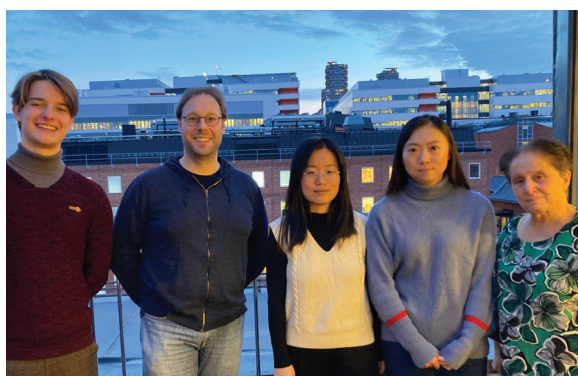


CMM News



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Swedish Research Council grantees



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*Sven-Christian Pawelzik Team
at CMM: studying eicosanoids
in cardiovascular disease*



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New graphic profile



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Editor: Magdalena Lindén
Layout: Edna Fagerstedt

A close-up photograph of a microscope's objective lenses. The central lens is in sharp focus, showing the text 'N PLAN 2.5x/0.07'. To its left and right are other lenses, slightly out of focus, with text like 'N PLAN 100x/1.25' and 'N PLAN 10x/0.25'. The background is dark and blurred.

Swedish Research Council Grantees from CMM

In the recent grant decisions from the Swedish Research Council (VR), 24 different grants were given to researchers from CMM within the categories of medicine and health, migration and integration as well as international collaborations in rare diseases. Funding was also granted to a CMMer together with four other researchers from Karolinska Institutet for the establishment of a new center of excellence.

Medicine and health

SWEDISH RESEARCH COUNCIL GRANTS



Magnus Bäck is awarded a total of 2,400,000 SEK for three years for the project 'Molekylär vägledning för behandling och handläggning av aortaklaffsjukdom'.



Eric Herlenius is awarded a total of 4,800,000 SEK for four years for the project 'Andnöd, Inflammation och Inspiration - patofysiologiska mekanismer bidrar till realtids precisions medicin med hjälp av förklarbar djup maskininlärning'.



Karine Chemin is awarded a total of 2,400,000 SEK for three years for the project 'Metabolisk kartläggning av vävnadsinfiltrerande T-celler i reumatiska sjukdomar'.



Per-Johan Jakobsson is awarded a total of 2,400,000 SEK for three years for the project 'Bestämning av prostaglandinens roll vid inflammatoriska sjukdomar med hjärtkärlkomorbiditet, nya behandlingsmöjligheter och kliniska implikationer'.



Liv Eidsmo is awarded a total of 9,000,000 SEK for five years for the project 'Nya strategier för framtida behandling av T cells baserade immunologiska ärr i huden'.



Lars Klareskog is awarded a total of 2,400,000 SEK for three years for the project 'Bättre prevention och tidig terapi för reumatoid artrit genom analys av patientrapporterade data, epidemiologi, genetik och immunologi'.



Camilla Engblom is awarded a total of 6,000,000 SEK for four years for the project 'Kartläggning av B- och Plasmacellkloner i cancer'.



Karin Loré is awarded a total of 4,800,000 SEK for four years for the project 'Immunologiska mekanismer vid mRNA vaccination'.



Caroline Grönwall is awarded a total of 4,800,000 SEK for four years for the project 'B-celler och autoantikroppar vid reumatisk sjukdom – kartläggning av komplexa interaktioner'.



Ljubica Matic is awarded a total of 2,400,000 SEK for three years for the project 'Att utnyttja potentialen hos glatta muskelceller för terapi vid aterosklerotisk kärlsjukdom'.



Carmen Gerlach is awarded a total of 3,600,000 SEK for three years for the project 'Utnyttja CD8 T-cells immunitet mot virusinfektioner'.

Carmen Gerlach is also awarded a total of 2,400,000 SEK for three years for the project 'Särskilja CD8 T cells-differentiering och aktivering – betydelsen för autoimmuna sjukdomar och T-cells minne'.

Stephen Malin is awarded a total of 4,800,000 SEK for four years for the project 'Lipoproteiner och immunförsvaret'.

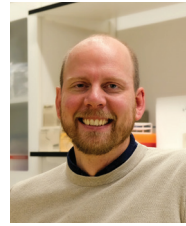


Medicine and health

SWEDISH RESEARCH COUNCIL GRANTS



Philippe Melas is awarded a total of 2,400,000 SEK for three years for the project 'FTO och m6A RNA-metyleringens roller vid alkoholberoende'.



Christopher Sundling is awarded a total of 2,400,000 SEK for three years for the project 'Immunomodulering och tolerans som en konsekvens av återkommande eller kronisk infektion'.



Magdalena Paolino is awarded a total of 2,400,000 SEK for three years for the project 'Atypiska ubiquitinkedjors roll i immunometabolismen'.



Camilla Svensson is awarded a total of 4,800,000 SEK for four years for the project 'Perifera smärtmekanismer vid fibromyalgi'.



Fredric Phiel is awarded a total of 9,000,000 SEK for five years for the project 'Kartläggning av sjukdomsmekanismer under olika faser av multipel skleros'.



Zhichao Zhou is awarded a total of 2,900,000 SEK for three years for the project 'Icke-kodande RNA i erytrocyter: nya mediatorer av kärlkomplikationer vid diabetes'.



Anna Smed Sörensen is awarded a total of 9,000,000 SEK for five years for the project 'Åldersrelaterade skillnader i immunsvaret i luftvägarna vid influensavirusinfektion'.

Migration and integration



Anna Färnert is awarded a total of SEK 6,730,000 for four years for the project 'Migration och hälsa: med fokus på vanligt förekommande infektioner i Afrika Söder om Sahara'.

International postdoc



Keying Zhu is awarded a three-year international postdoc grant of SEK 3,600,000. Keying will employ novel methods to perform research in ciliary biology and its signaling mechanisms for CNS white matter injury repair.



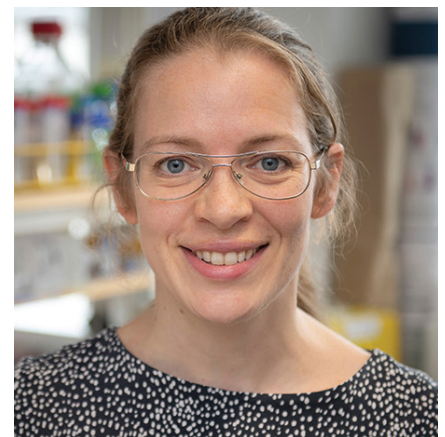
SWEDISH RESEARCH COUNCIL GRANTS

The Swedish Research Council has awarded project grants for international collaborations in rare diseases (EJP RD). Of the seven researchers awarded grants, four are researchers at Karolinska Institutet and two of them are part of CMM.

