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Centre for Cancer Biomarkers
Norwegian Centre of Excellence – University of Bergen

Norwegian Centre of Excellence
The Research Council of Norway

"CAPTURING CANCER COMPLEXITY AND CLINICAL CHALLENGES"

CCBIO Newsletter

DIRECTOR'S COMMENTS

EDITOR: eli.vidhammer@uib.no

Dear all

We are currently facing exceptional challenges - for science, for health services, and for the society. The corona situation is different from what we have seen for generations. We need to adapt and do our best to solve problems at different levels. Most likely, some of our experiences will permanently change our private and professional routines. As an example, virtual communication and education will be extensively used in the future.

For CCBIO, business has to go on, although not as usual. The most disturbing challenge is the lack of lab activities. Hopefully, it will be possible to re-establish some experimental work fairly soon. Regrettably, our Annual Symposium and other meetings have been cancelled, and we are working to establish virtual alternatives for research seminars and courses as reported from the CCBIO Research School.

In this newsletter, we are proud to present our brand new *CCBIO Annual Report 2019*. The report is usually presented at the Annual Symposium, but 2020 is different. The annual review is packed with exciting information and opinions from our members. The printed version will be available as soon as possible.

CCBIO was recently awarded continued support from the Research Council of Norway (RCN) and the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (DIKU) for phase 2 of the INTPART project: "Bergen-Harvard Cancer Studies phase 2: Continued Partnership for Responsible Education, Research and Innovation Excellence." We look forward to further strengthen the *Bergen – Boston axis* and working with our international friends and collaborators.

We are proud to present Professor Marta Bertolaso (Rome, Italy) as a new member of our International Faculty. Marta is a prominent international scholar in the field of *philosophy of science*. Please read our presentation in this newsletter, and also her opinion piece in the Annual Report.

Further in this newsletter, we have stories about ovarian cancer, tumor-stroma interactions, and upcoming PhD defenses. Take careful notice of our calendar during the upcoming weeks and months.

Be careful, and stay safe!

Best regards, Lars A. Akslen, Director

Programs and Research Teams

Mechanisms of Tumor-Microenvironment 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

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
- Inge Jonassen

Strategic Advice
- Rolf Reed

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link.

THE CCBIO ANNUAL REPORT IS NOW AVAILABLE

We normally issue the Annual Report at the CCBIO Annual Symposium at Solstrand, but this year has given some unexpected obstacles, forcing us to cancel the annual symposium. On the bright side, you will now have access to the annual report a little earlier!

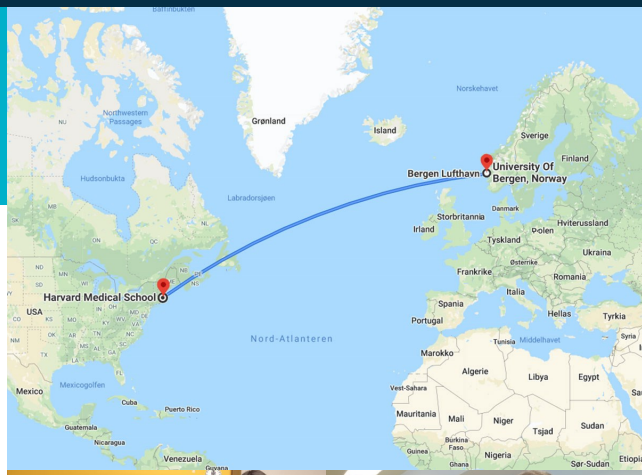
You can read it through this link (allow a minute to download as it is a large file). The printed version will be circulated as soon as possible (depending on the virus-situation).

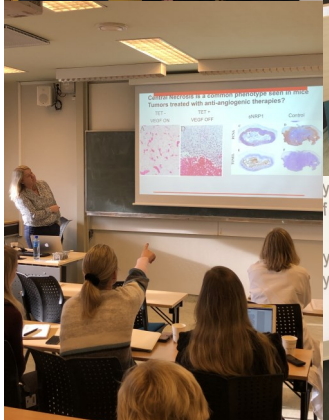
In the CCBIO Annual Report 2019, you can find:

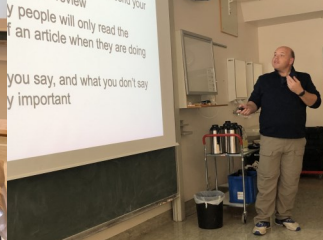
- An overview of our research groups and their scientific activities and progress
- Presentations of our international affiliated investigators
- CCBIO Opinion pieces with views on current topics
- Overview of other CCBIO activities, including doctorates, seminars, mini-symposia, meetings and courses
- Minibios on PhD candidates and postdocs
- Interesting facts and figures
- A lot of great photos
- - and much more!

