Transporters: Mediators of exogenous and endogenous molecular disposition

Dr Erin Schuetz, St Jude Children’s Research Hospital, USA

Dr. Erin Schuetz is Full Member in the Department of Pharmaceutical Sciences at St. Jude Children’s Research Hospital in Memphis, TN. Dr. Schuetz obtained her B.S. degree in Biology from St. Mary’s College in Notre Dame, IN and her Ph.D. in Pathology from the Medical College of Virginia/Virginia Commonwealth University. Dr. Schuetz joined the Dept. of Pathology at MCV/VCU as an Assistant Professor in 1987, and moved to St. Jude Children’s Research Hospital in 1993. Dr. Shuetz has 179 publications in the areas of drug metabolism, transport, nuclear hormone receptors and pharmacogenetics.

Prof Xavier de Cleves, Inserm UMRS1144; University Paris Descartes, France

Xavier Declèves is Professor of Pharmacokinetics at the Faculty of Pharmacy of the Paris Descartes University in Paris, France. He received a PhD in Pharmaceutical Sciences/Pharmacokinetics from the University of Paris Descartes in 2000. He is clinical pharmacologist specialized in the pharmacology of CNS drugs in the Cochin University Hospital and head of the Department of Pharmacology and Toxicology. He is the team leader of an Inserm (UMRS 1144) research team “Pathophysiology and Therapeutic Targets of the Blood-Brain Barrier” dedicated to brain barriers and their role in the variability of response to CNS drugs. Prof Declèves has made contributions in the expression, activity and regulation of drug-metabolizing enzymes and drug transporters at the blood-brain barrier under exposure to various drugs and drugs of abuse and under diverse pathological situations. These informations have been used to build neuropharmacokinetics models using CNS compartmental and PBPK modeling.

Dr Patrick Ronaldson, University of Arizona, USA

Dr. Patrick T. Ronaldson is an Associate Professor in the Department of Pharmacology at the University of Arizona College of Medicine. He obtained his Ph.D. degree in Pharmaceutical Sciences from the University of Toronto (Canada) and completed postdoctoral training at the University of Arizona (USA). His current research interests are targeting transporters at brain barrier sites for optimization of CNS drug delivery to treat ischemic stroke and cerebral hypoxia. Dr. Ronaldson has published over 30 peer-reviewed journal articles and 5 book chapters. He has previously served as Chair of the Drug Transport Focus Group in the American Association of Pharmaceutical Scientists (AAPS).
Interactive forum 1: Mouse to human: is barriers research translatable?

Zena Vexler, University California San Francisco, USA

Zinaida Vexler has served as the Director of Research, Neonatal Brain Disorders Center, UCSF since 2003. She has served on the NIH study sections and chaired Brain 2 and Brain 3 Committees for the AHA. Prof Vexler has multi-disciplinary training in chemistry, biochemistry, pharmacology and physiology. For more than 25 years, Prof Vexler’s research has been centered on the mechanisms of experimental stroke, including cerebrovascular injury and neuroinflammation after stroke. Her lab was the first to establish focal stroke models in neonatal rats and mice. They discovered a strikingly better preserved blood-brain barrier integrity after acute neonatal stroke than after adult stroke. They also discovered that microglial cells serve as endogenous neuroprotectants following neonatal stroke. They are investigating the contribution of microglial-extracellular matrix interactions in injury after stroke.

Dr Robert Bell, Pfizer World Wide Research and Development, USA

Bob received a PhD in Pathology studying the role of cerebral vascular dysfunction in Alzheimer’s disease under the supervision of Dr. Berislav Zlokovic at the University of Rochester in 2010. He then completed an AHA funded postdoctoral fellowship in cardiovascular biology in the Laboratory of Joseph Miano and also held a Research Assistant Professor position in the Department of Neurosurgery at the University of Rochester before joining Pfizer in 2013. Bob has authored over 25 papers and given numerous research talks. He is currently a co-organizer of the CSHL BBB meeting. Bob’s research has elucidated several cellular and molecular mechanisms that regulate neurovascular functioning in health and disease. His lab currently focuses on identifying vascular targets for the treatment of CNS disorders and enhancing the delivery of bio-therapeutics across the blood-brain barrier.
Modeling and imaging of vascular function in health and disease

