



"CAPTURING CANCER COMPLEXITY AND CLINICAL CHALLENGES"

CCBIO1 Newsletter

DIRECTOR'S COMMENTS

 EDITOR: eli.vidhammer@uib.no

Dear all

In this last issue of the Newsletter during 2019, we have several stories that reflect the diverse activities of CCBIO, ranging from advanced morphologic analysis of protein patterns to popular science for young children. Many thanks to Henriette Ertsås for putting together her science communication performance.

Several teams have now initiated experiments using the imaging mass cytometry platform (Hyperion) to perform deep tissue profiling at the protein level. This "Hubble Microscopy" has already created beautiful pictures and exciting data. Thanks to Brith Bergum and Jørn Skavland for operating the equipment and interacting with the CCBIO teams.

Efficient recruitment is an essential part of excellent science. In that context, the Medical Student Research Program is an important resource for CCBIO. The story (and history) on this topic is recommended.

Several CCBIO faculty should be congratulated. At the international level, we are very happy that Hani Gabra, member of CCBIO's International Faculty for years, has now strengthened his ties to the CCBIO family and the Bergen campus by accepting the position as new CMO of BerGenBio. Indeed, this is an outstanding opportunity for increased interaction between CCBIO and BerGenBio. And to all of us, especially the younger colleagues, take notice of Hani's 3 most important career tips. Next, congratulations to Camilla Krakstad for Helse Vest funding, to Dana Costea for the Global Oral Health Course Collaboration (DIKU, NORPART), to Reidunn Jetne Edelman for being accepted by the aiForward Programme (AIFORIA) to develop and use AI for studies of tumor associated vasculature, and finally to Sigmund Ytre-Hauge and Katrin Kleinmanns for having successfully defended their PhD thesis.

And of course, take notice of all the dates for many upcoming events, especially the 8th CCBIO Annual Symposium and the 3rd CCBIO Satellite Symposium. We recommend the Special Symposium coming up already on January 9th, 2020, on Cancer in the News, organized by Roger Strand, with important contributions from Irmelin W Nilsen and Mille S Stenmarck, and followed by a panel discussion.

Finally, I have a challenge for you: art in science is a discipline on its own, and many of us working on biomarker expression in cancer tissues have observed many striking and beautiful patterns. If you have a nice picture that you would like to share, please send it to us and we will consider it for the annual report or other purposes (always with a reference to the person responsible).

Merry Christmas and best wishes for 2020 to all of you!
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 resource: Bioinformatics and Big Data

- Inge Jonassen

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CCBIO ANNUAL SYMPOSIUM AND SATELLITE SYMPOSIUM

2020 is just around the corner, and we are busy securing great speakers for our largest annual event, the CCBIO Annual Symposium, and the preceding Satellite Symposium. Make sure you have saved the dates in your calendar!

The Satellite Symposium has become a fixed tradition since the [first satellite event](#) took place in 2018. The 2020 overarching topic will be *Immune Oncology*. Date: **May 11th 2020**.

The CCBIO Annual Symposium will take place **May 12-13 2020**. The venue is as tradition and success dictates: Solstrand Hotel & Spa at Os outside of Bergen. A beautiful hotel with history in its walls, great meals and wonderful fjord views never get old!

You can read about the earlier CCBIO Annual Symposia [here](#).

If you like long time planning, you might even save the dates for the CCBIO Annual Symposia the next 3 years:

- 2021: May 19th - 20th
- 2022: May 10th - 11th
- 2023: May 9th - 10th

MAY 2020						
SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
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24	25	26	27	28	29	30
31						



CCBIO INTERNATIONAL AFFILIATED PROFESSOR HANI GABRA APPOINTED CMO AT BERGENBIO

Professor Hani Gabra was recently appointed Chief Medical Officer at BerGenBio, based in Oxford UK. Professor Gabra has been part of CCBIO's network of international affiliated researchers since 2016, and considers his affiliation to CCBIO both an advantage and a prerequisite for his role as CMO for BerGenBio. He also finds there are clear opportunities for increased interaction between BerGenBio and CCBIO.



"It is a great pleasure to be working with the leadership team at BerGenBio and the external clinical and basic research community to drive forward AXL targeting therapies into the clinic," Gabra says.

