SCOPE – CENTRE OF EXCELLENCE IN MEDICAL AND NURSE EDUCATION

Vision: Building intrapreneurial mindset to foster lifelong learning

This application concerns a central aspect of all professionally oriented higher education programs: How to foster lifelong learning.

The future is unknown and this creates constraints and possibilities for education. Every year, more than one million new research papers are published in the health field. Societal changes, such as the ageing population, increases in chronic conditions, multimorbidity, and migration, requires adaption to new working situations. Health care must constantly adapt to new challenges and knowledge, ensuring that new research and practices replaces old knowledge and ways of doing things through constant professional updating. In their future workplaces, students from professionally oriented programs will need to acquire an unforeseeable range of new knowledge and skills.

Education for the health professions face approximately the same challenges across the western world. The Lancet Commission issued “Transforming Education to Strengthen Health Systems in an Interdependent World” (Frank, J. et al., 2010), calls for reforms in health professional education focusing on: Transformative learning and Interdependence with the practice field. Thus, the challenge is how to optimise the 3–6 years students spend at the university so that graduates have acquired competencies they can use in a changing practice field for the following 40+ years.

Having had a focus on transformative learning and strong cooperation with the practice field for several decades, we are in a position to stimulate teaching excellence and take educational activities in this area to the next level.

To do so, we will build a modern medical and nurse education leaning on the theory of Community of Practice (COP, Wenger, E., 2010). COP will work as a framework around both traditional and new educational strategies, emphasising the social nature of learning and identity transformation through experiential learning (Dornan, T., 2007) and role models. This builds on the 2018–25 strategy on education and learning environment of the Faculty: “To educate competent and respectful graduates with critical thinking skills and capacity for innovation and lifelong learning” and NTNU: “Develop the portfolio of lifelong learning programs in cooperation with working life”. We have an established formal and active cooperation with the practice field, including specialist health care (hospitals) and primary health care (municipalities), who are central collaborators in the work at the Centre.

Traditional teaching formats tend to drive compliance, not initiative. They can foster learners’ dependency on teachers and the teaching situation, and risks making the students reluctant to look beyond the current orthodoxy of best practice, rather than becoming confident in finding new communities of practice (COP)

Groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.
solutions for the next practice. Thus, we will welcome students into the community of practice, support them to become full participants and empower them to contribute to the reshaping of the community. To do so, they must be prepared to cope with the unknown and build their capacity to learn in situations beyond the safe boundaries of traditional teaching formats. As most doctors and nurses go on to work within (public) organisations, they need an intrapreneurial mindset – the use of entrepreneurial behaviours within an existing organisation.

The vision of SCOPE is to build excellence in medical and nurse education to foster lifelong learning through educating students with intrapreneurial mindsets that have capacity for innovation and driving change through cooperation.

To reach this vision, we will build on our long experience in transformative learning, which have made our students well versed in the skills needed for lifelong learning. However, we still need to take this further. We want to extend lifelong learning by developing and deploying innovative educational activities. We will strengthen our activities to develop students’ professional identities and refine our educational practices accordingly. We will also develop our educational model to strengthen the students’ awareness of how established best practices can be reshaped, and to give them the confidence and capacity to challenge these practices into becoming the next practice.

The expected result is students, medical doctors and registered nurses that are even better at learning and developing their skills, who are highly motivated and able to update their knowledge to cope with widely varying and complex work situations, and who are confident in driving change.

DOCUMENTATION OF EDUCATIONAL QUALITY IN EXISTING PROVISION

This application is founded in the medical doctor (MD) and bachelor of nursing (BN) programs at NTNU, but has activities involving other study programs.

Input factors

The Faculty of Medicine and Health Sciences (hereafter the Faculty) at NTNU is the largest faculty at NTNU and the largest health faculty in Norway, with a long tradition of excellence in research. Both the

- Eight health professional study programs
- 6500 students:
  - 770 Medical students
  - 1700 Nursing students
- 1800 employees, 1276 in scientific positions, 212 PhDs or postdocs
- 2014 Nobel Prize in Physiology/Medicine
- Hosts two Centres of Excellence in Research (SFF) and one Centre of Excellence in Innovation (SFI) in addition to six other major research centres
- 1231 scientific publications. 24 % level 2
- 96 PhDs awarded
- Revenue 1.4 billion NOK, 0.5 external

Intrapreneur

Intrapreneurship is the change initiatives taken within an organization by the people working there.

An entrepreneur is free and leader of the operation, while an intrapreneur is an employee.
MD and BN program are among the most sought-after study programs in Norway and NTNU has the highest grade-point average for admission directly from high schools of all Norwegian MD programs and among the three highest of the 47 Norwegian BN programs (Trondheim campus).

A particular strength of the Faculty is the close cooperation with the practice field. Our campus in Trondheim is uniquely integrated with St. Olav’s University Hospital and primary health care services operated by Trondheim Municipality, providing learning spaces for students, research facilities and staff offices close to the clinical spaces. Thus, research, clinical and academic functions are intertwined, exposing students to the practice field on a daily basis. The majority of the teachers in the MD program and some in the BN program have combined positions as academics and clinicians, ensuring close connection with the field of practice. The Faculty is also working together with Trondheim municipality on developing the “university municipality”. The students have access to the same extensive range of international journals, e-books, databases etc. as the staff. Additionally, we have developed a range of tools to support students learning emphasising digital solutions.

Formal pedagogical training is a requirement for permanent employment. In addition to NTNU’s pedagogical training, we offer a range of self-developed courses. We have lately built a standardised patient pool for clinical examinations and have developed a program for training volunteers, including children, to enact patient situations. The Faculty has a long history of engagement in education research on which the Centre will build (see reference list). The Faculty hosted the large AMEE (Association for Medical Education in Europe) conference in 2007 and we present several papers at this conference every year. Educational quality is part of the Faculty’s long-term strategic plan.

The Faculty established its own Teaching and Learning Centre, PLUS, in 2015 to facilitate pedagogical development and educational quality across all the Faculty’s study programs and sites. PLUS is headed by a Professor/MD and has become a cornerstone and home base for pedagogical development both within and across study programs.

