



## "CAPTURING CANCER COMPLEXITY AND CLINICAL CHALLENGES"

# CCBIO1 Newsletter

### DIRECTOR'S COMMENTS

EDITOR: eli.vidhammer@uib.no

Dear all

We just finished another very successful CCBIO907 course on Cancer-Related Vascular Biology, this time using the Zoom platform, and with close to 100 participants. Thanks to everyone involved, at the Vascular Biology Program in Boston and to our team at CCBIO. Please read the full story below for details. And we are heading off to other important events, like the CCBIO Mini-Symposium on Endometrial Cancer, and CCBIO905 course on Methods in Cancer Biomarker Research. Take a look at the programs and participate if you can.

The CCBIO-JAW Program on "junior application writing", organized and coordinated by Yamila, will have its kick-off very soon. Ten candidates, nominated by the CCBIO investigators and group leaders, have been invited to participate in this targeted effort to continue our work on career development.

Congratulations to our colleague and friend Rolf K. Reed for receiving the distinguished King's Medal of Merit for his long-standing contributions to the University of Bergen and the society. Very well deserved!

Congratulations to Sissel and Eduarda for having defended their PhD thesis work. Read about our "new faces", and please welcome all of them where they show up. PhD student Gloria Campioni is visiting from Italy to work in Costea's group. Welcome and enjoy the stay.

Sadly, this summer legendary cancer researcher Prof. Zena Werb passed away. We still remember her inspiring presentation in a CCBIO research seminar October 2014. Zena met with many of us for discussions, and we felt honored to spend some quality time with the "queen of the matrix" herself. Please read the full story.

Finally, take a look at our information on funding possibilities, and our calendar for up-coming events in the weeks to come.

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

#### Centre Director:

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# BROAD ATTENDANCE IN DIGITAL CCBIO-VBP/HARVARD COURSE

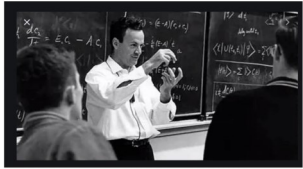
In collaboration with the Vascular Biology Program (VBP), Boston Children's Hospital, CCBIO recently completed the second CCBIO INTPART long course CCBIO907. This year, the course was given in digital format, and it was well visited by local students and researchers, participants from other institutions all over Norway, and also from Finland, Sweden and Denmark, in addition to some from other continents, all in all 96 participants.

This course is made possible by joint efforts from both sides of the [CCBIO/Vascular Biology Program-Harvard collaboration](#), and provides a unique opportunity for master and PhD students, postdocs, and researchers, to learn vascular and metastasis biology from leading faculty in these fields. VBP faculty this year included **Bruce Zetter, Michael S. Rogers, Joyce Bischoff, Edward Smith, Hong Chen, Diane R. Bielenberg, and Randy S. Watnick**, in addition to CCBIO's local experts **Reidunn Edelmann** and **Oddbjørn Straume**.

The digital course built on the original broad format, with extensions. The strong contributions from the Vascular Biology Program makes this an excellent effort in research education at the UiB. This year's large attendance, both from the UiB and other Nordic universities and beyond, indicates a great interest and relevance of this course, also as a future UiB PhD course. Although missing the informal chat in the coffee breaks, both students and faculty are happy with the digital format, which also makes it possible to interact with a much larger group of colleagues.

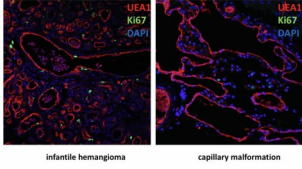
[Read the story here.](#)

You can be better!



"If you can't explain something in simple terms, you don't understand it." Richard Feynman

Dogma is that vascular tumors are proliferative whereas malformations are not.

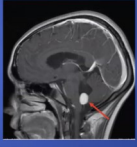


infantile hemangioma      capillary malformation

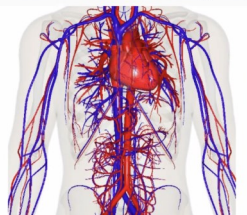
Courtesy of Ian Huang, PhD

Juvenile Pilocytic Astrocytoma (JPA)

- Non-invasive tumor
- Rarely disseminates
- Easily removable with surgery
- >95% lifetime cure rate after surgery




The Circulatory System



The heart pumps oxygenated blood throughout the body (systemic circulation). It is a closed system.

