



Centre for
Cancer Biomarkers



The Research Council of Norway



CCBIO Newsletter

www.ccbio.no

ISSUE NO 4, VOL 9, OCT 31, 2022

DIRECTOR'S COMMENTS

Dear all

Congratulations to Ole Frithjof Norheim, a longtime associate investigator at CCBIO, who recently landed a highly competitive SFF from the Research Council of Norway. This was the fifth cycle of SFF's, with one SFF allocated to the Medical Faculty at UIB (out of nine in total). The center, called BCEPS+, will focus on "fair prioritization".

We have included stories on the very fascinating technologies of fluorescence imaging and printing of live tumors from the active groups of McCormack, Bjørge and Costea.

Thanks to all of you for participating and supporting the CCBIO905 course on Methods in Cancer Biomarker Research, and in particular to Professor Klaus Pantel for giving an open CCBIO Special Seminar.

Congratulations to those of you who defended your PhD thesis work, and to Sushil Dhakal for receiving an ICIS travel award to present data from his PhD work. And welcome to visitors and new faces at CCBIO.

As always, take a close look at future events and calls for funding! Last but not least, we recommend the Holberg Talk (Holbergsamtalen) which can be seen on NRK.

Best regards, Lars A. Akslen, Director

*Capturing cancer complexity
and clinical challenges*

Norheim granted a new Centre of Excellence

Centre for Ethics and Priority Setting in Health



Photo by Ingvild Festervoll Melien.

The University of Bergen was recently allocated two new Centres of Excellence from the Research Council of Norway (RCN), one of which is the Centre for Ethics and Priority Setting in Health (BCEPS+), directed by CCBIO Associate PI Ole-Frithjof Norheim.

The new SFFs will each receive 155 million NOK in funding from the RCN. Nine centers in total were granted SFF status this year, see [press release from the RCN](#). BCEPS+ as an SFF will be led by professors Ole Frithjof Norheim and Guri Rørtveit and will build on ongoing applied research in universal health coverage decision support.

"We now have the opportunity to really delve deep into questions about efficient and fair prioritisation of scarce health resources".

This was BCEPS+ Director Ole Frithjof Norheim's reaction to the news of BCEPS' new status as a Centre of Excellence, as he went on to say how extremely happy and grateful he is for such recognition of the research environment here at the University of Bergen.

This 10-year funding scheme will pave the way for BCEPS+ to become a world-leading research centre and bring it closer to achieving its ambitious aim of developing innovative methods and a new ethical framework that can be applied at all levels to achieve fair and efficient priority setting in health.

Congratulations to Ole-Frithjof and all BCEPS+ colleagues!

[Read more here.](#)

Next generation medical fluorescence imaging



The McCormack group at CCBIO and the Department of Clinical Science is now launching the EU collaboration project CoDaFlight (Colouring the Dark in Fluorescence light), financed by the EU Pathfinder program. This project has the promise to develop the next generation of medical fluorescence imaging.

CoDaFlight (Colouring the Dark in Fluorescence light) radical vision is the development of a next-generation optical imaging platform, capable of revealing in real-time new and more accurate information, that provides an optical fingerprint related to a patient's body and its diseases through an innovative time-domain fluorescence imaging (tdFLI) technology.

The objectives of CoDaFlight are to develop the technological foundations that are needed to enable real-time in vivo tdFLI in medical practice and to integrate these foundations into a complete imaging system. The real-time imaging of fluorescence lifetime, deep into the patient, permits the unlocking of additional features, where today's medical imaging systems remain in the dark. This means that CoDaFlight will kickstart a new biomedical research field and addresses the need for safe and easy to use diagnostic imaging technology for immediate feedback during medical interventions and for continuous health monitoring.

The project has been awarded 3 million Euro, from the EU, for the research into time-domain fluorescence imaging and has been launched on October 1, 2022.

The UiB team, Emmet McCormack, Katrin Kleinmanns and Vibeke Fosse, is responsible for the preclinical validation of the imaging system.

