Cerebral Vascular Biology Meeting

18-22 June, 2023

Uppsala, Sweden

Conference Agenda

18 June 2023, Uppsala University Main Building	
3:30 pm - 5:00 pm	**Registration** Uppsala University Main Building, Foyer
5:00 pm - 7:10 pm	1. **Opening session** Grand Auditorium Discussion leaders: **Christer Betsholtz** (Uppsala University/Karolinska Institutet, Sweden), **Maarja Andaloussi Mäe** (Uppsala University, Sweden) **CVB2023 Organizing Committee** (Uppsala University, Sweden) Welcome greetings **Mats Larhed** (Vice-rector, Uppsala University, Sweden) Welcome to Uppsala University **Christer Betsholtz** (Uppsala University/Karolinska Institutet, Sweden) Acknowledgement of research achievements of Prof. Elisabetta Dejana **Mats Larhed** (Vice-rector, Uppsala University, Sweden) Diploma award to Prof. Elisabetta Dejana

	Keynote speakers **Elisabeth Tournier-Lasserve** (University of Paris, France) Genetic basis of small arteries disease from fetal life to adulthood **Maria Lehtinen** (Harvard Medical School, USA) Illuminating the choroid plexus brain barrier and its functions Presentation of Uppsala University **Annika Windahl Pontén** (Uppsala University, Sweden) History of Uppsala University
7:10 pm - 9:00 pm	**Group photo** Uppsala University Main Building, Foyer **Reception** Faculty Chambers, 2nd Floor, Uppsala University Main Building

19 June 2023, UKK, Hall B

8:30 am – 10:05 am	2. **Fluid transport and vascular networks** Discussion leaders: **Jean-François Ghersi-Egea** (Lyon Neurosciences Research Center, INSERM, France), **Maria Ascencion Globisch** (Uppsala University, Sweden) Keynote speaker **Gou Young Koh** (Center for Vascular Research, South Korea) Exploring novel routes of cerebrospinal fluid drainage Invited speakers **Kari Alitalo** (University of Helsinki, Finland) Meningeal lymphatics in health and in brain disorders **Christer Betsholtz** (Uppsala University/Karolinska Institutet, Sweden) Multiple cell types make brain barriers – new insights into the arachnoid membrane and its barrier

10:05 am – 10:35 am	**Coffee/tea break**
10:35 am – 12:05 pm	**Chenghua Gu** (Harvard Medical School, USA) The intra- and inter-cellular communication at the blood-brain barrier **Ralf Adams** (Max Planck Institute for Molecular Biomedicine, Germany) Cellular and molecular mechanisms controlling mural cell specification **Martin Dichgans** (Ludwig-Maximilians-University Munich, Germany) Brain Endothelium: A Nexus for Small Vessel Disease <u>Selected based on a submitted abstract</u> **Jin-Hui Yoon** (Center for Vascular Research, South Korea) The nasopharyngeal lymphatic plexus serves as a central hub for the drainage of cerebrospinal fluid
12:05 pm – 1:00 pm	**Lunch**
1:00 pm – 2:35 pm	3. **Brain tumor barriers: from molecular mechanisms to treatment opportunities (Sponsored by Cancerfonden)** Discussion leaders: **William Elmquist** (University of Minnesota, USA), **Roberta Lugano** (Uppsala University, Sweden) <u>Keynote speaker</u> **Rakesh Jain** (Harvard Medical School, USA) Improving treatment of primary and metastatic brain tumors: Emerging Insights and strategies <u>Invited speaker</u> **Anna Dimberg** (Uppsala University, Sweden) Vascular regulation of the tumor microenvironment in glioblastoma <u>Rapid fire poster session</u> **Ya'el Courtney** (Harvard University, USA)

	Signals making a splash: how the choroid plexus harnesses cerebrospinal fluid for developmental communication **Adrian Madarasz** (Theodor Kocher Institute, University of Bern, Switzerland) Subarachnoid erythrocytes clear rapidly along cranial nerves to cervical lymphatic vessels **Katalin Todorov-Völgyi** (Institute for Stroke and Dementia Research, Germany) The stroke risk gene Foxf2 maintains brain endothelial cell function via Tie2 signaling **Erik Bakker** (Amsterdam University Medical Center, Netherlands) Perivascular clearance of blood proteins after blood-brain barrier disruption in a rat model of micro-infarcts **Virginie Lam** (Curtin University, Australia) Plasmalogen supplementation attenuates doxorubicin-induced cognitive impairment and neurodegenerative changes in mice
2:35 pm – 4:00 pm	**Coffee/tea break** **Poster Session I (Poster number: 1-100), Hall C**
4:00 pm – 5:50 pm	<u>Invited speakers</u> **Patricia Steeg** (Centre for Cancer Research, National Cancer Institute, USA) Brain Metastases of Breast Cancer **Matthia Karreman** (German Cancer Research Center, Germany) Entry into the brain: Mechanisms of cancer cell extravasation and T cell recruitment in brain metastases **Benoit Vanhollebeke** (Université libre de Bruxelles, Belgium) Single-cell control mechanism of brain angiogenesis and blood-brain barrier formation

