

# ANNUAL REPORT 2018

## Oslo University Hospital

### Comprehensive Cancer Centre (OUH CCC)



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## Oslo University Hospital Comprehensive Cancer Centre

Oslo University Hospital was accredited an OEI Comprehensive Cancer Centre (CCC) on April 10th, 2017. During 2018 we have worked intensively to consolidate our CCC structure; Cancer Centre Board, Executive Committee and CCC Research Council. We have actively used these CCC bodies as tools for improving cancer care and cancer research in OUH. To accomplish this, the CCC Board was extended by adding the department leaders from Department of Paediatric Oncology, Department Tumor Orthopedics and Department of Pathology, as well as representatives from the three largest labour unions.

As a part of the accreditation process we submitted an improvement plan to OEI one year from accreditation. This report was then approved by the OEI board. Based on the OUH Cancer Strategy and the improvement plan, the CCC Board made an updated action plan for the next two years.

The activity of OUH CCC is located on four hospital campuses. As the first step in accomplishing the long-term plan for the future OUH, in 2018, final decisions were made to build a new clinical building and a proton centre at the Radium Hospital (NRH). This together with the new buildings for Cancer Research and Radiotherapy and the Cancer Innovation Centre, will all enforce the position of NRH as a national and regional cancer hub for cancer care and research. Key decisions on the future direction for the other OUH campuses will be made in 2019, also very important for OUH CCC.

Further improvements in cancer patient pathways had a high priority in 2018. Several initiatives were undertaken from the CCC Board and the work on documenting standardized pathways was continued and involved new diagnoses. This was aligned to quality improvement processes and several of the diagnosis-specific cancer pathway management teams identified challenges and initiated measures for improvement. A standardised report form has been developed as the basis for annual meetings between the CCC Board and the pathway management groups. We claim some progress on the work of patient pathways but however OUH did not reach the national goals in pathways times, in total and for several important pathways. This will be a focus area for OUH in 2019.

During 2018, important issues have been raised crossing the border between clinic and laboratory research; such as precision medicine, clinical trials, molecular diagnostics, and translational research. Initiatives on these issues were of major concern in the revised action plan. Crucial initiatives were also taken regarding development of a specific cancer biobank and a comprehensive management information system for cancer research. The first visit of the CCC Scientific Advisory Board (SAB) contributed fruitfully to address our challenges in these areas. A core inspiring message from the board was: Learn from every patient!

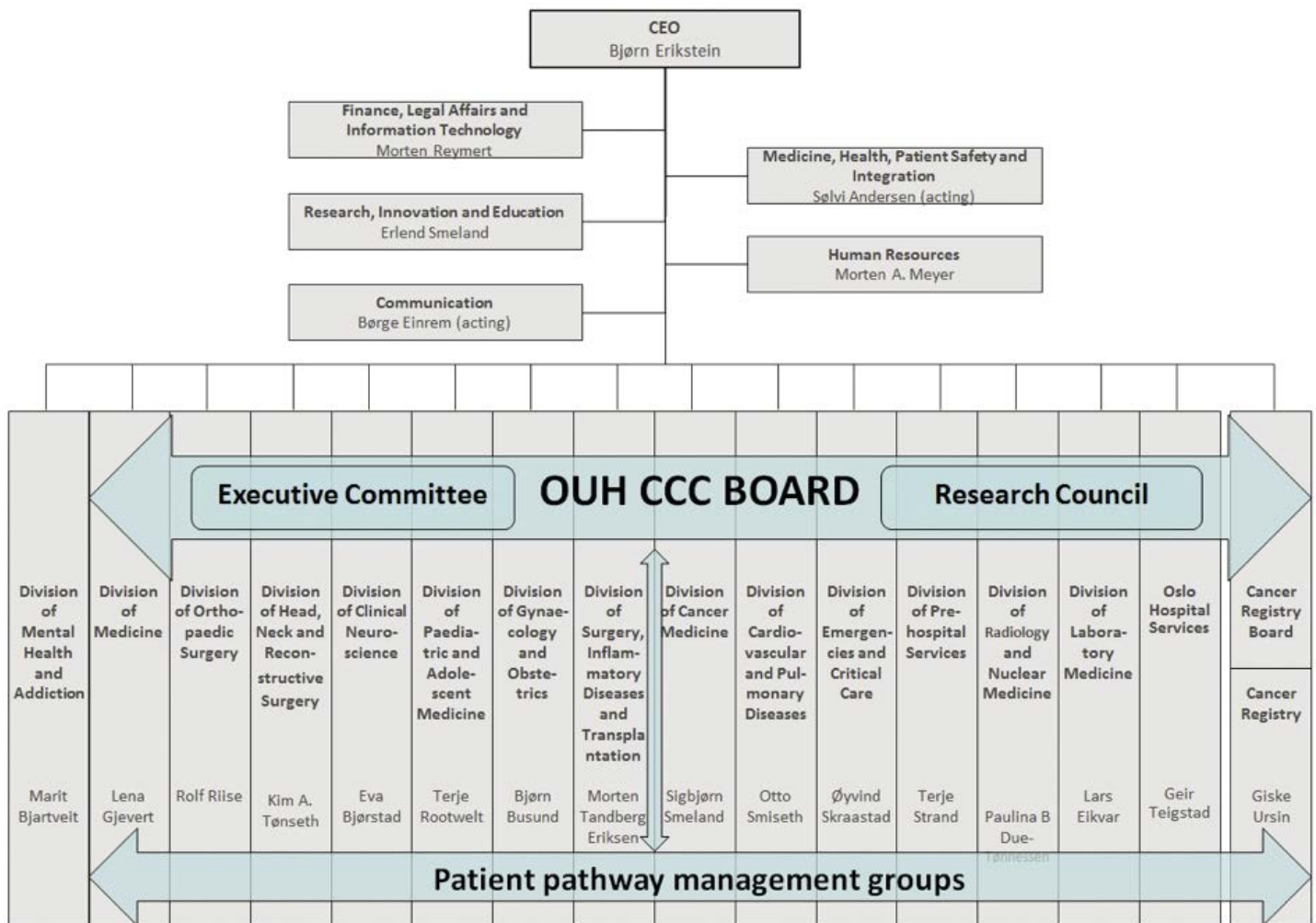
In conclusion, the activities and the achievements in 2018 reflect the challenges, the ability and the importance to coordinate and continuously develop research and clinical activity across in a large university hospital. There are however obstacles to overcome and goals yet to fulfil, which we will continue to work on in 2019 to reach our vision to become a leading cancer hospital in Europe.



Prof. Sigbjørn Smeland MD  
Head, Division of Cancer Medicine  
Chair, OUH CCC Board



## OUH CCC Management Structure



## OUH CCC Locations



Aker Hospital



Rikshospitalet



Radium Hospital



Ullevål Hospital

## Collaborating Partners



### UiO : University of Oslo

OUH has close organizational links with a number of faculties at the University of Oslo, in particular the Faculty of Medicine and The Faculty of Natural Sciences. Around 100 of the division's employees are also employed by The University of Oslo's Faculty of Medicine, teaching medical students in six of the twelve semesters. Guest students are also received from other universities in Norway and from abroad. OUH is the major institution for specialized training in oncology for physicians and nurses in Norway. The close collaboration between the hospital and University of Oslo is an important platform for this.



The Cancer Registry of Norway is part of South-Eastern Norway Regional Health Authority and is organized as an independent institution under Oslo University Hospital Trust, with its own board. The Cancer Registry of Norway, consisting of about 40 researchers, collects data and produces statistics of the cancer prevalence in Norway, and has an extensive research activity. They also got the administrative responsibility for the public screening programmes in Norway.



### OSLO CANCER CLUSTER

OCC is an oncology research and industry cluster dedicated to improving the lives of cancer patients by accelerating the development of new cancer diagnostics and treatment. OCC is a national non-profit member organization with about 90 members, including OUH CCC along with other Norwegian and international companies, research and financial institutions, university hospitals and organizations – all working in the cancer field. OCC represent the entire oncology value chain, doing everything from exploratory research to selling therapeutics and diagnostics to global markets.



Inven2 is Norway's largest player in the commercialization of research and is owned by the University of Oslo and Oslo University Hospital. Inven2 is the next generation of innovation company, established to safeguard and further develop Norwegian innovation, building bridges between outstanding research and the industry of the future.

## CCC Board

The CCC board contributes to strengthening the line managements' power of action across organisational divides and where activities are located. This is strived for by strengthening the overall ability to coordinate work with operational challenges and the development and implementation of the cancer strategy (see p.7). The work includes diagnostics, treatment, research, care, and rehabilitation.

### Main focus areas in 2018:

- Cancer patient pathways (CPPs) (see p.14)
- Biobank
- Clinical quality registries
- Dialogues with pathway teams
- Developing the role of pathway coordinators (see p.15)
- Collaboration with other hospitals
- Precision medicine
- Myeloid gene panels



1. Prof. Sigbjørn Smeland MD, Head, Division of Cancer Medicine (Chair)
2. Assoc. Prof. Morten Tandberg Eriksen MD, Head, Division of Surgery, Inflammatory diseases and Transplantation
3. Assoc. Prof. Lars Eikvar MD, Head, Division of Laboratory Medicine
4. Paulina Due-Tønnessen MD, Head, Division of Radiology and Nuclear Medicine
5. Prof. Kjell Magne Tveit MD, Director of Medicine
6. Elin Henriksen, Head, Department of Gastro- and Paediatric Surgery
7. Per Magnus Mæhle, Secretary, Division of Cancer Medicine

**Executive  
committee**

8. Torill Krøvel, Senior advisor, Staff Division of Surgery, Inflammatory diseases and Transplantation
9. Prof. Giske Ursin, Director, The Cancer Registry of Norway
10. Prof. Geir Tjønnfjord MD, Head, Department of Haematology
11. Prof. Gunnar Sæter MD, Head of Research, Division of Cancer Medicine
12. Tove Nakken, Head, The OUH Patient Council
13. Erik Rokkones MD, Head, Department of Gynaecological Cancer
14. Prof. Stein Kaasa MD, Head, Department of Oncology
15. Ying Chen MD, Head, Department of pathology
16. Prof. Kjetil Taskén MD, Head, Institute for Cancer Research, Division of Cancer Medicine
17. Prof. Ellen Ruud MD, Head, Department of Paediatric Oncology and Haematology
18. Ole-Jacob Norum, Head, Department of Cancer Orthopaedics
19. Aasmund Bredeli, Union representative, The Norwegian Medical Association
20. Bjørn Wølstaad-Knudsen, Union representative, Norwegian Union of Municipal and General Employees
21. Svein Erik Urstrømmen, Union representative, Norwegian Nurses Organisation



## CCC Research Council

The Research Council at OUH shall contribute to comprehensive, optimal use and further development of the potential OUH has within the field of cancer research. The scope of the Research Council at OUH includes clinical research, translation-research, foundation research and research-based innovation. The Research Council at OUH will work based on specific tasks from the Cancer Centre Board at OUH, but have several projects areas with an independent initiative.