[Read more here.](#)

ICIS travel award to Sushil Dhakal



Every year the International Cytokine and Interferon Society (ICIS) organizes their annual conference in different parts of the world. This year it was held in Hawaii, Kona, USA. PhD Candidate Sushil Dhakal in the Lorens group has just returned from Hawaii, as he was awarded with one of this year's ICIS travel awards to present his PhD work.

The travel awards are given to selected young scientists selected based on top-ranking ICIS Student/Postdoc Members' 1st author abstract presentations for Cytokines 2022 Hybrid Meeting topics. The awards are sponsored by gifts from the Milstein Family, Vilcek Foundation and ICIS Member donors and are based on the scientific merit of the abstract.

Sushil presented his poster titled *AXL inhibition enhances type 1 interferon (IFN) response and potentiates chemo-immunotherapy*, highlighting the group's major findings that AXL regulates tumor type 1 interferons to suppress antitumor immunity and its inhibition results in enhanced type 1 interferon response, leading to chemo-immunosensitization of refractory tumors.

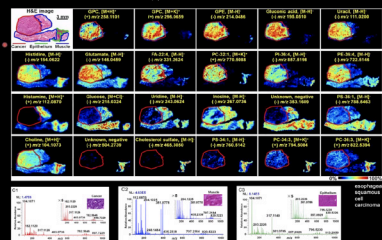
"This was a great experience," Sushil says. "I got to meet a lot of young and experienced scientists working in the field of cytokines and interferon biology and how these signals modulate cancer, inflammatory, autoimmune and infectious diseases. Other than science, I got to enjoy the pleasant Hawaiian weather, the view of the pacific ocean with spectacular sunsets, and the traditional and delicious Hawaiian Poke Bowl."

Congratulations to Sushil! [Read more about the event here.](#)



It takes a village to run an online course

Sun C, Li T, Song X, Huang L, Zeng Q, et al.
Spatially resolved metabolomics to discover tumor-associated metabolic alterations.
Proc Natl Acad Sci U S A. 2019 Jan 2;116(1):52-57.



THE EUROPEAN
LIQUID BIOPSY
SOCIETY

The promise of ctDNA and CTCs in the evaluation of cancer treatment efficacy

Prof. Klaus Pantel, MD, PhD
Director, Institute for Tumor Biology, UKE, University Cancer Center Hamburg (UCC)H
Adjunct Professor, University of Bergen, Norway
pantel@uke.de



Question 2

Antibodies used in IHC are coupled with...

A) Enzymes B) Fluorophores

C) Metal ions D) Radioactive isotopes

The course CCBIO905 – Methods in Cancer Biomarker Research was arranged for the fourth time September 27-29, 2022. This was the second time as a fully digital event. From the confusion of the first pandemic months, CCBIO is now highly experienced in organizing digital events, and hybrid events, for that matter. One thing is however clear – it takes a village to run a good online course!

"You know, we have a wide range of topics ranging from basic techniques on nucleotides and proteins to more advanced approaches, as well as bioinformatics and biobanking," says CCBIO Associate PI Agnete Engelsen, who is academic responsible for the course in joint forces with CCBIO Director Lars A. Akslen.

"That include 20 different teachers who covers methods of studying biomarkers in tissue samples, blood samples, circulating tumor cells and DNA, and other biologic materials. Methodologies like PCR techniques, microarray, next-generation sequencing, bioinformatics and artificial intelligence, immunohistochemistry, in situ hybridization, protein ligation assays, Western blot and ELISA, tissue microdissection and proteomics, flow cytometry, flow and imaging mass cytometry, and biobanking were presented. Changes in nucleic acids and proteins in different settings were discussed, as was the clinical applications of the various methods," she says.