"Over the years, my work on regulation of receptor tyrosine kinase networks including AXL and my work in translational cancer medicine has slowly converged, strengthening my view that anti-AXL therapy should be an important tool in the armamentarium of cancer treatment. After a period as VP in early clinical development at AstraZeneca, I now feel able to take up the challenging role of leading clinical development of AXL targeting therapies. In my role as a member of the leadership team at BerGenBio I get to contribute to delivering these assets as new treatments to patients with cancer as soon as possible," he continues.

See the [full interview here](#).

Read [about BerGenBio here](#).

HELSE VEST-SUPPORT TO PROFESSOR CAMILLA KRAKSTAD FOR ENDOMETRIAL CARCINOMA PROJECT

The Helse Vest funding for 2020 was recently announced, and we are happy to congratulate CCBio Associate PI and Professor at the Department of Clinical Science Camilla Krakstad with the NOK 1.5 mill. open project support per year over three years.

Professor Krakstad receives the support for her project "Clinical implementation of imaging and molecular markers for Endometrial Carcinoma".

Krakstad is heading the Bergen Gynecologic Cancer Research Group and receives funding to continue her research on biomarkers in endometrial cancer. The project aims to complete an implementation study where expression levels of hormone receptors ER and PR are used to aid in deciding if lymph node dissection should be performed for endometrial cancer patients. The project will evaluate molecular subgroups of endometrial cancers and investigate the use of routinely reported imaging markers as predictors for outcome in endometrial cancer.

MD Njål Lura also receives funding for his PhD project "Precision imaging for individualized treatment in uterine cervical cancer". Professor Ingrid Haldorsen is supervising the project which is part of a close collaboration between MMIV and The Bergen Gynecological Cancer Research Group. See [all Helse Vest grants 2020 here](#).



Photo by Ingvild Festervoll Melien

GLOBAL ORAL HEALTH COURSE COLLABORATION

This year, the Department of Clinical Dentistry at the University of Bergen launched a new international project together with five partner institutions in East Africa. CCBio Associate Investigator Dana Costea is part of the managing team of this project, and has recently returned from a visit to the partner university in Tanzania, the Muhimbili University of Health and Allied Sciences in Dar es Salaam.



Photo 1: Participants to the workshop at Muhimbili University, Tanzania. Photo 2: Dana presenting the on line CYTOMINE-based digital platform for teaching in oral pathology as part of the future Global Oral Health Course. Photos: Isaac Okullo

The project "Establishment of Joint Research-based Education in Dentistry in Norway and East Africa" is financed by [DIKU](#) in the framework of the [NORPART programme](#) and is financed for a 5 years period. The general aim of the project is to develop and establish a standardized educational platform for the global oral health at the UiB and partner institutions. UiB partner institutions for this project are universities in Sudan, Tanzania, Uganda and Ethiopia. Read more about the project [here](#).

One of the main activities of the project is the development and implementation of a course in Global Oral Health, in which oral pathology and oral cancer will constitute a separate module. The course will use the [digital platform recently established in the EURASIA project](#) coordinated by Dana Costea, where digital slides of representative cases are continuously uploaded and shared between participating institutions. During the visit at the Department of Pathology at Muhimbili National Hospital, Dana discussed using this platform for consultancy and sharing of special cases between the Muhimbili and Haukeland hospitals, with the local collaborator Pathologist Edda Vuhahula (actually a former student of Lars A. Akslen).

In addition to Dana, CCBio PI **Roger Strand** and Associate Investigator **John Cairns** will also contribute to the development of the Global Oral Health course by addressing societal, ethical and economical aspects of dentistry in the modern world. We look forward to following the project!

DEEP LEARNING AI IN CCBIO POSTDOC PROJECT

CCBio Postdoc Reidunn Jetne Edemann has been accepted to the aiForward program to apply deep learning AI to her project.

Reidunn came across Aiforia at a conference and was encouraged to apply to the aiForward program, and was accepted as one of the first to the program. Her mission is to take the analysis of tumor vasculature to the next level by deepening the characterization of these vessels and to ultimately correlate them to patient outcome-related endpoints as well as other biological traits of tumors in different cancer types.

[Read more here.](#)



INTEGRIN $\alpha 11$ CYTOPLASMIC TAIL IS REQUIRED FOR FAK ACTIVATION TO INITIATE 3D CELL INVASION AND ERK-MEDIATED CELL PROLIFERATION



Pugazendhi Erusappan

A recent study from Gullberg's group published in Scientific Reports with Pugazendhi Erusappan as first author, suggests that the cytoplasmic tail of integrin $\alpha 11$ is essential for the signaling function of integrin $\alpha 11\beta 1$.