CONTINUED SUPPORT FROM RCN AND DIKU FOR THE CCBIO-HARVARD INTPART PROJECT

CCBIO applied for and recently received continued support from the Research Council of Norway (RCN) and the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (DIKU) for phase 2 of the INTPART project: "Bergen-Harvard Cancer Studies phase 2: Continued Partnership for Responsible Education, Research and Innovation Excellence."







The INTPART project "Bergen-Harvard Cancer Studies: A Partnership for Excellent Education and Research" was established in 2016 through RCN and DIKU funding. What started as a personal collaboration years ago between Professor Lars A. Akslen and Professor Judah Folkman in Boston has snowballed into collaborative efforts with widespread impact. By collaborations between CCBIO, the Vascular Biology Program (VBP) at Boston Children's Hospital and Harvard Medical School, and Harvard Kennedy School, successful activities strengthening research education and collaborative activities between partners have taken place. The purpose of phase 1 of the project was to strengthen higher education (at master and PhD level), research education and international research collaboration by partnerships with world-class institutions. This was completed through several successful activities.

In phase 2, CCBIO will expand the goals to *strengthen responsible education, cancer research and innovation* through long-term international cooperation. The CCBIO and VBP (Boston Children's Hospital and Harvard Medical School) are main partners in phase 2, as the planned aims and activities originate from the collaboration between groups in these institutions.

In addition to continuation of the established courses and activities, phase 2 will include a new course, *Innovation in Cancer Research*, and the CCBIO effort within Responsible Research and Innovation (RRI) and the ethical and societal aspects (ELSA), coordinated by Professor Roger Strand, will now be fully integrated in all phase 2 activities.

Read all about the people and activities involved in this article.

BRINGING PHILOSOPHY OF SCIENCE TO THE CCBIO TABLE

The CCBIO International Faculty was established to support the Centre through active collaborations and strategic advice. In addition to the 13 already affiliated members, we have now recruited a new member, Marta Bertolaso from Rome, Italy, and have the pleasure of presenting her and her unique contribution to CCBIO.

Marta Bertolaso is Professor of Philosophy of Science at the Faculty of Science and Technology for Humans and the Environment and at the Institute of Philosophy of Scientific and Technological Practice, at University Campus Bio-Medico of Rome (UCBM), Italy. She is the director of the Research Unit of Philosophy of Science and Human Development. She teaches Epistemology of the Experimental Design, Human Ecology & Sustainability, Digital Mindset Transitions in the same university for undergraduate and graduate students.

Her expertise in philosophy of life sciences and scientific practice, and philosophy of complex organized systems has allowed her to promote and collaborate in interdisciplinary research and educational projects. She is currently focusing her work on an integral understanding of organismic development, of the notion of human progress and human work. She is currently contributing, in collaboration with companies and enterprises, to the development of an 'ecosystem accelerator' of a new industrial and social development after the COVID19 epidemic.

Her collaboration with CCBIO, more specifically, relies upon the work she did on cancer research and cancer biology in the last two decades, from which also the paradigm of integral development emerged. In particular, she is focusing on the assumptions and epistemological foundations for an adequate identification and implementation of biomarkers for cancer's diagnosis and treatment.

Read interview here about how she came to choose her field of work, as her first degree and academic training is, in fact, in molecular biology and cancer research, and about her aims for the CCBIO collaboration.

Professor Bertolaso was also part of the CCBIO-Harvard INTPART meeting at Iceland in August 2019. Photo: Eli V.

QUALITY OF LIFE FOR PATIENTS WITH OVARIAN CANCER

Bergen Sanitetsforening has sponsored Karen Rosnes Gissum's PhD work on quality of life for patients with ovarian cancer, and writes about this in an article. Karen is a new PhD candidate in CCBIO, with Professors Line Bjørge and Roger Strand as supervisors.