Through cooperation with all Nordic and 27 other international MD programs, more than 30% of our MD students go on exchange in the fourth year, which is taught in English to accommodate international students. Among the BN students, 20% go on exchange, and there

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**Pedagogical courses offered**
- Problem based learning
- Team base learning
- Creating Objective Structured Clinical Examinations
- Writing Multiple Choice Questions
- Digitalising lectures
- Supervision skills

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**Education and educational research:**
- The Faculty has its own Teaching and Learning Centre, PLUS
- 1.7 million NOK allocated to educational development projects past three years
- Tradition for active student involvement and a strong student democracy
- Six current PhD candidates on education
- Two research groups on medical/nurse education

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SCOPE – Centre of Excellence in Medical and Nurse Education
is extensive cooperation internationally. We collaborate with Dhulikhel Hospital in Nepal on a summer school where 15 students have clinical rotation.

**Process factors**

Student involvement is central for both the MD and BN program. We follow the ordinary activities set out by NTNU, e.g. having reference groups whose inputs are a significant part of the annual quality report to the program board. In addition, we have a tradition for more active involvement and a strong student democracy. This includes student representatives on a range of committees and projects outside the formal boards. The Faculty pays for student participation at educational conferences, and several students are engaged, and some paid to work on educational projects.

The Faculty has invested in infrastructure for student innovation. An innovation lab has been built and dedicated employees’ work on innovation, including cooperation with our student organisation for innovation, DRIV NTNU.

The BN program is redesigning their entire study plan, which will be implemented from 2020. It builds on the study model employed today by alternating between longer periods in supervised practice and student active learning activities on campus to support integration of theory and practice, with a goal of greater alignment between learning activities, outcomes and assessments. The summative assessment also reflects the study model of subject integration; i.e. summative assessments integrate basic science with clinical cases.

The MD program employs a complex integrated curriculum model with spiral learning, and subject and discipline integration. PBL constitutes the backbone of the pedagogical model. The students’ learning is guided by a comprehensive set of learning outcomes. The MD program has an integrated research program, which admits 10% of the students annually providing them half a PhD. The summative assessment has been extensively revised the last few years, with e.g. external reviewers of all MCQs used in exams and replacing of practical exams with Objective Structured Clinical Examination (OSCE), which is more reliable and tests a broader set of clinical skills. In 2018, the Faculty launched a decentralized branch for the 3rd and 4th year in the MD programme. It is based on the longitudinal integrated clerkship learning model (LIC), as one of the first medical schools in Europe.

For both the MD and BN program, student-centred methods, such as team based learning/flipped classrooms, are gradually being integrated. Early patient contact is a key feature and is highly appreciated by the students. They learn to communicate, examine, care for and prescribe treatment for real patients with an increasing degree of independence throughout the programs. We also employ simulation exercises and training on mannequins, to allow the students to practise clinical skills in a safe environment.

SCOPE – Centre of Excellence in Medical and Nurse Education
In terms of formative assessment, PBL and small groups provide students with continual feedback, utilising both self- and peer assessment of teamwork skills. We have established an innovative automatic progression testing. The doctor-patient course for MD students and the systematic training of observational skills for BN students provide feedback and supervision on communication and clinical skills. During clinical rotation and practice placement, the students receive feedback and supervision on clinical skills acquisition.

**Outcome factors**

Both the MD and BN program has a very low dropout rate. The BN students at campus Trondheim have achieved the best result on the national exam in Anatomy, Physiology and Biochemistry in the three years they have been conducted. Our students and alumni report that our programs have a very high relevance for the practice field. This is in line with feedback from employers in the practice field who have high regard for the MD and BN students from NTNU, especially because of their experience in identifying their own learning needs, ability to work independently and researching relevant literature to find solutions to problems. They also say that our students communicate efficiently and empathically with patients and their relatives, as well as with colleagues. We have won several educational awards.

### Graduation rate

<table>
<thead>
<tr>
<th></th>
<th>BN</th>
<th>MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate total</td>
<td>90 %</td>
<td>95 %</td>
</tr>
<tr>
<td>Graduate within standardised time</td>
<td>70 %</td>
<td>90 %</td>
</tr>
</tbody>
</table>

**CENTRE PLAN**

The vision and plans for the proposed Centre have grown out of a joint initiative from management, students, user representatives, the practice field and the academic community, based on an analysis of the current situation and in alignment with local and national strategic plans.

**Strategies and plans for educational development and innovation**

As described above, our strategies and plans must tackle the challenge of developing a feedback culture open to change, and empowering students to become intrapreneurs that can facilitate the changes required to implement new evidence-based standards in the next practice. This includes initiating change, not only in their own practice, but also in the practice of the organisations where they will work. This is a huge task within health care which has a very strong tradition of master – apprentice learning, and a hierarchically structure. Thus, we have an awareness of how to such traditions can challenge our activities and we have made contingencies for how to meet them as described below.
We have conscientiously placed the Centre into our teaching and learning centre, PLUS. PLUS is organised at the Faculty level and works with all the study programs and campuses. This will ensure that the Centre, and its activities after the end of the funding period, are part of the Faculty’s ongoing efforts to continuously improve educational quality, rather than being a ‘bolt-on’ project. As the Centre is a large undertaking we will ensure that it receives the necessary attention by establishing a steering committee headed by the Pro-rector for education at NTNU. The Centre management will be physically co-located with PLUS. We will have two advisory councils (AC); national AC focusing on cooperation and dissemination, and international AC focusing on strategy and research; reference groups for the centre and for each of the larger projects, and a management group overseeing the day-to-day work. For each WP we will have separate working groups with representatives from the students, staff and other stakeholders. To facilitate the cooperation across campus, representatives will participate in all relevant activities. Importantly, we consider the practice field as a campus as well, and they will be actively included in the work.
**Student involvement**

The students have been involved and are active partners in setting up this Centre, and student involvement will be a cornerstone in the Centre. Importantly, we are conscious that study programs at the Faculty must mirror the process of evolving practice. We will therefore more systematically open up for changes in the study programs based on student input, to give them a better opportunity to shape their own learning by strengthening their ability to challenge what is done and giving them more responsibility. As such, *our education will be a living lab in preparing the students to use their intrapreneurial mindset within the education, by giving room for even more student involvement and allowing innovative suggestions from the students to be turned into student active development projects*. Concretely, students will be integral members of all working groups, they will be offered employed work and have office space in the Centre. The study programs and staff will be challenged and supported to open up for changes. There will be a joint process of prioritising and implementing large scale changes to the study programs. To give room for intrapreneurial activities that enables a continuous process of opportunity exploitation, we will provide management support, room for autonomy, facilitation of cooperation and an innovative climate.