CMMers Susanna Brauner and Fredrik Piehl receive funding for the project “Karakterisering och optimering av vårdförloppet vid myastenia gravis” (Characterization and optimization of the course of care in myasthenia gravis). The researchers will study the natural course of disease progression and the effects of thymectomy (surgical removal of the thymus gland) and biological treatments in myasthenia gravis, with the aim of optimizing the course of care in specific patient groups. Myasthenia gravis is a chronic autoimmune disease where antibodies block and destroy acetylcholine receptors at the neuromuscular junction, resulting in weakness of the skeletal muscles. Susanna Brauner is responsible for the retrospective part of the study (data analyses in a historical patient cohort) which has been awarded SEK 1,600,000. Fredrik Piehl is responsible for the experimental aspects and the prospective part of the study (collecting new clinical data from patients) which has been awarded SEK 2,400,000.



Fredrik Piehl. Photo: Stefan Zimmerman



Susanna Brauner. Photo: Ulf Sirborn

New center of excellence

Together with four other researchers from Karolinska Institutet, CMMer Carmen Gerlach is a co-principal investigator of a new center of excellence at Karolinska Institutet, awarded 30 million Swedish kronor from the Swedish Research Council (VR). The center will focus on further development of cell-based cancer treatments.

SWEDISH RESEARCH COUNCIL GRANTS



Carmen Gerlach.
Photo: Karolinska Institutet

Killer cells, including natural killer and T cell subsets, are white blood cells that target virus-infected and cancer cells. Modified killer cell therapies show promise in treating cancers like leukemia and lymphoma. Further interdisciplinary research is crucial to extend these treatments to a broader range of cancers.

“With this grant scheme, we can offer long-term funding for innovative ideas that could result in groundbreaking research results,” the Swedish Research Council writes in a press release.

Professor Yanan Bryceson at the Department of Medicine, Huddinge will lead the new center, which will be named the Centre for Cellular Cancer Therapy (C3T). Carmen Gerlach (Department of Medicine, Solna, and CMM), Isabelle Magalhaes (Department of Clinical Science, Intervention and Technology), Stephan Mielke (Department of Laboratory Medicine), and Michael Uhlin (Department of Clinical Science, Intervention and Technology) will also form the center. The funds will be distributed over five years, with the potential for another five years of funding after evaluation.

Funding and grants

ERC synergy grant to Eduardo Villablanca



Eduardo Villablanca
Photo: Magnus Bergström

The project CartoHostBug (Functional cartography of intestinal host-microbiome interactions) has been awarded an ERC synergy grant of EUR 10 million, which is shared between four researchers, among them Eduardo Villablanca, senior researcher at Karolinska Institutet and CMM Group Leader. The aim of the project is to map how disturbances in the gut microbiome can lead to inflammatory bowel disease and colorectal cancer.

Eduardo Villablanca investigates how interactions between the microbiome (microorganisms in the body) and the host (human) affect health and diseases. Most of these interactions happen in the gut, where many types of bacteria reside. Disruptions in these interactions may lead to gut-related diseases like inflammatory bowel disease and colorectal cancer.

“Many studies have associated the microbiome with gut-centric and extraintestinal diseases; however, many of these studies remain controversial as they use stool samples, which don’t represent what is going on in the tissue. We aim to fill this knowledge gap by exploring host-microbe interactions at the molecular level and at high resolution in the right tissue,” says Eduardo Villablanca.

The ERC-awarded CartoHostBug team consists of Eduardo Villablanca, Stefania Giacomello at KTH (Royal Institute of Technology), Sweden, Julio Saez-Rodriguez at University Hospital Heidelberg, Germany, and Georg Zeller at the European Molecular Biology Laboratory, Germany. They will together develop technologies to create a detailed, highly resolved map of host-microbiome interactions in intestinal tissues during health and disease.

The ERC Synergy Grant supports small scientific teams to address the greatest research challenges across disciplines, fostering collaboration for innovation. This initiative, part of the EU’s Horizon Europe program, encourages pooling diverse skills and resources to advance through interdisciplinary collaboration and novel methodologies.

This text is based on an article from the Karolinska Institutet website.

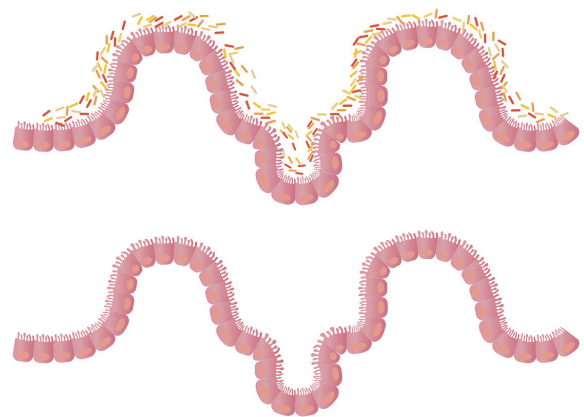
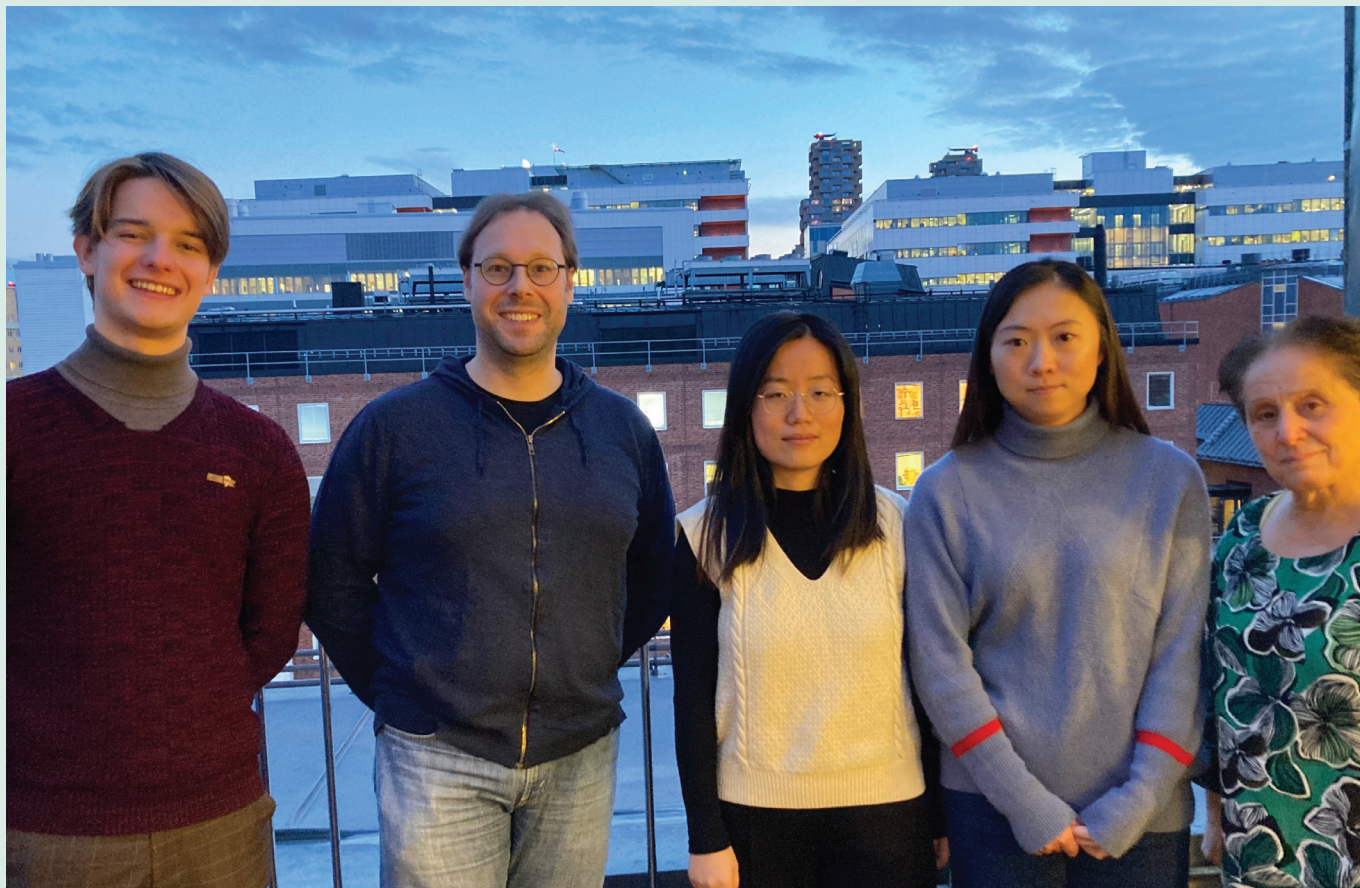