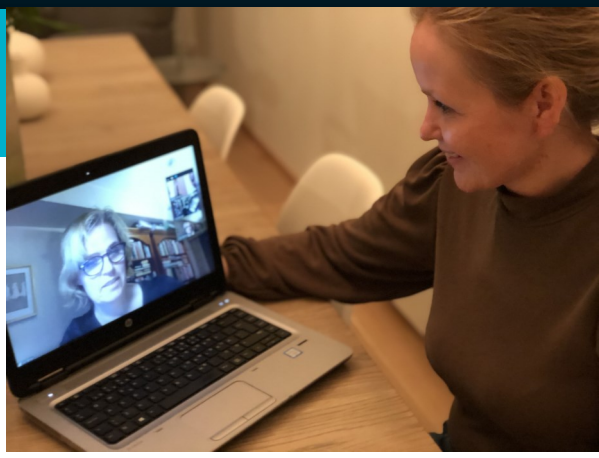
Karen's research is part of a larger project plan where we want to describe women's experiences as they undergo treatment and follow-up for ovarian cancer, as well as gain better understanding of women's perspectives to establish a psychosocial intervention that will improve women's quality of life along the disease path," Line Bjørge explains.

Karen will in her project allocate time on a clinical trial where 70 patients are followed through their disease course (assessment, treatment and follow-up) for 2 years. The purpose of the study is to look at the relationship between the extent of the surgical procedure, the presence of residual tumor and the patients' quality of life and to use the knowledge gained to identify markers for disease treatment.

"CCBIO has given us a unique opportunity to establish new collaborative relationships," Bjørge says and refers specifically to her own interaction with Roger Strand. "We can combine biology and clinic with more soft markers - which we hope can form the basis for further research. We hope that the project setup we have established for Karen's PhD project can be used to generate disease-specific data for other cancer diseases affecting both women and men," she explains.

"The collaboration with Roger Strand makes it possible to focus on the ethical dilemmas the patients encounter along the way in their disease path, both in connection with diagnosis and choice of treatment," Karen explains, aiming to meet the patients' needs or wishes, and possibly develop a psychosocial measure that can help them.

You can read the full article here (Norwegian only).


Digital project meeting — as the current situation dictates.

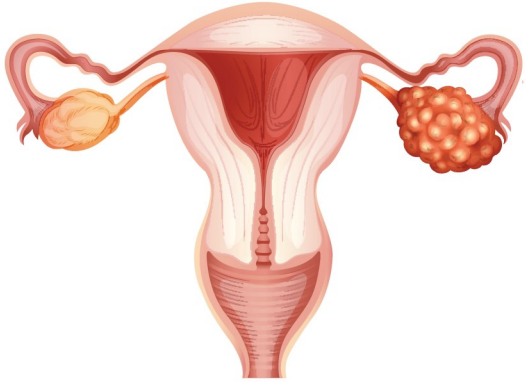


Illustration: www.colourbox.com

STATUS FOR CCBIO'S SEMINARS AND COURSES

CCBIO aims to hold all its lectures at UiB through digital platforms for the rest of the spring term. PhD courses attended through these platforms with the scheduled curriculum and time frame, will provide the same ECTS as originally planned for the course.


Illustration: colourbox.com

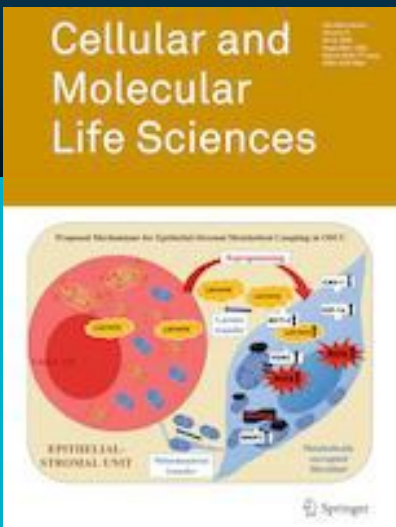
At the CCBIO Research School for Cancer Studies, we are working to set up CCBIO908 (Scientific Writing and Communication Seminar) and CCBIO904 (Biomarkers and Tumor Biology in Clinical Practice) before the summer, and potentially set up CCBIO Seminars through digital solutions.