**Deliverables:**

I. Eight student initiated development projects have been launched

**WPI Culture of feedback**

On the “Studiebarometer”, our program scores highly on student satisfaction. However, the important indicator “amount and quality of feedback”, receives the lowest score, as for other programs in Norway. Feedback thus needs to be strengthened, and this will be a central activity of the Centre. To create and maintain a welcoming community of practices open for changes, we will build a culture where constructive feedback is the norm. This links to an intrapreneurial mindset permeating the study programs; we see and challenge each other. When people are used to receiving and giving feedback, it is also easier to suggest changes. Our aim is a self-empowering positive circle; receiving and giving feedback facilitates both self-reflection and the ability to look for solutions, which are central to the learning process, ultimately fostering lifelong learning. We will dedicate one full time position to stimulate to a culture of feedback. This person will oversee, coordinate and initiate activities across study programs. The focus of all activities will be to promote the ability to see the other person and support his or hers learning process. We see peer-teaching as important
and will increase the amount of peer-teaching by both having older students as peer-teachers and supervisors and having student at the same level teach each other. To further support the students’ learning processes and keep track of feedback throughout their studies, we will device a system in which individual feedback from different sources is collected and presented in a meaningful way to each student. **Deliverables:**

I. The Studiebarometeret score on feedback has improved and is above the national average  
II. A full-time employee is dedicated to stimulate to a culture of feedback  
III. Established an integrated program for building students and staff’s skills in feedback  
IV. Formal education in peer-teaching is offered and >20% of the students participate each year  
V. Feedback throughout the study is collected and displayed in one place for each student

**WP2 Critical thinking**

An intrapreneurial mindset is about being able to critically analyse current practice and to look for alternative solutions. This requires critical thinking skills to identify challenges, formulate questions, analyse facts and form judgment. We have not yet reached the point where this is a strong part of the study programs. Our students are exposed to research literature on a regular basis, but less so to how to practically generate research evidence and innovation. In medicine and nursing, research publications in the form of short journal articles is the main vehicle for such knowledge. To select the best evidence and to use this knowledge, students need a firm basic understanding of research methodology and the different traditions for knowledge generation. In this WP we will therefore have a focus on strengthening learning of research and quality improvement methodology at the right point in time and in alignment with other learning activities. We will focus on how to use research based knowledge and give a better understanding through experience with how knowledge is generated and implemented. This will be a basis for both the intrapreneurial mindset and to get an increased focus on transformative learning. Importantly, we will do so by establishing a cooperation between the MD and BN program. This will help us create a better understanding of the different knowledge traditions among both staff and students. **Deliverables:**

I. A compulsory quality improvement project on how to implement next practice is introduced  
II. The teaching in critical appraisal is revised and expanded  
III. A new organization and set of requirements for the student theses are established

**WP3 Clinical practice**

Both our partners in the practice field and the students have emphasised the importance of improving clinical practice placements and increase interprofessional training. Efficient medical and nurse education requires optimal use of the time when students are in contact with patients.
The quality of the clinical practice is therefore crucial in educating doctors and nurses. Much can be gained by even better organisation of clinical practice and alignment with other teaching activities like theoretical education and simulation training. To achieve this, we will build on our strong cooperation and formal contracts with the practice field, and especially the university hospital and university municipality. This includes more and better aligned arenas for cooperation both on a local and management level, discussions on learning outcomes and learning activities and establishing shared positions (persons employed both at the university and in the clinic) in new areas. **Deliverables:**

I. The practice fields report that the Centre activities are relevant for tomorrow's practitioners  
II. Clinical practice is reorganised, and clinicians’ supervision skills are improved  
III. Interprofessional practice for all 12 health and social care educations at NTNU is piloted  
IV. A student active clinic for both mono- and interprofessional practice is established  
V. There is more interprofessional simulation and clinical skills training  
VI. Interested patients have been linked to students, who will follow them over time to learn about patient experiences of the illness trajectory and manoeuvring through the health care system

**WP4 Cross campus education**

The MD and BN study programs are delivered across four campuses and several health care institutions in different parts of Norway. This means that there is a need for cross campus education to ensure equality across sites within the same study program. This mirrors the situation in health care, where personnel at different places and from different organisations need to cooperate. Thus, cross campus educations can be a preparation for what the students will experience in the practice field. Having several campuses within the same organisation is also a new phenomenon in Norway, and there is a need for good solutions. The Faculty is an early adopter in this area with the same MD program delivered on two campuses and the BN program on three campuses. To improve cross campus education, we will try out and research different technical and pedagogical solutions. **Deliverables:**

I. Different methods of digitally supported synchronous education are tested and implemented  
II. Digital student cooperation across campuses and professions is established

**WP5 Management (including dissemination, evaluation, research)**

We will have a separate WP on management covering the day-to-day operation of the Centre, and coordination between the different WPs and projects to ensure synergies. In addition, the WP will have the overall responsibility for evaluation and dissemination, and facilitating the needed faculty development and external cooperation. **Deliverables:**

I. Three of the Centre’s PhD candidates have submitted their thesis
Additionality
The additional gains of receiving the SFU Centre Award will give us both extra resources and prestige, which will be used to expand projects and involve more of the staff and other education programs. We will be able to introduce more extensive changes to our curriculum and introduce new learning activities more rapidly. With more resources, we will be able to buy time for engaging staff and students in developmental work and, not least, conduct more research on educational activities and their impact, and be able to disseminate to a larger community, nationally as well as internationally.

Evaluation and impact framework, and implementation framework
With all Centre activities, we will develop sustainable solutions to facilitate long lasting changes. Normalisation Process Theory (NPT) will be used BOTH as an implementation AND evaluation and impact framework and also to estimate value for money. NPT is a framework for understanding the processes by which complex interventions are naturally integrated and sustained in daily work, or not. It has been tested, refined and applied in studies conducted across diverse settings. It is also suitable for planning the implementation.