Image of intestinal epithelium colonized by bacteria. Image: Pixabay



Sven-Christian Pawelzik Team

NEW CMM TEAM

The Team Pawelzik joined CMM in May 2023. As part of the Translational Cardiology Group (headed by Magnus Bäck who is also a CMM Group Leader), our research interest is focused on mechanisms of inflammation that drive cardiovascular diseases.

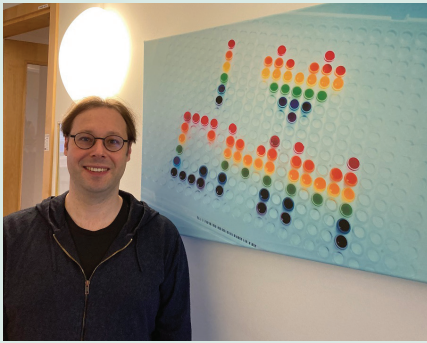
Lipid mediators of the eicosanoid superfamily are involved in many pathophysiological processes. They may promote either pro-inflammatory reactions or mediate the resolution of inflammation. Strategies to influence the balance of inflammation and its resolution are therefore important to influence disease progression.

Our group studies the role of eicosanoids in, for example, atherosclerosis, abdominal aortic aneurysm, and aortic valve stenosis. We use tissue samples from human aortic valves, different cell culture systems, *ex vivo* and *in vivo models*. Furthermore, we apply transcriptomic approaches including a transcript biobank of aortic stenosis, individualized phenotyping based on

genetic variants, and single cell sequencing. As part of the European Consortium “CARDIOVASCULARRESOLUTION OF INFLAMMATION TO PROMOTE HEALTH” (CARE-IN-HEALTH), we also employ advanced mass-spectrometry based lipid analysis to understand the mechanistic link between chronic inflammation and the risk for cardiovascular disease and to provide individual signatures of inflammation resolution for patients.

You can find us on floor 01 of the CMM L8 building. Please contact us and say hello if you are interested in our techniques and want to collaborate!

Sven-Christian Pawelzik

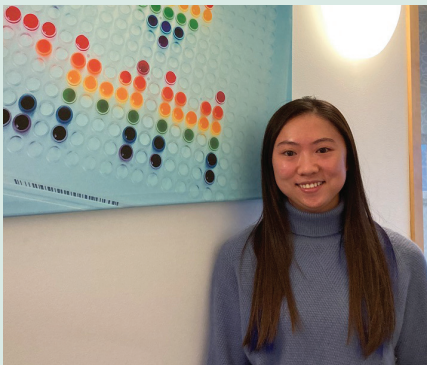


Sven-Christian received his PhD in Medical Sciences from Karolinska Institutet (KI) and continued his education with a postdoctoral fellowship at the Institute of Trans-

lational Medicine of the University of Pennsylvania (UPenn) in Philadelphia, PA, USA. After he returned to KI, Sven-Christian joined the Translational Cardiology Group of Prof. Magnus Bäck in the Division of Cardiovascular Medicine. Sven-Christian was appointed Adjunct Assistant Professor at KI and recently became a Team Leader at CMM. Scientifically, Sven-Christian has a broad interest in the regulation of lipid mediators and potential pharmacological intervention strategies in human disease. His work has highlighted the structural inter-

action of novel pain killers with their target enzyme, the consequences of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) and the deletion of their target enzyme in atherosclerosis, and how undesired thrombosis on calcified aortic valves, which is mediated by eicosanoid lipid mediators, can be prevented. In a clinical trial of COVID-19 patients, he has also investigated immunomodulatory effects of fish oil supplementation, which enhances the substrates and precursors of specialized pro-resolving lipid mediators

Zihan Qin



Zihan is a second-year PhD student in our team. She attained her MD from Fudan University (Shanghai, China) in 2018 and subsequently completed her MSc degree at Shanghai Jiao Tong University, concentrating on transcriptional regulation of myocardial infarction and ischemia-reperfusion injuries due to circadian rhythm disturbances. Zihan's current research interest

is focused on calcific aortic valve disease (CAVD) and the interplay between inflammation and ferroptosis, a newly discovered iron-mediated form of regulated cell death. Her goal is to elucidate pathophysiological mechanisms that promote calcification via valvular hemorrhage and to identify potential therapeutic targets for medical intervention in CAVD.

Bahrati Borovsky

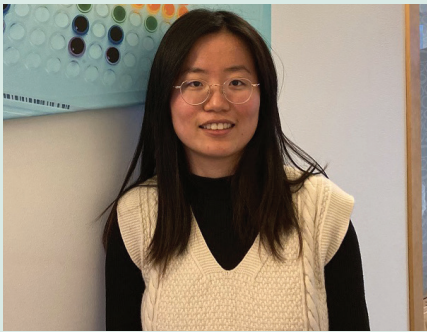


Bahrati joined our team for an internship during the summer of 2023 and enjoyed the work so that he continues to work with us as an undergrad researcher in parallel to his studies of medicine in term 2 at KI. He investigates the effect of cytokines secreted by differentially primed macrophages on valvular calcification with a focus on single

nucleotide polymorphisms (SNPs) in key players of tissue calcification. He also aims to establish co-culture conditions of human valvular and immune cells.