Integrin $\alpha 11\beta 1$ is a collagen-binding integrin, which is receiving increasing attention in the context of activated fibroblasts in tumour stroma, wound healing and fibrosis. Since integrin $\alpha 11\beta 1$ has distinct functions in vivo from the other collagen-binding integrins, authors hypothesized that the unique functions of integrin $\alpha 11\beta 1$ is in part due to its cytoplasmic tail.

"Results from the study suggests that integrin $\alpha 11$ cytoplasmic tail is essential for efficient focal contact formation, cell spreading, cell proliferation, cell migration and collagen remodeling," Professor Gullberg explains. "In addition, we also demonstrate that integrin $\alpha 11$ cytoplasmic tail is needed for FAK activation to promote cell migration and FAK-dependent ERK activation to promote cell proliferation," he continues.

In summary, the study strongly suggests that integrin $\alpha 11$ cytoplasmic tail plays a central role in $\alpha 11$ integrin-specific functions.

The study: P. Erusappan, J. Aleam, N. Lu, C. Zeltz, D. Gullberg: "Integrin $\alpha 11$ cytoplasmic tail is required for FAK activation to initiate 3D cell invasion and ERK-mediated cell proliferation." Sci. Rep.(Oct 25;9(1):15283. doi: 10.1038/s41598-019-51689-6.) (2019). Contact information: p.m.erusappan@medisin.uio.no.

THE MEDICAL STUDENT RESEARCH PROGRAM AND CCBIO

Since its startup 5 years ago, CCBIO has engaged 17 students in the Medical Student Research Program, and several have proceeded to a PhD degree. The students in the program are genuinely interested and dedicated, but also lacking research experience and in need of close follow-up and mentoring. Nevertheless, CCBIO has very good experiences in including Medical Student Research Program students in their research groups.



Photo: Ingvild Festervoll Melien

The program is a special offer from the Medical Faculty to medical and dental students (up to 10 %) who have a special interest in medical and dental research and are willing to do research in parallel with their studies. This special offer gives the students an organized research training and the opportunity to perform their own research, including writing an article, which could be the beginning of a PhD. The research training is in such an extent that by completing the program, the students have fulfilled the requirements for research training on a PhD level. If the students wish to go ahead with a PhD, the training component has already been approved.

CCBIO PI **Karl-Henning Kalland** has had four Medical Student Research Program students in his group so far. "Even though our group has demanding experimental projects with laboratory work and use a wide variety of methods, my experience as project manager and main supervisor is absolutely positive," he explains. "The Medical Student Research Program students have played an active role in our research environment and have contributed with ideas, work efforts, writing of publications and presentations at conferences both internationally and locally. This has undoubtedly provided a very good methodological and experiential basis for their future careers," he says.

"You work with your project over many years as the work from the Medical Student Research Program follows you into your PhD fellowship. This gives you time for acquisition of knowledge and to mature as a researcher," says former Medical Student Research Program student **Hilde Engerud**.

Read the full article [here in English](#) or [here in Norwegian](#), with more statements from CCBIO supervisors and students.

Submit projects

CCBIO research groups should note that the Medical Faculty has just issued a **deadline, January 11th**, for submission of **research project proposals** for recruitment of students from class 2019 to the Medical Student Research Program. Use [this form](#) to submit proposals. Find all the info you need [here](#). Also note the **Networking Day January 29th** where research groups are invited to present themselves to prospective Medical Student Research Program students, at stands in the BBB lobby from 12:00-15:00. Poster walls will be available.

THE HYPERION – DIALOGUE ON EXPERIMENTAL DESIGN

As more and more projects are getting ready to start running samples on the Hyperion Imaging System (HIS), it is crucial that the technical support staff operating the instrument is contacted well in beforehand to help you and your group plan your experiments.