### Main focus areas in 2018:

- Recruiting patients to clinical studies
- Time for clinicians to do clinical studies
- Translational studies
- Biobank
- Organizing SAB visit



1. Prof. Gunnar Sæter MD, Head of Research, Division of Cancer Medicine (Chair)
2. Prof. Tom Hemming Karlsen MD, Head of Research, Division of Surgery, Inflammatory diseases and Transplantation
3. Prof. Kristin Bjordal MD, Head, Department of Research Support, Oslo Hospital Services
4. Prof. Kjetil Taskén MD, Head, Institute for Cancer Research, Division of Cancer Medicine
5. Tove Nakken, Head, The OUH Patient Council
6. Prof. Ellen Ruud MD, Head, Department of Paediatric Oncology and Haematology
7. Prof. Ben Davidson MD, Department of Pathology, Division of Laboratory Medicine
8. Prof. Stein Kaasa MD, Head, Department of Oncology
9. Prof. Elisabeth Weidepass, Head, Research Department, The Cancer Registry
10. Prof. Lars Eide, Head of Research, Division of Laboratory Medicine
11. Per Magnus Mæhle, Secretary, Division of Cancer Medicine

## Scientific Advisory Board

### OUH lessons from SAB visit and report

The purpose of the SAB visit was to evaluate strengths and challenges of the total CCC research, compared with the ambitions of the cancer strategy and the targets of the CCC-implementation plan and to utilize the potentials of the cancer centre.

- **Increase clinical research and patients included in studies**
- **Facilitate dedicated research time for clinicians/diagnosticians**
- **Increase collaboration between basal, translation and clinical research**
- **Establish an institutional project for personalized cancer medicine**
- **Increase collaboration between OUH/UiO and the Cancer Registry**

OUH CCC is highly committed to make improvements to these areas. Our next SAB-visit will be in fall 2020, and our next reaccreditation in 2022.

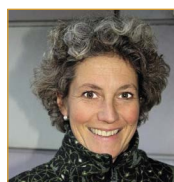
### SAB members



Prof. Inger Sandlie,  
Institute of Biosciences,  
University of Oslo



Prof. Carl-Henrik Heldin,  
University of Uppsala and  
Chairman of the Board,  
The Nobel Institute (Chair)



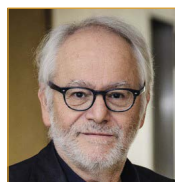
Prof. Mef Nilbert,  
Director of Research,  
Danish Cancer Society,  
Copenhagen



Prof. Kjeld Schmiegelow,  
Professor of Paediatrics and  
Paediatric Oncology,  
University Hospital  
Rigshospitalet, Copenhagen



Prof. Jenny Chang-Claude,  
Division of Cancer  
Epidemiology,  
DKFZ Heidelberg



Prof. Fabien Calvo,  
Chief Scientific Officer,  
Cancer Core Europe and  
Institut Gustave Roussy



Prof. Josep Tabernero,  
Vall d'Hebron Institute  
of Oncology,  
Barcelona



# OUH Cancer Strategy 2017-2021

## Vision and mission for OUH Cancer Centre

**Vision:** OUH will be a leading cancer centre in Europe

**Mission:** We are a complete cancer centre and the hub of Norwegian cancer care.  
We are developing the hospital for the future in cooperation with our patients

## The OUH Cancer Centre's most important strategic measures from 2017-2022

1. Strengthen the information, education and involvement of patients at all stages in illness
2. Develop standardised pathways for all patient groups
3. Gather the same type of patient treatment in one location in OUH and improve infrastructure, including new buildings and a proton centre
4. Increase the use of personalised diagnostics as the basis for correct treatment and to avoid over- and under-treatment
5. Further-develop work-sharing with other hospitals in the region and the primary health service
6. Develop existing and establish new prioritized areas of research with particular international impact fraction or potential
7. Increase the number of clinical studies and patient accrual to trials
8. Establish national and enterprise-based quality registers for all cancer groups
9. Establish IT solutions which facilitate quality improvement and improve patient security, support patient pathways, and support research
10. Increased commitment to primary and secondary prevention of cancer in collaboration with the Cancer Registry
11. Establish institutional governance for the CCC
12. Set the agenda for public discussion of cancer in Norway





## Looking forward

- Radium hospital
- Proton centre
- Reaccreditation
- Plan for development of molecular diagnostics and precision medicine
- Cancer patients pathways home-to-home
- Governance systems focused on cancer
- Clinical quality registries for all diagnoses
- Cancer competence plan
- Cancer biobank
- Inclusion in clinical trials
- Tools for shared decision making



Illustration of the prospected new Radium Hospital

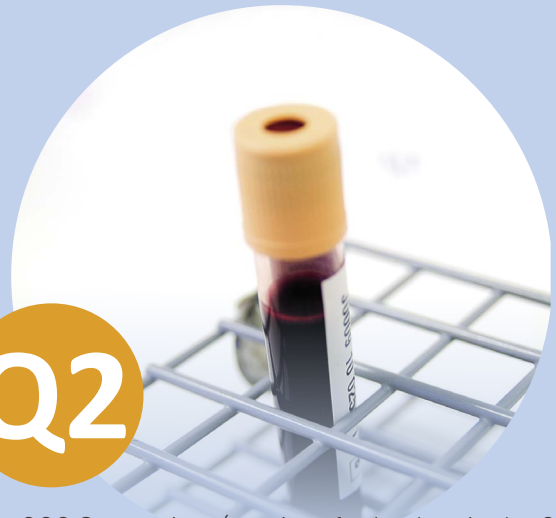


# Major Events for OUH Cancer Centre 2018



Q1

- Research group leader gathering
- SAB visit
- 6 new members to CCC Board
- 2 new members in CCC Executive Committee



Q2

- CCC Symposium (seminar for leaders in the OUH cancer centre with local and international speakers)
- Milestone Report approved by OECI



Q3

- The Medical Association's leadership award to Ying Chen, Head of the Department of Pathology



Q4

- Pathway group leaders and patient pathway coordinators gathering
- Breast cancer treatment relocated to Aker Hospital
- Elisabete Weiderpass elected new IARC Directore



## OUH CCC: Core Activity Data for 2018



**5 819**

Number of cancer patients newly diagnosed at OUH



**8 830**

Total number of new cancer patients referred to OUH



**23 764**

Number of cancer patient admissions



**97 360**

(2017: 98 273)  
Radiotherapy:  
number of fractions



**14 179**

Number of overnight stays



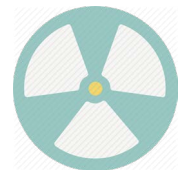
**300**

Number of beds



**114 026**

Number of outpatient consultations



**6 353**

(2017: 6 367)  
Radiotherapy  
treatment series



**5 655**

Radiotherapy:  
number of patients



**59 207**

Radiology examinations



**19 027**

CT scans



**22 147**

Chemotherapy treatments



**6 924**

MRI scans



**52 800**

Estimated pathology  
evaluations



**14 400**

Cytology



**17 164**

Molecular pathology

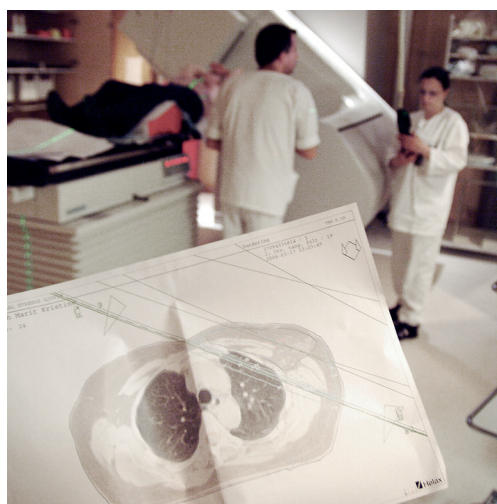
## Relative Survival

The data for relative survival is from the Cancer Registry. (See Cancer in Norway for definition of relative survival).

**Table 1.** Relative survival – a selection of cancer diagnoses related to gender

Relative survival (%) estimated for two five-year periods for patients treated at OUH (operation or radiotherapy), with the associated 95% confidence intervals. Please note that there are no stage corrections in comparisons.