Simin Zhang



Coming from the province of Hunan in China, Simin completed her MSc degree in Pharmacology at Sun Yat-sen University (Guangzhou, China). In 2021, her journey led her to Stockholm to start her doctoral education, in which she investigates inflammation resolution in cardiovascular disease. Using mass spectrometry, Simin investi-

gates the lipid mediator profile of human macrophages to elucidate their pathophysiological role in abdominal aortic aneurysm. She also develops new mass spectrometry-based methods with the aim to expand the measurable lipidomic profile and to be able to detect and quantify specialized pro-resolving mediators.

Peri Noori



Peri is a senior research technician and recently joined our team as lab manager on a part-time position shared with her obligations as contact person for the Single-Cell Core Facility at CMM. She obtained her MSc degree in Molecular Genetics from Lomonosov University (Moscow, Russia) and has over 30 years of experience with molecular biology techniques. In our team she

manages the lab organization and assists with RNA isolations from all kinds of samples, single-cell library preparation, and single-cell RNA sequencing.

Amit Laskar



Amit received both his MSc degree in Medical Bioscience and his PhD in Medical Sciences from Linköping University. He works as a part-time biomedical assistant in our team besides his position as a research coordinator in the Dermatology Research Group. In our lab he explores the phagocytotic activity of macrophages using live cell

imaging and its pharmacological modulation. In another project he aims to decipher the role of specialized pro-resolving lipid mediators and their receptors in the rare genetic skin disease pseudoxanthoma elasticum (PXE).

New CMMers



Joyce van de Ven, a master student from the Master Molecular Mechanisms of Disease program at Radboud University, in the Netherlands, has joined Eduardo Villablanca's lab. She is working in the project led by postdoc Gustavo Monasterio, aimed at addressing the link between intestinal disorders and salivary glands dysfunction.



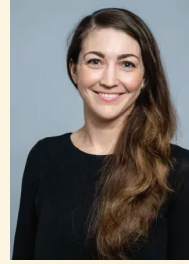
Dr. Yigit Koray Babal is a new postdoc, working with Sebastian Lewandowski (Bob Harris' Group at CMM). He defended his PhD thesis in 2023, in Turkey, within the field of computational biology. His research focus was about gene regulation of nervous system development and neurodegenerative diseases. He will be working on the activation trajectories of brain fibroblast cells using single cell multi-omics approaches.



Maria Gil is a master student in advanced immunology from the University of Barcelona. She has started a one-year internship that will continue until September 2024 and will be working under the supervision of PhD student Alexandra Argyriou on the characterization of TRM T cells in rheumatic diseases.



Dr. Nilanjan Ghosh has been recruited as a postdoc researcher under supervision of Assistant Professor Zhichao Zhou in John Pernow's group. His current research topic is on the communication mechanisms of erythrocyte-mediated endothelial dysfunction in type 2 diabetes with a focus on the role of non-coding RNAs. Nilanjan obtained his PhD at University of Otago in New Zealand in 2021 followed by a postdoc training at Maryland School of Medicine, USA. Before joining KI, he worked as a Clinical Research Assistant at Medical Research Institute of New Zealand.



Dr. Camilla Engblom recently joined CMM as an Assistant Professor in the Division of Immunology and Allergy and the Department of Medicine, Solna, hosted by Dr. Eduardo Villablanca's lab. During her PhD in Immunology at Harvard University in Dr. Mikael Pittet's lab (Massachusetts General Hospital/Harvard Medical School), she uncovered: i) functionally important long-range tumor-immune interactions, ii) ways to sensitize tumors to immuno-

therapy, and, together with Dr. Allon Klein's lab (Harvard Medical School), iii) cross-species tumor-infiltrating myeloid cell diversity. For her post-doc in Dr. Jonas Frisén's lab (Karolinska Institutet), Camilla Engblom developed a spatial transcriptomics-based tool (Spatial VDJ) to map B cell and T cell receptors within human tissues together with the Lundeberg group (KTH-Royal Institute of Technology, Sweden). In support of her work, Camilla Engblom has received multiple competitive Swedish starting grants, including SciLifeLab Fellow and SSMF to set up her lab. Dr. Engblom's current research aims to uncover the functional cellular and molecular niche of tumor-associated B cell clones and to harness clinically relevant tumor-associated B cell receptor sequences for anti-cancer therapy.

The most recent paper from Camilla Engblom, published in December:

Engblom C, Thrane K, Lin Q, Andersson A, Toosi H, Chen X, Steiner E, Lu C, Mantovani G, Hagemann-Jensen M, Saarenpää S, Jangard M, Saez-Rodriguez J, Michaëls-son J, Hartman J, Lagergren J, Mold JE, Lundeberg J, Frisén J. Spatial transcriptomics of B cell and T cell receptors reveals lymphocyte clonal dynamics. *Science* 2023 Dec 8;382(6675):eadf8486. doi: 10.1126/science.adf8486. Epub 2023 Dec 8.

New appointments



Nicolas Ruffin was appointed Do-cent in Immunology on November 1st at the Department of Clinical Neuroscience, Karolinska Institutet.

Funding and grants

Stephen Malin has received SEK 3,000,000 from the Ming Wai Lau Centre for Reparative Medicine (MWLC) Seed Grant Programme for the project 'From disease to recovery: Investigating the effects of APOB-lipoproteins on hematopoietic stem cells in cardiometabolic disease.' The project and funding is shared with Peter Woll at the Department of Cell and Molecular Biology, Karolinska Institutet.

Stephen Malin's project has also been accepted in the Drug Discovery and Development Platform at SciLifeLab, one of four selected in Sweden. Within the project, the researchers will develop new anti-inflammatory treatments for monogenic autoimmune disorders and cardiometabolic disease.

Zhichao Zhou was awarded SEK 2,700 000 from the Swedish Heart and Lung Foundation for the project 'Erythrocyte-derived non-coding RNAs: new mediators of vascular injury in diabetes'.

Eric Herlenius has received SEK 1,600,000 from the Swedish Brain Foundation for the project 'INSPIRATION - screen, detect and protect against inflammation-induced life-threatening events.'

Catharina Lavebratt has received a SEK 1,500,000 donation from Bo and Ulla Lundevall for her research.

Carolina Hagberg was awarded a project grant in Endocrinology & Metabolism of consisting of DKK 1,000,000 (about SEK 1,600,000) from Novo Nordisk Foundation, entitled 'Adipocyte functionality is maintained by metabolic cooperation with endothelial cells'.

