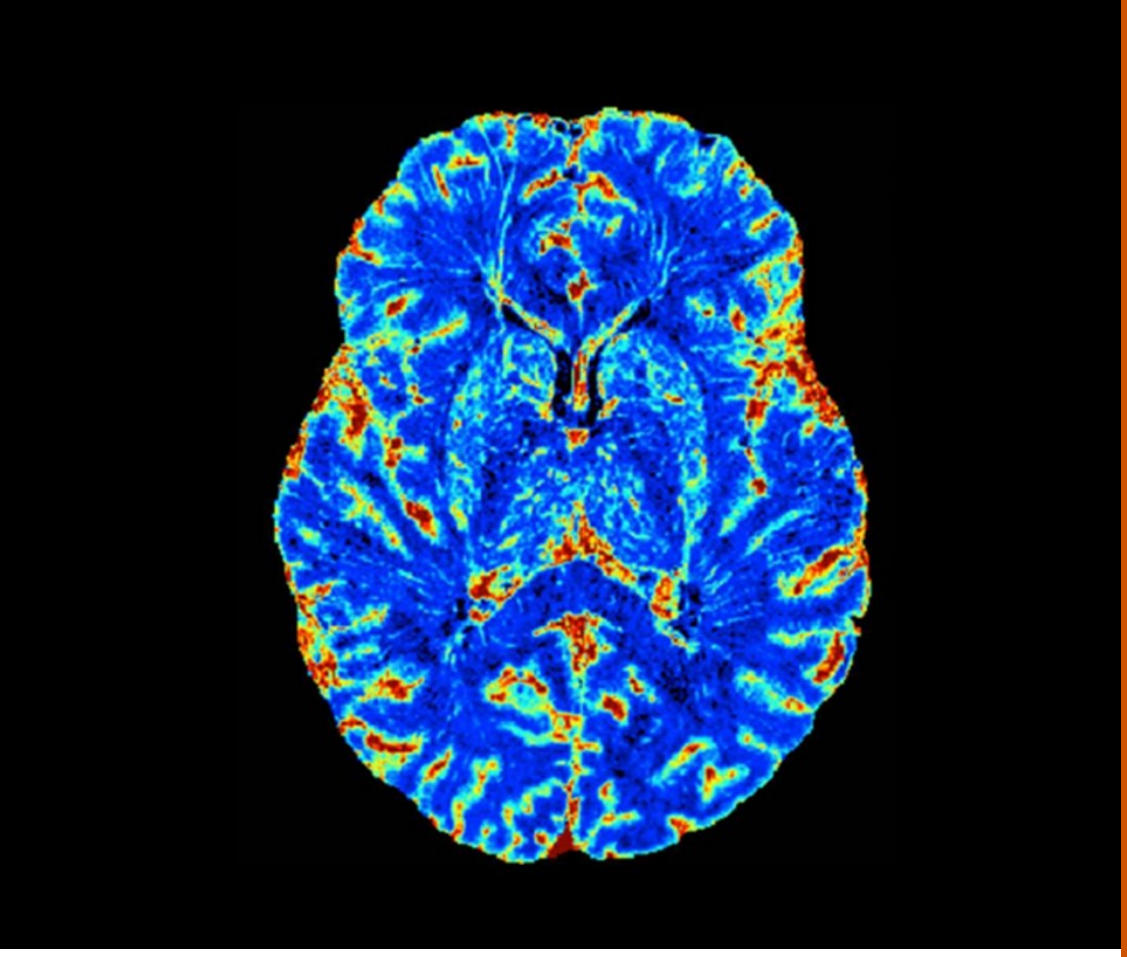

VIRTUAL 26TH ANNUAL BLOOD-BRAIN BARRIER CONSORTIUM

CULTIVATING THE NEXT GENERATION OF TRANSLATIONAL SCIENTISTS

MARCH · 11 & 12 · 2021

Welcome!

Thank you for joining us for the Virtual 26th Annual Blood-Brain Barrier (BBB) Consortium Meeting, which is organized by the Neuro-Oncology and BBB Program at Oregon Health & Science University (OHSU) in collaboration with the International Brain Barriers Society (IBBS). Once again, the Scientific Advisory Board has assembled an outstanding group of speakers from a variety of disciplines, while providing ample time for group discussions and virtual networking opportunities.

This year, our focus is on "Cultivating the Next Generation of Translational Scientists". The main session topics include: the blood-labyrinth barrier (BLB) and approaches to otoprotection; novel approaches to enhance delivery of therapeutics to the brain; research advancements in complex barriers of the CNS; and the state of the field of the blood-tumor barrier, cancer biology and clinical treatment advances. All attendees are invited to participate in the opening session on Thursday with updates on pre-clinical and clinical trials from the consortium and our collaborators. There we will discuss collaborative opportunities in the areas of blood-brain barrier disruption (BBBD), current and future trials, and advances in novel imaging techniques.