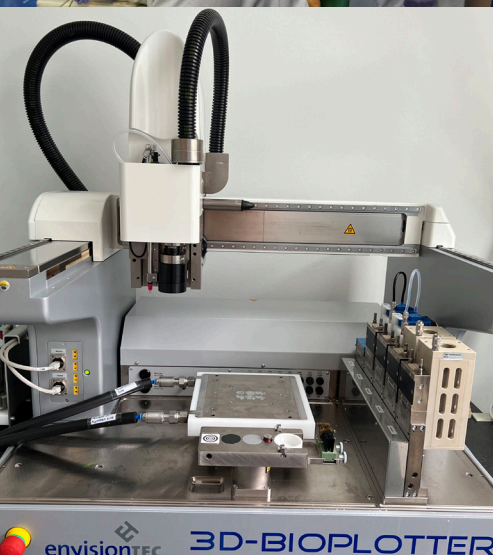
"This has been a great team effort from our research community! We are very grateful to our colleagues who contributed to making this year's CCBIO 905 a great success and a great learning experience for our students through exciting lectures, quizzes, and discussions!" Agnete emphasize.

[Read more here.](#)

Printing live tumors in vulvar cancer project



Rammah and Harsh in the lab. Photo by Dana C.



A collaboration project on vulvar cancer between the Bjørge, Costea and Mustafa groups are using a 3D bioprinter to print tiny vulvar cancer tumors with live support tissue, for more realistic testing of which therapy will give the best response.

This project is part of CCBIO PhD Candidate Rammah Elnour's PhD work, with main supervisor Postdoc Harsh Dongre and co-supervisors Professor Line Bjørge, Professor Daniela Elena Costea and Researcher Ahmad Rashad.

"Vulvar cancer is a serious disease, which, unfortunately, has not been subject to sufficient research. It is difficult to obtain representative models of vulvar cancer that can be used to test drugs. We are one of the few research groups in the world working on this," says Rammah Elnour.

By printing mini tumors with cancer cells, support cells and inflammatory cells, cancer is formed that looks much like vulvar cancer as it appears in the patient. Therapeutical interventions can thus be tested in a realistic way. The researchers use cells from patients and have recently managed to use normal mucosal tissue from the vulva to develop a bioink, a gel, for the printing. This is a gel with living cells, that stiffens over time, and where cancer tissue can grow as in the body. The team has now just had an important breakthrough, verifying that cancer cells and other cell types interacting with the cancer cells will survive and grow in the gel.

[Read more here.](#)

SCANPATH 2022 – still some spots available



SCANPATH – the Scandinavian Seminar on Translational Pathology – will this year be hosted by CCBIO at Solstrand Hotel & Bad close to Bergen, Norway, November 14-15, 2022. We are now reaching 100 registered participants, but can fit in some more – on request basis only to geir.loken@uib.no.

SCANPATH is an annual network meeting for Scandinavian tumor pathologists and pre-clinical scientists with an interest in the prospects of next generation tissue profiling. The aim is to stimulate tissue-based studies of tumor mechanisms and biomarker mapping. This initiative has been a success since the startup in 2016, and SCANPATH is now a well established annual forum. The meeting is open for all with an interest in morphology oriented research.

Similar to previous years, like last time in Lund in 2021, the seminar will include inspirational speakers representing different research groups attending the meeting.

We will have one poster session where participants can present their work, and ample time for informal interaction.

Time: November 14-15, 2022, 09:00-18:00 the 1st day, and 09:00-16:00 the 2nd day.

Place: Bergen, Norway at Solstrand Hotel & Bad.

Practical information: See practical information on [this PDF link](#).

Registration: Is now closed, but we can still fit in a handful of participants, so send a request to geir.loken@uib.no if you want to participate, but have not yet registered.

Fee: The subsidized participation fee is 3000 NOK/300 Euro per person and covers lodging and meals November 14-15.

Program: is available [at this website](#).

The Holberg Talk on NRK TV



NRK TV Kunnskapskanalen has published the Holberg Talk (Holbergsamtalen) for 2022, with CCBIO PI Roger Strand in conversation with Sheila Jasanoff.