There are four core constructs in NPT, defined as essential conditions and processes for new working practices to become a natural part of daily work: Coherence, Cognitive participation, Collective action, and Reflexive monitoring. The relationship between the constructs is not linear, they influence each other, and implementation work is necessary within all four constructs. The table gives an overview of the questions to be used when planning the implementation and evaluating the impact of the Centre:

<table>
<thead>
<tr>
<th>NPT components</th>
<th>Questions</th>
</tr>
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<tbody>
<tr>
<td>Coherence (Makes sense)</td>
<td>Does the intervention have a clear purpose?</td>
</tr>
<tr>
<td></td>
<td>Who will benefit from the intervention?</td>
</tr>
<tr>
<td></td>
<td>Are those involved likely to value these benefits?</td>
</tr>
<tr>
<td></td>
<td>Will they understand the intervention?</td>
</tr>
<tr>
<td>Cognitive participation (Engagement and commitment)</td>
<td>Will the intervention fit the overall goals and activity?</td>
</tr>
<tr>
<td></td>
<td>Are those involved likely to think it is a good idea?</td>
</tr>
<tr>
<td></td>
<td>Are they prepared to invest time and work in this?</td>
</tr>
<tr>
<td>Collective action (Facilitation for use)</td>
<td>How will the intervention affect those involved?</td>
</tr>
<tr>
<td></td>
<td>Is it compatible with existing practices?</td>
</tr>
<tr>
<td></td>
<td>Will those involved need extensive training before they can use it?</td>
</tr>
<tr>
<td>Reflexive monitoring (Appraisal of value)</td>
<td>Are those involved likely to appreciate the intervention after a while?</td>
</tr>
<tr>
<td></td>
<td>Can the intervention be improved on the basis of experience and feedback?</td>
</tr>
</tbody>
</table>
All evaluation efforts will be seen in light of the overarching question: “What is the impact of our educational activities on fostering lifelong learning?” We will also include evaluation of the impact of the Centre’s activities after graduation, when the students have been working for a few years. We will take a longitudinal perspective, doing repeated measurements to monitor development over time, including establishing a baseline, creating feedback loops in order to optimise our educational activities.

In order to ensure that its activities can be sustained after the funding ends, the Centre will, as mentioned, be integrated with our established teaching and learning centre, PLUS. The knowledge gained will be used within an established structure whose task it is to work with institutional educational development over time.

**Evaluation methods**

We will use a range of methods to collect and analyse data; qualitative interviews, surveys and experimental studies.

- A yearly survey of students and staff
- A biannual survey of those involved in supervision in clinical practice
- A survey every third year of a random sample of employers
- Yearly reviews of activities in the work packages
- PhD projects on feedback, clinical practice and critical thinking

**Dissemination**

Our dissemination strategy is built around our target groups. Our primary target groups will be: 1) students and staff at the Faculty 2) the practice field and 3) other study programs in Norway. These groups will be involved directly in the work, through joint projects and representation, as we consider this community of practice work model as the best method of dissemination. We can only succeed in implementing changes across the Faculty if we are extremely good at developing feasible solutions and disseminating them. We therefore need to develop and test solutions and dissemination methods (in line with Normalisation Process Theory) to succeed in our aim. This also aligns with our vision of intrapreneurial mindset and life long learning.

Our position within PLUS will give us increased opportunities to directly involve all health education programs at the Faculty in our projects. We have close collaboration with other study programs in Norway, both at management and student level, as well as on educational projects. We will build on this collaboration to spread knowledge from the Centre, and to support related changes they may wish to implement.

Several of the planned activities of the Centre will be carried out in the field of practice.
They will also have relevance for the health sector in general, and particularly those institutions providing students with practice placements. These institutions will form a stakeholder group for many of our activities. Furthermore, realising the full effect of our efforts within the Faculty to foster lifelong learning will depend on the students encountering supportive environments after graduation. Therefore, we will target these settings, include them in our community of practice, and create improved environments for continuing learning.

The Faculty and its employees have a long tradition of publishing across different channels (web pages, Facebook, Twitter), but we are especially proud of our own open blog http://blog.medisin.ntnu.no/. Our experience has been that news published in this channel has a broad reach, and is often picked up by the media.

At the core of the strong research tradition at the faculty, is a culture of seeking input from and cooperating with others. We will continue this at the Centre by getting external input in all parts of our work. This leads to reciprocal activities, opening many avenues for external dissemination.

Study programs outside Norway will be targeted through research publications in journals for medical and nurse education and a range of activities at international meetings. Our international advisory board and our existing international partners will be used for network dissemination.

Our work will be relevant for other health education providers and for higher education in other fields. These groups, and the general public, will be reached through our website, newsletters and social media. We will also arrange (and take part in) conferences and workshops, which will be open to external participants.

Legacy

The success of the Centre will on short term be measured by the extent to which the faculty members and others have been able to use what has been developed. This is within the tradition of the Faculty: New knowledge is only valuable when it is shared and used by others. Thus, our legacy, some years after completion, will be in the form of innovative models for transformative learning and interdependence, which will foster intrapreneurial mindset that supports lifelong learning and enable students to initiate change in their practice after graduation. This will be evidenced by publications, as well as changed curricula in other health care education programs.
APPENDIX: REFERENCES

The list includes references used in the application and references to research papers from studies on education conducted by our academic staff and students published in peer review journals (i.e. not conference proceedings from e.g. the AMEE conferences where we have several presentations each year). There are also references to some other types of publications regarding our own educational work.

References to literature used in application


Harden, Ronald M. ”Ten key features of the future medical school—not an impossible dream.”  


Hattie J. ”Visible learning: A synthesis of over 800 meta-analyses relating to achievement.”  


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Indergaard, Trond, and Berit Stjern. ”Counselling of Problem Based Learning (PBL) groups through videoconferencing.” *Studies in health technology and informatics* 146 (2009): 603-607.