	Selected based on submitted abstracts **Imola Wilhelm** (Biological Research Centre, Szeged, Hungary) Pericytes promote breast cancer brain metastasis formation A cavernoma patient story - Mia Caderas (video presentation) **Hua Huang** (Uppsala University, Sweden) CCM3 is essential in sprouting angiogenesis
20 June 2023, UKK, Hall B	
	4. **The BBB and drug delivery** Discussion leaders: **Stina Syvänen** (Uppsala University, Sweden), **David Brody** (NIH, NINDS, USA) Keynote speaker **Robert Thorne** (Denali, USA) The path to the brain: transporting biotherapeutics across the BBB
8:30 am – 10:05 am	Invited speakers **Maarten Dewilde** (KU Luven, Belgium) Nanobodies to cross the blood-brain barrier **Yasuo Uchida** (Hiroshima University, Japan) Next generation quantitative proteomics opens up the new fields of CNS barrier studies
10:05 am – 10:35 am	**Coffee/tea break**
10:35 am – 12:00	Invited speaker **Won-Suk Chung** (Korea Advanced Institute of Science and Technology, South Korea) Anti-inflammatory clearance of amyloid beta by a chimeric Gas6 fusion protein

	Selected based on submitted abstracts **Danica Stanimirovic** (National Research Institute of Canada, Canada) Brain delivery of therapeutics using IGF1R5, a single-domain antibody targeting insulin-like growth factor-1 receptor **Urs Langren** (Roche, Switzerland) Beyond the shuttle: Advances in brain delivery of biologics and novel tools for further optimization **Helena Karlström** (Karolinska Institutet, Sweden) Active immunotherapy reduces NOTCH3 deposition in brain capillaries in a CADASIL mouse model **Quentin Smith** (Texas Tech University Health Sciences Center, USA) Blood-brain barrier permeability for highly lipophilic solutes greatly exceeds prior estimates: three case studies that illustrate significance
12:00 pm – 1:00 pm	**Lunch**
1:00 pm – 2:30 pm	5. **Brain imaging: from visualization to function** Discussion leaders: **Ruiqing Ni** (University of Zurich, Switzerland), **Ayal Ben-Zvi** (Hebrew University of Jerusalem, Israel) Invited speakers **Dag Sehlin** (Uppsala University, Sweden) Brain PET imaging with BBB penetrating antibody ligands **Nicolas Tournier** (Université Paris-Saclay, France) Imaging the neuro-vascular transport and coupling for translational pharmacology **Martin Thunemann** (Boston University, USA) Mechanistic underpinning of human neuroimaging – cortical interneurons in CBF regulation Rapid fire poster session

	Krzysztof Kucharz (University of Copenhagen, Denmark) Two-photon microscopy in vivo reveals brain vessel type-specific loss of glycocalyx caused by apoM/S1P signaling impairment **Frida Bällgren** (Uppsala University, Sweden) Profound influence of lipopolysaccharide-induced inflammation on oxycodone active transport across blood-brain interfaces: a rat microdialysis study **Elin Wik** (Uppsala University, Sweden) Brain pharmacokinetics of mono- and bispecific amyloid-beta and alpha-synuclein antibodies in mice measured by high cut-off microdialysis
2:30 pm – 3:00 pm	**Coffee/tea break**
3:00 pm – 4:05 pm	<u>Invited speakers</u> **Martin Lauritzen** (University of Copenhagen, Denmark) Two-photon microscopy imaging of neurovascular functions **Laura Bojarskaite** (Oslo University, Norway) Gliovascular dynamics in mice across sleep cycle <u>Selected based on a submitted abstract</u> **Pilhan Kim** (Korea Advanced Institute of Science and Technology, South Korea) Longitudinal intravital imaging of cerebral microinfarction with disruption of neurovascular unit and blood brain barrier
6:00 pm – 01:00 am	**Conference dinner** Uppsala Castle

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9:00 am – 10:10 am	6. **Neurodegeneration and vascular ageing** Discussion leaders: **Francesca Cicchetti** (Université Laval, Canada), **Lester Drewes** (University of Minnesota Medical School Duluth, USA)

	Keynote speaker **Katerina Akassoglou** (University of California San Francisco, USA) Blood drivers of neurodegeneration Invited speaker **Dritan Agalliu** (Columbia University, USA) Unraveling the cellular sources and mechanisms of neo-angiogenesis in neuroinflammatory diseases
10:10 am – 10:40 am	**Coffee/tea break**
10:40 am – 12:05	Invited speaker **Anuska Andjelkovic** (University of Michigan, USA) Epigenetic signatures associated with blood-brain barrier in aging and neurodegeneration Selected based on submitted abstracts **Sophia Shi** (Stanford University, USA) Cerebrovascular glycocalyx degeneration during aging and neurodegenerative disease promotes blood-brain barrier dysfunction and brain bleeds **Jennifer Gamble** (Centenary Institute, Australia) Vascular senescence and leak as potential targets for mending the blood-brain barrier in Alzheimer's disease **Saverio Francesco Retta** (University of Torino, Italy) Identification of novel biomarkers of prognostic and predictive value for risk stratification and treatment of Cerebral Cavernous Malformation disease **Yao Yao** (University of South Florida Morsani College of Medicine, USA) Fibroblasts repair blood-brain barrier damage and hemorrhagic brain injury via TIMP2