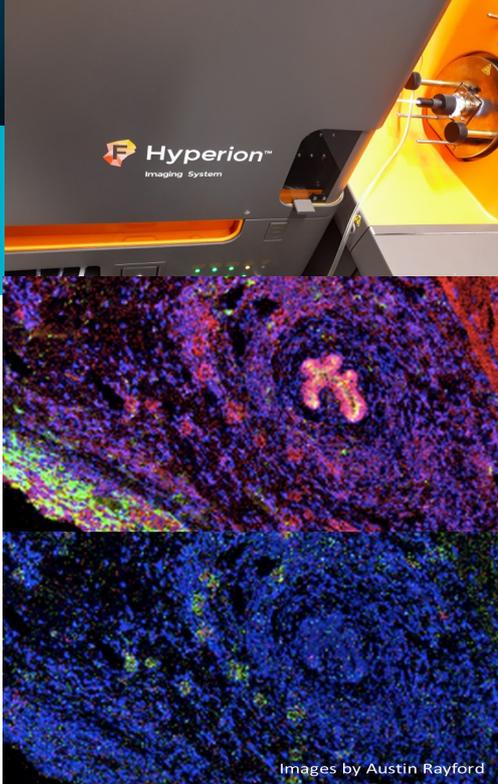
Poorly planned experiments on HIS can be very costly, and experience dictates that preparing your projects well in advance is important and avoids unnecessary use of resources. Brith Bergum and Jørn Skavland, the chief engineers operating HIS, have accumulated lots of experience on experimental design and know what the instrument is capable of and which issues that typically arise. They also know which application specialists and other researchers with similar projects to contact to discuss your experiments.

Also, sharing your experiences with Brith and Jørn in retrospect is advisable as they can ensure that your experiences are carried on to other users, often within the same group or among your collaborators. To this end, they also arrange meetings on Hyperion and Helios experiments on Fridays in room 7.1 at the 7th floor in the lab building at 13.00, during which users can present, discuss and share their experiments and experiences. Please contact Jørn or Brith if you want to be on the email list for the meetings.

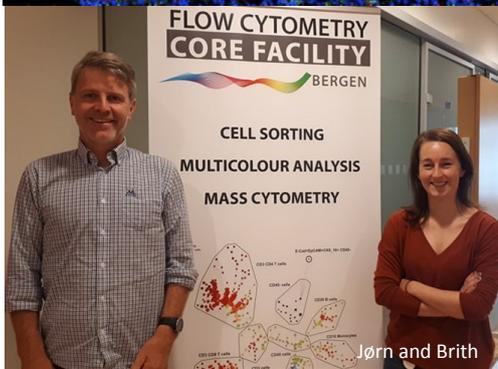
The core facility has 10 antibodies for Hyperion in its reagent repository; these antibodies can be purchased in small aliquots. This will allow researchers and groups to more easily test imaging mass cytometry on their own samples without having to purchase larger aliquots.

We therefore encourage you, and those from your group who will be hands on with HIS experiments, to contact [Brith Bergum](#) and [Jørn Skavland](#) as soon as possible.

You can find more information about the HIS [here](#). Also read [earlier article](#) about the Hyperion. Information about the other instruments at FLOW can be found [here](#).



Images by Austin Rayford



Jørn and Brith

POPULAR POPULAR SCIENCE

Henriette Ertsås has had an active year with CC BIO's popular science show since she completed her PhD last year at the Department of Biomedicine and CC BIO. Sparking a scientific interest in children seems to work very well when adding a touch of humor to a difficult topic.

More than 800 schoolchildren so far this year in the Bergen area have experienced the tumor microenvironment in the body characterized on stage in roles such as fat cells, fibroblasts, osteoblasts, epithelial cells, immune cells and endothelial cells. Through 16 performances in Bergen schools and at the Research Fair, Henriette has showed the children that it takes more than a mere mutation to make a cancer cell.

The play Stine Stamcelle Finner seg Selv ("Stine Stem Cell") has been a great success. It is a free standing drama adaptation of the book "Biomarkers of the Tumor Microenvironment: Basic Studies and Practical Applications" by Lars A. Akslen and Randolph Watnick (editors). Henriette plays the stem cell Stine which takes on new identities and abilities depending on where she is in the microenvironment surrounding her. Volunteers from the audience play the other characters, creating even more attention from their peers.

The play can be booked free of charge by school classes. We encourage CC BIO's affiliates to circulate information about this opportunity to the schools of the children in their families.

Read about the performances [here](#). Also see [video of Stine Stamcelle](#).