Prof Michelle Bradbury, Center for Translation of Cancer Nanomedicines & Intraoperative Imaging Program; Gerstner Sloan Kettering Graduate School; Weill Medical College of Cornell University, USA

Michelle S. Bradbury is currently a Professor of Radiology at the Gerstner Sloan Kettering Graduate School and Weill Medical College of Cornell University, and holds a Joint Appointment in the Molecular Pharmacology Program at Sloan Kettering Institute. She is Co-Director of a U54 NCI-awarded MSK-Cornell Center for Translation of Cancer Nanomedicines, as well as the Director of Intraoperative Imaging and Co-Chair of the Innovations and Technology Team at MSK. Her work has focused on the co-development and translation of tumor-selective, ultrasmall particle-based imaging tools (C dots) to the clinic for surgical and other medical oncology applications. Dr. Bradbury has and continues to serve as a member of several national and international Scientific Advisory Boards.

Prof Martin Lauritzen, Rigshospitalet and University of Copenhagen, Denmark

Prof Lauritzen is a Professor of Clinical Neurophysiology (since 1998) and a Professor of Translational Neurobiology (since 2007) at the University of Copenhagen. He was also Head of Department of Clinical Neurophysiology at Glostrup Hospital from 1994-2011. Prof Lauritzen is a founding member of the steering committee for COSBID, a member of the steering committee Center for Healthy aging, University of Copenhagen since 2009, and director of the Lundbeck Foundation Research Initiative on Brain Barriers and Drug Delivery since 2014. He has more than 160 publications in international journals.

Prof Daniela Virgintino, Bari University School of Medicine, Italy

Daniela Virgintino is Professor of Histology and Human Embryology at the University of Bari, School of Medicine, Bari, Italy. Prof. Virgintino received her degree in Medicine at the University of Bari, Italy, in 1985 and also a degree of Specialist in Occupational and Environmental Medicine in 1988. Daniela Virgintino started in 1988 her research in the field of the blood-brain barrier (BBB) development and brain angiogenesis in experimental models of embryo-embryo transplants. In 1990, her research interest became focused on the study of neuro- and glio-vascular relationships in human foetal development. Present scientific interests are BBB involvement in neurological diseases (brain tumours and neurodegenerative disorders) and BBB differentiation and neuroangiogenesis during human brain development. Prof. Virgintino has authored many peer-reviewed international publications.

Dr Eric Shusta, University of Wisconsin, USA

Dr. Shusta received his Ph.D. in 1999 from the University of Illinois where, under the guidance of Dr. Dane Wittrup, he studied the production and engineering of antibodies and T-cell receptors using yeast. Currently, Dr. Shusta is the Howard Curler Distinguished Professor in the Department of Chemical and Biological Engineering at the University of Wisconsin-Madison. His research focuses on antibody-based brain drug delivery and the development of molecular, cellular and protein engineering tools that can help gain a better understanding of blood-brain barrier transport and function. He has been recognized by the Dreyfus New Faculty Award, an NSF Career award, the ACS BIOT division young investigator award, among others, and was recently elected fellow in the American Institute for Medical and Biological Engineering.
Lifestyle, diet and the barriers

Michal Toborek, USA
Michal Toborek is a Leonard M. Miller Professor of Biochemistry and Molecular Biology. Prior to getting a PhD (1989) in Biochemistry from the Silesian School of Medicine in Katowice, Poland, he obtained an MD degree in 1985 from the same institution. After completion of his PhD degree, he moved to the University of Kentucky for his post-doctoral work and gradually rose to the ranks. In 2011, we moved to the University of Miami Miller School of Medicine. His main research interest is focused on the involvement of the blood-brain barrier (BBB) in the pathomechanisms of cerebrovascular and neurodegenerative disorders.