Note that the Scientific Writing and Communication Seminar now has been approved as a PhD course, with 2 ECTS!

Details about the programs and course dates will be announced soon. For the courses running at fall 2020 (CCBIO907 and CCBIO905), we'll get back with updated info as soon as possible.

NEW INSIGHTS INTO TUMOUR-STROMA INTERACTIONS AND FIBROBLAST ACTIVATION IN CANCER

Fibroblast activation and contribution to tumour progression has been proven in many cancer types. Recent work from Costea's group reveals that epithelial–mesenchymal interaction events occur in a certain sequence, starting with metabolic reprogramming of fibroblasts before their stepwise transition into a carcinoma-associated fibroblast (CAF) phenotype. Focusing then on mitochondria, in collaboration with Mitochondrial Medicine & Neurogenetics group, they show that cancer cells are able to induce a specific and unidirectional mitochondrial transport from fibroblasts to cancer cells, hijacking the physiological process of mitochondria transfer from astrocytes into neurons.



The title of the article is "*Metabolic reprogramming of normal oral fibroblasts correlated with increased glycolytic metabolism of oral squamous cell carcinoma and precedes their activation into carcinoma associated fibroblasts*". The work is a collaboration between the Experimental Pathology Research Group of CCBIO's associate researcher Professor Daniela Elena Costea and the Mitochondrial Medicine & Neurogenetics (MMN) Research Group of Professor Laurence A. Bindoff. Tumour-stroma interactions are the focus of Costea's research group and now they show in this paper the dynamics and key sequential events of the activation of normal surrounding fibroblasts into carcinoma-associated fibroblasts (CAFs). Here they show that normal fibroblasts and cancer cells become first metabolically coupled through several processes. The normal fibroblasts were metabolically reprogrammed after interaction with cancer cells by being induced into a hypoxia-like condition followed by aerobic glycolysis, secretion of reactive oxygen species, high levels of l-lactate and overexpressing lactate exporter MCT-4. Furthermore, the fibroblasts were induced to export mitochondria towards cancer cells through both direct contact via tunnelling nanotubes and indirect mechanisms, and pushed into mitophagy and mitochondrial permeability transition pore (mPTP) opening via a decrease in activation of AMPK–PGC-1α axis.

You can find the article in this link. The article's graphical abstract has been featured on the cover page of issue 6 March 2020 of Cellular and Molecular Life Sciences Journal (link to the issue: https://link.springer.com/journal/18/77/6).

EXCELLENT NEW REVIEW ON MECHANOBIOLOGY OF TUMOR FIBROSIS

Valerie Weaver is an international authority on the role of fibrosis in tumor mechanobiology. In a recent review the status of the field, with a summary of known molecular pathways involved in tumor fibrosis, is summarized in a comprehensive manner (Piersma et al., 2020). The review is an excellent starting point for those interested in the mechanobiology of the tumor microenvironment.

References:

- Kai, F., A.P. Drain, and V.M. Weaver. 2019. The Extracellular Matrix Modulates the Metastatic Journey. *Dev Cell*. 49:332-346.
- Paszek, M.J., C.C. DuFort, O. Rossier...V.M. Weaver. 2014. The cancer glycocalyx mechanically primes integrin-mediated growth and survival. *Nature.* 511:319-325.
- Paszek, M.J., N. Zahir, K.R. Johnson...V.M. Weaver. 2005. Tensional homeostasis and the malignant phenotype. *Cancer Cell*. 8:241-254.
- **Piersma, B., M.K. Hayward, and V.M. Weaver. 2020. Fibrosis and cancer: A strained relationship. *Biochim Biophys Acta Rev Cancer.* 1873:188356.**
- Weaver, V. M. 2014. The microenvironment matters. *Mol Biol Cell*. 25:3254-3258.

PhD Bram Piersma (left) was a postdoc in the Weaver lab during the sabbatical year (2017-2018) of Donald Gullberg. Bram is currently a researcher at the University of Groningen, Holland.

QUESTIONING THE SOLUTION OF CANCER

March 4th, Filosofisk poliklinikk invited to a meeting at Litteraturhuset in Bergen with the title «The mythology of cancer: the solution to cancer». The meeting was chaired by Caroline Engen, board member of Filosofisk poliklinikk, MD and recently a PhD graduate doing her PhD work affiliated to CCBIO.