Gender	ICD-10	Location	2003–2007	2013–2017			
			OUH	OUH	Oslo	Health South East Region	Norway
Female	C00-14	Oral cavity and pharynx	68,3 (61,5–74,2)	71,3 (65,4–76,4)	63,8 (51,5–73,8)	72,1 (66,8–76,7)	74,1 (70,1–77,6)
	C15	Oesophagus	12,0 (6,4–19,4)	39,9 (29,9–49,6)		27,8 (21,4–34,5)	23,9 (19,1–29,0)
	C16	Stomach	32,3 (21,7–43,2)	27,8 (18,5–37,8)	9,5 (4,1–17,4)	20,6 (16,4–25,1)	26,4 (23,2–29,8)
	C18	Colon	62,5 (57,2–67,4)	61,1 (55,4–66,3)	68,7 (62,9–73,9)	68,6 (66,5–70,6)	67,8 (66,3–69,3)
	C19–20	Rectum	61,5 (56,1–66,5)	63,7 (58,7–68,2)	65,2 (56,5–72,6)	68,5 (65,5–71,3)	68,9 (66,7–71,0)
	C33–34	Trachea and Lung	21,2 (18,7–23,9)	34,6 (32,1–37,0)	26,7 (22,5–31,1)	23,8 (22,3–25,3)	24,5 (23,3–25,7)
	C43	Melanoma	69,9 (64,7–74,5)	73,3 (68,8–77,3)	85,2 (79,8–89,2)	89,1 (87,2–90,8)	90,5 (89,0–91,7)
	C50	Breast	90,1 (88,7–91,4)	94,0 (92,8–95,0)	90,7 (88,2–92,7)	90,7 (89,7–91,5)	90,4 (89,7–91,0)
	C53	Cervix uteri	80,6 (77,3–83,5)	83,0 (80,0–85,6)	82,5 (75,6–87,6)	81,0 (78,3–83,4)	81,4 (79,3–83,2)
	C54	Corpus uteri	79,6 (76,0–82,8)	80,9 (77,4–83,9)	85,7 (79,1–90,4)	85,2 (82,9–87,2)	84,2 (82,5–85,7)
	C56, C57.0–4, C48.2	Ovary	46,7 (42,9–50,4)	58,6 (54,4–62,5)	48,8 (41,5–55,7)	48,5 (45,8–51,2)	48,6 (46,5–50,7)
	C64	Kidney	62,4 (53,5–70,0)	65,7 (56,8–73,3)	79,3 (64,8–88,3)	75,6 (71,4–79,3)	76,7 (73,6–79,4)
	C65–68	Urinary	53,3 (45,7–60,3)	55,7 (48,1–62,6)	73,2 (63,5–80,7)	69,6 (65,9–73,0)	70,5 (67,8–73,0)
	C70–72	CNS	69,4 (65,6–72,9)	69,9 (66,4–73,1)	73,2 (64,9–79,8)	76,4 (73,8–78,8)	75,9 (74,0–77,6)
Male	C00-14	Oral cavity and pharynx	53,9 (48,9–58,6)	63,5 (59,4–67,3)	63,4 (52,6–72,3)	65,1 (61,4–68,5)	67,6 (64,9–70,2)
	C15	Oesophagus	14,6 (9,7–20,4)	24,6 (19,8–29,8)	19,0 (10,1–30,1)	17,7 (14,3–21,4)	20,4 (17,6–23,2)
	C16	Stomach	23,1 (16,3–30,6)	44,1 (35,8–52,1)	25,3 (15,3–36,5)	26,2 (22,6–30,0)	26,7 (24,1–29,3)
	C18	Colon	52,9 (47,1–58,4)	57,6 (51,7–63,0)	63,4 (56,6–69,5)	63,3 (61,0–65,4)	64,1 (62,5–65,7)
	C19–20	Rectum	60,8 (55,7–65,5)	65,3 (61,3–69,1)	73,1 (65,1–79,6)	69,1 (66,5–71,6)	69,5 (67,5–71,3)
	C33–34	Trachea and Lung	15,2 (13,2–17,3)	27,7 (25,3–30,1)	19,4 (14,8–24,5)	17,5 (16,2–18,9)	17,9 (16,9–18,9)
	C43	Melanoma	54,8 (49,5–59,8)	64,6 (59,7–69,2)	86,6 (79,6–91,3)	85,4 (83,1–87,4)	85,0 (83,3–86,5)
	C61	Prostate	91,5 (89,5–93,1)	97,3 (95,8–98,2)	94,9 (91,9–96,8)	94,3 (93,4–95,1)	94,0 (93,4–94,6)
	C62	Testis	95,7 (91,7–97,8)	98,1 (94,4–99,4)	99,0 (89,7–99,9)	99,3 (97,3–99,8)	98,9 (97,8–99,5)
	C64	Kidney	57,7 (51,5–63,4)	62,8 (57,0–68,0)	74,6 (64,9–82,0)	75,2 (72,2–77,8)	74,8 (72,6–76,8)
	C65–68	Urinary	63,9 (58,4–68,8)	62,3 (57,1–67,1)	81,3 (73,4–87,0)	78,3 (75,8–80,6)	78,3 (76,6–80,0)
	C70–72	CNS	50,9 (46,9–54,7)	54,2 (50,7–57,6)	59,6 (51,8–66,5)	63,0 (60,1–65,8)	61,7 (59,6–63,7)



## Patient Satisfaction

In 2018, approximately 1/3 of the cancer patients replied to OUHs web-based survey. Results show overall high satisfaction scores (>90%) – and a better performance than in 2017. In addition to the questionnaire, the patients have the opportunity to leave comments. These opinions are valuable for the improvement of patients' experience at OUH.

### The comments are generally positive:

"A top staff with great professional skills that gives confidence that the treatment you get is correct. Accommodating in all steps from entering the door"  
- *Gynecological cancer patient*

"The staff is friendly and knowledgeable. They provide good information and provide peace of mind during the treatment"  
- *Breast cancer patient*

"I am very pleased with the kindness and efficiency I experienced with the patient coordinator in preparation for the day of surgery. On the day of surgery I was greeted with a crew that took care of me in all respects. I am very happy with the treatment!  
- *Skin cancer patient*

### However, some also comments for improvement:

"Poor interaction between departments"  
- *GI cancer patient*

"Too long waiting time for the test results"  
- *CNS cancer patient*





## Patient Involvement

### How are patient representatives influencing cancer care in OUH CCC?

The Patient Council at OUH CCC is advisory to the head of the division in cases concerning the patient issues. The main purpose is to ensure that the patient perspective is safeguarded when decisions affecting the services of the patient are being made.

Four different patient organizations are represented in the Patient Council at OUH CCC. The structure advocates the patient's and relatives perspectives in cases and this is followed up by advice from the Patient Council through regular meetings with the head of the Division of Cancer Medicine. According to the mandate given to the Patient Council at OUH, the representatives convey their individual and general experiences from patients and relatives with a constructive, provident and formal approach.

By focusing on the patient, their safety, relatives and good interaction Patient Council contributes with their ideas on to the quality and continuous improvement of cancer care at the OUH CCC.

Chair of OUH CCC Patient Council  
Erna Hogrenning

## Regional Meetings for Gynecological Cancer – by Video Conference

Following a period of discussions within the established regional Gynaecological Collaboration Forum we started our 3-channel regional video meetings as the first diagnostic group in OUH in September 2017. We collected experience from the "Lung meeting" with a successful history of 2-channel meetings over years. After one year of 60 min meetings every second week we switched to 30 min weekly meetings according to an evaluation process in order to be clinically relevant.

A 3-channel technology is mandatory to be able to cover the need for video discussions and two set of radiological imaging for comparison.

Clinicians from the local departments log on to "Norsk Helsennett" to discuss selected cases with our three - four clinicians and one radiologist from our hospital. Patient records and relevant radiology have to be transferred to OUH two days prior to the video discussion. Focus was initially on patients with metastatic or relapsing disease mostly in a palliative setting. However, gradually it emerged a need for discussion of patients in a primary setting in order to effectively decide treatment options without time consuming consultations at OUH.

The OUH radiologists revise radiological findings up front and present their conclusions in the meeting.

Following the video discussion both the local gynaecologists and the gynaecologists from OUH make their documentations in their own EPR (electronic patient record) copying the local department.

Since start up in September 2017 a total of 77 patients have been discussed. 70 of these were concluded in the meeting and did not have to meet at our OUH out-patient-clinic for "clinical decision", meaning OUH resources could be available for patients in greater need of our one-to-one consultations.

Our aim is to include all the gynaecological departments in the South East Health Authority Region for participation. So far 8 of 19 local departments have logged on to the meetings. There is room for improvement.



## Establishing a regional cancer patient pathway (CPP) for high-grade glioma patients

Petter Brandal, Head of neurooncology, Dept. of Oncology, Oslo University Hospital (OUH)  
Einar Osland Vik-Mo, Head of surgical neurooncology section, Dept. of Neurosurgery, OUH

Patients with high-grade gliomas face an often rapidly progressive disease, where individualized treatment choices are necessary to relieve patient stress and to optimize outcome. For these patients a Cancer Treatment Pathway National Guideline has been established to assure timely primary treatment. Although the overall treatment and follow-up schedule is standardized, its practical implementation is quite complex. The effectuation is dependent on a close collaboration between departments of neurosurgery, oncology, neurology and radiology in at least eight different hospitals throughout the South-Eastern Health Region. Due to this regionalization of treatment, an in-house cancer patient pathway (CPP) at OUH would clearly not be sufficient to take care of these patients. To improve the structure of the regional treatment of patients with high-grade gliomas, a regional CPP has now been established.

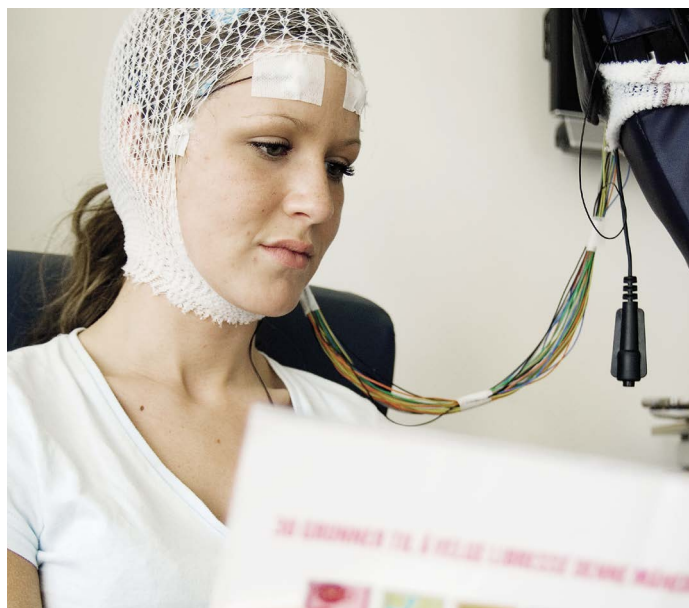
To review the strains, delays and the use of resources for individual patients and the overall system, we involved all groups of treatment providers at OUH and representatives from all oncological, neurological and radiological departments involved. Through two regional meetings, document hearings and numerous subspecialty discussion groups, we were able to establish a unified consensus on patient treatment, follow-up and institutional/departmental responsibility.