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# APPENDIX: BUDGET

<table>
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<th>Type of cost</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>Total</th>
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<td>Payroll*</td>
<td>7 713 592</td>
<td>8 467 730</td>
<td>8 452 556</td>
<td>8 290 209</td>
<td>7 110 910</td>
<td>40 034 996</td>
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<tr>
<td>Indirect expenses</td>
<td>4 048 018</td>
<td>4 540 598</td>
<td>4 485 679</td>
<td>4 324 944</td>
<td>3 440 808</td>
<td>20 840 048</td>
</tr>
<tr>
<td>Procurement of R&amp;D services</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Operating expenses**</td>
<td>430 000</td>
<td>600 000</td>
<td>750 000</td>
<td>710 000</td>
<td>440 000</td>
<td>2 930 000</td>
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<tr>
<td>Total</td>
<td>12 191 610</td>
<td>13 608 328</td>
<td>13 688 235</td>
<td>13 325 152</td>
<td>10 991 718</td>
<td>63 805 044</td>
</tr>
</tbody>
</table>

* Payroll covers on average 9.4 full year equivalents each year for five years (total 47 full year equivalents): **1.4 for employment of students**, 4.8 permanent scientific staff including 0.5 for centre leader, 1 for centre manager, 0.2 for information manager and 2 for PhDs (a total of 5 PhDs).

** Operating expenses covers costs for operational activities and tasks in the WPs, for dissemination and for the reference groups and advisory boards such as travel, procurement for minor equipment, publications fee (open access), conferences, workshops etc.

## Finance plan

<table>
<thead>
<tr>
<th>Source</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
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<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>NTNU *</td>
<td>4 191 610</td>
<td>5 608 328</td>
<td>5 688 235</td>
<td>5 325 152</td>
<td>2 991 718</td>
<td>23 805 044</td>
<td>37 %</td>
</tr>
<tr>
<td>NOKUT</td>
<td>8 000 000</td>
<td>8 000 000</td>
<td>8 000 000</td>
<td>8 000 000</td>
<td>8 000 000</td>
<td>40 000 000</td>
<td>63 %</td>
</tr>
<tr>
<td>Total</td>
<td>12 191 610</td>
<td>13 608 328</td>
<td>13 688 235</td>
<td>13 325 152</td>
<td>10 991 718</td>
<td>63 805 044</td>
<td>100 %</td>
</tr>
</tbody>
</table>

* Own funding from NTNU covers 37 % of the total cost of the centre
**Motivation for the level of costs**

The main cost is involvement of a large number of staff, both scientific and administrative. As the activities in the Centre involves several subjects and activities across the medical doctor and nurse program, as well as across study sites, many people need to be involved. This concerns both the extra resources needed for the developmental work and the implementation. Some of these cost will be used for hiring staff, so that the permanent staff can spend the needed time on the activities in the work packages.

In our view, it is important that the Centre leader continues to be involved in daily work as a professor at the faculty, so this will be a 50% position. It is also necessary to have a person with full-time responsibility for day to day operations, and we will employ a senior advisor with relevant academic credentials as the Centre manager, working as an administrator, but also being involved in some of the projects and especially in dissemination.

The students are generally very active in extracurricular work and in the student democracy. As we will have massive involvement of students in our work, we are conscious that we must not “steal” students from other activities. We will therefore pay students for work at the Centre. As agreed with the Student Council, we will offer both long and short-term positions, with the main activities taking place between October and April, and in the summer holidays. We will also have fixed work plans that fit with students’ schedules.

We will employ one person in a full time position to work on building a culture of feedback. This resource will be used across the different work packages, and be the main person together with the Centre leader and manager, in ensuring that all activities are coordinated and geared towards the vision of the Centre.

Finally, we will have a strong emphasis on research. We will employ Ph.Ds. within the Centres budget, and we will also apply for external funding from various research programmes. As Ph.D. projects involve several persons, we see this as an important way of increasing research activity on educational issues among the academic staff.

The operating expenses are relative modest, as most of the activities will be done using the “ordinary” resources available. The main types of costs are operating expenses for the PhDs, travel (study sites, conferences), and cost for the development work.
Appendix c. SCOPE – Centre of Excellence in Medical and Nurse Education

Statement from the institutional leadership of the host institution in support of SCOPE – Centre of Excellence in Medical and Nurse Education.

The institutional leadership at NTNU confirms the institutional foundation and significance of SCOPE – Centre of Excellence in Medical and Nurse Education, and confirms the institutions’ commitment to provide own funding if the centre is awarded SFU status.

SCOPE – Centre of Excellence in Medical and Nurse Education is the result of a joint effort of students, representatives of the practice field and patients and both academic and administrative staff at the Faculty of Medicine and Health Sciences at NTNU. The aim of SCOPE is to foster lifelong learning through educating students with intrapreneurial skills that have capacity for innovation and driving change through cooperation. The vision and goals are founded on the Faculty and NTNU strategies:

- “To educate competent and respectful graduates with critical thinking skills and capacity for innovation and lifelong learning” (MH faculty)
- “Develop the portfolio of lifelong learning programs in cooperation with working life” (NTNU)

It also meets the goals of NTNU’s coming “Politikk for kvalitet i og utvikling av studieporteføljen” (Politics for quality in and development of the study portfolio) by

- building on excellent research,
- using digital tools to create unified teaching across campuses and
- including students in the development of the studies.
The activities of SCOPE have been planned in partnership with the health care services and is founded in our agreements with both hospitals and municipalities thus it builds on existing agreements and contracts ("Rammeavtaler" and "Samarbeidsavtaler"). This especially includes

- Contributing with necessary and much wanted competence to the health care services.
- Working closely with the hospitals and municipalities in operationalizing the agreed goals.
Curriculum vitae
Professor Aslak Steinsbekk

Married since 1987, two children born 1989 and 1990 and grandchildren
ORCID: http://orcid.org/0000-0001-9090-0739

Aslak Steinsbekk is a professor in behavioral sciences in medicine and health
service research at the Department of Public Health and Nursing, Norwegian
University of Science and Technology. He is leader for the research group for health service research
and he has built up a research group in patient education and user involvement. His main research
activities at current centers around health service research with a focus on the patient perspective
and how patients experience the complete package of services they use. He is currently PI on several
research and development project in medical and health science education including the use of
virtual reality (VR), focus on interprofessional education and the role of supervision. Aslak has mainly
published in the areas of health care organization and utilization, communication, patient education,
patient participation and complementary and alternative medicine, and have been PI for studies
using different methodologies (more than 10 randomized controlled trials, qualitative methods,
epidemiology, and systematic review). Aslak has broad educational experience. He has initiated and
headed a joint educational activity where more than 700 students from nine professional educations
participate (TverrSam). He has also been in charge of coordinating a semester at the medical
programme which includes practice placement in primary care and headed the examination
commission. He has developed educational modules at master’s and PhD levels. Furthermore, he has
initiated and headed several processes where a range of partners from different organisations have
cooperated in applications and in setting up centres / networks. He thus has a broad experience from
research, education and collaborative processes.