How does science and society impact each other? Sheila Jasanoff explains the research she has received the Holberg Prize 2022 for. (English audio, Norwegian texting.)

See the [complete video here](#).

Recent doctoral defenses



Hildegunn Siv Aase. Photo: private

Hildegunn Siv Aase defended Monday October 31 her doctoral dissertation "Digital Breast Tomosynthesis - the future screening tool for breast cancer?" at the University of Bergen.

Hildegunn did her PhD work at the Department of Clinical Medicine and CCBIO, with supervisors Researcher Solveig Hofvind and Professor Ingfrid S. Haldorsen.

In her thesis, she compares results after screening with digital breast tomosynthesis, 3D images, versus standard examination with digital mammography (DM). The results indicate that 3D mammography is at least as good as DM, and that the new method is a safe screening method.

See the [press release \(in Norwegian\)](#).



Silje Kjølle. Photo by Thor Brødreskift

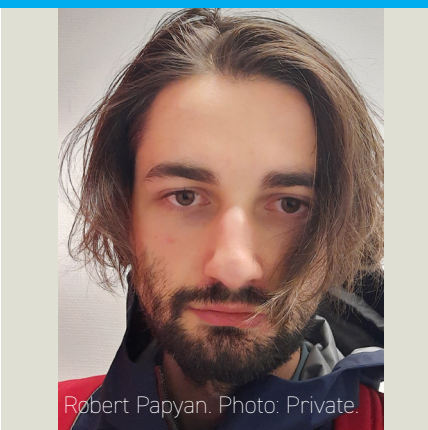
Silje Kjølle defended Tuesday August 30, 2022 her doctoral dissertation "Tumor microenvironment in breast cancer progression. A mass spectrometry-based proteomics study for biomarker discovery and validation" at the University of Bergen.

Silje did her work at the Department of Clinical Medicine and CCBIO, with main supervisor Professor Lars A. Akslen and co-supervisors PhD Kenneth Finne and PhD Heidrun Vethe.

Her PhD project focused on the stress response to low oxygen availability (hypoxia), separated proteins in the microenvironment, and associations to cancer tumors with a poor prognosis. The doctoral work has identified differences in the microenvironment between different types of breast cancers, and demonstrated groups of proteins (signatures) that can identify more aggressive tumors.

See the [press release \(in Norwegian\)](#).

New faces



Robert Papyan. Photo: Private.

Welcome to new faces in the CCBIO family!

Robert Papyan is a guest researcher in Costea's research group, from Yerevan Medical State University, Armenia. He is a medical doctor in specialization to become a pathologist. His interest is in improving diagnostic and treatment of head and neck cancer patients. He will be for 3 months in Costea's group to perform research on biomarkers in head and neck cancer. He is part of the [collaboration project](#) for Education and Research in Oral Pathology and Oral Cancer between Norway, Moldova, Belarus and Armenia financed by Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education.



Carla Alvarez Rivas. Photo: Private.

Carla Alvarez Rivas is a guest researcher in Costea's group during the fall of 2022 in a collaborative project using Imaging Mass Cytometry (the Hyperion technology) for investigating the pathogenesis of periodontal diseases. Dr. Rivas is an R90 Postdoctoral Fellow in Immunology at The Forsyth Institute, Cambridge, USA, and a Research Fellow at Harvard School of Dental Medicine. She holds a DDS and a PhD in Biomedical Sciences from the Universidad de Chile. She was awarded the Philips Oral Healthcare Young Investigator Research Grant to develop the collaborative project entitled "Revealing T Cell Complex Phenotypes in Periodontal Disease by Imaging Mass Cytometry" in the Tissue Engineering Group at the University of Bergen.

Relevant calls for funding



Here is an overview of the upcoming deadlines for funding, relevant to our CC BIO students and researchers. For more details, please check the links below and find more at the Medical Faculty's page on [External funding opportunities](#).