Focus was put on understanding the critical loss of information upon transferring patients between units, especially on what kind of information the patient had received. Establishing a clear line of accurate information transferal would allow for reduction of patient uncertainty and relieve anxiety. A systematic follow-up schedule allows for better planning, patient information and optimization of resources. In particular, standardized neuropathological assessment and neuroradiological follow-up (timing and choice of MRI sequences) were established to allow for a more uniform and timely patient treatment.

The regional CPP is now approved, and implementation is underway. Evaluation and further regional interaction to improve the CPP is planned from fall 2019. A cornerstone in the implementation of the CPP is the establishment of regional teleconference multidisciplinary team meetings.



Figure 2: Flow sheet of diagnostics in the CNS cancer patient pathway



## Network of CPP facilitators

In order to document CPPs, project facilitators help coordinating the projects and draw flow sheets in OUHs electronic library of guidelines. The CPP Facilitator Network focus on sharing experiences, managing the facilitator role and utilizing tools for improvement work. The network consist of professionals from different departments with a variety of professions – ranging from administrative workers to nurses and consultants.

Elin Høy, former head nurse in the lymphoma pathway, works full time as CPP facilitator:

*“Reviewing the patient pathways provides a good basis for improvement work and planned follow-up of the patients”*

## Cancer Patient Coordinator Role

Torill Krøvel, Senior advisor, Staff Division of Surgery, Inflammatory diseases and Transplantation:

In 2018 you led a group with the mandate to advise how the patient coordinator role should be in OUH. This is a role that has gained great focus due to the introduction of patient pathways in Norway as well as OUHs accreditation as comprehensive cancer centre.



### Why are cancer patient coordinators important?

Patient pathway coordinators' role is first and foremost being the patients' first contact in OUH. Further, their role includes ensuring secure transitions between internal and external units. Good communication is crucial for patients and their family members, and the coordinators' unique competence is essential for patient pathway flow.

### Briefly - what are your groups' recommendations regarding the future cancer patient coordinator role?

We want to heighten the role! To be a patient coordinator should be an attractive career path. The group handled a wide range of topics with following recommendations related to the role:

- Today the coordinators are the patients' contact until they start treatment. There is a need for clarification regarding when the coordinators should transfer the patient to another contact.
- Implementation of multidisciplinary team (MDT) meetings has had a positive effect on patient care, however the coordinators should have clear roles within these.
- There should a forum for learning and sharing experiences.
- The coordinator role is diverse and dynamic, and there is a need for development of competence.
- The job description should answer to the idea of the future coordinator role. Thus, the description should include a requirement of professional background as a nurse/nurse specialist in cancer care or similar education.
- First receiver of referral should have the responsibility of ensuring good coordination in cases where patients have multiple cancer diagnoses and accordingly are in more than one pathway.

### How is the work continuing in 2019?

The work resulted in a formation of an Executive committee for forum for patient pathway coordinators. Forums will be held twice a year.



## Improvement Work

Improvement work is high on the agenda for OUH to ensure safe patient care with high quality.

In the A6 ward at The Radium Hospital the team working with prostate and breast cancer patients systematically prevent and learn from deviations. Daily gatherings are held to discuss content at their improvement board. They were the first to implement the board in 2015, and today many other wards have followed. The board contains lists of tasks that should be done during the day as well as important reminders.

Furthermore the team bring up unwanted circumstances or deviations that have or could have happened during the day. In plenary, they explain the situations and the actual or possible patient consequences. Next to the improvement board, the team have a board where all current patients are listed to show individual risks (e.g. poor nutrition or risk of falling).

Head of unit, Elisabeth Borenstein, emphasises the importance on investigating the system level for explanations of errors, thus not keeping employees accountable - maybe the training has not been adequate, maybe there are too much going on to concentrate on tasks and so on. As a result, the

attendees experience the meetings as positive and inspiring, and are initiative-takers in seeking solutions to problems that may occur. This is also reflected in the anonymous OUH employee feedback ForBedring, where the team respond they are not afraid to report deviations to the OUH central deviation system.



## Innovation Department



The Innovation department provides resources and support to drive innovation at Oslo University Hospital. We offer advice and practical assistance for employees who are going to carry out innovation projects. We can provide a comprehensive contact network and knowledge you need to start, develop and apply a new service or product.

It does not require a complete idea to get help from us. Together we can identify needs and clarify new innovation opportunities. The innovation department have knowledge within:

- Innovation
- Project
- Plan and carry out workshops
- Funding Opportunities
- Measurements of the usefulness of the idea / innovation in the early phase

The innovation department collaborates closely with the hospital's commercialization partner, Inven2. If your idea is of commercial caliber, we will contact Inven2 who will assist you further.



## Home treatment - freedom in a portable infusion pump

Gudveig Storhaug, Professional Development Nurse, The Department of Oncology, Cancer Clinic, Oslo University Hospital.

Most of the intravenous cancer treatment is currently offered to patients as inpatient or outpatient treatment. The portable infusion pump can contribute to increased quality of life and can provide the opportunity for patients to go home during treatment. The infusion pump is small and can be carried in a fanny pack or a backpack. The pump is designed to administer treatment like antibiotics, fluids, cancer treatment and nutrition whilst the patient is at home.

The feedback from the patients in our department who have tested home treatment has been very positive, and there is no doubt that this approach to treatment means increased quality of life. Patients are given the opportunity to go home and maintain a more normal everyday life during treatment. Inpatients can also use the portable infusion pump, and it can contribute to more active cancer patients whilst admitted.



*Cancer nurse Marthe Bråthen and Head of Unit Mona Haukland at Unit AKBS2 at the Department of Oncology have contributed as "nurse and patient" in several of the films made in the home treatment project.*



*Picture from the information film made in the home treatment project showing the infusion pump and "the patient" leaving the hospital with her treatment.*



## Rasmus – the OUH stuffed animal mouse who became name of the year, 2018

The clear winner of *person of the year* in one of the biggest newspapers in Norway – Dagbladet – was OUHs stuffed animal Rasmus. Ragnhild Hals, nurse specialist, leader of the OUH children and youth programme, and Rasmus' mother, explains who the mouse is:

«Rasmus is a mascot for ill children finding themselves in unfamiliar and intimidating situations. He is a result from our core thought of seeing the individual patient, not only their diagnosis. When a child cancer patient needs for example chemo therapy or surgery, a nurse will explain the procedure directly to the child using a picture book starring Rasmus. The pictures of the procedures are taken at OUHs' facilities, creating predictability and security for the child. This way the information the patient and their kins receive are standardised, thus ensuring high quality communication, and simultaneously easing the nurses' busy work days. Rasmus may also join the procedures, giving the children the opportunity to test equipment on him before themselves. Sometimes he has had surgery, sometimes he has EKG electrodes on his chest.

Placed in all departments, Rasmus contributes to continuity. Play is also an important factor – which everyone in the room are in on – creating an environment for the children to express their thoughts and questions.

The mouse is also used as a pedagogical tool after treatment by teachers in OUHs pre-school and school.»

Hals emphasizes that childrens' sense of control over the situation is crucial for good care. Ramsus' popularity has grown since the award, and he receives applause not only from OUHs professionals, but most importantly from the children and their parents.



Photos: Jørn H. Moen / Dagbladet



## Rehabilitation after cancer treatment in Oslo University Hospital (OUH)

OUH offers several rehabilitation services for cancer patients both during and after treatment.

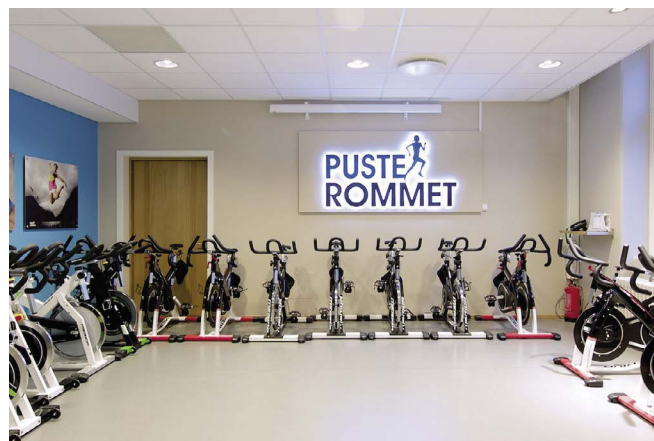
During treatment there are in-house services of psychosocial and nutritional support, as well as physical exercise centres ("Pusterom") where patients are offered individual or group-based physical training.

In addition the hospital opened a Cancer Rehabilitation Centre in June 2017. This Centre offers out-patient multidisciplinary rehabilitation programs and psychological services for cancer patients after treatment, and serves patients treated with curative intent, patients with "chronic cancer" and patients with late-effects. The main target group are patients within working-age, and the interventions focus on improving physical and psychosocial function as well as working ability. Patients are referred to the Centre from hospital doctors and general practitioners.

The patients can engage in group-based or individual rehabilitation programs. The group-based programs typically run one day/week during 7 weeks, and consist of a combination of patient education, group discussions and tailored physical exercise. Individual rehabilitation programs includes follow-up by various professionals

as needed (physiotherapist, social worker, nurse, dietitian and/or psychologist), sometimes in combination with group training. Two psychologists at the Centre offer short-term psychological treatment for patients and close relatives with substantial cancer-related psychological distress.