Artery (Aorta) → Arterioles → Capillaries → Venules → Veins



# THE KING'S MEDAL OF MERIT TO ROLF K. REED

Former CCBIO PI and current CCBIO Strategic Advisor, Rolf K. Reed, was October 14 awarded with the prestigious Norwegian award, the King's Medal of Merit ([Kongens Fortjenstmedalje](#)).

The King's Medal of Merit was established by King Haakon VII in 1908. It was presented to Reed by the Mayor of Bergen, Marte Mjøs Pedersen, in a ceremony at the Faculty of Medicine, University of Bergen (UiB). The medal is awarded to individuals as "a reward for efforts of a particularly socially beneficial nature in fields such as art, culture, science, business, social and humanitarian work."

From Rolf K. Reed first came to the Faculty of Medicine as a medical student in 1972, he has contributed as an MD, associate professor and professor, department leader (IBM), vice dean and dean at the Medical Faculty. As a researcher, his main interest has been basic research, with a long list of merits through publications, collaborations, awards, distinctions, assignments and commissions of trust.



At CCBIO, his strategic advisory role benefits from a long experience of leadership positions and strategic committees at the UiB, as well as having been dean, deputy dean and head of department for many years. Reed's long experience with committees and planning groups in research councils, international evaluation and advisory boards is brought into the longtime strategic planning in CCBIO.

Congratulations with a well deserved distinction! Read more in [article here](#) (Norwegian only).

# CCBIO MINI SYMPOSIUM ON ENDOMETRIAL CANCER

We are happy to invite to a CCBIO Mini Symposium on endometrial cancer, titled "Endometrial cancer—How will new molecular knowledge influence the way we are treating our patients?", Wednesday October 21 at 15.00—17.00. This is a digital event, where you can participate even from your home office. No beforehand registration necessary, just log on to the webinar some minutes before it starts.

The incidence of endometrial cancer is rising both due to increased life-expectancy and higher degree of obesity in the population. Traditionally, endometrial cancer has been histologically classified and risk stratified based on clinico-pathological parameters. Molecular classification has the potential to replace histology for risk classification if solid molecular markers can be identified. The Cancer Genome Atlas (TCGA) endometrial cancer project described four distinct prognostic EC subtypes based on genomic abnormalities that reflect EC tumor biology: ultramutated, hypermutated, copy-number low and copy-number high subtypes. Subsequently, molecular and histopathologic classifiers have been suggested and evaluated for their prognostic and predictive value. The impact of molecular classification is evident and opens for development and use of more targeted therapies, and will be recognized by the upcoming WHO classification. This mini symposium will focus on the current status for risk-stratification of endometrial cancer, and highlight the need for implementation of current knowledge in the clinic to improve treatment for endometrial cancer patients.



Illustration: colourbox.com

## Speakers:

- **Alicia Leon del Castillo**, Leiden: "Histologic subtyping and grading, or Molecular classification? Endometrial cancer diagnosis in 2020"
- **Alexandra Leary**, Paris: "Endometrial cancer in the era of targeted therapy"
- **Mansoor R Mirza**, Copenhagen: "The new ESGO guidelines for treatment of endometrial cancer"
- **Katrine Woie**, Bergen / **Ane Gerda Zahl Eriksson**, Oslo: "The new Norwegian guidelines for treatment of endometrial cancer"

**Chairs:** Camilla Krakstad and Line Bjørge

**Time:** Wednesday Oct 21 2020, at 15.00-17.00 (Note that time is Central European Summer Time (CEST), the time zone in Norway):

**Place:** Digital event in Zoom, as webinar.

**Logon:** You can find more information and Zoom logon link [on this website](#).

## IN MEMORY OF ZENA WERB

It was with great regret we received the news of the death of Zena Werb, one of the most renowned scientists of our time.