Horizon Europe

Don't know where to start? Have a look at the upcoming workshops organized by FIA:

- [UIB Opp 2.15 Preparing for your next Horizon Europe proposal](#). In Bergen November 1, 2022, at 09.00-11.30
- [How to write competitive proposals for the ERC Consolidator and Advanced Grants](#). In Zoom November 8 and 9 (all day Nov 8, half day Nov 9)
- **ERC 2023**
[Consolidator Grant](#): Deadline February 2, 2023
[Advanced Grant](#): Deadline May 23, 2023
[Synergy Grant](#): Deadline November 8, 2022
- **Marie Skłodowska-Curie Actions (MSCA)**
[Doctoral Networks](#): Deadline November 15, 2022
- **Missions in Horizon Europe – [Conquering cancer](#)**
 Next deadline is in Spring 2023.
- **Erasmus+**: Project establishment support (PES-støtte) for the development of applications under the centralized initiatives in Erasmus+. [More information here](#).

Research Council of Norway

There will be no FRIPRO call in the February 2023 call, but we expect it to be announced before the summer 2023 with funding allocated for start in 2024.

- Deadline Nov 16, 2022: [Researcher Project for Technological Convergence Related to Enabling Technologies](#) (forskningsradet.no)
- Deadline Feb 8, 2023: [Researcher Project for Scientific Renewal \(Thematic Priority Call\)](#) (forskningsradet.no)
 - Health: 60MNOK for project within "women's health" (text may change until Dec 14th)
- For a full overview: [Current calls for proposals](#) - apply for funding (forskningsradet.no)

UiB

- Stays abroad for PhDs and postdocs at the Medical Faculty: next deadline is in March. [More info here](#).

- **Fond og legater**: UiB is building a new database and application system. Therefore the deadline is delayed to *January 2023*. System will open Jan 2nd, and deadline will be before end of January (exact date TBC).

Individual fellowships and personal grants

- EMBO: personal fellowships and career grants, open year-round. [More information here](#).

Innovation grants from the Norwegian Research Council

- [Qualification](#) – Research Commercialisation from Publicly Funded Research – Commercialisation Project 2022. Open-ended, 3-12 months, 200-500 000 NOK.
- [Proof-of-Concept](#) – Research Commercialisation from Publicly Funded Research – Commercialisation Project 2022. Open-ended, 12-36 months, 1-5 MNOK.

DAM Foundation: [Research program](#) opens Nov 15, with a deadline Feb 15 2023.

Trond Mohn Foundation – [Trustworthy AI](#): Deadline January 10, 2023

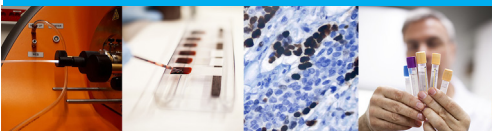
- Step 1: Research projects: call for and select a limited number of research projects to be nominated to the TMS Trustworthy AI – call (maximum 18 MNOK)
- Step 2: Overarching coordination project: When the awarding projects has been decided by TMS, the UiB-AI steering group and the project PIs jointly, is invited to propose an overarching coordination project to facilitate common activities, common communication initiatives, and collaboration between the funded projects (maximum 2 MNOK)

Research Advisor

For more info and advice on grants and applications, contact our Research Advisor at CC BIO, Yamila Torres Cleuren (Yamila.cleuren@uib.no).



Coming CCBIO events



Make sure to save the dates in your calendar, and register when applicable. You can see all planned CCBIO events in the [CCBIO web calendar](#).



- November 14-15, [SCANPATH, the Scandinavian Seminar on Translational Pathology](#), will this year be hosted by CCBIO in Bergen (Solstrand Hotel)
- November 24, [CCBIO Seminar, speaker Donald Gullberg](#)
- Nov. 30 - Dec. 2., [CCBIONeur910 course Patient and Public Involvement in Medical and Health Research](#).
- December 8, [CCBIO Junior Scientist Symposium](#)
- December 15, [CCBIO Seminar, speaker Tim Coorens](#)



Note date for [next year's CCBIO Annual Symposium](#): May 8-10, 2023, also this time at Solstrand Hotel, outside of Bergen.