Tone Skaali, MD, Special Advisor, Section for Psychosocial Oncology, Coping and Rehabilitation



## Pilot Study of NCCN Forms

The National Comprehensive Cancer Network (NCCN) form, developed by leading cancer centres in the US, has been translated and validated for use in OUH. In 2018, the pilot study tested the form in consultations with 92 gynaecological cancer patients, as a tool to identify individual needs for rehabilitation.

Lene Thorsen, researcher in Section for Late Effects, explains that the one-page form contains two elements: a distress thermometer and a checklist of various problems sorted in groups. The patients, guided by a nurse, fill out the form before entering the consultation room. When the consultants are given the form, they can easily identify whether the patients are distressed, and if so in what areas. Thus, the standardised mapping saves time for busy professionals. The pilot study found that over half of the patients scored more than four on the distress thermometer, commonly reporting feelings of concern, tiredness, and tingling in hands. A score of four or more leads the professionals to offer relevant information or referrals.

In 2019, the researchers transfer the forms to the clinicians, as the forms will be integrated in clinical practice.

NCCN National Comprehensive Cancer Network®

**NCCN Guidelines Version 2.2017**  
**Distress Management**

**NCCN TERMOMETER FOR GRAD AV PÅKJENNING**  
Angi om noe av det følgende har vært et problem for deg den siste uke, inkludert i dag.  
Instruksjoner: Sett en ring rundt tallet (0-10) som best beskriver hvor stor grad av påkjenning du har opplevd den siste uke, inkludert i dag.

Ekstrem påkjenning

Ingen påkjenning

**LISTE OVER PROBLEMER**  
Angi om noe av det følgende har vært et problem for deg den siste uke, inkludert i dag.  
Pass på å kryssse av JA eller NEI for hvert punkt.

JA	NEI	Praktiske problemer	Emosjonelle problemer
<input type="checkbox"/>	<input type="checkbox"/>	Ønsker å forlate	Depresjon
<input type="checkbox"/>	<input type="checkbox"/>	Bølg	Frykt
<input type="checkbox"/>	<input type="checkbox"/>	Økonomi/Forsikring	Nervøsitet
<input type="checkbox"/>	<input type="checkbox"/>	Transport	Nedstemthet
<input type="checkbox"/>	<input type="checkbox"/>	Jobbskole/utdanning	Bekymringer
<input type="checkbox"/>	<input type="checkbox"/>	Beslutninger om behandling	Tap av interesse for vanlige aktiviteter
<input type="checkbox"/>	<input type="checkbox"/>	Spising	Angst/religøse bekymringer
<input type="checkbox"/>	<input type="checkbox"/>	Forhold til barn	
<input type="checkbox"/>	<input type="checkbox"/>	Forhold til partner	
<input type="checkbox"/>	<input type="checkbox"/>	Multighet til å få barn	
<input type="checkbox"/>	<input type="checkbox"/>	Helseproblemer i familien	
<input type="checkbox"/>	<input type="checkbox"/>	Hygiene/påklædning	Sår i munnen
<input type="checkbox"/>	<input type="checkbox"/>	Pusten	Kvalme
<input type="checkbox"/>	<input type="checkbox"/>	Endringer i værmåling	Tørstett nese
<input type="checkbox"/>	<input type="checkbox"/>	Forsvinnelse	Smerter
<input type="checkbox"/>	<input type="checkbox"/>	Diaré	Seksuallitet
<input type="checkbox"/>	<input type="checkbox"/>	Forandring	Tørstende hud
<input type="checkbox"/>	<input type="checkbox"/>	Fatigue	Søvn
<input type="checkbox"/>	<input type="checkbox"/>	Mobilitet (ta seg frem)	Rusmisbruk
<input type="checkbox"/>	<input type="checkbox"/>	Forandring	Pricking i hender/føtter
<input type="checkbox"/>	<input type="checkbox"/>	Hukommelse/konsentrasjon	
<input type="checkbox"/>	<input type="checkbox"/>	Sår i munnen	
<input type="checkbox"/>	<input type="checkbox"/>	Kvalme	
<input type="checkbox"/>	<input type="checkbox"/>	Tørstett nese	
<input type="checkbox"/>	<input type="checkbox"/>	Smerter	
<input type="checkbox"/>	<input type="checkbox"/>	Seksuallitet	
<input type="checkbox"/>	<input type="checkbox"/>	Tørstende hud	
<input type="checkbox"/>	<input type="checkbox"/>	Søvn	
<input type="checkbox"/>	<input type="checkbox"/>	Rusmisbruk	
<input type="checkbox"/>	<input type="checkbox"/>	Pricking i hender/føtter	

Andre problemer: \_\_\_\_\_

DSA

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## OUH CCC Research Activity 2018

Cancer research is performed in most of the Divisions in OUH, often in collaboration with the University of Oslo, and in the Cancer Registry of Norway. There is a large number of collaborations across the CCC, including in several combined centres of excellence. The activity and accomplishments in 2018 have been excellent, and includes coordination and participation in an increased number of EU-funded projects.

The overall number of international full publications was an impressive 654 in 2018, of which 290 (45%) had first and/or last author from OUH CCC. 155 of these publications involved the Cancer Registry of Norway. The overall average and median impact factor (IF) was 6,1 and 3,8, respectively, which is an increase from previous years. In the Institute for Cancer Research publication quality was purposely prioritized over publication volume during 2017 and 2018, with a resultant increase in the median IF from 3,5 in 2016 to 5,1 in 2018. The number of active clinical trials and patients included have also increased in 2018. For more information on accomplishments please see Key Numbers on p. Y and Research Highlights on p. Z]

Each division and some departments have local research councils and IRB's for strategic planning, prioritization and operational coordination of research. In 2016 an overarching CCC Research Council (CCCRC) was established, with senior representation from all major Divisions performing cancer research, some departments with high research activity, and from the Patient Council (see p. X). The CCCRC meets in person every second to third month, with a specific mandate to give recommendations to the CCC Board on overarching strategic research issues, prioritized areas for

development and research collaboration across the CCC. Items for the CCCRC during 2018 have been implementation of the Strategic Plan 2017-2021, and follow-up of input from the OECI CCC accreditation process (2017) and the CCC Scientific Advisory Board (SAB). The first SAB two-day visit took place in March 2018, and the Board had discussions with nearly all research units. The SAB recognized numerous research strengths, including the overall research volume and quality, international competitiveness and the outstanding excellence of several research groups. Following its advice, the CCCRC has worked on areas for development such as improving the cancer biobank structure, increased research collaboration with the Cancer Registry and internal mechanisms to secure dedicated research time for an increased number of selected clinicians. In 2018 the CCCRC also arranged the first annual CCC Research Group Leader seminar, where 70 scientists across the organisation meet to exchange ideas and promote collaboration.

Our excellence in cancer research is thematically very broad and spans from molecular biology, cancer immunology/immunotherapy, radiation biology, to clinical trials, palliative care and survivorship. Pursuing excellence across such diversity is the very nature of cancer research in a leading European CCC, and holds great promise for the future.



*Prof. Gunnar Sæter MD  
Research Director,  
Division of Cancer Medicine  
Head, OUH CCC Research Council*

## Key indicators

**654 (290)**

Total number of peer-reviewed publications (with OUH-CCC first or last author)

**88 (13%)**

Number of publications with impact factor >10

**32 (5%)**

Number of publications with impact factor >20

**195**

Number of active clinical trials

**841**

**(9,5% of new patients seen)**

Number of patients included in clinical trials

**557**

Approx. total number of FTEs in cancer research

**750 mill kr**

Budget: estimate of research budget (by parameters)

**28**

Completed Ph.D. degrees

**28**

Disclosures of Invention (DOIs)

**9**

Active projects funded by EU (H2020)

## Research Highlights

- Both Karl-Johan Malmberg and Tor Erik Rusten won very prestigious 5-year “Toppforsk” grants from the Research Council and the University of Oslo
- Official opening of a new KG Jebsen Centre for B Cell Malignancies where ICR scientists participate (and with June Myklebust as Deputy Director)
- Award of a highly prestigious ERC Advanced Grant to Harald Stenmark (one of very few that has been granted an ERC AdG for the second time!)
- Kristian Berg and Theo Theodossis have won two prestigious Horizon2020 Future Emerging Technologies (FETOPEN) grants for research on how light, neutrons and protons can be combined with photosensitizers for drug delivery and cancer therapy
- Guro Lind won a large KLINBEFORSK grant for a multi-centre trial to document a biomarker for bladder cancer recurrence
- King Olav Vs Prize for Cancer Research by the Norwegian Cancer Society to Vessela Kristensen
- The award of the UiO Research Prize to Harald Stenmark
- Dr. Elisabete Weiderpass, Head of the Research Department in the Cancer Registry of Norway, was elected new director of IARC, one of the most prestigious positions in the international cancer field
- BreastScreen Norway at the Cancer Registry of Norway had by May 2018 invited one million women to breast screening mammography
- Sample history form The Norwegian Cervical Screening Programme was made available for health care workers
- A statistics engine of cancer incidence available for general use was launched at the Cancer Registry of Norway
- Building of new freezing facilities at the Janus Serum Bank were completed and moving of samples was initiated, improving efficiency of sample delivery and work environment
- Prof. Stein Kaasa & Prof. Jon Håvard Loge (Department of Oncology ) were first authors of a Lancet Oncology commissioned article on Integration of oncology and palliative care (PMID: 30344075) published by Lancet oncology in October 2018. Among the 30 international authors were also PhD Tonje Lundebj and PhD Marianne J Hjermsstad from Department of Oncology.
- A special session was dedicated to launch the Commission at ESMO 2018 with the title: Best integration of Supportive and palliative care in the continuum of care.