Dr Egle Solito, Barts and The London School of Medicine and Dentistry, Queen Mary University London, UK
Dr Egle Solito is Reader in Immunobiology and heads the Blood-Brain Barrier research group at Queen Mary University London (WHRI-SMD). She obtained her PhD at the University of Pavia (Italy). In 1993 she was awarded an EU fellowship (Biotech program) and she joined the Institut Cochin de Genetique Moleculaire, INSERM, in Paris, France. In January 2000, she moved to Imperial College London, UK, where she continued her long-term interest in annexin A1 biology in the brain. She is fellow of the Royal Society of Biology, British Pharmacology Society and Higher Education. Her research is centred on the impact of peripheral inflammation and metabolism on immune cell trafficking across the brain barriers with the final goal to identify molecules which aid the resolution of inflammation. Her research is sponsored by ARUK, Wellcome Trust and Italian Society for Multiple Sclerosis (FISM).

Prof Frederic Calon, Laval University, Canada
Dr Frédéric Calon is a biochemist-pharmacist focusing his research program on the development of treatments for neurodegenerative diseases. Dr Calon and his team mainly carry on preclinical assays in animal models of Alzheimer’s and Parkinson’s diseases as well as neuropathology studies with human brain samples. His research group has also developed an expertise on the blood-brain barrier and the quantification of transport of compounds into the brain. With collaborators worldwide, Dr Calon's group has published >115 peer-reviewed articles, cited more than 5000 times. The ultimate goal of Dr Calon's work is to accelerate the transfer of knowledge from basic neuroscience to clinical applications for brain diseases.

Prof Thomas Abbruscato, Texas Tech University Health Sciences, USA
The research of Dr. Abbruscato's Lab involves approaches to understand the mechanisms by which the neurovascular unit responds to brain ischemia, diabetes and nicotine with respect to transport protein expression, cell-cell interactions, and the transport of drugs, ions and nutrients that are vital for brain recovery after stroke. His Lab utilizes a variety of in vitro and in vivo blood-brain barrier models to both measure drug and nutrient uptake/transport and effects on stroke outcome and the influence of nicotine and tobacco smoke chemicals on cerebrovascular pathology. The overall goal of his lab is to make significant preclinical discoveries that will translate to new treatment options for stroke patients.
The BBB as a player in neurodegenerative disorders

Dr Nicola Marchi, Institute of Functional Genomics, CNRS-INSEMER, Montpellier, France

Dr Nicola Marchi is Head of Cerebrovascular Mechanisms of Brain Disorders at the Department of Neuroscience, Institute of Functional Genomics. The Team at Cerebrovascular Mechanisms of Brain Disorders focuses on the neuro-vascular unit (NVU) and its pharmacology. The Team investigates the pathophysiological role of cerebral vessels in contributing to neuronal dysfunction. Dr Marchi has authored 63 publications.

Prof Francesca Cicchetti, Université Laval, Canada

Francesca Cicchetti is a professor at the department of Psychiatry & Neurosciences, Faculty of Medicine of Université Laval in Québec . Her work focuses on the development of therapeutic approaches for neurodegenerative disorders. She has published over 80 manuscripts in various high impact journals including in PNAS, Annals of Neurology, Acta Neuropathologica, Trends in Pharmacology, Brain. She has received numerous awards and distinctions including the Canadian Institute of Health Research New Investigator Award (2007-2012), the Fonds de Recherche en Santé du Québec (FRSQ) Junior Research Award (2006-2007 and 2003-2006), Young Investigator Award from NARSAD (2006) and Parkinson Society Canada (2002) and more recently the National Researcher award from FRQS (2014). She is an active member of several scientific committees and editorial boards.