Gustavo Monasterio was awarded with the European Crohn's and



Colitis Organization (ECCO) Grant consisting of € 80,000 for the project entitled 'Investigation regenerative pathways in salivary glands to mitigate oral manifestations of inflammatory bowel diseases'.

Catharina Lavebratt has received a donation for her research from Ulf Lundahls Minnesfond through the Swedish Brain Foundation, consisting of SEK 700,000.

Ida Nilsson has received a donation from Ulf Lundahls Minnesfond consisting of SEK 600,000 for the project entitled 'Translational studies of anorexia nervosa'.

Srustidhar Das received SEK 500,000 Sfrom Åke Wibergs Stiftelse for the project "Functional and mechanistic insights into the role of B cells and tumor microenvironment in colorectal cancer".

Aida Collado has been awarded a SEK 225,000 grant from the Foundation for Geriatric Diseases for the project 'Unraveling the role of red blood cells-derived extracellular

vesicles in the development of atherosclerosis in type two diabetes.

Ravi Kumar has received a research grant from the Ulla and Gustaf af Ugglas foundation, consisting of SEK 200,000 for the project 'Citruinlerad antigenspecifik CD4+ T-cellsimmunitet vid reumatoid artrit – mot tolerans och direkta patientterapi'.

Xinyi Li, postdoc in Magdalena Paolino's Team received a research grant from the Foundation for Geriatric Diseases for the project 'Uncovering novel physiological roles for ubiquitination in atherosclerosis'.

Gustavo Monasterio was awarded a SEK 197,000 to organize a conference entitled 'Oral-gut Symposium 2: Mucosal Immunity at the Oral-Gut Axis in Health or Disease (2nd Version)'. The conference will be held at Karolinska Institutet and it is co-organized with Eduardo Villablanca (Karolinska Institutet) and Juliana Barreto de Albuquerque (Harvard Medical School/Massachusetts General Hospital).

Funding and grants

KID Funding

The following CMMers have been awarded the KID funding 2023 as principal supervisors for a PhD student:

Anna Smed Sörensen for the PhD project 'Monocyters och dendritiska cellers funktion i immunpatogenes vid sarkoidos i lungorna.'

Joakim Dahlin for the PhD project 'Kartläggning av normal och malign hematopoes med singel-cell multi-omics-analyser'.

Ning Xu Landén for the PhD project 'Avkodning av RNA-regulomet för mänsklig hudsårsläkning.'

Bob Harris for the PhD project 'Nya immunterapeutiska terapier vid amyotrofisk lateralskleros'.

Leo Hanke for the PhD project ' Strukturell och funktionell dissektion av Paramyxovirusinträde'.

Zhichao Zhou for the PhD project ' Erytrocyt-deriverade extracellulärvesikler: mediator och behandlingsmål för kärlkomplikationer vid typ 2-diabetes'.

Ida Nilsson for the PhD project 'Translationella studier av anorexia nervosa'.

Lina Marcela Diaz Gallo Norlén for the PhD project 'Karakterisering av undergrupper av patienter med systemisk lupus erythematosus genom att integrera omics och fenotypiska data.'

Carmen Gerlach for the PhD project 'CD8 T-cells immunitet mot infektioner i möss och människor.'

Camilla Engblom for the PhD project 'Spatial analysis av B cell kloner under tumörutveckling och immunterapi.'

Begum Horuluoglu for the PhD project 'Autoantikroppar och B-celler hos patienter med myosit.'

Fredrik Piehl for the PhD project 'Kartläggande av sjukdomsmekanismer i olika faser av multipel skleros med avancerade avbildningstekniker och lösliga biomarkörer'.

Taras Kreslavskiy for the PhD project 'Känner gamma-delta T-lymfocyter i tumörerna igen tumörantigener?'

Nicolas Ruffin for the PhD project 'Antigenreceptorspecificiteter som driver neuroinflammation vid multipel skleros'.

Eduardo Villablanca for the PhD project 'Ett spatialt funktionellt atlas för den läkande tarmbarriären.'

Catharina Lavebratt for the PhD project 'Biomarkörer för psykos och effekter av fysisk träning.'

Peder S. Olofsson for the PhD project 'Nervös reglering av hepatocyter och hepatiska stellatceller vid inflammation.'

Other grants & funded positions

Eric Herlenius received a SEK 1,000,000 grant from Digital Futures ISP to support a postdoctoral position in Collaboration KTH and Region Stockholm-Karolinska Institutet. The title of the project is 'EMERDENSY, (Explainable Machine Learning for Development of Early Warning Systems).'

John Pernow received SEK 558,000 from the Swedish Heart and Lung Foundation for a PhD position for the student John Tengbom who will work on the project entitled 'The role of red blood cell dysfunction in atherosclerotic cardiovascular disease'.

Honorary doctorate

CMM Group Leader Professor Robert A. Harris (Bob Harris) received a honorary doctorate at the Iuliu Hatieganu University of Medicine and Pharmacy (UMF) Cluj-Napoca, Romania. The honour is given in recognition of Bob Harris' exceptional contributions to the development of the university, especially in the context of the European University Alliance NeurotechEU project.

Bob Harris has been Karolinska Institutet's scientific lead in the NeurotechEU project since its start in 2019.

"I am greatly honoured by rector Anca Dana Buzoianu and her university awarding me this distinction," says Bob Harris, professor at the Department of Clinical Neuroscience, Karolinska Institutet and CMM Group Leader. "The point of a university alliance is to help each other and to learn from each other while working together, and I am happy if our Romanian colleagues appreciate my efforts."

NeurotechEU (the European University of Brain and Technology) is an alliance of eight European universities which aims to build a trans-European network of excellence in brain research and technologies by 2040.

This text is based on an article from the Karolinska Institutet website.



Rector Anca Dana Buzoianu presents the award to honorary doctor Robert Harris. Photo: N/A.



Publications

CMMers IN BOLD

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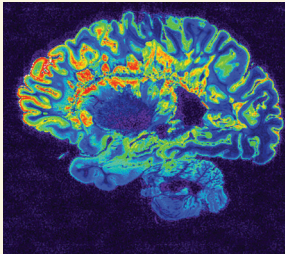
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Mini Abstracts

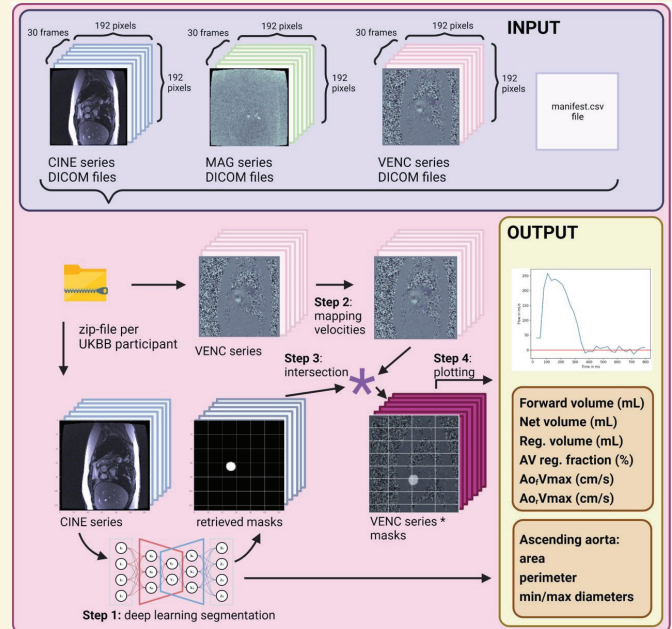
EBV and multiple sclerosis



Publication: Thomas OG, Olsson T. Mimicking the brain: Epstein-Barr virus and foreign agents as drivers of neuroimmune attack in multiple sclerosis. *Front Immunol* online. 2023;14. Available from: <https://www.frontiersin.org/articles/10.3389/fimmu.2023.1304281>.