# **Selected Research Prospects**

## Prognostic factors of skin melanoma

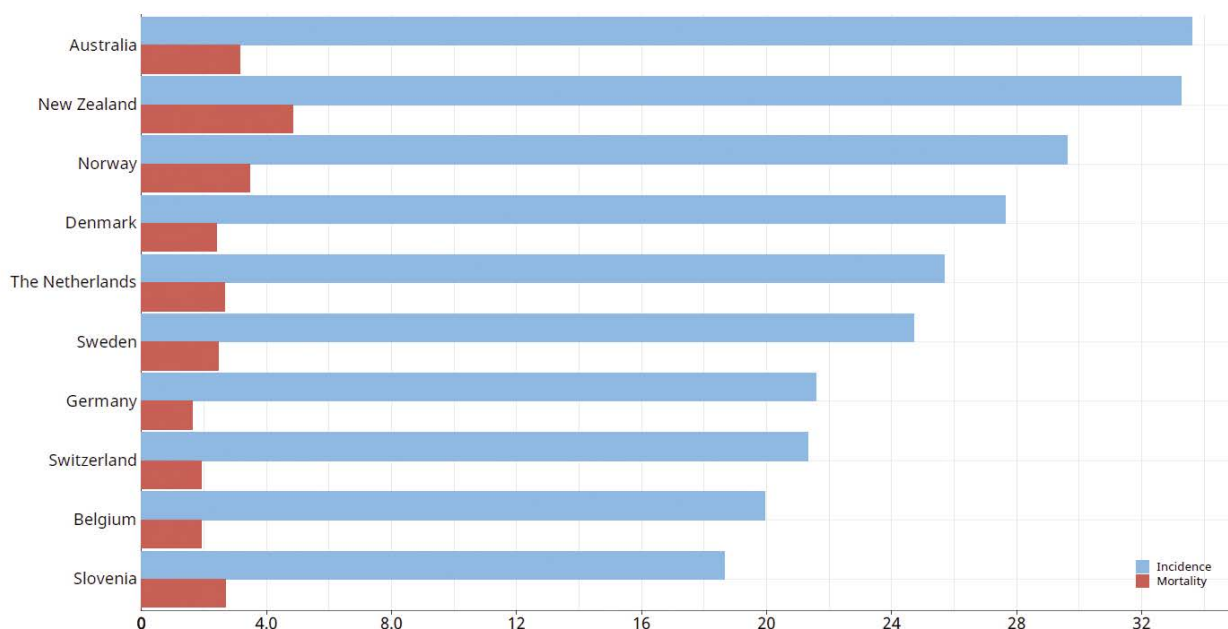
Worldwide, the Norwegian skin melanoma incidence and mortality rates are ranked third. Nation-wide data from the Cancer Registry and the Melanoma Registry, gives unique possibilities to study causal factors for improving prevention strategies to reverse increasing rates.

We find thicker tumors and more advanced disease in Norwegian men than in women, and more advanced tumors with a higher proportion of the nodular type in Norwegian patients compared with other countries. The results indicate delayed diagnosis and underline a need of knowledge about signs and symptoms, in particular about the nodular type.

When studying precision in reporting of melanoma thickness, we revealed rounding which lead to clustering around whole and half decimals. This rounding increases proportions of tumors classified at the lowest and highest stage category, with consequences for patient management and prognosis.

Melanoma group/major collaborators: TE Robsahm, JS Stenehjem, LA Berge, MB Veierød (UIO), P Helsing (OUS), A Green (QIMR Berghofer, Australia)

Estimated age-standardized incidence and mortality rates (World) in 2018, melanoma of skin, both sexes, all ages



## Precision oncology of colorectal cancer (CRC) - the BIOMAN study

In a nation-wide collaborative research network (Fig. 1) we are currently building a clinical resource for biomarker analysis in a population-based series of 5,000 stage I-III CRC patients treated according to standard guidelines. Development of a more personalized approach for adjuvant chemotherapy decision making is needed to avoid over- and under-treatment of the patients. The study cohort is designed from pre-existing clinical and demographic data in the Norwegian Colorectal Cancer Registry. The national network of clinicians will ensure quality-controlled clinicopathological, treatment and follow-up data. The BIOMarker Norway (BIOMAN) study is led by professor Ragnhild A. Lothe and Dr. Marianne G. Guren together with the multidisciplinary team at Oslo University Hospital (OUH) and in close collaboration with the main responsible at each participating site.

Pathologists will examine diagnostic tumor sections and mark representative areas for biomarker analyses, and the research biobank will be constructed and analyses will be performed in the K.G. Jebsen Colorectal Cancer Research Centre at OUH. Here we have implemented a complete and cutting-edge digital pathology pipeline for advanced immunohistochemistry-based biomarker analyses (Fig. 2), to meet the requirements for accuracy and high-throughput. Targeted DNA sequencing will be performed in a subset of 1,000 tumors for a panel of CRC-related genes. The multiple biomarkers will be analyzed for associations with clinicopathological risk factors and for biomarker interactions, and biostatistical survival modeling will be applied to develop multivariable biomarker models for prediction of risk of relapse and benefit from adjuvant chemotherapy.

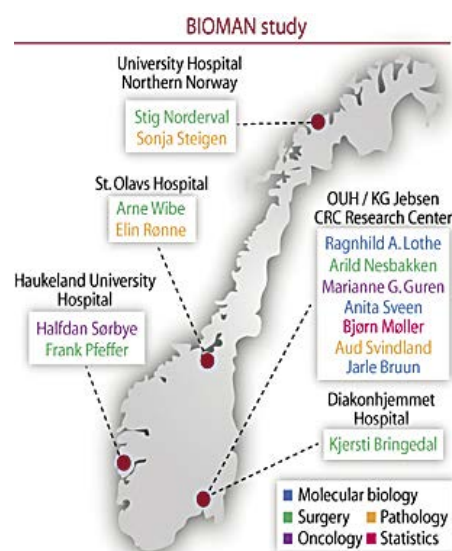


Fig 1. The national network of participating hospitals, clinicians and scientists in the BIOMAN study

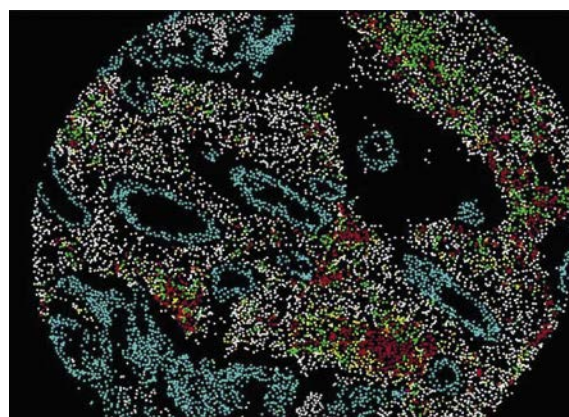
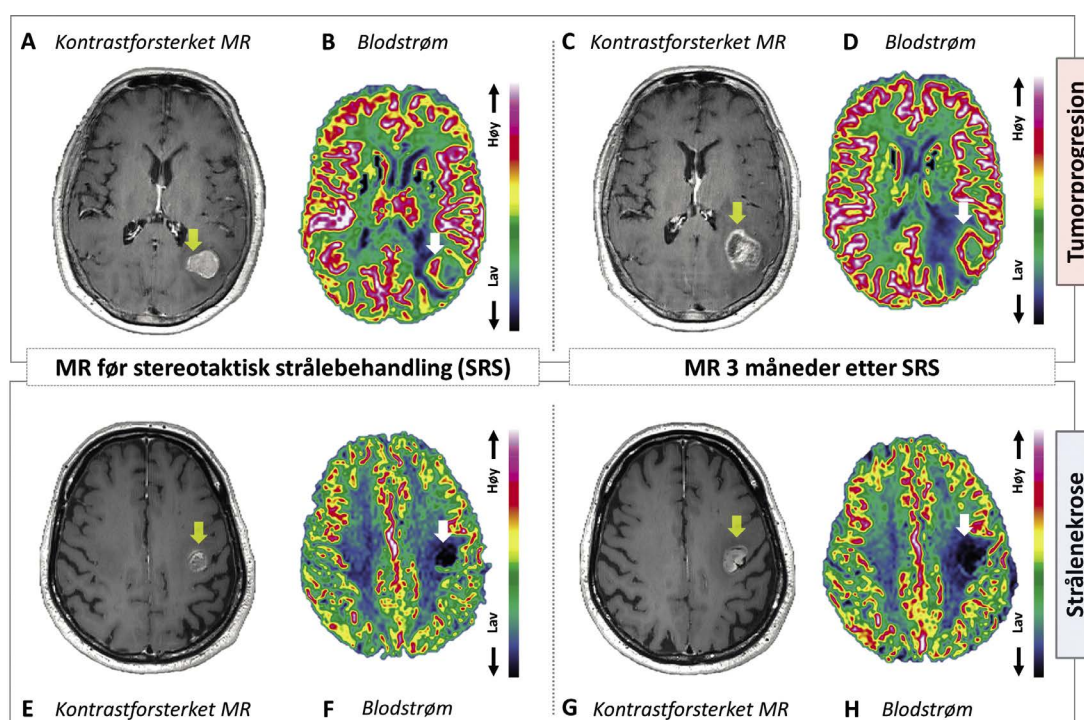
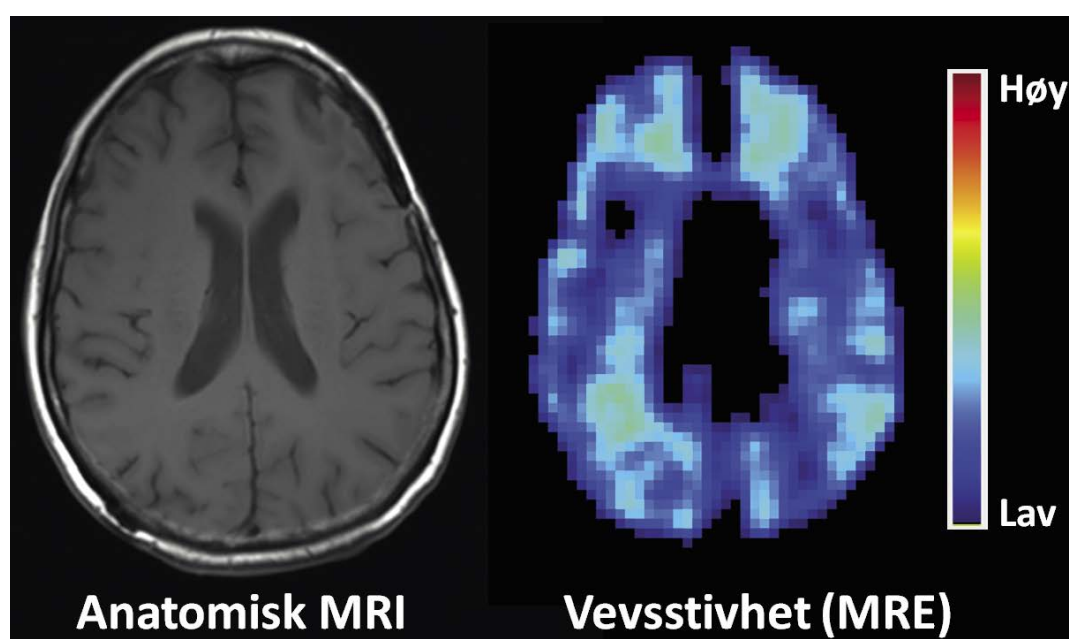