Key speaker was Jarle Breivik, professor at the Department of Medical Behavioral Sciences in Medicine at the University of Oslo. Jarle Breivik has previously provoked leading cancer researchers with the article "We Won't Cure Cancer," published in The New York Times. Here, he among other argued that "the growing cancer epidemic is not a problem that medical science is about to solve. In fact, it is a problem we are about to make worse." At the Filosofisk poliklinikk meeting, he invited the audience to reflect on whether there really is a "cancer problem" that can be solved once and for all. The presentation was followed by a discussion with the audience about how different views of the "cancer problem" affect what help we are offered when we get sick - and at what cost. The many inputs from the audience was in great part concerned with the cost for the society and the individual, and what end of life-content should be if focus was removed from beating the disease.

Jarle Breivik and Caroline Engen on stage at the Filosofisk poliklinikk meeting March 4th 2020.
Photo by Emilie Sandve Aase.

COMING DOCTORAL DEFENSES

Doctoral defenses are, for the time being, performed as digital events. This does not prevent you from seeing the defense, as you can join from your home office through Microsoft Teams, either through downloading the app, or join through the web version. We currently have 2 new doctoral defenses coming up soon on the calendar.

Harsh Dongre:

Main supervisor: Professor Daniela Elena Costea, co-supervisors: Professor Line Bjørge and Professor Anne Christine Johannessen

Place: Digital meeting room, access available through the press release.

Trial lecture: Thursday April 30 2020 at 10.15

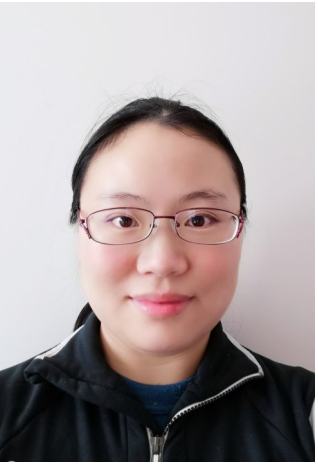
Topic: "The significance of tumor stroma interactions for clinical behavior and therapeutic response in cancer"

Doctoral defense: Thursday April 30 2020 at 12.15

Dissertation title: "Biomarkers and preclinical models for more precise diagnosis and personalized treatment of oral and vulva carcinomas - Study on human samples and experimental models"

1. opponent: Professor Harry Hollema, University Medical Center Groningen, the Netherlands
2. opponent: PhD Else Driehuis, University of Utrecht, the Netherlands
3. member of the committee: Adjunct Professor Hrvoje Miletic, University of Bergen

The defense will be led by Professor Anders Molven.



Yaping Hua:
Main supervisor: Professor Karl-Henning Kalland, co-supervisor: Professor Xisong Ke.
Place: Digital meeting room, access available through the press release.
Trial lecture: Monday May 4 2020 at 10.15
Topic: "Traditional Chinese Medicine (TCM) in treatment of cancer - clinical effects on tumor size, survival, and metastasis"

Doctoral defense: Monday May 4 2020 at 12.15
Dissertation title: "Discovery and characterization of novel STAT3 and androgen receptor inhibitors in prostate cancer cells"
1. opponent: Professor José Carlos Machado, University of Porto, Portugal
2. opponent: Associate Professor Gerd Berge, UiT The Arctic University of Norway
3. member of the committee: Professor Lars Herfindal, University of Bergen
The defense will be led by Professor Silke Appel.

NEW FACES

Welcome to new members of the CCBIO family!

Ulrikke Hugaas is a student in the Medical Student Research Program (Forskerlinjen), with Elisabeth Wik as main supervisor.

Ulrikke is currently in her second year of medical school, working part-time on her project titled «Molecular subtypes in primary and metastatic breast cancer of the young». The aim of the project is to examine the metastasis pattern in breast cancer of the young and to investigate whether age affects the grade of concordance between molecular subtypes in primary tumors and paired metastatic lesions. Ulrikke will start her full-time research year this fall.

Amalie Fagerli Tegnander is a student at the Medical Student Research Program, with Elisabeth Wik and Lars A. Akslen as supervisors.