A/Prof Cristina Morganti-Kossmann, Monash University and Australian New Zealand Intensive Care Research Centre, Australia

Cristina Morganti-Kossmann is an Adjunct Associate Professor at Monash University and Australian New Zealand Intensive Care Research Centre, Alfred Hospital, Australia. She is also a Research Associate Professor at the University of Arizona, USA, and an Affiliated Associate Professor at the Karolinska Institute, Sweden. Dr Morganti-Kossmann has developed an applied bench-to-bedside paradigm, integrating clinical research and experimental models of traumatic brain injury conducted in Europe, Australia and the US. The focus of her research is to elucidate inflammatory processes induced in the injured brain, develop novel therapeutic strategies to reduce secondary brain damage and validate the use of biomarkers as reliable indicators of injury severity and predictors of outcome. She has generated 120 publications including research articles, reviews and book chapters.
The barriers as a neuroimmunological interface

Prof Christopher Sobey, La Trobe University, Australia
Chris Sobey is an NHMRC Senior Research Fellow and Professor in Physiology at La Trobe University. He has more than 170 publications from his studies of vascular diseases involving oxidative stress and inflammation – especially stroke, atherosclerosis and hypertension. His current work is investigating the inflammatory mechanisms occurring in the brain after stroke in order to identify and develop new treatments for stroke patients. Novel approaches include systemic cell therapy, Th2 cytokines and estrogen receptor binding drugs.

Prof Britta Engelhardt, University of Bern, Switzerland
Britta Engelhardt obtained a PhD in Human Biology (Dr.rer.physiol) in 1991. After a post-doctoral fellowship in the laboratory of Eugene C. Butcher at Stanford University, California, she set up her own research group at the Max-Planck Institute for Physiological and Clinical Research, Bad Nauheim, Germany in the department of Werner Risau in 1993. Britta Engelhardt is Professor for Immunobiology at the University of Bern and the Director of the Theodor Kocher Institute. She is an expert in blood-brain barrier biology with a special focus on neuroinflammatory processes at the BBB. She has pioneered the use of intravital microscopy of the CNS white matter microcirculation allowing to study leukocyte/BBB interaction in real time in live mice. For this work she has received the Herrmann-Rein Award of the Society for Microcirculation and Vascular Biology in 2001. She has published over 120 peer-reviewed papers in addition to almost 80 reviews, commentaries or book chapters on this topic.

Prof Georges Grau, The University of Sydney, Australia
Professor Georges Grau obtained a MD from the University of Liège and a Privat-Docent from the University of Genève. He has been the Chair of Vascular Immunology at the University of Sydney since 2006. Since 1979, his research has focused on immunopathological mechanisms of infectious diseases, notably in cerebral malaria, multiple sclerosis and septic shock, with particular emphasis on cytokines and the microvascular endothelium. His in vivo intervention studies in murine models contributed to the elucidation of cytokine interactions leading to tissue injury, with particular attention to tumour necrosis factor (TNF), which had important implications for cell adhesion molecules in various models of pathology. His 356 papers (263 peer-reviewed) have been cited over 26,000 times and his h-index is 81. Current projects at the Vascular Immunology Unit deal with pathophysiological events at the level of brain microvascular endothelium.
Dr Regina Faubel, Medical school University of Pittsburgh, USA

After spending her first year of studies in Strasbourg (France), Dr Faubel moved in 2002 back to her hometown Göttingen to continue studies of Biology at the Georg-August-Universität (Germany). After receiving the Diploma in 2008, she stayed at the university and joined the graduate school. During her PhD, Dr Faubel aimed to understand circadian regulation of solute transport in the brain and discovered the ciliary logistic network. Considering the relevance of this discovery and contradiction to previous works, Dr Faubel reassessed the claims before a first manuscript was published in 2016. The same year, she joined the group of Dr. C.W. Lo at the University of Pittsburgh (PA).