EDUCATION

2011  Project management. Norwegian University of Science and Technology
2005  PhD Clinical medicine. 14.05.2005. Department of General Practice and Public Health, Faculty of
       Medicine, Norwegian University of Science and Technology
2004  Educational development program, Norwegian University of Science and Technology
2000  Master Sociology. Faculty of Social Science. Norwegian University of Science and Technology
1999  Evidence Based Health Care. Norwegian Institute of Public Health / University of Oslo, Norway
1992  Homeopath, Norwegian Academy for Natural Medicine, Norway
1989  Business administration, Trondheim Business School, Sør-Trøndelag University College, Norway

CURRENT AND PREVIOUS POSITIONS

2012-  Professor in Behavioural sciences in medicine and Health service research, Department of
       Public health and Nursing, Norwegian University of Science and Technology
2010-12 Project manager Trondheim Helseklyngen (Trondheim Health Cluster), Norway
2005-12 Researcher. Department of Community Medicine and General Practice, Norwegian University
       of Science and Technology, Norway
2006-09  Post. Doc. Department of Community Medicine and General Practice, Norwegian University of
       Science and Technology
2002-04  PhD student, Department of Community Medicine and General Practice, Norwegian University
       of Science and Technology
1997–98 Researcher (part time). Institute of Community Medicine, University of Tromsø. Norway
SUPERVISION OF GRADUATE STUDENTS AND RESEARCH FELLOWS

Current supervision: 20
- Main supervisor PhD candidates: 4 - Master thesis: 10
- Co supervisor PhD candidates: 5 - Medical Student’s Research Programme: 1

Completed supervision of candidates who have completed their degree since 2005: 86
- Main supervisor PhD candidates: 6 - Co supervisor PhD candidates: 7 - Others (mainly master thesis): 73

TEACHING ACTIVITIES
A range of teaching activities at Norwegian University of Science and Technology. PBL supervisor. Doctor-Patient course, lectures, semester coordinator, chair exam commission at medical doctor program. Leader interprofessional education both on campus and in practice. Leader all courses in research methods for master and post graduate education. Master and PhD courses in qualitative research methods. Head of VR-lab.

PUBLICATIONS
Total career research publication 121 (109 since 2005 year of PhD, 61 since 2013)
- Peer review journals: 104 (first author: 23 last author: 56)
- Book chapters: 4
- Other: 13

ACTIVITIES SUMMARISED OTHER

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<td>University department board and boards for education. Building new</td>
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<tr>
<td></td>
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<td>University research and educational groups. Evaluation research</td>
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<td>National professional organisation. National and international</td>
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<td>Course coordinator</td>
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<td>University courses on PhD and Masters level. Joint interprofessional</td>
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<td>Section editor and assistant editor for international peer review</td>
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<td>Employment assessment</td>
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<td>Professorship (4) and university positions (4)</td>
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<td>Evaluation Misc.</td>
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<td>Miscellaneous formal evaluation activities of application for</td>
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<td>research founding, educational activities etc For liaisons committees</td>
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<td>Evaluation of doctoral thesis in Norway, Denmark and Italy</td>
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<td>leader on development of educational projects, relocation of</td>
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<td>department. Project member on a range of miscellaneous projects</td>
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</table>
Curriculum vitae

Professor Hilde Grimstad

Gender: Female.
Nationality: Norwegian.

Positions
2017 - Leader of PLUS, the Teaching and Learning Centre at Faculty of Medicine and Health Sciences from 2017.
2016  Professor in General Practice and Behavioural Medicine

Education
2000  PhD in Medicine, NTNU
1987  MD, NTNU

Pedagogical education
2015  ASME Course leadership for change in education, AMEE
2005  Course in MCQ, NTNU
2004  Educational development program, NTNU
1999  National course in Doctor-patient interaction in everyday clinical work. To explore, understand, research and teach
1996  Course in PBL, NTNU

Previous positions
2009-2017  Vice Dean Education at Faculty of medicine, NTNU
2005-2009  Head of Department of General Practice and Public Health, NTNU
1998-2005  Assistant professor and associate professor, NTNU
1998-2005  General Practitioner, Trondheim
1992-1998  Ph.d. student, Department of General Practice and Public Health, NTNU
1991-1992  Junior doctor, geriatrics, University Hospital, Tromsø
1990  General practitioner, Tromsø
1989-1990  Junior doctor in pathology, University hospital, Tromsø
1989  Intern in General Practice, Karlsøy municipality in Troms
1988-1989  Intern Sandefjord Hospital

Teaching and supervision
Courses and seminars for faculty in teaching and learning. Coordinator for the doctor-patient course for medical students 1998-2005 including faculty development, development of course and exams. Teaching medical students, practising nurses, bioengineering students, midwifery students, and medical doctors and nurses under specialisation in different medical subjects, especially clinical

Research
Participant in a national collaboration research project on evaluation of clinical communication teaching (ECCO-project) 2002-2008, resulted in 10 articles. Research in health consequences of abuse of women, and in patient participation in health care. Leader for research group in health education at NTNU.

Publications
24 articles in international peer review journals, 4 articles in national review journals, 1 book chapter

Other activities
National:
Leader of the program group in Medicine in RETHOS project 2018-
Leader of a national commission elaborating increase of medical education in Norway 2018-

Regional and local:
Vice head of Hospital board, Health North-Trøndelag
Leader of Læringsfestivalen, conference of teaching and learning for higher education in Norway, organized by NTNU 2016-
Member of commission for developing and piloting a new educational development program for faculty at NTNU 2019-

Previous:
Member of national commission for developing national learning outcome for training practice supervisors, UHR 2016-2017
External program evaluator for medical doctor program at University of Oslo 2013
Participated in four PhD evaluations
Peer reviewer in four different journals

Management:
Member of NTNU’s education committee 2009-2017. Member and for the last 6 years vice leader of Hospital Board, University Hospital, St Olavs Hospital 2006-16. Member and last years vice leader of board of Lifandis AS, earlier HUNT Biosciences AS 2007-2015. Member of Faculty board Faculty of Social and Educational Sciences, NTNU, 2013-. Board member for Trondheim municipality’s rehabilitation unit in Spain 2011-.