Save the date May 22-23 for [CCBIO908, the Scientific Writing and Communication Seminar 2023](#). We are repeating the success from earlier years, in the CCBIO/Harvard INTPART collaboration. Open for all.



Other relevant coming events



Events from collaboration partners and other relevant events.

- Gikk du glipp av webinarer Tverrfaglig brystkreftbehandling – onkologisk, kirurgisk og patologisk? Foredragsholdere er Egil Støre Blix fra Universitetssykehuset Nord-Norge, Vegard Heimly Brun fra Universitetssykehuset Nord-Norge og Ying Chen fra CCBIO og Først medisinske laboratorium. Du kan fremdeles se opptak av det ved å melde deg på via [denne lenken](#).
- November 2, [BBB seminar with guest lectures by Rajan Gogna and Esha Madan](#). Titles: Role of Cell Fitness and Flower Code in tumor-host interactions, and Molecular Mechanism of the regulation of Flower Exon-3 in Tumor Microenvironment. Bergen.
- November 3, [BBB seminar with Juan Antonio Vizcaino, Benefits of open science practices in proteomics and challenges arising from clinical datasets](#), Bergen
- November 9, [Treatment approaches for elderly/unfit patients with AML in the Nordic countries](#), Webinar by the Nordic AML Group.
- November 9-11, [NEUROSYSM930 - Applied bioinformatics and data analysis in medical research](#), Bergen
- November 17-18, [Onkologisk Forum](#), Oslo
- November 22, [Building your next EU proposal within AI & cancer – tips and funding opportunities](#), Oslo Cancer Cluster, Oslo (partly online)
- November 29-December 2, [9th NorMIC workshop on microscopy image processing](#), University of Oslo/Digital Life Norway, Oslo
- December 1, [BBB seminar with Markus Miettinen, High-fidelity biomolecular modelling](#), Bergen
- December 8, [Oslo Cancer Cluster December Gathering & Introduction of New Members 2022](#), Oslo.
- January 26, [Cancer Crosslinks 2023](#), Oslo Cancer Cluster, Oslo.

Publications

You can find the CCBIO publications on [this pubmed link](#). See the most recent 5 below.

- Chakravarthy A et al (incl. Halle MK, Krakstad C, Salvesen H.) Integrated analysis of cervical squamous cell carcinoma cohorts from three continents reveals conserved subtypes of prognostic significance. *Nat Commun*. 2022 Oct 7;13(1):5818. doi: 10.1038/s41467-022-33544-x. PMID: 36207323
- Gaafar NM, Osman TA, Elsheikh M, Ahmed IA, Dongre H, Fromreide S, Suleiman AM, Johannessen AC, Nginau ES, Costea DE. Epithelial PD-L1 expression at tumor front predicts overall survival in a cohort of oral squamous cell carcinomas from Sudan. *Clin Exp Dent Res*. 2022 Sep 30. doi: 10.1002/cre2.666. Online ahead of print. PMID: 36177667
- Kang J, Cairns J. "Don't Think Twice, It's All Right": Using Additional Data to Reduce Uncertainty Regarding Oncologic Drugs Provided Through Managed Access Agreements in England. *Pharmacoecon Open*. 2022 Sep 20. doi: 10.1007/s41669-022-00369-9. Online ahead of print. PMID: 36123583
- Aamdal E, Skovlund E, Jacobsen KD, Straume O, Kersten C, Herlofson O, Karlsen J, Hussain I, Amundsen A, Dalhaug A, Nyakas M, Hagene KT, Holmsen K, Aamdal S, Kaasa S, Guren TK, Kyte JA. Health-related quality of life in patients with advanced melanoma treated with ipilimumab: prognostic implications and changes during treatment. *ESMO Open*. 2022 Sep 15;7(5):100588. doi: 10.1016/j.esmoop.2022.100588. Online ahead of print. PMID: 36116420
- Sommerfelt H, Sandvik LF, Bachmann IM, Brekke RL, Svendsen HL, Guttormsen AB, Aziz S, Dillekås H, Straume O. Toxic epidermal necrolysis after immune checkpoint inhibition, case report, and review of the literature. *Acta Oncol*. 2022 Sep 8:1-5. doi: 10.1080/0284186X.2022.2119099. Online ahead of print. PMID: 36073292

Recent CCBIO in the media

Recent media appearances by CCBIO PIs and group members. For all media hits, see [CCBIO's web pages](#).