You can read the [press release from University of California San Francisco here](#). Also see an [obituary in Nature Cancer](#) and with the [American Association for Cancer Research](#).

At CCBIO, we got to meet Zena Werb as she visited us by invitation of the Gullberg group, and we had the honor of having her as speaker on one of our CCBIO Seminars (images to the right). Marion Kusche Gullberg spent her sabbatical year in the lab of Zena Werb in 2011-2012, and has very fond memories of a vibrant laboratory characterized by an intellectually stimulating and inclusive environment where Zena took great care of all members.

CCBIO Director Lars A. Akslen deeply regrets this news. "We still remember her inspiring presentation in a CCBIO research seminar October 2014. Zena met with many of us for discussions, and we felt honored to spend some quality time with the "queen of the matrix" herself", Akslen says.



2 photos: UIB/Anne Sidsel Hærdlevær



# NEW LASER MICRODISSECTION SYSTEM

CCBIO's mother department, the Department of Clinical Medicine, would like to spread the good news of the new Laser Microdissection System which is available in our research environment. This enables the user to isolate areas of tissue, or even single cells, from FFPE (formalin-fixed, paraffin-embedded) or frozen tissue sections. The LMD7 comes with a high-quality Leica microscope and camera, and allows for either brightfield or fluorescent imaging.

Laser-microdissected tissue is very suitable for downstream genomic, transcriptomic, proteomic or metabolomic analyses.

Key features:

- High-quality Leica microscope
- High powered laser (cuts through almost "everything")
- Gravity-assisted tissue isolation
- Four air-objectives with 5x, 10x, 40x and 63x magnification
- Fluorescence filters (RGB and Cy5)
- Several different collection alternatives (tube caps, 96-well plates, 8/12-tube strips)
- User-friendly software



The [Leica LMD7](#) is located at the Department of Pathology, 2nd floor, Sentralblokken, Haukeland University Hospital, room 5322 (AV-room). The LMD7 is owned by Department of Clinical Medicine (K1). The following have contributed to the purchase: Faculty of Medicine, Pancreas Research Group (Anders Molven), Tumor Biology Research Group (Lars A. Akslen), Neuromics lab (Charalampos Tzoulis), Renal Research Group (Hans-Peter Marti). For booking, go to [the MIC booking system](#). First-time users are required to book a training session. Low cost for use (50 NOK/h), plus minimum 2 hours of supervised use (450 NOK/h) for new users. Superusers/instructors are [Kenneth Finne](#), [Tariq Osman](#) and [Irene Flønes](#).

## VACANT POSITION: POSTDOCTORAL FELLOW

We are currently announcing a postdoc position in CCBIO's Program 2, in the project "Protein Biomarkers and Novel Targets in Aggressive Breast Cancer", and will focus on the subproject: "Imaging Mass Cytometry of Tumor Microenvironment Features in Breast Cancer Subtypes". Duration is 3 years. Application deadline is November 1, 2020.

The position will focus upon integrated protein studies by using imaging mass cytometry, immunohistochemistry and proteomic profiling of human tissue samples and relevant cell line panels. The applicant must hold a Norwegian PhD or an equivalent degree within a relevant field of research, or have the doctoral thesis submitted prior to the application deadline. It is a condition of employment that the PhD has been awarded and at the latest within 1.2.2021.

You can find the [announcement and application link on this website](#).



# RELEVANT CALLS FOR FUNDING

Here is a list of current and relevant calls, so take a look and see if any of these are relevant for you.

## 2021 NFR FRIPRO:

- 10/02/2021: [Forskerprosjekt for fornyelse](#) (4-12 M, 36-72 months)\*
- 10/02/2021: [Forskerprosjekt for unge talenter](#) (4-8 M, 36-48 months)\*
- 10/02/2021: [Treåring forskerprosjekt med internasjonal mobilitet](#) (3-3.9 M, 36 months)\*
- 17/02/2021: [Samarbeidsprosjekt for å møte utfordringer i samfunn og næringsliv](#) (24-48 months)\*
- 10/02/2021: [Stort, tverrfaglig forskerprosjekt](#) (12-25 M, 48-72 months)\*\*

\*Can only apply to one as PI.

