



NOVEL APPROACHES TARGETING BRAIN BARRIERS FOR EFFECTIVE DELIVERY OF THERAPEUTICS

APRIL 29–MAY 1, 2019 • HYATT REGENCY DULLES, HERNDON, VA

Co-Sponsored by
International Brain Barriers Society:



Sunday, April 28, 2019

Pre-Event Set Up

12:00 pm – 5:00 pm AAPS Registration

Monday, April 29, 2019

7:30 am – 9:30 am AAPS Registration

7:30 am – 8:30 am Continental Breakfast

8:30 am – 11:00 am Poster Set Up

8:30 am – 8:45 am **Introduction and Opening Remarks**
Reina Bendayan Pharm.D., University of Toronto, Canada

8:45 am – 10:00 am **Plenary Session**
Moderator: Robert Thorne, Ph.D., Denali Therapeutics & the University of Wisconsin-Madison, USA

Drug Delivery to the Brain: integrating neuroscience, physiology, and brain barriers science considerations in the development of new therapies
Keynote Speaker: Rita Balice-Gordon, Ph.D., Sanofi Genzyme Inc., USA

10:00 am – 10:15 am Coffee Break

10:15 am – 11:45 am **Session One: Barriers of the CNS – Physiology and Regulation**
Moderator: Danica Stanimirovic, Ph.D. National Research Council, Canada
Moderator: Joy Zuchero, Ph.D., Denali Therapeutics, USA

Physiology and Regulation of the BBB

Joan Abbott, Ph.D., King's College London, UK

Physiology and Regulation of BCSF Barrier

Maria Lehtinen, Ph.D., Harvard Medical School, USA

11:45 am – 1:00 pm

Lunch and Poster Session

1:00 pm – 3:00 pm

Session Two: Molecular Mechanisms of Brain Barriers Permeability and Targeting

Moderator: Elizabeth de Lange, Ph.D., Leiden University, Netherlands

Moderator: Bjoern Bauer, Ph.D., University of Kentucky, USA

Receptor Mediated Transcytosis at the BBB

Danica Stanimirovic, Ph.D., National Research Council, Canada

Transporter Mediated Uptake of Small Molecules at the BBB

Patrick Ronaldson, Ph.D., University of Arizona, USA

Transporter Mediated Drug Efflux at the BBB

Tetsuya Terasaki, Ph.D., Tohoku University, Japan

Targeting Transferrin Receptor for Brain Macromolecule Delivery

Joy Zuchero, Ph.D., Denali Therapeutics, USA

3:00 pm – 3:30 pm

Coffee Break and Poster Viewing

3:30 pm – 5:00 pm

Session Three: Targeting to the CNS by Crossing the Brain Barriers

Moderator: Li Di, Ph.D., Pfizer, USA

Moderator: Jacob Marcus, Ph.D., Merck, USA

Delivery of Fully Functional Antibodies Across the BBB

Per-Ola Freskgard, Ph.D., Roche Pharma Research, Switzerland

BBB Disruption by Ultrasound for Targeting Drug Delivery

Kullervo Hynynen, Ph.D., University of Toronto, Canada

Brain Delivery of Antisense Oligonucleotides for the Treatment of Neurodegenerative Disorders

Frank Bennett, Ph.D., Ionis Pharma, USA

5:10 pm – 5:30 pm

Tech Showdown Case Study

5:30 pm – 7:00 pm

Reception and Poster Session

Tuesday, April 30, 2019

7:30 am – 9:30 am	AAPS Registration
7:30 am – 8:30 am	Continental Breakfast
7:50 am – 8:10 am	Tech Showdown Case Study
8:30 am – 9:30 am	Plenary Session Moderator: Reina Bendayan, Pharm.D., University of Toronto, Canada Pharmacokinetic Concepts in CNS Drug Delivery and Distribution Modern and Emerging Views Keynote Speaker: Margareta Hammarlund-Udenaes, Ph.D., Uppsala University, Sweden
9:30 am – 9:45 am	Coffee Break
9:45 am – 11:45 am	Session One: In Vitro and In Vivo Methodologies for the Study of Brain Barriers Moderator: Birger Brodin, Ph.D., University of Copenhagen, Denmark Moderator: Patrick Ronaldson, Ph.D., University of Arizona, USA In Vitro Human BBB Cell Culture Models Eric Shusta, Ph.D., University of Wisconsin-Madison, USA BBB Spheroids-A Platform for CNS Drug Delivery Choi-Fong Cho, Ph.D., Harvard University, USA Microphysiological Systems- Organ on a Chip Nur Mustafaoglu, Ph.D., Harvard University, USA PET Imaging in CNS Drug Discovery Lei Zhang, Ph.D., Pfizer, USA
11:45 am – 1:00 pm	Lunch and Poster Session
1:00 pm – 3:00 pm	Session Two: Bypassing the CNS Barriers and Novel Formulations for Delivery of Small and Large Molecules to the Brain and Spinal Cord Moderator: Joe Nicolazzo, Ph.D., Monash University, Australia Moderator: Saileta Prabhu, Ph.D., Genentech, USA Distribution of Macromolecules in Brain Fluids and Perivascular Spaces Robert Thorne, Ph.D., Denali Therapeutics & the University of Wisconsin-Madison, USA Intranasal Drug Delivery Mallory J. Stenslik, Ph.D., Merck Research laboratories, USA