Prof Robert Thorne, University of Wisconsin-Madison, USA

The Thorne laboratory studies diffusive and convective transport within the extracellular and perivascular spaces of the central nervous system. They aim to leverage knowledge of physiology and central nervous system structure with a variety of methods in order to identify new ways to effectively deliver biologics to the brain and to better understand how endogenous proteins such as antibodies distribute within the central compartment following intraparenchymal, intrathecal, or intranasal administration. Dr. Thorne recently chaired the 2016 ‘Barriers of the CNS’ Gordon Research Conference (http://www.grc.org/programs.aspx?id=12833) and also serves on the editorial board of Fluids and Barriers of the CNS and the Council/Steering Committee of the International Brain Barriers Society (http://www.ibbsoc.org/).

Dr Jeffrey Iliff, Oregon Health & Science University, USA

An Assistant Professor of Anesthesiology and Perioperative Medicine at Oregon Health & Science University, Jeffrey Iliff helped to define the brain-wide network of perivascular pathways, termed the ‘glymphatic system’, which facilitates CSF-Interstitial fluid exchange. His recent studies have shown that the glymphatic system fails in the aging brain and in the young brain after traumatic brain injury. Research in his lab now focuses on identifying the molecular changes that underlie glymphatic system failure with aging and after trauma, extending these experimental studies into human subjects and clinical populations, and discovering ways to co-opt the glymphatic system to improve drug delivery throughout the brain and spinal cord.

A/Prof Nathalie Agar, Harvard Medical School; Brigham and Women’s Hospital, USA

Nathalie Y.R. Agar, Ph.D. is the founding Director of the Surgical Molecular Imaging Laboratory (SMIL) in the Department of Neurosurgery at Brigham and Women’s Hospital, and an Associate Professor of Neurosurgery and of Radiology at Harvard Medical School. Dr. Agar’s multidisciplinary training includes a B.Sc. in Biochemistry, Ph.D. in Chemistry, a postdoctoral fellowship in Neurology and Neurosurgery from McGill University, and further postdoctoral training in Neurosurgery at the Brigham and Women’s Hospital. Her research aims to develop and implement comprehensive molecular diagnoses through improved biochemical classifications. This will ultimately enable surgeons and oncologists to tailor treatment from the time of surgery, and allow personalized cancer care using molecular imaging with mass spectrometry approaches.
Dr Jean-François Ghersi-Egea, INSERM U1028; CNRS UMR5292; Claude Bernard Lyon1 University, France

Dr Jean-François Ghersi-Egea is an INSERM Research Director who graduated from pharmaceutical school and obtained his PhD in Pharmacological Sciences in France. Pioneer in the original discovery of the blood-CSF barrier as a detoxifying site for the brain, Dr Ghersi-Egea is currently leading the "Fluids and barriers of the CNS" Team and the Blood-brain interfaces exploratory facility BIP at the Neuroscience Research Center in Lyon, France. His current fields of research include transport and neuroprotection mechanisms at the developing and adult blood-brain and blood-CSF barriers, and the implication of the choroid plexus-cerebrospinal fluid system in perinatal injuries and neuroinflammation.

Roos Vandebroucke obtained a PhD in Pharmaceutical Sciences in 2008 and performed her postdoctoral training in the group of Claude Libert at the Inflammation Research Center (IRC, Ghent, Belgium), focusing on matrix metalloproteinases (MMPs), tumor necrosis factor (TNF) and interferons (IFNs) in inflammatory disorders. In 2015, she started her own research group at Ghent University and VIB (Belgium), focusing on the gut and brain choroid plexus epithelial barriers in sepsis, (inflam)aging and neuroinflammatory diseases. She studies the importance of the choroid plexus in disease, as missing link in the gut-brain axis and as delivery route of therapeutics to the brain.

Dr. Maria Lehtinen is a New York Stem Cell Foundation Robertson Investigator and Assistant Professor at Boston Children's Hospital, Harvard Medical School. As a graduate student, she trained with Dr. Azad Bonni on signaling mechanisms regulating neuronal survival. She joined Dr. Anna-Elena Lehesjoki's lab for her first postdoctoral fellowship to investigate the role of redox homeostasis in progressive myoclonus epilepsy. She carried out a second postdoctoral fellowship with Dr. Christopher A. Walsh to train in mechanisms governing cerebral cortical development. The Lehtinen lab carries out basic and translational research investigating how secreted signals in the cerebrospinal fluid regulate the development and health of the nervous system.
Interactive forum 2: Transporters, nanoparticles and brain targeting: how close are we to a clinical solution?