International collaboration
Research and education stay at University of Cambridge, Communication and Clinical Skills Unit with Jonathan Silverman, autumn 2006
Collaboration with Nagoya University, Medical School about PBL, 2017-
Part of the faculties’ collaboration with Kathmandu University Hospital Nepal
A number of visits to Universities in Europe and America for collaboration and student exchange
Participated at about 11 AMEE-conferences with and without papers and workshop
HÅVARD ULSAKER
Klæbuveien 126, 7031 Trondheim
901 86 661 | havardu97@gmail.com
født: 13. oktober 1997

UTDANNING

Forskerlinjen i medisin NTNU
Forskerlinjeprosjekt innen minimal invasiv aortakirurgi 2018-dd

Profesjonsstudiet i medisin NTNU
2016-dd

Studiespesialiseringende Gol vidaregåaende skule
Fordypning i realfag 2013-2016

ARBEIDSERFARING

Medisinskkväll av for Center of Assessment in Medical Education 2018-dd
Senteret jobber med evidensbasert utdanning for å bedre læringsutbyttet i medisinutdanningen ved NTNU. Vi jobber med adaptiv formativ progresjonstesting, formativ studentdrevet OSKE og gjennomføring av mini-CEX (Clinical Evaluation Exercise)

Pleimehjelpere og tilkallingsvakt for Hemsedal Bygdaheim 2017-dd

Studentforfatter ved MH-fakultetet NTNU 2016-2017
Forfatter av flervalgsoppgaver til bruk på fremtidige eksamener i medisinstudiet

Helge- og feriemedarbeider for Power Hemsedal 2012-2017
Salg, kundebehandling og etterfylling av varer i butikk

VERVARBEID

Norsk medisinstudentforening
Arbeidslivsansvarlig 2019
Grunnutdanningsansvarlig 2018
Grunnutdanningsansvarlig, Nmf Trondheim 2016-2017

Den norske legeforening
Spesialitetskomité for LIS1 2019
Styringsgruppen til Helselederskolen 2018-dd
Representant i prosjektet «Refleksjoner fra Verdens ende» 2017
Syv yngre leger og medisinstudenter diskurte fremtidens lege- og pasientrolle. Resultatet ble presentert på E-helse i Norge-konferansen (EHIN) 2017

Kunnskapsdepartementet
Representant i RETHOS-prosjektet 2018-dd
Studentrepresentant i programgruppen for medisinutdanningen. RETHOS-prosjektet utarbeider nasjonale retningslinjer for de helse- og sosialfaglige utdanningene i Norge

MH-fakultetet NTNU
Representant i arbeidsgruppen for master i helseteknologi 2019-dd
Arbeidsgruppen designen en master i helseinformatikk som skal kunne gjennomføres parallelt med medisinstudiet ved NTNU etter modell fra forskerlinjen
Representant i pedagogisk vurderingskomité 2017-dd
Studentrepresentant ved ansettelser til undervisnings- og forskningsstillinger
Kulltillitsvalgt 2 2016-2017

Universitets- og Høgskolerådet
Studentrepresentant i den nasjonale fagstrategiske enheten UHR-Helse og sosial 2018-dd
UHR er en medlems- og interesseorganisasjon for norske universiteter og høgskoler. UHR-Helse og sosial samler studieledere i de helse- og sosialfaglige utdanningene i Norge

KURS

Oslo Healthcare Leadership Summit 2019
Essential Skills in Medical Education Assessment på AMEE 2018 2018
Prinsipper for vurdering, oppgaveforfatting, OSKE-design og standardsetting av beståttgrenser
Training New Trainers + Training Medical Education Trainers 2017
7-dagers kurs med fokus på organisasjonsledelse, presentasjonsferdigheter og medisinsk utdanning i regi av International Federation of Medical Students’ Associations

Akutmedisinkurs 2016
Arrangert av St. Olavs Hospital og Trondheim akutmedisinske studentforening

Pleiemedhjelperkurs 2016
Arrangert av St. Olavs Hospital og Norsk medisinstudentforening

ARTIKLER


Curriculum Vitae
Ivar Skjåk Nordrum
born 22 May 1953

Positions
Main position: Leader for Medical Doctor Programme, Faculty of Medicine and Health Sciences, NTNU, since 1. November 2015.
Part time position: Senior Consultant in Surgical Pathology at St. Olavs Hospital - Trondheim University Hospital.
Chairperson: Medical Museum, St. Olavs Hospital - Trondheim University Hospital and the Faculty of Medicine and Health Sciences, NTNU.
Chair: Professor in Forensic Medicine, Faculty of Medicine and Health Sciences, NTNU

Education

Former workplaces and positions
MD and PhD at the Artic University of Norway (University of Tromsø). Surgical Pathologist and Forensic Pathologist at University Hospital of Northern Norway in Tromsø, Oslo University Hospital and the Institute of Forensic Medicine in Oslo. Associate professor and professor at the Faculty of Medicine and Health Sciences, NTNU since 2000.

Education experience and qualifications
I have taught general and systemic pathology, forensic pathology and legal medicine, and other topics for medical students, but also students from high schools and different postgraduate groups, for almost 30 years.

I have experience with different teaching modalities as problem based learning, team based learning (which I introduced and piloted together with a colleague at our Faculty), lectures, seminars and different specialized courses (microscopy, autopsy pathology and dissection).

A selection of courses and congresses I have attended: 1. Course in University Pedagogy (100 hours during one year in 1991), problem based learning (1999 and 2015), 2. Assessment Course (by K. Boursicot, T. Roberts and R. Fuller, Tromsø 2014), 3. Medical Education & All that Jazz: A Focus on Faculty Development in the Health Professions (McGill University, Montreal July 2016) and 4. The annual AMEE congress (the Association for Medical Education in Europe) in the period 2014-2017.

I have authored book chapters in textbooks and produced a 45 minutes instruction video on the autopsy for medical students.

In autumn 2018, our Faculty launched a desentralised branch for the 3rd and 4th year of the MD programme based on the longitudinal integrated clerkship model (LIC).