\*\*Can apply in addition to the ones above.

## Other relevant grants:

- [Barnekreftforeningen](#) 1/11/2020
- [World cancer Research Fund](#). 2 step process: outline due Nov 16<sup>th</sup>, full application March 2021.
- [Support for collaborations in Digital Life Norway - cross-project activities](#). (Open-ended deadline.) Examples of such activities could be exchange of competence, methods, small pilot projects, workshops, research visits etc.

## UiB:

- [SPIRE funding](#): strategic program for international research cooperation. Expected deadline 1.12.2020
- [Positioning funding \(POS\)](#) – to support researchers who are positioning themselves towards Horizon Europe applications.
- [Fond og legater](#), open for MSc, PhD, postdocs and researchers to apply for extra research money, stay abroad, travel to conferences, publishing of results, equipment and more.

## Innovation grants:

- [NFR Qualification project](#) – research commercialization project from publicly funded research (open-ended deadline). 500.000 NOK for 3-12 months (open-ended call).
- [NFR Proof-of-concept project](#) – research commercialization from publicly funded research (open-ended deadline). 5 M NOK, 12-36 months (open-ended call).

More info and advice on grants and applications:  
contact CCBIO Research Advisor [Yamila Torres Cleuren](#)



# GRANT APPLICATION TRAINING PROGRAM: CCBIO-JAW

We are happy to announce a new program: CCBIO-JAW (**J**unior **A**pplication **W**riting program): A group of 10 researchers at an early stage in their careers (postdocs/researchers) that are getting ready to start preparing applications aiming for independence. CCBIO is kicking CCBIO-JAW off this autumn.

This group will get training once a month by our research advisor (Yamila), who will organize this program. The main goal is to teach the basics of grant applications and give them the tools they need to succeed. This will represent an opportunity to learn about each other's research plans and aid establish new collaborations for future applications. They will receive training in reading grants, writing grant applications, and setting up their CVs. Following and in parallel with the training, they will receive some guidance in groups set up for the individual calls (e.g., NFR or Kreftforeningen). The first batch of participants are currently receiving invitations, by nomination from the group leaders.

# RECENT DOCTORAL DEFENSES



**Sissel Dyrstad** defended Friday August 21 2020 her doctoral work "A study on metabolic rewiring in cancer cell plasticity" at the University of Bergen.

Main supervisor: Professor Karl Johan Tronstad, co-supervisors: Researcher Gro Vatne Røsland and Professor Jim Lorens.

See [press release](#).



**Eduarda Guerreiro** defended June 12 2020 her doctoral work "Isolation and characterization of extracellular vesicles – Molecular couriers from cancer cell lines, and saliva and tear fluid from patients with primary Sjögren's syndrome" at the University of Oslo. Her PhD project focused on extracellular vesicles from oral cancer aiming at understanding their role in tumor progression. She did her PhD at the the Institute of Oral Biology, University of Oslo, with main supervisor Tine Merete Sølund at the UiO, but also connected to Bergen with Professor Daniela Costea as co-supervisor.

See [press release](#).

## NEW FACES



**Luka Tandarić** is a new PhD candidate in the The Precision Oncology Research Group, under the joint supervision of the Professors Line Bjørge and Emmet McCormack.

Luka holds an MS in molecular biology from the University of Zagreb, Croatia. His PhD project will focus on the improvement of patient selection for targeted treatment and the enhancement of immunotherapy response rates of ovarian cancer patients. The aim is to describe the value of combined CD73 and PD-L1 blockade immunotherapy in patients with epithelial high-grade serous ovarian carcinoma.