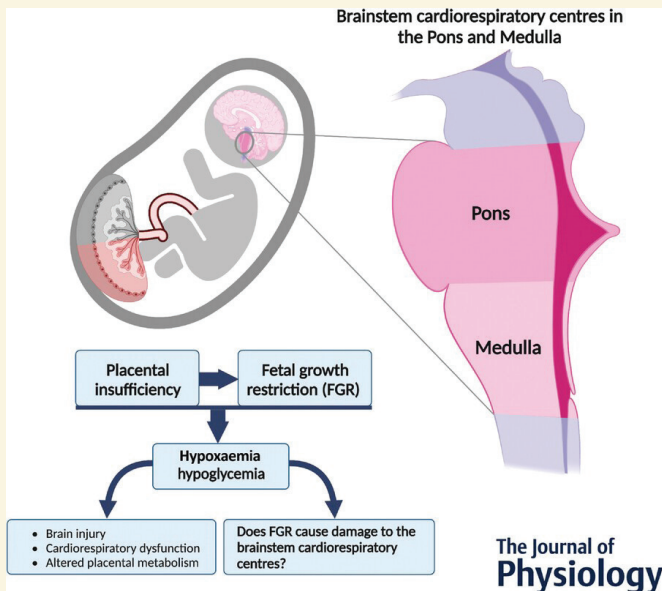
The review summarises current knowledge of how adaptive immune responses to Epstein-Barr virus and other pathogens may damage the brain through structural mimicry to neuronal autoantigens in multiple sclerosis, and briefly discussing other infectious mechanisms that may be involved.

Cardiac dynamic flow and genetics



Publication: Gomes B, Singh A, O'Sullivan JW, Amar D, Kostur M, Haddad F, Salerno M, Parikh VN, Meder B, Ashley EA. Genetic architecture of cardiac dynamic flow volumes. *Nat Genet.* 2023 Dec 11. doi: 10.1038/s41588-023-01587-5. Online ahead of print.

Neuropathologies in developing brainstem



Publication: Ahmadzadeh E, Polglase GR, Stojanovska V, Herlenius E, Walker DW, Miller SL, Allison BJ. Does fetal growth restriction induce neuropathology within the developing brainstem? *J Physiol.* Nov 2023;601(21):4667-4689.

This paper introduces DeepFlow, a deep learning system utilizing phase contrast cardiac magnetic resonance imaging to analyze cardiac blood flow. This large-scale study was performed in 37,967 individuals. The findings, employing a mixed linear model and Mendelian randomization, unveil significant genetic associations related to cardiac dynamic flow volumes, such as aortic forward velocity and left ventricular stroke volume. Key genes (ELN, FBN1, ULK4) implicated in connective tissue and blood pressure pathways underscore their role in aortic valve function, emphasizing their contribution in the general population.

Investigating the biomedical potential of shark skin

PUBLICATION

CMM researchers Jakob Wikström and Ety Bachar-Wikström have recently published a study exploring the unique biochemical properties of shark skin, particularly focusing on the thin mucus layer covering it. The study was conducted at the Marine Biological Laboratory in Woods Hole, Massachusetts, where Jakob and Ety used the resources that made this work possible.

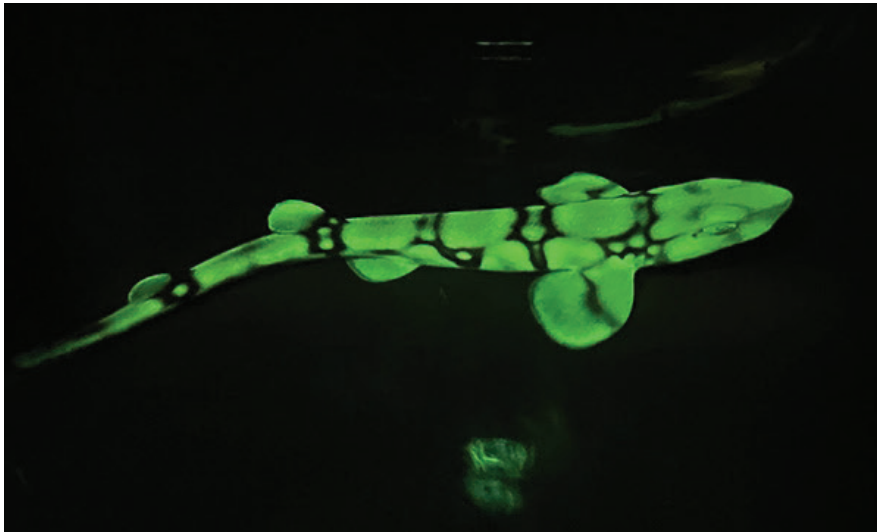
While sharks exhibit remarkable wound-healing abilities in the wild, this trait has not been extensively studied in controlled lab conditions. Their research showed that the chemical composition of shark mucus differs significantly from that of bony fish, resembling mammalian mucus, including human mucus, in acidity.

The findings suggest potential biomedical applications, such as the development of wound care treatments. The researchers emphasize the importance of characterizing these animals for both human relevance and a deeper understanding of their unique biology. Further studies are underway to delve into the distinct biochemical properties of various shark and skate species.

Publication: Bachar-Wikström E, Thomsson KA, Sihlbo C, Abbo L, Tartor H, Lindén SK, Wikström JD.) Identification of Novel Glycans in the Mucus Layer of Shark and Skate Skin. *Intl. J. Mol. Sci.*, 2023. DOI: 10.3390/ijms241814331.



Jakob Wikström and Ety Bachar-Wikström in the Marine Biological Laboratory. Photo: MBL.



The chain catshark (*Scyliorhinus retifer*) is one of four elasmobranch species (sharks, skates, rays and sawfish) known to be biofluorescent. Photo: Jakob Wikström and Ety Bachar-Wikström.