Amalie is a second year medical student at the University of Bergen. Her project concentrates on how alterations in estrogen receptor-related factors in the primary tumor relate to breast cancer progress. The aim is to improve our understanding of breast cancer biology, with potential practical applications for novel therapy and biomarkers for better patient stratification before treatment.

Karen Rosnes Gissum is a new PhD candidate in The Precision Oncology Research Group, with Line Bjørge as main supervisor and Roger Strand as co-supervisor.

Karen is an oncological nurse and holds a MS in evidence-based practice. In her PhD project she will explore how advanced surgery affects the quality of life in women treated for ovarian cancer. The data will form the basis for new clinical studies focusing on psychosocial interventions and how biomarkers can be used to establish individual follow-up programs.

Christiane Helgestad Gjerde is a new PhD candidate in The Precision Oncology Research Group, with Line Bjørge, Emmet McCormack and Gorka Ruiz de Garibay as supervisors.

Christiane graduated from medical school and the Medical Student Research Program at the University of Bergen in December 2019. Her PhD project focuses on developing better preclinical models of ovarian cancer, through the establishment of an organoid platform.

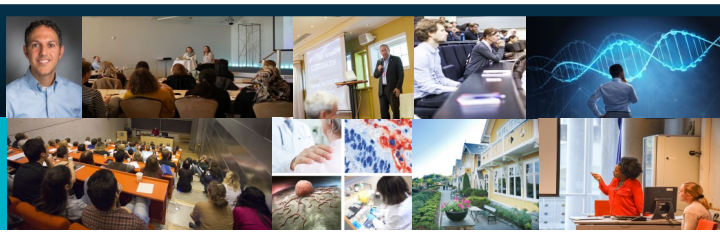
Stian Tornaas is a new PhD candidate in Costea's group, with main supervisor Daniela Elena Costea and co-supervisor Donald Gullberg.

He holds an MS in biomedicine from the University of Tromsø – The Artic University of Norway. In his MS project, he investigated whether cancer-associated fibroblasts (CAFs) isolated from patients with small non-cell lung carcinoma could modulate the immune function of dendritic cells (DCs), and if ionizing irradiation of CAFs would have measurable effects on this modulation. His PhD project aims to identify different CAF phenotypes in HNSCC by using Hyperion/imaging mass cytometry and their role in resistance to therapy using cohort of patient tissue.

Diana Siyam is a dentistry student in her second year participating in the Medical Student Research Program, with Daniela Costea as supervisor.

Her project investigates the tropism of mesenchymal stem cells towards oral cancer. The project will be run in collaboration between these three research groups: the Experimental Research Group of Professor Daniela Costea, the Tissue Engineering Group of Professor Kamal Mustafa, and the Diabetes Research Group of Professor Helge Ræder.

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.

As you know, our largest events, the CCBIO Annual Symposium and the Satellite Symposium have been cancelled altogether for 2020. We are very much looking forward to hosting these events next year.

At the CCBIO Research School for Cancer Studies, we are working to set up CCBIO908 (Scientific Writing and Communication Seminar) and CCBIO904 (Biomarkers and Tumor Biology in Clinical Practice) before the summer, and potentially set up CCBIO Seminars through digital solutions. Stay tuned on our web calendar, or keep an eye on information e-mails from us.

Details about the programs and course dates will be announced soon. For the courses running at fall 2020 (CCBIO907 and CCBIO905), we'll get back with updated info as soon as possible. CCBIO907 and CCBIO905 are planned as follows so far:

- September 21-October 2, CCBIO907 Cancer-related vascular biology, Bergen
- October 27-29, CCBIO905 Methods in Cancer Biomarker Research, Bergen

OTHER COMING EVENTS



- E-læringskurs fra Helse Vest i brukermedvirkning i helseforskning (Norwegian only). Tilgjengelig online når man ønsker. Kurset: https://kursbygger.ihelse.net/?startcourseid=12
- August 24-27 and October 12-13, Transdisciplinary life science – a Digital Life Norway course, Trondheim. For PhD students and postdoctors who want to learn more about working on transdisciplinary research projects within biotechnology and the life sciences.
- August 31-September 2, the 4th annual conference of Digital Life Norway Research School, Malangen (Tromsø).
- September 8-10, Nordic Life Science Days (NLSDays), the largest Nordic partnering conference dedicated to the life science industry. Malmö/Copenhagen.
- September 10, Knowledge for growth, the 16th edition of Europe's finest life sciences conference knowledge for growth, in Ghent, Belgium. (Postponed date, was originally planned for May 28.)
- September 21-26 and October 5-9, A hands-on introduction to artificial intelligence in computational biotech and medicine, Centre for Digital Life Norway, Bergen.
- December 14-16, Science, Technology, and Society: RRI Course Digital Life Norway, Bergen.