- 31.10.22, Health Talk, "[Hun utvikler miniversjoner av bukinnen for å bedre forstå hvordan eggstokkreft utvikler seg og kan behandles](#)", Christiane Helgestad Gjerde.
- 29.10.22, Health Talk, "[Fant ulik immunrespons hos pasienter med eggstokkreft som ble behandlet med to immunterapier](#)", Luka Tandaric.
- 27.10.22, Health Talk, "[ESGO 2022: - PARP hemmere er det største medisinske gjennombruddet de siste 30 årene - nå kommer også immunterapi](#)", Line Bjørge.
- 24.10.22, Sanitetskvinnene.no, "[3D-printer mini-svulster for å finne medisin mot vulvakreft](#)", Rammah Elnour, Harsh Dongre.
- 13.10.22, NRK TV, "[Holbergsamtalen 2022](#)", Roger Strand.
- 26.09.22, UiB News, "[Two new Centres of Excellence to the University of Bergen](#)", Ole Frithjof Norheim.
- 23.09.22, Khrono, "[Tre på rad for Moser-miljøet. 5 av 9 sentre til Universitetet i Oslo](#)", Ole Frithjof Norheim.
- 23.09.22, Forskningsrådet, "[1,4 milliarder kroner til ni nye sentre for fremragende forskning](#)", Ole Frithjof Norheim.
- 19.09.22, Onkologisk Tidsskrift, "[Lederen for den nordiske AML-gruppen: Vi har store ambisjoner](#)", Bjørn Tore Gjertsen.
- 01.09.22, Health Talk, "[ESMO-studie: - En del av pasientene med eggstokkreft som fikk olaparib ble kurert](#)", Line Bjørge.
- 01.08.22, Dagens Medisin, "[Det er tillatt å være saklig, Kristiansen](#)", Eirik Joakim Tranvåg, Ole Frithjof Norheim.
- 28.07.22, Boston Globe, "['Please do not erase': A treasured whiteboard at Boston Children's Hospital has not been touched for 15 years](#)", Lars A. Akslen.

Programs and Research Teams

Mechanisms of Tumor Micro-environment Interactions:

- Donald Gullberg
- Karl-Henning Kalland
- Emmet McCormack

Exploration and Validation of Cancer Biomarkers:

- Lars A. Akslen
- Jim Lorens
- Camilla Krakstad
- Daniela Costea
- Elisabeth Wik
- Carina Strell
- Agnete Engelsen

Clinical Applications and Trial Studies:

- Bjørn Tore Gjertsen
- Oddbjørn Straume
- Line Bjørge

Health Ethics, Prioritization and Economics:

- Roger Strand
- John Cairns
- Ole Frithjof Norheim

Additional resources:
Bioinformatics and Big Data
▪ IngeJonassen

Strategic Advice

- Rolf Reed

Centre Director:

Prof. Dr.Med Lars A. Akslen
+ 47 55 97 31 82
lars.akslen@uib.no

Administrative Leader:

Geir Olav Løken
+ 47 55 58 54 36
geir.loken@uib.no

All administrative officers:
[link](#).



**Norwegian
Centre of
Excellence**
The Research Council of Norway

University of Bergen, Centre for Cancer Biomarkers CCBIO, Department of Clinical Medicine, Jonas Lies vei 87, 5021 Bergen. Tel. + 47 55 58 54 36
www.ccbio.no