Centre for Cancer Biomarkers (CCBIO) ved Universitetet i Bergen sender «Forskning til folket» ut til skoler og museum for å formidle kunnskap om kreft i form av teater, i tråd med universitetets formidlingsstrategi for en kunnskapsbasert samfunnsutvikling.

FORESTILLINGER

Stine Stamcelle finner seg selv

En populærvitenskapelig teaterforestilling om identitet

Denne historien foregår inni kroppen. I en serie av scener får du se hvordan Stine Stamcelle oppdager nye identiteter og evner. Omgitt av fettvev blir hun ettergivende og følelig, hun liker ikke etter å dra noe stadi. Lever hun under terroren fra en kronisk betennelse blir hun opprørt av å dele seg i mange dataceller. Når ekstrinstitan Cytokan går sin entré over Youtube og maner til væpnet forsvær mot en diffus fiende, vender nabocellene seg mot kroppen og lar en moden Stine Mellekjertelcelle utvikle seg baklengs til å bli en umoden stamcelle igjen.

Publikum får spille fettceller, fibroblaster og immunceller og utfører handlinger som bestemmer Stines skjebne. Vil du spille fapocytter som larer immunforsvaret opp i stry? Eller være en forrådsersk fibroblast som gjør Stines tilværelse vanskelig ved å strekke fibre på kryss og tvers over scenen? Da er det godt å vite at alt kan reverseres om bare omgivelsene oppfører seg skikkelig.

Forestillingen dekker disse læringsmålene i læreplanen for naturfag etter 7. årstrinn:

- «formulere naturfaglige spørsmål om noe eleven lærer på, foreslå mulige forklaringer, legge en plan og gjennomføre undersøkelser»
- «forklare hvordan kroppen selv beskytter seg mot sykdom...»

Publikum: Passer for 4-8 trinn
Antall: Maksimum 60 elever
Varighet: Forestillingen varer 60 minutter
Sted: Høstsemester eller gymnast på din skole
Kontakt: henriette.ertsas@iuh.no, tlf 97601192

Kan du spille en fibroblast slik den ser ut gjennom mikroskopet?

Letters Henriette has received from participating children illustrate their interest:

What I liked about the show was that we managed to learn something while it was fun at the same time.

Dear Henriette.. I liked everything about the performance and I hope you will come back to our school.

Hi Henriette.. I liked your show because you made something fun out of something which is sad to talk about. I also think it is great that you do these shows, so that children can learn what is going on in the body with all the cells.

CCBIO SPECIAL SEMINAR JANUARY 9TH ON CANCER IN THE NEWS

Join us for an interesting discussion and pizza! Cancer is a prominent topic in newspapers and other mass media. More or less sensationalist, news abound on advances in cancer research. In a country such as Norway, however, there have been even more news coverage to controversies around the approval (and lack thereof) of new and expensive cancer treatments.



Illustration: www.colourbox.com

Irmelin W Nilsen and **Mille S Stenmarck** will present how these two sets of issues, respectively, have been covered in latter years in the main Norwegian newspapers. How can research, media and other social actors work together to improve the quality of the public sphere devoted to cancer issues?

Panelists are **Tine Dommerud**, Aftenposten and **Knut Helland**, UiB. **Moderator: Roger Strand**, CCBIO/UiB

Where and when: Auditorium 4, BB-building, January 9th at 13:00-15:30. Open for all, no registration needed.

REGISTRATION AND PROGRAM FOR CCBIO906 CANCER GENOMICS

Registration link and preliminary program is now available for the CCBIO906 course. This 3 ECTS course will provide broad understanding of aspects of cancer genome biology and its investigation by next generation sequencing (NGS) technologies. Methods for analyzing DNA variation and structure and RNA expression patterns will be covered, as well as nuclear and chromatin structure, plus ethical and legal aspects and hereditary predisposition.



Illustration: www.colourbox.com

The course will give you the skills to:

- Formulate problems, plan and carry out NGS analyses on samples from cancer patients.
- Assess the expediency and application of different NGS methods in cancer diagnostics and research
- Know the contact points for NGS analysis and data storage and analysis in the Bergen area
- Communicate relevant literature and methods concerning cancer genomics

Ola Myklebost has the academic responsibility for this course. Rebecca Nguyen is the administrative coordinator.

When: February 19-21, 2020

Preliminary program: [is available here](#).

Registration: through [this link](#).

Who: Mainly intended for PhD candidates, but open to all.

More information: is available [here](#).