Dr William Elmquist, University of Minnesota, USA

William F. Elmquist is currently Professor and Director of the Brain Barriers Research Center, at the University of Minnesota, Department of Pharmaceutics. He received his pharmacy degree at the University of Florida, and Pharm.D. and Ph.D. (pharmacokinetics) from the University of Minnesota. His research has studied the influence of active efflux transporters in the blood-brain barrier (BBB) on CNS drug distribution. An important project currently underway is examining the determinants of anticancer drug permeability in the blood-brain barrier to improve the treatment of brain tumors. Long-term objectives of Dr. Elmquist's research include examining expression and regulation of transport systems in key tissues that influence drug disposition, and how variability in expression, either genetically or environmentally controlled, may contribute to variability in drug response in the patient. Dr. Elmquist has long been a consultant to the pharmaceutical industry and the NIH, served on many journal editorial boards, and is a Fellow of the American Association of Pharmaceutical Scientists (AAPS).

Dr Danica Stanimirovic, National Research Council of Canada, Canada

Dr. Danica Stanimirovic, Director of the Translational Bioscience Department, NRC’s Human Health Therapeutics Portfolio, manages a portfolio of R&D projects in partnership with Canadian and international biopharma companies aimed at de-risking and advancing biologics pipeline in preclinical development. She leads NRC’s Strategic Program, Therapeutics beyond Brain Barriers, focused on developing new delivery strategies for biologics targeting CNS indications. She holds an M.D. and PhD degree in Neurochemistry from the Faculty of Medicine, University of Belgrade. She is a recipient of several Canadian and international awards and has authored over 150 manuscripts and 15 patents in the field of brain vascular physiology and drug delivery across the blood-brain barrier.
The brain behind the barriers: A tribute to Norman Saunders

Prof Kjeld Møllgård, University of Copenhagen, Denmark
Kjeld Møllgård is professor at Dept. of Cellular and Molecular Medicine, University of Copenhagen, and Head of the ‘Human fetal biobank and Core Facility’ at Department of Cellular and Molecular Medicine. Professor Møllgård’s main interests are developmental neurobiology, brain-barrier systems, human embryonic stem cells, morphogenesis and organogenesis. The list of publications comprises more than 30 reviews and book chapters and 140 scientific papers. Professor Møllgård has served as Dean of the Medical Faculty for 4 years and Rector/Vice-chancellor for the University of Copenhagen for 8 years.

Dr Dalton Dietrich, University of Miami, Miller School of Medicine, USA
Dr. Dietrich has a broad research interest in investigating the pathophysiology and treatment of various injury conditions including brain and spinal cord injury. As Scientific Director of The Miami Project to Cure Paralysis basic, translational and clinical research is directed toward areas of nervous system injury and repair involving neuroprotective and regenerative strategies. Ongoing collaborations with Dr. Norman Saunders are also directed toward clarifying the morphological, cellular and molecular changes in spinal cords transected at different developmental ages. At the University of Miami Miller School of Medicine, Dr Dietrich is a Professor of Neurological Surgery, Kinetic Concepts Distinguished Chair in Neurosurgery, and Vice Chairman for Academic Affairs, Neurological Surgery. He is also Senior Associate Dean for Discovery Science.

Dr Mark Habgood, The University of Melbourne Australia
Dr Habgood is a Senior Research Fellow in the Department of Pharmacology & Therapeutics at The University of Melbourne. PhD studies in blood-CNS barrier development and function with Norman Saunders at The University of Southampton and Postdoc with Joan Abbott and Michael Bradbury at King’s College London. Main research focus of the lab is on factors that limit drug entry into the CNS, neuroprotective treatments to improve preservation of spinal cord function after injury and the development of novel human physical rehabilitation programs to improve levels of physical activity and quality of life after spinal cord injury.