PUBLICATIONS

You can find the CCBIO publications on this pubmed link.
See the last 5 below.

- Azeem W, Bakke RM, Appel S, Øyan AM, **Kalland KH**. Dual Pro- and Anti-Inflammatory Features of Monocyte-Derived Dendritic Cells. Front Immunol. 2020 Mar 27;11:438. doi: 10.3389/fimmu.2020.00438. eCollection 2020.
- Bae CA, Ham IH, Oh HJ, Lee D, Woo J, Son SY, Yoon JH, Lorens JB, Brekken RA, Kim TM, Han SU, Park WS, Hur H. Inhibiting the GAS6/AXL axis suppresses tumor progression by blocking the interaction between cancer-associated fibroblasts and cancer cells in gastric carcinoma. Gastric Cancer. 2020 Apr 2. doi: 10.1007/s10120-020-01066-4. [Epub ahead of print]
- Bjørsvik HR, **Gjertsen BT**, Elumalai V. Total synthesis intermediates as a molecule treasure chest: hit to leads with cytotoxic effect in leukemic cells. ChemMedChem. 2020 Mar 31. doi: 10.1002/cmdc.202000066. [Epub ahead of print]
- Pandey S, Osman TA, Sharma S, Vallenari EM, Shahdadfar A, Pun CB, Gautam DK, Uhlin-Hansen L, Rikardsen O, **Johannessen AC**, **Costea DE**, Sapkota D. Loss of S100A14 expression at the tumor-invading front correlates with poor differentiation and worse prognosis in oral squamous cell carcinoma. Head Neck. 2020 Mar 23. doi: 10.1002/hed.26140. [Epub ahead of print]
- Aasebø E, Berven FS, Bartaula-Brevik S, Stokowy T, Hovland R, Vaudel M, Døskeland SO, **McCormack E**, Batth TS, Olsen JV, Bruserud Ø, Selheim F, Hernandez-Valladares M. Proteome and Phosphoproteome Changes Associated with Prognosis in Acute Myeloid Leukemia. Cancers (Basel). 2020 Mar 17;12(3). pii: E709. doi: 10.3390/cancers12030709.

RECENT CCBIO IN THE MEDIA

Recent media appearances by CCBIO PIs and group members. For all media hits, see CCBIO's web pages.

27.04.20, Forskning.no, "Kampen mot korona er avhengig av åpne data", Inge Jonassen.

06.04.20, Bergensavisen Pluss, "Folkehelsen vil lide om andre pasienter ikke prioriteres", Ole Frithjof Norheim.

05.04.20, Bergensavisen, "Mener andre nå bør prioriteres", Ole Frithjof Norheim.

29.03.20, VG, "Professor om corona-situasjonen i norsk helsevesen: – Det vil bli veldig vanskelige valg", Ole Frithjof Norheim.

29.03.20, Dagens Medisin, "Ingen rettferdige priser uten mer åpenhet", Eirik Joakim Tranvåg.

27.03.20, Healio, "Researchers develop AI-based projects for tumor scoring, vessel annotation", Reidunn Edelmann.

24.03.20, Aftenposten, "Rangering av helsehjelp er en av de vanskeligste etiske utfordringene vi kjenner", Ole Frithjof Norheim.

20.03.20, Dagens Medisin, "Prioritering: – Må opprettholde idealet om likebehandling", Ole Frithjof Norheim.

05.03.20, BioTechnique, "Liesbeth Hondelink and Reidunn Jetne Edelmann on deep learning for cancer research and early career advice for women in STEM", Reidunn Edelmann.

01.03.20, Nord24, "Lytix Biopharma med nye lovende studier for kreftmedisin", Nina Louise Jebsen.

Feb. 20, Bergen Sanitetsforening, "Hvordan har kvinner med eggstokkreft det – egentlig?", Line Bjørge, Karen Rosnes Gissum, Roger Strand.