CCBIO904 BIOMARKERS AND TUMOR BIOLOGY IN CLINICAL PRACTICE

The 4 ECTS course covers broad tumor biological topics that are important for understanding how cancer occurs, the mechanisms that control tumor growth, proliferation and morbidity. The course will focus especially on tumor biological changes that may have or already have significance for personalized cancer treatment and clinical trial studies of new diagnostics and treatment. The course corresponds partly with the Medical Association's annual tumor biology course, but has a stronger focus on the significance of tumor biological knowledge for clinical trials.



Illustration: colourbox.com/CCBIO

The course will give you with the skills to:

- Formulate problems and suggest research of molecular biological aspects in cancer and cancer development in order to map tumor biological mechanisms.
- Critically assess the expediency and challenges of using different methods for researching molecular biological aspects of cancer.
- Select relevant literature that deals with molecular aspects important in cancer.

Oddbjørn Straume has the academic responsibility for this course. Reidun Kristin Kopperud is the administrative coordinator.

When: April 20-22, 2020

Preliminary program: [is available here](#).

Registration: [through this link](#).

Who: Mainly intended for PhD candidates, but open to all.

More information: is available [here](#).

RECENT DOCTORAL DEFENSES



Sigmund Ytre-Hauge defended December 11th his dissertation "Advanced imaging biomarkers in endometrial cancer". Supervisors: Professor Ingfrid S. Haldorsen, Professor Jone Trovik and Professor Helga B. Salvesen (+)

See [press release](#).



Katrin Kleinmanns defended Friday December 13th her dissertation "Rethinking High-Grade Serous Ovarian Carcinoma: Development of New Preclinical Animal Models for Evaluation of Image-guided Surgery and Immunotherapy". Supervisors: Professor Emmet Mc Cormack and Professor Line Bjørge. See [press release](#).

COMING CC BIO EVENTS

Make sure to save the dates in your calendar, and register when applicable. You can see all planned CC BIO events in the CC BIO web calendar.



- January 9th, [CC BIO Special Seminar on Cancer in the News](#), Bergen.
- January 30, CC BIO Junior Scientist Symposium
- January 30, CC BIO Seminar, [speaker Johannes Eble](#).
- February 19-21, [CC BIO 906 Cancer Genomics](#), Bergen.
- February 20, CC BIO Seminar, [speaker Rameen Beroukhim](#).
- March 19, CC BIO Seminar, [speaker Akin Ojesina](#).
- April 16, CC BIO Junior Scientist Symposium
- April 20-22, [CC BIO 904 Biomarkers and tumorbiology in clinical practice](#), Bergen.
- April 30, CC BIO Seminar, speaker tba.
- May 11, [CC BIO Satellite Symposium](#), Solstrand. This year's topic: Immune Oncology
- May 12-13, [CC BIO's 8th Annual Symposium](#), Solstrand. CC BIO's largest annual event!

OTHER COMING EVENTS



- E-læringskurs fra Helse Vest i brukermedvirkning i helseforskning (Norwegian only). Tilgjengelig online når man ønsker. Innføring i hva brukermedvirkning i helseforskning er, og praktiske tips for å etablere et godt og fruktbart samarbeid mellom bruker og forsker. Kurset: <https://kursbygger.ihelse.net/?startcourseid=12>
- January 15, [Helse og fremtid 2019](#), Oslo, organized by Novartis, Thermo Fisher Scientific and LMI.
- January 16, [Cancer Crosslinks 2020](#), Oslo Cancer Cluster. This year's topic is "Progress in cancer care – a tsunami of promises or game changing strategies?" Note that [Harriet Wikman](#) from [Klaus Pantel's](#) Team at the UKE Hamburg is a speaker at Cancer Crosslinks. There is an opportunity to meet her during her visit (and of course on Jan 16th, networking evening). Also note that as a CC BIO member, you might apply to OCC for them to cover your flight or train tickets. Contact cwh@oslocancercluster.no
- January 23-26, [the 56th Winter Contact meeting of the Norwegian Biochemical Society \(NBS\)](#), Voss, Norway. Covering areas of biological, biochemical, biomedical and bioinformatical research. Reduced prices for Master and PhD students. CC BIO PhD fellows and postdocs can apply for travel/accommodation grant.
- February 10-13, [Oslo Life Science Conference](#), the 5th Oslo Life Science Conference hosted by UiO: Life Science and partners.
- February 17-19, [Next-generation live-cell microscopy](#). Light sheet, Quantitative Phase, Structured Illumination, Tromsø, by Digital Life Norway and University of Tromsø. CC BIO PhD fellows and postdocs can apply for travel/accommodation grant.
- March 16-17, [Nordic Precision Medicine Forum 2020](#), Stockholm.
- March 16-20, [Bioinformatic analysis of the airway microbiome: A QIIME2 workshop](#), Bergen. 5-day workshop focusing on applied bioinformatics in the field of microbiome data mainly for non-computer scientists using QIIME2.
- March 23-25, [Bio-Europe Spring 2020](#), Paris.
- June 3-5, [Summer School in Fibrosis Research](#), Bergen. Organizer: Donald Gullberg.