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Dr Shane Liddelow, Stanford University, USA
Dr Shane Liddelow received his PhD from the University of Melbourne, Australia. He then worked as a CJ Martin postdoctoral fellow in the Department of Neurobiology at Stanford University, California. Dr Liddelow has contributed to the understanding of the early development of the blood-CSF barrier, as well as astrocyte reactivity in the brain and spinal cord. He is involved in the development of treatments for a range of neurodegenerative diseases such as Alzheimer’s and Parkinsons’ diseases and Amyotrophic Lateral Sclerosis, as well as working towards treatments to enhance survival of neurons following traumatic injury.
Pharmacokinetic-pharmacodynamics for correlating brain fluid concentration to activity

Dr Yuichi Sugiyama, Sugiyama Laboratory, RIKEN Innovation Center, Japan

Yuichi Sugiyama started working as the Head of Sugiyama Laboratory, RIKEN, Yokohama, Japan since 2012. His work is internationally recognized by many awards, including AAPS Distinguished Pharmaceutical Scientist Award, 2003, B.B.Brodie Award from ASPET in 2012, R.T. Williams Distinguished Scientific Achievement Award (ISSX) in 2013. He was listed as a top (1) scientist by ISI in 2007 for the number of citations he received in the preceding 10 years in the field of “Pharmacology and Toxicology”. He served as the president of both “International society for the study of xenobiotics (ISSX)” and “Japanese Society for Xenobiotic Metabolism and Disposition (JSSX)”.(2006-2007).

Dr Irena Loryan, Uppsala University, Sweden

Dr. Irena Loryan is researcher at the Translational PKPD group at the Department of Pharmaceutical Biosciences, Uppsala University. She received her M.D. (2001) and Ph.D. (2007) from Yerevan State Medical University, Armenia. She then worked as a post-doctoral fellow at the Division of Pharmacogenetics at the Department of Pharmacology and Physiology, Karolinska Institutet (Prof. Magnus Ingelman-Sundberg). Since 2011 she worked as a post-doctoral fellow at the Department of Pharmaceutical Biosciences, Uppsala University (Prof. Margareta Hammarlund-Udenaes). Her current research interest focuses on mechanistic understanding of CNS drug disposition in health and disease with specific emphasis on PKPD relationship in discrete brain regions.

Dr Liesbeth de Lange, Leiden Academic Center for Drug Research, The Netherlands

Dr. Elizabeth de Lange is Head of Translational Pharmacology of the Leiden Academic Center for Drug Research (LACDR). Her ultimate aim is to contribute to the scientific basis for the prediction of human drug effects by translational pharmacokinetic-pharmacodynamic model development on the basis of preclinical data. Particular emphasis lies on investigations on drug distribution to targets in the Central Nervous System (CNS). Her research has a comparative and integrative design to elucidate conditional influences on individual mechanisms, and includes the cycle of simulations – predictions - experimental testing - data modeling – simulations etc. Experiments typically involve monitoring techniques in (freely moving) chronically instrumented animals, including microdialysis.
The BBB as a target for disease reversal

Prof William Banks, University of Washington School of Medicine, USA
Dr William A Banks attended medical school at University of MO-Columbia. In 1998, he joined the Geriatrics group headed by Dr John Morley at the St Louis VA and Saint Louis University and in 2010 became the Associate Director of Research for the Puget Sound VA GRECC. His work has focused on brain-body communication as mediated by the handling of peptides, regulatory proteins, and other informational molecules by the blood-brain barrier. He is editor-in-chief of Current Pharmaceutical Design and on 13 other editorial boards including those for Endocrinology, Journal of Pharmacology and Experimental Therapeutics, Brain, Behavior, and Immunity, Peptides, Journal of Alzheimer’s Disease, and Experimental Biology and Medicine. He has delivered over 200 invited lectures at the national/international level, has over 500 non-abstract publications, over 20,000 Web of Science citations, and an H-index of 82.