Awards and nominations
1. Education award 2015, Faculty of Medicine and Health Sciences, NTNU. 2. Nominated to the Best Teacher Award in 2008, the Faculty of Medicine and Health Sciences, NTNU. 3. The SINTEF award for outstanding teaching at NTNU in 2007 was awarded the Department of Morphology for the new introductory course in general pathology. The course was initiated and designed by Nordrum when the medical curriculum was revised in 2003. 4. The Telenor
Nordic Research Prize 1999 was awarded "The Telepathology Group" (Tor J. Eide, Bjørn Engum, Ivar Nordrum, Birger J. Nymo and Eivind Rinde).

**International experience**


**Former leader- and membership**

1. Academic Director of the Committee for Renewing the Medical Curriculum, Faculty of Medicine and Health Sciences, NTNU (delivered report October 2014). 2. Member of the Faculty Board, Faculty of Medicine and Health Sciences, NTNU. 3. Member of the Norwegian Board of Forensic Medicine. 4. Member of the National Disaster Victim Identification Team. 5. Head of the Teaching Group in Surgical Pathology and Forensic Medicine. Faculty of Medicine and Health Sciences, NTNU. 6. Head of the Quality Assurance Committee and Vice Chairman. The Norwegian Association of Pathology.

**R&D qualifications**

I have been first, last or co-author on 53 studies, 11 reviews and book chapters, and a larger number of abstracts, proceedings, letters, reports and chronicles. Most of the studies, and some other publications, are retrievable in the database PubMed (if searching use: Nordrum I*). I have supervised two PhD candidates and nine medical student thesis.

I have given numerous lectures at meetings and congresses domestic and abroad.

I have lead R&D projects in forensic medicine and telepathology. In telepathology, more than 25 years ago when telemedicine germinated, the University Hospital of Northern Norway was in the international forefront. We (“The Telepathology Group”) established the very first remote frozen section service in the world, published a number of studies and received attention accordingly.

**Motivation to become an educational leader**

The work as an academic director of the committee for renewing the medical curriculum at our faculty in 2014 was very interesting, meaningful and inspiring. When the faculty established a new full-time position as leader of the MD programme, I applied. In that position, I am responsible for the daily management, quality assurance and renewal of the MD programme.

**Leisure activities**

Playing saxophone in marching band and saxophone quartet.

**Further information**

My CV-profil at NTNU in both Norwegian an English is available here:

https://www.ntnu.no/ansatte/ivar.nordrum
https://www.ntnu.edu/employees/ivar.nordrum

Both have a link to my teaching portfolio (in Norwegian).
Name: Kjersti Grønning, born 27.05.1968
Adress: Almevegen 4c, 7059 JAKOBSLI
Cell: +4747305342
E-post: Kjersti.Gronning@ntnu.no

Education:
Aug. 2012    NTNU: PhD in Public Health and General Practice from the Faculty of Medicine, Department of Public Health and General Practice
2002-2004    NTNU: Master in Health Sciences
1994-1995    NTNU: Practical Pedagogical Education
2000        The Sør-Trøndelag University College: Health and Social Administration
1992       University College of Nursing in Levanger: Nursing

Current position
• Main position: Associated professor /Ph.D. at NTNU, Faculty of Medicine and Health Sciences, Department of Public Health and Nursing
• Extra position: RN /PhD at the Department of Rheumatology, University Hospital, St.Olavs, Trondheim (20%)

Teaching Course Coordinator
• HSYK3003 Bachelor thesis in Nursing (“project bachelor”)
• HVUT8067 Introduction to research methods
• FH3007 Health Promotion in the Health Care Services
• SPL4911 Master Thesis in Clinical Nursing (coordinator at Campus Trondheim)

International experience
• Erasmus Teaching Assignment at University of Split, Department of Health studies, Croatia, June 2014

Research projects
• INSIGHTS: The impact of involving undergraduate nursing students into clinical research projects (2018-2021)
• Promoting labour market participation of the chronically ill – a comparative study. (In co-operation with the project owner NORCE in Bergen)
• Health Promotion Worthwhile – WP2 “The experiences and effects of a health promotion intervention for people with chronic pain in healthy life centers” and “The meaning of user involvement at Healthy Life Centers in Norway” (2015-2019)
• Patient education in Rheumatology: 5-year follow-up after participating in Patient education (2015-2020)
• ProFoose: Promotiong Food Security in Portugal (2015-2018)
Quality and development projects
- Fast-track inspired Rheumatology (Department of Rheumatology, University Hospital, St.Olavs, St.Olavs Hospital / NTNU, 2014-2019)
- Patient-initiated follow-up Rheumatology (PORS) (Department of Rheumatology, University Hospital, St.Olavs, St.Olavs Hospital / NTNU, 2014-2019)
- When the consultation starts at home (Department of Rheumatology, University Hospital, St.Olavs, St.Olavs Hospital / NTNU, 2017-2018)

Assessment tasks and committee work 2013-2018:
- PhD evaluation: 3
- Post doc evaluation: 1
- 2011-2017→: Chairman of the reference group for the National Advisory Unit on Rehabilitation in Rheumatology (NKRR). 2017→: member of the reference group
- 2011→: Member of the reference group for the National Resource Center for Rehabilitation in Rheumatology (NBRR).
- 2011-2014: Board member of Norwegian Interdisciplinary Organization in Rheumatology (NJOR).
- 2013: Member of the Program committee the Technology Conference (VELKON), 23.-24 October
- 2013: Member of the Working Group for Health&Care21 (HelseOmsorg21)

R&D qualifications
- I have been the first, last or co-author on 20 peer-reviewed papers, reviewed several scientific papers, written two book chapters, four professional articles and a larger number of abstracts or proceedings. Most of the studies, and some other publications, are retrievable in the database PubMed (if searching use: Grønning K or Almberg K) or by searching in Google scholar.
- I am or have supervised four PhD candidates (two main supervisor and two co-supervisor), 3 master student thesis, and approx. 100 Bachelor thesis in Nursing.
- I have given numerous lectures at meetings and congresses domestic and abroad.
- I am the leader of the research group “Nurse education research” at the institute

Grants and funding
I have received grants and funding from
- The Norwegian Nursing Association
- The Rheumatology research fund in Trondheim
- The Jan A. Pahles Legate in Oslo
- The Central Norway Regional Health Authority (RHA)
- The European League Against Rheumatism (EULAR)