12:05 pm – 1:00 pm	**Lunch**
1:00 pm – 2:30 pm	7. **Reconstruction of CNS barriers in vitro: from development to application** Discussion leaders: **Maria Deli** (Biological Research Centre, Hungary), **Sumio Ohtsuki** (Kumamoto University, Japan) <u>Invited speakers</u> **Birger Brodin** (Copenhagen University, Denmark) In vitro modeling of the brain capillary endothelium: Opportunities and pitfalls **Maxime Culot** (University of Artois, France) Evaluation of human stem cells-derived BBB models for repeated dose toxicity testing **Joel Blanchard** (MIT, USA) Reconstruction of the Human Blood-Brain Barrier in vitro to investigate and therapeutically target Alzheimer's disease <u>Rapid fire poster session</u> **Magdalena Kurtyka** (University Medical Center Mainz, Germany) SLC7A1 is a novel candidate for the transport of therapeutics across the blood-brain barrier **Roeben Munji** (University of California San Diego, USA) Monoamine neurotransmitter metabolism by brain vascular endothelial cells regulates behavior **Hamidreza Sadegh** (University of Technology Sydney, Australia) Investigation of gut microbiome modification as a potential therapeutic option for Cerebral Cavernous Malformation (CCM)
2:30 pm – 4:00 pm	**Coffee/tea break** **Poster Session II (Poster number: 101-199), Hall C**

4:00 pm – 5:10 pm	Invited speaker **Dominik Paquet** (Ludwig-Maximilians-University Munich, Germany) Exploring the role of FOXF2 in small vessel disease in a novel human iPSC-derived model of the neurovascular unit Selected based on submitted abstracts **Britta Engelhardt** (University of Bern, Switzerland) VE-cadherin identifies arachnoid and pia mater cells: a missing landmark for in vivo imaging of CNS immune surveillance **Pelin Kasap** (University of Bern, Switzerland) An isogenic in vitro model of the human neurovascular unit to explore blood-brain barrier dysfunction in neuroinflammation **Hideaki Nishihara** (Yamaguchi University, Japan) Modeling blood-brain barrier dysfunction in amyotrophic lateral sclerosis
5:15 pm – 6:00 pm	**IBBS meeting, Hall B**

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8:30 am – 10:05 am	8. **Neuroimmune axis: the regulatory role of CNS barriers** Discussion leaders: **Sandrine Bourdoulous** (Institut Cochin, France), **Brandon Kim** (University of Alabama, USA) Keynote speaker **Caroline Menard** (CERVO Brain Research Centre, Canada) Adaptations of the blood-brain barrier driving resilience to stress vs depression Invited speakers **Janet Cunningham** (Uppsala University, Sweden) Clinical and biological findings from a patient cohort enriched for suspected autoimmune psychiatric disease **Jonathan Kipnis** (University of Washington, USA)

	Bridging veins “bridging” the brain and the periphery
10:05 am – 10:35 am	**Coffee/tea break**
10:35 am – 12:10	**Michelle Erickson** (University of Washington, USA) Interactions of chemokines with the vascular blood-brain barrier **Roosmarijn Vandenbroucke** (Ghent University, Belgium) The gut-microbiota-brain axis: a role for the brain barriers? <u>Selected based on submitted abstracts</u> **Gayel Duran** (Hasselt University, Belgium) Migration into the central nervous system triggers inflammasome activation in Th lymphocytes during neuroinflammation **Aaron Johnson** (Mayo Clinic, USA) MHC class I antigen presentation by brain endothelium regulates CD8 T-cell mediated blood-brain barrier disruption in experimental cerebral malaria **Ana Rita Brás** (Institute of Experimental Medicine, Hungary) Role of microglia-endothelial interactions in systemic inflammation-induced vascular and leukocyte responses
12:10 pm – 1:10 pm	**Lunch**
1:10 pm – 2:45 pm	9. **Brain barriers milieu: from pathophysiology to predictions** Discussion leaders: **Anika Hartz** (University of Kentucky, USA), **Roeben Munji** (University of California San Diego, USA) <u>Keynote speaker</u> **Richard Daneman** (University of California, USA) Blood-brain barrier regulation of brain function and behavior <u>Invited speakers</u>

	Stefan Liebner (Medical School Goethe University Frankfurt, Germany) Microenvironmental control of vascular barrier function in the CNS in health and disease **Elisabeth De Lange** (Leiden University, the Netherlands) Adding the 3rd dimension: Spatial aspects of BBB transport and intrabrain distribution of drugs
2:45 pm – 3:15 pm	**Awards and Closing ceremony**