describe the societal impact of the research group's research. Consider contribution to education, economic, societal and cultural development in Norway and internationally.

Table 7. The research group's societal contribution, including user-oriented publications, products (including patents, software or process innovations
Instructions: Please select 5–10 of your most important user-oriented publications or other products from the last 5–10 years with emphasis on recent publications/products. For each item, please use the following formatting. Please delete lines which are not used.

3. Challenges and opportunities

Information about the strengths and weaknesses of the research group is obtained through the questions above. In this chapter, please reflect on what might be the challenges and opportunities for developing and strengthening the research and the position of the research group.

Scales for research group assessment

Organisational dimension

Score	Organisational environment
5	An organisational environment that is outstanding for supporting the production of excellent research.
4	An organisational environment that is very strong for supporting the production of excellent research.
3	An organisational environment that is adequate for supporting the production of excellent research.
2	An organisational environment that is modest for supporting the production of excellent research.
1	An organisational environment that is not supportive for the production of excellent research.

Quality dimension

Score	Research and publication quality	Score	Research group's contribution Groups were invited to refer to the Contributor Roles Taxonomy in their description https://credit.niso.org/
5	Quality that is outstanding in terms of originality, significance and rigour.	5	The group has played an outstanding role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
4	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.	4	The group has played a very considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
3	Quality that is recognised internationally in terms of originality, significance and rigour.	3	The group has a considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
2	Quality that meets the published definition of research for the purposes of this assessment.	2	The group has modest contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
1	Quality that falls below the published definition of research for the purposes of this assessment.	1	The group or a group member is credited in the publication, but there is little or no evidence of contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.

Societal impact dimension

Score	Research group's societal contribution, taking into consideration the resources available to the group	Score	User involvement
5	The group has contributed extensively to economic, societal and/or cultural development in Norway and/or internationally.	5	Societal partner involvement is outstanding – partners have had an important role in all parts of the research process, from problem formulation to the publication and/or process or product innovation.
4	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is very considerable given what is expected from groups in the same research field.	4	Societal partners have very considerable involvement in all parts of the research process, from problem formulation to the publication and/or process or product innovation.
3	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is on par with what is expected from groups in the same research field.	3	Societal partners have considerable involvement in the research process, from problem formulation to the publication and/or process or product innovation.
2	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is modest given what is expected from groups in the same research field.	2	Societal partners have a modest part in the research process, from problem formulation to the publication and/or process or product innovation.
1	There is little documentation of contributions from the group to economic, societal and/or cultural development in Norway and/or internationally.	1	There is little documentation of societal partners' participation in the research process, from problem formulation to the publication and/or process or product innovation.

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