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 Mustafaoğlu, 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**

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<tr>
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<td>Moderator: Per-Ola Freskgard, Ph.D., Roche Pharma Research, Switzerland</td>
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<td>Engineering Brain Delivery to Treat Neurodegenerative Disease</td>
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<td>Keynote: Ryan Watts, Ph.D., Denali Therapeutics, USA</td>
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9:30 am – 9:45 am  Coffee Break

9:45 am – 11:15 am  **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 *(invited)*

**Progress and Future Challenges in CNS Drug Discovery and Development**
Eric Stefanich, Genentech, USA
Jasi Atwal, Ph.D., Genentech, USA

**Use of Major Consortia to Address Drug Delivery to the CNS**
Birger Brodin, Ph.D., University of Copenhagen, Lundbeck Foundation, Denmark

11:15 am – 12:00 pm  **Summary and Panel Discussion**
Drs. Jacob Marcus, Sreedharan Sabarinath, Reina Bendayan, Robert Thorne, Per-Ola Freskgard

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