**Rezvan Ehsani** is a new Postdoctoral Researcher in the Jonassen Group, at CBU/the Department of Informatics.

Rezvan has a PhD in bioinformatics from NTNU in Trondheim, Norway. Since 2016 he has been working as an assistant professor at the University of Zabol in Iran. His research has focused on gene regulation including transcription factors and epigenetics. At CBU, Rezvan will be working in the group of Professor Jonassen and linked with CCBIO. His focus will be on analyzing tumor microenvironments utilizing the novel Hyperion instrument for imaging mass cytometry to generate spatial information on sub-cellular resolution on protein abundance in and around tumors.



**Seyed Mohammad Lellahi** started as a postdoc in CCBIO at Karl-Henning Kalland's lab in March 2020.

He has a master's degree in Medical Cell Biology from UiB, and a PhD from the University of Tromsø (UiT). During his PhD, he worked with a long non-coding RNA called NEAT1, and studied the role of NEAT1 in breast cancer and autophagy.

The Kalland group and collaborators have been developing a new treatment modality named cryoimmunotherapy (CryoIT) against cancer. In this method, monocyte-derived dendritic cells (moDCs) are added to a frozen tumor in patient body which resulted in a better proinflammatory response against cancer. In this project, Mohammed is studying two other dendritic cells subpopulation, conventional type 1 DCs, and conventional type 2 DCs, to investigate if they are a better alternative for moDC in cryoimmunotherapy treatment. Furthermore, he will be developing an "Organoid and DC co-culture model system" to study immune cells and cancer material in a more complex environment using the Helios Hyperion Imaging System mass cytometry platform.



# VISITING PHD FELLOW FROM ITALY

The [Research Group in Experimental Pathology](#) of Professor Costea is currently hosting Gloria Campioni, a student of the PhD course in Converging Technologies for Biomolecular System (TeCSBi), Department of Biotechnology and Bioscience at University of Milano-Bicocca (Italy). She is here for 3 months to learn how to generate *in vitro* 3D multi-cellular cancer models and to study the effect of fibroblasts on the metabolic rewiring of resistance pathways in cancer.

Gloria's doctoral project aims to develop complex models of mammary carcinoma, such as spheroids from breast cancer cell lines and organoids from patient derived xenografts, in order to study cancer metabolic rewiring. Breast cancer is the most frequent and deadly cancer in women, and it is considered a very heterogeneous disease, so more complex models are necessary to better represent this type of tumor and its microenvironment. Her lab group in Italy, lead by [Professor Marco Vanoni](#), is interested in systems biology and in studying *in vitro* cancer metabolic plasticity, also through the development of three-dimensional tumor models.

Gloria was interested in a research stay at the the Experimental Pathology Research Group because she would like to deepen her study of breast carcinoma interactions with the tumor microenvironment, and found that this research group could support her to develop 2D and 3D co-culture systems of breast cancer cells with human mammary fibroblast for this purpose.

Despite of the fact that she had to spend 10 days in quarantine upon her arrival in Norway, she felt included in the group from the very first days, because she could join digitally the weekly meetings organized by the lab. Now that she can go to the lab, she's glad to be involved in different ongoing projects because it gives her the opportunity to learn different techniques and approaches to research.

Bergen has so far made a good impression on her, as a quiet city with friendly people, and with a location which gives the opportunity to experience wonderful landscapes and to be immersed in nature.

We wish Gloria welcome to Bergen, the University of Bergen and CCBIO!



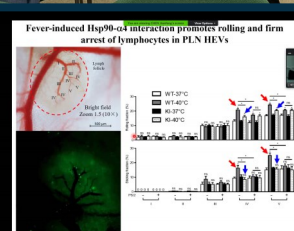
Gloria working in the cell culture laboratory at Gades Laboratory for Pathology.

Below: Gloria (in the middle) together with members of the Experimental Pathology Research Group at the weekly group meeting. Photos: Dana Costea



## 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](#).



- October 21, [CCBIO Mini Symposium on Endometrial Cancer](#), digital event.
- October 27-29, [CCBIO905 Methods in Cancer Biomarker Research](#), digital event. Participation for ECTS is now fully booked, but you can still join as a non-ECTS participant for professional updates.
- November 5, [CCBIO Seminar as Webinar](#), speaker Rolf Brekken. Digital event.
- November 26, [CCBIO Junior Scientist Symposium](#), Bergen, Haukeland campus/digital.
- November 26, [CCBIO Seminar as Webinar](#), speaker Frédéric Amant. Digital event.
- December 17, CCBIO Seminar as Webinar, speaker TBA. Digital event.