PUBLICATIONS

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



Illustration: Colourbox.com

- Espedal H, Fonnes T, Fasmer KE, **Krakstad C**, Haldorsen IS. [Imaging of Preclinical Endometrial Cancer Models for Monitoring Tumor Progression and Response to Targeted Therapy](#). Cancers (Basel). 2019 Nov 27;11(12). pii: E1885. doi: 10.3390/cancers11121885. Review.
- Forthun RB, Hovland R, Schuster C, Puntervoll H, Brodal HP, Namløs HM, Aasheim LB, Meza-Zepeda LA, **Gjertsen BT**, Knappskog S, **Straume O**. [ctDNA detected by ddPCR reveals changes in tumour load in metastatic malignant melanoma treated with bevacizumab](#). Sci Rep. 2019 Nov 25;9(1):17471. doi: 10.1038/s41598-019-53917-5.
- Lende TH, Austdal M, Varhaugvik AE, Skaland I, Gudlaugsson E, Kvaløy JT, **Akslen LA**, Søyland H, Janssen EAM, Baak JPA. [Influence of pre-operative oral carbohydrate loading vs. standard fasting on tumor proliferation and clinical outcome in breast cancer patients – a randomized trial](#). BMC Cancer. 2019 Nov 8;19(1):1076.
- Suliman S, Ali HRW, Karlsen TA, Amiaud J, Mohamed-Ahmed S, Layrolle P, **Costea DE**, Brinchmann JE, Mustafa K. [Impact of humanised isolation and culture conditions on stemness and osteogenic potential of bone marrow derived mesenchymal stromal cells](#). Sci Rep. 2019 Nov 5;9(1):16031.
- Tutusaus A, de Gregorio E, Cucarull B, Cristóbal H, Aresté C, Graupera I, Coll M, Colell A, Gausdal G, **Lorens JB**, García de Frutos P, Morales A, Marí M. [\[A FUNCTIONAL ROLE OF GAS6/TAM IN NON-ALCOHOLIC STEATOHEPATITIS PROGRESSION IMPLICATES AXL AS THERAPEUTIC TARGET\]](#). Cell Mol Gastroenterol Hepatol. 2019 Nov 2. pii: S2352-345X(19)30146-8. [Epub ahead of print]

RECENT CCBIO IN THE MEDIA

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



10.12.19, Dagens Medisin, "[Slik kan kunstig intelligens endre bildemedisinen](#)", Ingfrid Haldorsen.

05.12.19, Dagens Medisin, "[En av to behandlinger handler om kreft](#)", Ole Frithjof Norheim.

01.10.19, Dagens Medisin, "[Milepæl for norsk kreftstudie](#)", Oddbjørn Straume.

30.09.19, tvr.by, Belarussian national TV, "[Future dentists of Belarus, Norway, Moldova and Armenia to be trained in a joint program](#)", Daniela E. Costea

23.09.19, Nationen, "Ny behandling mot arvelig eggstokkreft godkjent", Line Bjørge.

22.09.19, Bergens Tidende, "[Dagen etter kreftoperasjonen kunne Tordis dra hjem. Da var hun ferdigbehandlet.](#)", Camilla Krakstad, Ingfrid Haldorsen.

22.09.19, Bergensavisen, "Forskning for liten og stor", Henriette Ertsås.

21.09.19, Bergensavisen Pluss, "[Her ble det forsket på stort og smått](#)", Henriette Ertsås.

21.09.19, Trønderavisa, "Godkjenner ny behandling mot arvelig eggstokkreft", Line Bjørge