Fig 2. One tumor core from a tissue microarray hybridized with five different antibodies against various lymphocytes and tagged with different colors (fluorochromes). The photo is the composite result of the digital scorings

## TREATMENT

TREATMENT is an observational study addressing the need for knowledge and adequate biomarkers in the diagnosis and response assessment of patients with brain metastasis. One of the biggest challenges in cancer today is that we do not know who will benefit from a particular drug. Promising new anti-cancer treatments including immunotherapy have made traditional diagnostic biomarkers insufficient because the cytostatic rather than cytotoxic nature of these therapies do no longer result in a simple reduction in tumor size. The TREATMENT project uses functional information from advanced Magnetic Resonance Imaging (MRI) and our in-house developed Vessel Architecture Imaging (VAI) method to better understand the response to traditional stereotactic radiosurgery (SRS) and immunotherapy. In collaboration with Stanford University, project work also includes use of artificial intelligence (AI) to automatically detect and segment brain metastases.





## Transplant Oncology: Research Group for Experimental Transplantation for Cancer

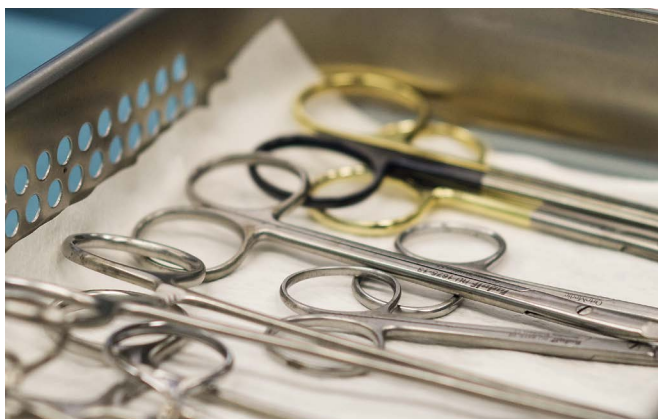
*Transplant oncology* is a new concept encompassing multiple disciplines of transplantation medicine and oncology designed to push the envelope of the treatment and research of hepatobiliary cancers. Liver transplantation (LT) for selected patients with hepatocellular carcinoma has been well established since the mid-nineties. The majority of patients with primary and secondary liver tumours are not amenable to liver resection, and the long-term prognosis with chemotherapy treatment in these cancers are dismal with short overall survival. The research group for experimental transplantation for cancer started the world's first exploratory study (SECA-I) on liver transplantation as a treatment option for selected patients with non-resectable liver-only metastases in 2006. The first results were published in 2013, demonstrating an overall survival at 5 years of 60%. Compared with a matched cohort of chemotherapy treated patients from the NORDIC VII trial, the transplanted patients had superior outcome, indicating a benefit of liver transplantation in this setting. The study also made it possible to identify risk factors for short post-transplant survival, and these were incorporated into a score, termed the OSLO-score. The research group started a new SECA-II study, with the primary aim of elucidating whether improved selection criteria could improve 5-year overall survival to levels that are comparable with standard indications for liver transplantation. The outcomes are currently under publication, and clearly show that it is possible to select patients so that a 5 year overall survival of about 80% can be achieved.

Traditionally, metastatic cancers have been considered a contraindication for liver transplantation, except from selected patients with liver metastases from neuroendocrine cancer. This has been based on the notion that the immunosuppression utilized in organ transplantation could facilitate cancer growth and dissemination. A large proportion of the transplanted CRC patients develop relapse after transplantation.

About 70% of the recurrences are lung metastases, and many of these might actually be staging errors due to the lack of accurate methodology to diagnose small lung metastases. Our research and experience show that these lesions grow slowly, and the majority are amenable to resection with curative intent. Thus, the overall survival even after relapse remains high in these patient cohorts. When comparing growth rate of lung metastases in transplanted patients with rectal cancer patients with lung metastases, Harald Grut et al, showed that there is no difference in growth rate of lung metastases between the immunosuppressed patients and the control group. Based on the above-mentioned factors, disease-free survival is of more limited value as an outcome parameter in the evaluation of liver transplantation for colorectal liver metastases than other cancer forms.

Access to liver grafts will always constitute a major limitation for implementation of liver transplantation as a treatment option in non-resectable cancers. In 2014, we introduced a novel technical concept combining liver resection and partial liver transplantation with delayed two-stage hepatectomy, termed the RAPID concept. This allows for the use of liver segments 2+3, usually utilized for pediatric recipients, to act as a surplus graft, thereby providing improved access to liver transplantation for cancer patients. The RAPID concept has gained world-wide attention, and currently many countries are picking up the procedure in cooperation with Oslo University Hospital and the research group for experimental transplantation that has the most extensive experience in the world within this field of transplant oncology.

Svein Dueland  
Pål Dag Line



## CAR T cell therapy in Acute Leukemia

Chimeric Antigen Receptor (CAR) T cell therapy against CD19 (CD19CAR) is a breakthrough cancer immunotherapy that has been intensively investigated in children and young adults with relapsed B-lymphoblastic acute leukemia (B-ALL) in the last years. Oslo University Hospital (OUH) participated as Nordic study site in two global Novartis-sponsored CD19CAR trials for B-ALL (ELIANA, CCTL019B2201; ETP, CCTL019B2001X) and recruited in total 8 patients from Norway and the Nordic area. Main toxicity observed was cytokine-release syndrome (CRS) that was manageable in all patients by an interdisciplinary team of specifically trained pediatric and adult hematologists and critical care physicians. Beside efficacy of CART in ALL, the trials also proved that this personalized engineered cellular therapy can safely be distributed across borders and continents (Maude et al., NEJM 2018), which led to registration of CTL019 (Kymriah) as the first ever gene therapy for treatment of pediatric and young adult relapsed B-ALL. Kymriah is now available and approved as standard-of-care for relapsed B-ALL indications in Norway, and the first patients have already been infused with Kymriah at OUH as the only accredited CART site in Norway. Currently, a new multicenter trial (CASSIOPEIA; CCTL019G2201J) is initiated at OUH for children with high-risk front line ALL aiming to replace highly toxic therapies like allogeneic stem cell transplantation by CD19CAR.



*Jochen Büchner,  
MD, PhD  
Principle investigator/  
CART program  
Department of Pediatric  
Hematology and Oncology*



*Tobias Gedde-Dahl,  
MD, PhD  
Co-investigator/  
CART program  
Department of Hematology*



## CanCell

CanCell is a research centre that aims at uncovering the “Achilles’ heels” of cancer cells and target these for reprogramming cancer cells into harmless cells.

Cancer remains a major disease group which causes suffering of patients and their relatives and imposes a heavy burden on the health care system.

### Challenges

There is thus an urgent need to improve cancer treatment through research, but our recent ability to sequence cancer genomes from thousands of patients has so far had limited impact on cancer therapy.

A major obstacle to translating “big data” information from DNA sequencing into clinical benefit is our incomplete understanding of the molecular mechanisms by which genetic and epigenetic modifications affect tumour cells, and how the tumour microenvironment and somatic tissues promote cancer progression.

### Vision and strategy in short

CanCell’s vision is to elucidate changes in cellular pathways that are rewired during cancer development, defined as “cancer cell programmes”, including cell signalling, metabolism, membrane dynamics, and genome/chromatin organisation.