## OTHER COMING EVENTS



- October 22, November 12, December 3, [the Fifth Annual Nordic-American Life Science Conference](#), digital event.
- October 26-29, [BIO-Europe® 2020 Digital](#), digital event.
- November 10-11, EHIn 2020, [E-Health in Norway – Norway's largest e-health conference](#), Lillestrøm + digital events.
- November 19, [Digital Life 2020](#), the annual conference of our partner the Centre for Digital Life Norway. Digital event in Zoom. Registration required for access link.
- January 21, [Cancer Crosslinks 2021](#), Oslo Cancer Cluster. Digital event.

# PUBLICATIONS

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



- Ytre-Hauge S, Salvesen ØO, **Krakstad C**, Trovik J, Haldorsen IS. [Tumour texture features from preoperative CT predict high-risk disease in endometrial cancer](#). Clin Radiol. 2020 Sep 14;S0009-9260(20)30374-3. doi: 10.1016/j.crad.2020.07.037. Online ahead of print.PMID: 32938538.
- Lerche M, Elozegui-Artola A, Kechagia JZ, Guzmán C, Georgiadou M, Andreu I, **Gullberg D**, Roca-Cusachs P, Peuhu E, Ivaska J. [Integrin Binding Dynamics Modulate Ligand-Specific Mechanosensing in Mammary Gland Fibroblasts](#). Erratum. iScience. 2020 Sep 4;23(9):101507. doi: 10.1016/j.isci.2020.101507. Online ahead of print.PMID: 32896770 Free PMC article.
- Wang X, Deng L, **Gjertsen BT**. [A microfluidic device for differential capture of heterogeneous rare tumor cells with epithelial and mesenchymal phenotypes](#). Anal Chim Acta. 2020 Sep 8;1129:1-11. doi: 10.1016/j.aca.2020.06.060. Epub 2020 Jul 19.PMID: 32891378.
- Guerreiro EM, Øvstebø R, Thiede B, **Costea DE**, Søland TM, Kanli Galtung H. [Cancer cell line-specific protein profiles in extracellular vesicles identified by proteomics](#). PLoS One. 2020 Sep 4;15(9):e0238591. doi: 10.1371/journal.pone.0238591. eCollection 2020.PMID: 32886718 Free PMC article.
- Kho PF, Amant F, Annibaldi D et al, incl. **Krakstad C**. [Mendelian randomization analyses suggest a role for cholesterol in the development of endometrial cancer](#). Int J Cancer. 2020 Jul 13. doi: 10.1002/ijc.33206. Online ahead of print.PMID: 32851660.

## RECENT CCBIO IN THE MEDIA

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



19.10.20, På Høyden, "[Kongeleg heder til UiBere](#)", Rolf K. Reed.

14.10.20, UiB Nyheter, "[Kongeleg utmerking til akademisk bauta](#)", Rolf K. Reed.

08.10.20, Dagens Medisin, "[Forsker på nøyaktig fjerning av svulstvev ved eggstokkreft](#)", Line Bjørge, Emmet McCormack.

19.09.20. Alt om din helse, "[Nye, gode medisiner ved akutt myelogen leukemi](#)", Bjørn Tore Gjertsen.

26.08.20, HelthTalk, "[Ny studie: Pasienter med en aggressiv blodkreftsykdom lever lenger med ny behandling](#)", Bjørn Tore Gjertsen.

05.08.20, Dagbladet, "Blodprøve kan avsløre kreft", Bjørn Tore Gjertsen.

16.06.20, Agenda Magasin, "[Helseprioriteringer under en pandemi](#)", Ole Frithjof Norheim.

11.06.20, Dagens Medisin, "[Mener ny behandling ikke bare kan drives av de mest entusiastiske legene](#)", Line Bjørge.