Use of Nanotechnology to Bypass the BBB

Torben Moos, Ph.D., Aalborg University, Denmark

AAV Vector Gene Delivery Systems Across the BBB

Benjamin Deverman, Ph.D., the Broad Institute of MIT and Harvard, USA

3:00 pm – 3:30 pm

Coffee Break and Poster Viewing Session

3:30 pm – 5:30 pm

Session Three: In Vitro/In Vivo Correlations (IVIVC) and Physiological Based Pharmacokinetic Models (PBPK) in CNS Drug Disposition

Moderator: Bjoern Baeur, Ph.D., University of Kentucky, USA

Moderator: Reina Bendayan, Pharm.D., University of Toronto, Canada

CNS IVIVC

Yuichi Sugiyama, Ph.D., Riken Innovations Center, Japan

Prediction of Human CSF and ISF Drug Concentrations-Application of Microdialysis Technique

Elizabeth de Lange, Ph.D., Leiden University, The Netherlands

Monocarboxylate Transporters at the BBB Role in Toxicokinetics

Marilyn Morris, Ph.D., University of Buffalo, USA

Anticancer Drug Delivery Across the BBB

Bill Elmquist, Ph.D., University of Minnesota, USA

5:40 pm – 6:00 pm

Tech Showdown Case Study

6:00 pm – 7:30 pm

Reception and Roundtable Case Discussions

Challenges Faced in CNS Drug Discovery and Development, Industry and Regulatory Perspectives

Moderators: Drs. Li Di, Per-Ola Freskgard, Jacob Marcus, Ryan Watts, Joy Zuchero, Danica Stanimirovic, Joe Nicolazzo, Sreedharan Sabarinath

Wednesday, May 1, 2019

7:30 am – 9:30 am

AAPS Registration

7:30 am – 8:30 am

Continental Breakfast

7:50 am – 8:10 am

Tech Showdown Case Study

8:30 am – 9:30 am

Plenary Session

Moderator: Per-Ola Freskgard, Ph.D., Roche Pharma Research, Switzerland

Engineering Brain Delivery to Treat Neurodegenerative Disease

Keynote: Ryan Watts, Ph.D., Denali Therapeutics, USA

9:30 am – 9:45 am	Coffee Break
9:45 am – 11:15 am	<p>Concluding Session: CNS Delivery: Looking to the Future Moderator: Jacob, Marcus, Ph.D., Merck Laboratories, USA Moderator: Sreedharan Sabarinath, Ph.D., U.S. Food and Drug Administration, USA <i>(invited)</i></p> <p>Progress and Future Challenges in CNS Drug Discovery and Development Eric Stefanich, Genentech, USA Jasi Atwal, Ph.D., Genentech, USA</p> <p>Use of Major Consortia to Address Drug Delivery to the CNS Birger Brodin, Ph.D., University of Copenhagen, Lundbeck Foundation, Denmark</p>
11:15 am – 12:00 pm	<p>Summary and Panel Discussion Drs. Jacob Marcus, Sreedharan Sabarinath, Reina Bendayan, Robert Thorne, Per-Ola Freskgard</p>
12:00 pm – 12:20 pm	Tech Showdown and Award Winner Announced
12:20 pm – 12:50 pm	Poster Award Presentation and Closing Remarks
12:50 pm – 1:20 pm	Grab and Go Lunch

Programming Committee

Chair: Reina Bendayan, Pharm.D., University of Toronto

Co-Chair: Robert G. Thorne, Ph.D., Denali Therapeutics & the University of Wisconsin-Madison

Co-Chair: Per-Ola Freskgard, Ph.D., Hoffmann-La Roche