CMM events and outreach

WASOG 2023

The World Association of Sarcoidosis and other Granulomatous Disorders (WASOG) 2023 international conference was held from June 19 to 21, 2023, at Aula Medica, Karolinska Institutet, Stockholm, Sweden with the theme 'Big data - How to move the field towards precision medicine in Interstitial Lung Diseases (ILDs)'.

Natalia Rivera, Junior Principal Investigator at Karolinska Institutet and CMM team leader was the conference chair of WASOG 2023 and together with the local and international committees created a dedicated event that provided to all the attendees an unmatched opportunity to learn the latest developments in the field of ILDs. At CMM, Olga Chuquimia was also part of the local organizing committee.

There were over 300 delegates from more than 35 different regions of the world including United States of America, Netherlands, Sweden, Turkey, Germany, Portugal, France, United Kingdom, Japan, Italy, Croatia, Ukraine, Finland, Norway, Australia and more that apart of attending lectures could use this event to reconnect and network for potential collaborations with participants worldwide.

The 3-day intense scientific program offered 10 sessions that highlighted the latest advancements in the research of ILDs with topics related to clinical updates and



WASOG conference session in Aula Medica.
Photo: Stefan Zimmerman.

treatment options, big data, biobanks, and single-cell approaches, artificial intelligence applications toward precision medicine, new concepts on disease characterization, phenotypes, and socioeconomic determinants, and Immunological approaches and methods covered by insightful oral and poster presentations. MESARGEN consortium, a pioneering international framework funded by the Swedish Heart Lung Foundation that aims to revolutionize the genomics field of sarcoidosis world-



Poster session. Photo: Stefan Zimmerman.



Natalia Rivera presenting at WASOG.
Photo: Private.

CMM events and outreach

WASOG 2023



Participants in the WASOG conference. Photo: Stefan Zimmerman.

wide was introduced by Natalia Rivera's presentation "Genetic architecture of sarcoidosis using multi-ethnic cohorts in the MESARGEN consortium" showing novel results from MESARGEN studies under her leadership. The conference also offered patient education sessions focused on the quality of life of ILD patients and serial Industry - Sponsored lectures by Boehringer Ingelheim, Xentria, aTyr Pharma, Kinevant and more companies that highlighted the latest progresses in ILDs treatment. A packed social program highlighting the Vasa Museum, Skansen, and Nobel Museum was also included and offered during the WASOG 2023 conference to all delegates that provided a glimpse of the Swedish culture and an authentic midsummer celebration experience.

Among of the of the scientific program rich discussions, WASOG 2023 took the opportunity to honor Dr. Robert P. Baughman as the recipient of the "Inaugural D. Geraint James Award 2023" and Professor Johan Grunewald as the recipient of the "Lifetime Science Achievement Award 2023."

WASOG delegates, including the president of the organization, Dr. Daniel Culver, praised the conference as one of the best WASOG conferences in years, highlighting a well-organized event with a strong focus on clinical and translational aspects in ILDs. The WASOG 2023 conference will be considered the standard for future WASOG conferences.

WASOG 2023 is currently offering a post-conference session viewing on demand that will be available until 31 December 2023. More information can be found at wasog2023.org and on the conference social channels on LinkedIn, X (formerly Twitter) and the WASOG 2023 app.

Text by Olga Chuquimia & Natalia Rivera

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Assistant Professor, Respiratory Medicine,
Department of Medicine Solna
natalia.rivera@ki.se

MESARGEN: <https://mesargenwordpress.com/>



CMM events and outreach

3TR fourth annual meeting



Participants at the 4th 3TR Annual Meeting in Stockholm. Photo: Ulf Sirborn.

On October 4th and 5th 2023, the 4th 3TR Annual Meeting took place at Karolinska Institutet. The meeting was hosted by Sven-Erik Dahlén (IMM) and Ioannis Parodis (MedS). Having the meeting hosted during the announcements of the 2023 Nobel Prizes was a particularly special occasion.

Taxonomy, Treatment, Targets and Remission (3TR) is the largest to date European immunology project, setting out to fundamentally increase our knowledge of the molecular pathways and mechanisms linked to response and non-response to therapy in seven immune-mediated, allergic, and inflammatory diseases (SLE, RA, MS, Crohn's disease, ulcerative colitis, asthma, COPD). 3TR has received funding from the Innovative Medicines Initiative 2 Joint Undertaking (JU). The JU receives support from the EU's Horizon 2020 research and innovation programme and the European Federation of Pharmaceutical Industries and Associations (EFPIA). The meeting started with a welcome talk by Professor Annika Östman Wernerson, President of Karolins-

ka Institutet, about the history and current status of Karolinska Institutet. Next, Professor Klas Kärre, past chairperson of the Nobel Committee for Physiology or Medicine, traced the life of Alfred Nobel and shared insights into the work of the Nobel Committee. Among a series of inspiring talks was that by the 3TR scientific officer Klelia Salpea from the Innovative Health Initiative (IHI), who highlighted the public-private partnership's current goals, priorities, and strengths, as well as that by the 3TR Advisory Board Member Jonathan Knowles who played a central role in establishing and launching the initiative in 2008 as the Chairman of the Directors' Group of the EFPIA. Finally, Siobhán O'Sullivan, the 3TR Ethics Advisor, argued in her talk to reconceptualise data sharing as a "social contract" based on reciprocal commitment and consensus on what is considered a public good and trustworthy collaboration.

After this inspiring opening, the rest of day 1 was dedicated to updates and discussions of the different work packages and disease groups, each presenting their

CMM events and outreach

3TR fourth annual meeting

progress over the last year. Day 1 closed with dedicated break-out sessions for the individual disease groups to discuss operational issues, recruitment strategies, and contributions to cross-disease activities. The results of these exchanges within the different disease groups was followed on the second meeting day by a lively plenary discussion of possible directions for the upcoming cross-disease analyses, the core of 3TR. Particularly inspiring was the Q&A session with representatives from the 3TR Patient Advisory Group.

The meeting closed with a General Assembly and a summary of the main action items from this meeting by the 3TR Coordinator Marta E. Alarcón-Riquelme (FPS) and the Project Lead Terry Means (Sanofi).

We continue dedicated to our mission i.e., getting the right drug to the right patient at the right time. Ioannis Parodis and his team at CMM are proud contributors to the effort.

Text by Ioannis Parodis



From the Q&A session with the 3TR patient advocates.
Photos: Ulf Sirborn

Digitalize in Stockholm Conference 2023

Digitalize in Stockholm is an annual conference and meeting place for global thought leaders and rising stars in academia, industry, government, and civil society – all engaged in digital transformation.