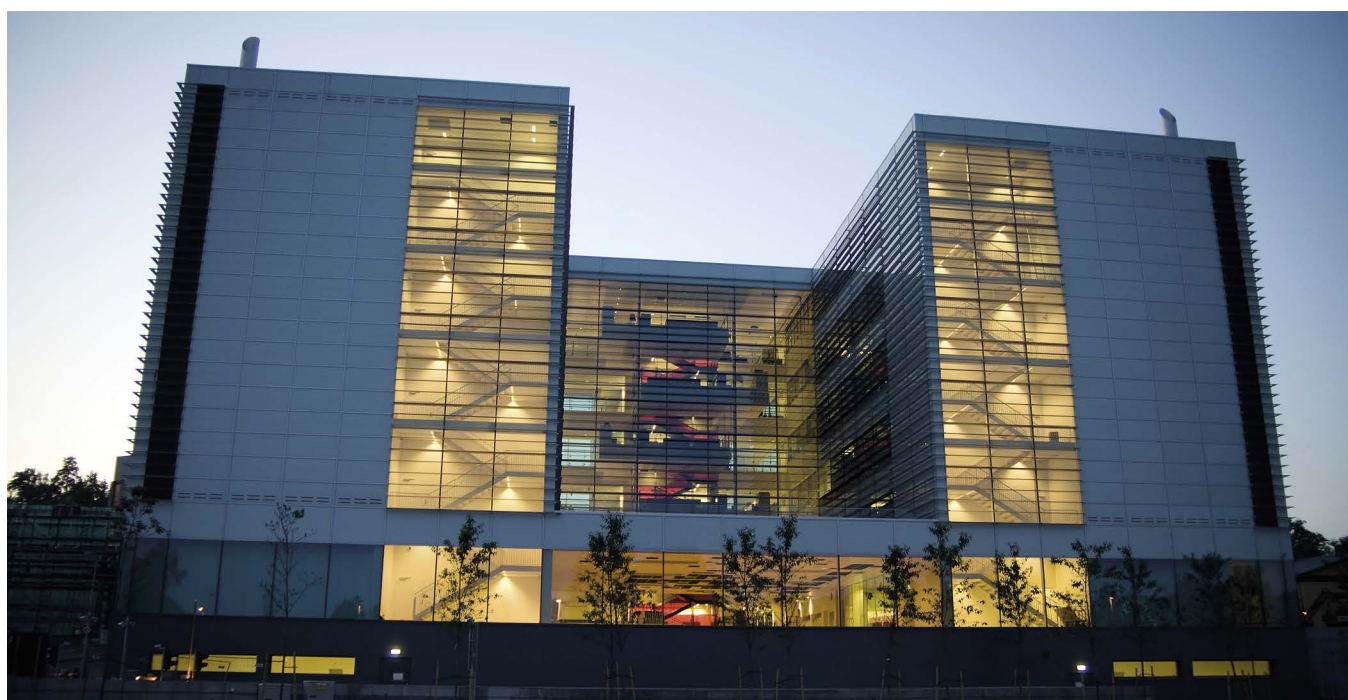
The centre’s unique strategy is to reveal cross-talk between these programmes via close cooperation between six research groups with expertise on the individual processes.

Innovative methods and collaborations with a strong interdisciplinary team of associate members and world-leading visiting professors will further enhance the impact of CanCell’s research.

### Paving the way

In vitro models with cultured cells and in vivo models with fruit flies, zebrafish and mice will be used to recapitulate cancer progression in individual cells and in organisms, with special emphasis on tumour-microenvironment interactions. These integrated analyses will identify novel oncogene and non-oncogene addiction pathways that cancer cells are particularly dependent on for their growth, spreading and survival, thus exposing “Achilles’ heels” of cancer.

This will be exploited for “reprogramming” cancer cells into non-malignant cells in vitro and in vivo to pave the way for novel cancer therapies.





## Integration of Oncology and Palliative Care - a Lancet Oncology Commission published October 2018

Professors Stein Kaasa and Jon Håvard Loge from the Department of Oncology were first authors and led the 2 year project which included contributions from 28 other researchers from Europe, North-America and Australia.

Integration of oncology and palliative care (PC) combines two paradigms: the tumour-directed approach from oncology and the host-directed approach from PC. The Lancet Oncology Commission addresses how PC and oncology can be integrated by combining these two approaches focusing content, models, organization of cancer care, public health, politics, education and research.

The published RCTs on integration demonstrate health gains, but how and when to integrate is uncertain. Early delivery of specialist palliative care promotes patient-centeredness including shared-decision making, family involvement and regular use of patient-reported outcome measures. Barriers to integration include the perception of PC as end-of-life care, deficient planning at all levels, and insufficient infrastructure and funding. Furthermore, death and dying are stigmatized. The competence in combined oncology and PC varies substantially and must be defined at all levels.

The commission proposes to use standardized care pathways (SCPs) and multidisciplinary teams (MDTs) to promote integration. Integration raises new research questions: how much, when and how should PC be delivered and what is the minimum model for good care?

Film about the project:

<https://www.youtube.com/watch?v=7XZ8y8zXudU>



*Professors Loge (left) and Kaasa (right). In the middle last author, Tonje Lundebj, also from Dept. of Oncology*

## Regional research network in radiation oncology - NIRO

NIRO was established in 2018 based on funding from the South-Eastern Norway Regional Health Authority (Helse Sør-Øst). The network will be a platform for research in radiotherapy, providing meeting places and promoting collaboration across disciplines, start up of clinical trials and arrangement of seminars and training visits. The aim is to strengthen research and clinical competence and thereby facilitate implementation of new and well-needed radiotherapy strategies to reduce acute toxicity, severe late effects and incidence of recurrence.



The potential of a research network in radiation oncology is large. OUH hosts one of the largest radiotherapy centres world-wide with more than 6000 new patients yearly and have regular contact with the two other centres in our region; Sørlandet Hospital in Kristiansand and Innlandet Hospital at Gjøvik. We are therefore in a good position to conduct patient-oriented research in radiotherapy and have a longstanding interest in the field. The kick-off meeting for NIRO in January this year gathered more than 100 persons from the three hospitals, including oncologists, medical physicists, biologists, radiotherapists, and radiologists, for seminars and lively discussion of research strategies and projects.

*NIRO core group at OUH, from left: Mathilde H. Normann, Marianne G. Guren, Eirik Malinen, Heidi Lyng, Randi G. Syljuåsen, Åse Bratland, Taran P. Hellebust. Not present: Åslaug Helland.*  
[www.niro-research.no](http://www.niro-research.no)



## Drug Sensitivity Testing

Most haematological cancer patients receive chemotherapy as front line treatment. While chemotherapy is initially very effective, many patients experience limited long-term benefit and suffer from side effects that impair quality of life. For that reason, several new forms of targeted therapy have recently been developed, which offer a more precise treatment with fewer side effects. However, only certain groups of patients appear to benefit from these targeted therapies, development of resistance to these therapies is common, and it remains a challenge to provide the right treatment to the right patient at the right time.

The research groups headed by Dr. Taskén and Dr. Enserink are using a precision medicine approach based on ex vivo drug sensitivity screening to identify the optimal treatment for each individual patient. We directly test the sensitivity of cancer cells obtained from patients to hundreds of anticancer drugs to identify drugs that are most effective for each patient. We are also testing combinations of drugs to determine which combinations act in synergy to kill cancer cells. Such synergizing drug combinations have the potential to prevent development of resistance to therapy.

## IRONMAN – Prostate Register

The treatment landscape for men with advanced prostate cancer is rapidly changing. Six new drugs have entered the clinic in seven years and many more are in clinical trials. How to optimize the beneficial effects of these drugs are still unknown and these drugs are therefore given in different sequences and combination across the globe. Biomarkers to identify patients who will benefit from the treatment is also lacking.

IRONMAN is an International Registry for Men with Advanced Prostate Cancer. More than 5000 men, coming from Australia, Europe, North- and South-America, will join the registry. The Registry will collect the patient's medical history, treatment information and blood samples. The patients will answer health surveys to measure their quality of life over time.

Oslo University Hospital has taken the initiative to start-up IRONMAN-Norway and will include the first patients in 2019.

## Tropé/Kolstad Meeting 2018

The 9th Tropé meeting on updates and controversies in gynecologic oncology took place on December 7th, 2018. The meeting attracted about 100 gynecologic oncologists from Scandinavia, and an excellent group of local and international experts in the field of Gynecologic Oncology to provide lectures on hot topics.

Meeting highlights included lectures on new developments in PARP inhibitors in ovarian cancer by professor Mansoor R. Mirza, the role of immunotherapy and of angiogenesis inhibitors in ovarian cancer by Dr. Robert L. Coleman, as well as two engaging pro-con debates on controversial topics: "Surgical management of early stage cervical cancer", by professor Claus Høgdall and Dr. Pedro Ramirez, followed by a debate on "HIPEC in ovarian cancer" by professor Andreas Du Bois and Dr. Oliver Zivanovic.

Professor Du Bois also held the 9th Tropé lecture "Is there a role for surgery in the modern treatment of ovarian cancer?"

This meeting would not have been possible without the generous support of the Inger and John Fredriksen foundation for ovarian cancer research.

Ane Gerda Z Eriksson and Claes Tropé  
Course directors

## Exposure-related risks of cancer in Norwegian offshore oil industry workers

The project is now running on its third round of funding from The Research Council of Norway's PETROMAKS2 programme, covering the period 2018– 2021. The research group has a strong international profile with active collaborators at the U.S National Cancer Institute (MD, USA) and Albert Einstein College of Medicine (NY, USA), in addition to collaborators at the universities of Oslo and Bergen.

Study aims for the present project period include assessment of the relations between shift work and breast cancer, and exposures and skin cancer among female workers; hydrocarbon exposure and respiratory cancer among men; and chlorinated solvents and bladder and kidney cancer in men.

Important findings and contribution from the offshore project thus far include dose-response relationships between benzene exposure and lymphomas/leukemias at lower exposure levels and for other subtypes than previously recognised. These findings were cited as important new evidence by the International Agency for Research on Cancer when the carcinogenicity of benzene was re-evaluated in 2017.



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## ICON

Cancer immunotherapy with antibodies that enhance the immune response by blocking the PD-1 or CTLA-4 checkpoints show remarkable clinical activity. We conduct a randomized phase IIb trial (n=75), ICON, evaluating nivolumab (nivo; anti PD-1) and ipilimumab (ipi; anti CTLA-4) combined with immunogenic chemotherapy in metastatic hormone receptor positive breast cancer. The host immune response is strongly predictive for the effect of chemotherapy in breast cancer. In the ICON trial, we release the brake on the immune response by use of nivo+ipi. Patients randomized to receive only chemotherapy, will be offered ipi+nivo after disease progression. The trial recruit patients at OUH (sponsor), Kristiansand Hospital and Stavanger University Hospital. As of May 2019, 27 patients have been included.

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Oslo University Hospital is a local hospital for parts of Oslo's population, region hospital for residents in the South-East Region and has a variety of national functions.

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