Prof Ethan Lippmann, Vanderbilt University, USA
Dr. Ethan Lippmann received his bachelor's degree in Chemical Engineering from the University of Illinois at Urbana-Champaign and his doctoral degree in Chemical Engineering from the University of Wisconsin-Madison. He has been an Assistant Professor in the Department of Chemical and Biomolecular Engineering at Vanderbilt University since 2015. His research group utilizes molecular and cellular engineering approaches to better understand disorders that afflict the neurovascular unit and design novel strategies to combat their progression.

Prof Richard Daneman, University of California, San Diego, USA
Prof Richard Daneman grew up in Toronto, and got a BSC in biochemistry from McGill University and a PhD from Stanford University in Developmental Biology, and then was a Sandler Fellow at UCSF. He is now an Assistant Professor at UCSD in the departments of Neuroscience and Pharmacology where he studies the cellular and molecular mechanisms that regulate the BBB in health and disease.
Overcoming hurdles for CNS delivery

Prof Margareta Hammarlund-Udenaes, Uppsala University, Sweden

Margareta Hammarlund-Udenaes, PhD, is a Professor of Pharmacokinetics and Pharmacodynamics at Uppsala University, Sweden, since 1999, heading the Translational PKPD Group. She has supervised 17 PhD’s and published more than 100 original articles. She became an AAPS Fellow in 2005, is an Editor of Pharmaceutical Research and an EAB member of Fluids and Barrier of the CNS and Journal of Pharmaceutical Sciences. She was the Chair of the Gordon Conference on Barriers of the CNS in 2014 and of the 8th International Symposium on Microdialysis in 2016. Drug delivery to the brain is theoretically and experimentally studied. New concepts and methods are developed; disease influence and the role of nanodelivery on BBB transport of drugs for peptides are also investigated.

Dr Eduard Urich, Roche Innovation Center Basel, Switzerland

Dr Eduard Urich is a Senior Scientist at Roche Pharmaceutical Research and Early Development, Roche Innovation Center Basel, Switzerland. He completed his PhD in Neuroimmunology at University Zuerich in 2007. He then went on to do postdoctoral research in Experimental Immunology at the Scripps Research Institute La Jolla, USA until 2009. At the Roche Innovation Center in Basel, Dr Urich undertook postdoctoral research in Neuroscience, before working as a research scientist and is currently the Preclinical project leader at Roche Neuroscience.

Christopher Hartshorn, National Cancer Institute, National Institutes of Health, USA

Dr. Christopher M. Hartshorn serves as a program director in National Cancer Institute’s Office of Cancer Nanotechnology Research (OCNR) in the National Institutes of Health. In this role, he manages nano-centric research projects, evaluates effectiveness of the programs, and maintains proper stewardship over federally funded research. Furthermore, he serves as a technical expert to extramural programs and participates in development and direction of new research initiatives within the NCI Center for Strategic Scientific Initiatives. Prior to the OCNR, Dr. Hartshorn worked for the National Institute of Standards and Technology (NIST). Dr. Hartshorn earned his Ph.D. in Physical Chemistry and Materials Science from Washington State University.

Dr. T. Nathan Yoganathan, KalGene Pharmaceuticals Inc., Canada

Dr. T. Nathan Yoganathan is currently the President and Chief Executive Officer of KalGene Pharmaceuticals. Dr. Yoganathan is a university and industrial research scientist, turned entrepreneur who became an experienced CEO, having successfully launched a public biotechnology company. He has over twenty five years of experience in scientific research in cell signaling and gene expression technology, and has published several articles, and is an inventor of many patents. Dr. Yoganathan is the recipient of numerous awards, including ones from the Natural Sciences and Engineering Research Council of Canada, and the Thyroid Foundation of Canada. He serves on a number of advisory boards for both government and industry, including the CIHR Strategic Training Program in the Bioinformatics Advisory Board, BIOTECanada’s Emerging Companies Advisory Board, and the Ontario Research Fund Advisory Board.