CMM Group Leader Eric Herlenius is a Professor of Pediatrics at Karolinska Institutet and Senior Consultant, Astrid Lindgren's Children's Hospital. Together with Rickard Lövström, Health Data Specialist at the Karolinska University Hospital and Erik Nordell, Research Manager at Ericsson, he participated in a panel discussion on the topic 'Digitalization in Complex Systems'. More specifically, the panelists conferred about matters summarized in this abstract:

"In large complex systems, e.g. the healthcare sector, digitalization is at the front line in several areas, and AI is introduced widely. In parallel, these systems/organizations depend on robust digital/AI tools compatible with other digital tools. This is to avoid attitudes against digitalization.

Several consultants and large digitalization/Medtech corporates offer professional solutions. However, they often fail because of a lack of knowledge about the specific organization."

CMM events and outreach

Epigenetics course



Participants in the epigenetics course. Photo: Private.

Lara Kular, Majid Pahlevan Kakhki, and Maja Jagodic conducted a course focused on Epigenetics and its Applications in Clinical Research from October 23rd to 27th, 2023. The course attracted a total of 22 participating students and benefited from insights provided by 17 national and international speakers specialized in various aspects of epigenetics. The purpose of the course was to provide doctoral students with a basic understanding

of epigenetic mechanisms and their role in the etiology of common complex diseases. Through examples of cutting-edge technologies and their applications in studying complex diseases such as cancer and chronic inflammation, students were encouraged to explore the translation of epigenetic principles and approaches into innovative clinical applications.

Chairing at conferences

Natalia Rivera acted as the chair or moderator at two conferences this fall. On September 11th she chaired the session titled 'Sarcoidosis: disease mechanisms and pathogenesis' at the European Respiratory Society (ERS) International Congress 2023, taking place in Milan, Italy, 9-13 September. During the American Society of Human Genetics (ASHG) Conference 2023, 1-5 November in Washington DC, Natalia chaired the session on 'Gene discovery from large-scale studies'.



Natalia Rivera chairing a session at ASHG. Photo: Private.

CMM photo contest 2023:

The winners

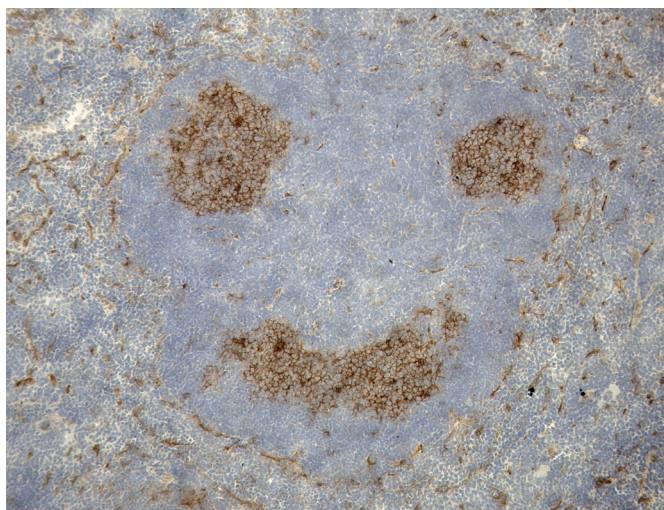


1st prize

Artwork name: The bless

Photographer: Yunbing Shen

Shining through the L8 building, the sun and we celebrate even the smallest achievements together.



2nd prize

Artwork name: The Smiley of germinal center

Photographer: Shiyong Lin

It was photographed while I was processing and observing my immunohistochemistry stains. Low-density lipoprotein (LDL) is closely related to hyperlipidemia. Immunohistochemistry staining of the spleen of mice immunized with low-density lipoprotein-reactive T cells showed a more intense germinal center imprint, accompanied by smiles, and a decrease in plasma cholesterol levels.



3rd prize

Artwork name: Long shadows of late work

Photographer: Gustavo Monasterio

This picture was taken after a long day, with long exposure, in a long night after a long day of work at the lab.

Upcoming events

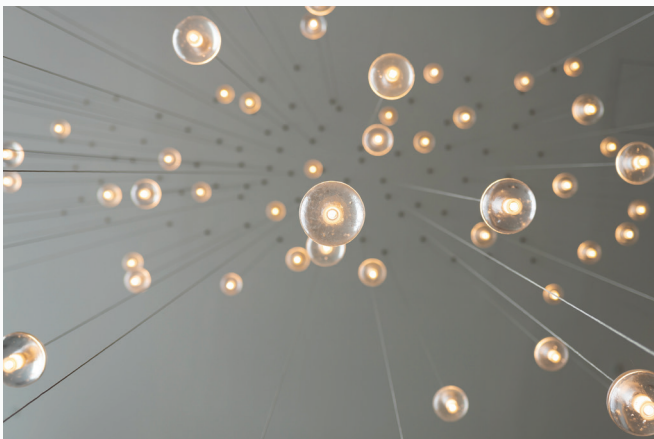
CMM Seminar Series starting in 2024: Open nomination of speakers

We would like to receive your nominations of excellent Swedish and/or international scientists that could be of broader scientific interest to the CMM community.

The nominations should include a brief description of the speaker's scientific profile and relevance to the CMM scientific community (not to exceed more than one page).

Please send your nominations to CMM Communication communication@cmm.se (no specific deadline). Selection of speakers will be made by the CMM Steering Group.

CMM will (together with the nominator) arrange a scientific programme for the invited speaker, hosting the seminar as well as providing the opportunity for networking reception after the talk, with some drinks and light bites. For a selected number of guests/speakers CMM can also contribute towards travel and accommodation costs if required.



Dissertation Charlotte de Vries

Friday, January 12, 2024 at 09:00

Speaker: Charlotte de Vries

Topic:
From oral infection to autoimmunity : studies of antibodies and B cells on the path towards rheumatoid arthritis

Location:
CMM Lecture Hall, Visionsgatan 18, L8:00, Ground Floor.
Karolinska University Hospital, Solna



New graphic profile

Dear CMMers,

This is the first issue of CMM News since the launch of the new graphic profile for CMM along with a new website. The most prominent feature of the graphic profile is the logo. What is the idea behind the new logo?

Like CMM, the shape represents several values - from the different perspectives of translational scientific knowledge to the CMM L8 building itself as an open and welcoming meeting place. The symbol reminds us that the great discoveries are within reach as long as we look at the challenges from the right perspective.

The graphical pattern (the symbols on top of this page) represents the collective effort between the different disciplines and access to the research infrastructure made possible by CMM. It can be seen as a beehive of creative exploration and also forms an abstract representation of a molecular structure.

How do we use the graphic profile of CMM and what should you think about if you, for instance, use our logo in different contexts?

On our website you find a [downloadable document](#) with the full description of the CMM brand and the graphic profile in Swedish. It will shortly be available in English.

Do not hesitate to contact the Communication office at CMM (communication@cmm.se) if you have any questions or would like to give us feedback regarding the new website and graphic profile.

Wishing you all happy holidays,

Magdalena Lindén



Happy Holidays!



Next deadline for sending in
contributions to CMM News
24th of January 2024