Please join us on Thursday afternoon for our virtual poster session, as well as for the keynote presentation by Dr. Stuart Grossman, which will wrap up the first day. Friday morning will begin with our Funding Opportunities for Translational Research on the Neurovascular Unit (NVU) session, featuring representatives from the NINDS, NCI, and other sources.

Similar to previous years, new investigator scholarship awardees will be given the opportunity to present their research orally. These short presentations will occur on Friday following the Funding Opportunities session. Also back by popular demand, the "one-on-one" mentor sessions will be held virtually on Friday during the meal break, providing an opportunity to meet and talk informally with seasoned scientists and clinicians in the fields of BBB and NVU science, neuro-imaging, drug delivery, and neuro-oncology. Please see the Mentor Session page for the link to sign up!

We are honored to have so many graduate and post graduate students and senior scientists gathered together virtually to network, share recent translational advances, and to discuss strategies for moving the field forward with the universal goal of improving clinical outcomes. As we embrace this new virtual meeting format together, we hope to make this experience as engaging and educational as possible. We are grateful for your participation and look forward to many stimulating discussions.

Acknowledgements

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SCIENTIFIC PROGRAM

THURSDAY, MARCH 11TH

All times listed are PST

CULTIVATING THE NEXT GENERATION OF TRANSLATIONAL SCIENTISTS

8:00am PST	· INTRODUCTION AND WELCOME ·	Prakash Ambady Portland, Oregon

· UPDATES ON PRE-CLINICAL AND CLINICAL TRIALS FROM THE CONSORTIUM AND OUR COLLABORATORS ·

8:10-9:30 PST	Moderators:	Prakash Ambady Portland, Oregon	Nancy Doolittle Portland, Oregon	Joseph Bubalo Portland, Oregon
	Immunological Response to Osmotic BBB Disruption			Scott Burks Bethesda, Maryland
	Safety of Intra-arterial Chemotherapy and Osmotic BBB Disruption			Kutluay Uluc Portland, Oregon
	Update on Maintenance Obinutuzumab for Primary CNS Lymphoma			Nancy Doolittle Portland, Oregon
	Update on Preclinical Trials			Leslie Muldoon Portland, Oregon
	Inflammation and Ototoxicity			Cymon Kersch Portland, Oregon
	Panel Discussion/Q & A			
	Correlating Imaging of the Brain Tumor Microenvironment and Glymphatic System with Histology			Ramon Barajas Jr. Portland, Oregon
	Assessing High-Grade Gliomas: Steady-State Ferumoxytol Perfusion vs DSC-Gd			Laszlo Szidonya Portland, Oregon
	Multi-Center Safety Results for Off-Label Diagnostic Use of Ferumoxytol in MRI			Kim-Lien Nguyen Los Angeles, California
	Panel Discussion/Q & A			

BREAK, 9:30AM—9:40AM PST

· COMPLEX BARRIERS OF THE CNS: RESEARCH ADVANCEMENTS ·

9:40-11:10 PST	Moderators:	Lester Drewes Duluth, Minnesota	Sadhana Jackson Bethesda, Maryland	
	Overview of the Barriers of the CNS			Bjoern Bauer Lexington, Kentucky
	The Blood-Retinal Barrier: OCT and More			Phoebe Lin Portland, Oregon
	A Cellular and Spatial Map of the Choroid Plexus Blood-CSF Barrier			Neil Dani Boston, Massachusetts
	Glioma-Network Interactions: What Might This Mean for Therapeutic Strategies?			Shawn Hervey-Jumper San Francisco, California
	Panel Discussion/Q & A			

VIRTUAL POSTER SESSION, 11:10AM—12:00PM PST

- SEE POSTER SESSION TAB FOR LINKS -

BREAK, 12:00PM —12:15PM PST

THURSDAY, MARCH 11TH CONT.

All times listed are PST

· NOVEL APPROACHES TO ENHANCE DELIVERY OF THERAPEUTICS TO THE BRAIN ·

12:15-2:10 PST	Moderators:	Prakash Ambady Portland, Oregon	Stuart Grossman Baltimore, Maryland	John Boockvar New York, New York
	Engineering Enzyme Delivery to the CNS across the BBB: Preclinical and Clinical Proof of Concept			Robert Thorne South San Francisco, California
	The Blood-Brain Barrier and Hematopoietic Stem Cell Transplant			Troy Lund Minneapolis, Minnesota
	Enhanced Delivery of Morpholino Oligonucleotides Using Low Dose Radiation			Prakash Ambady Portland, Oregon
	Dynamics of Blood-Brain Barrier Opening			Paul Lockman Morgantown, West Virginia
	Future of Focused Ultrasound in Brain Tumor Therapy			Joseph Frank Bethesda, Maryland
	Update on Intra-Arterial Drug Delivery to Bypass the BBB			John Boockvar New York, New York
	Panel Discussion/Q & A			

BREAK, 2:10PM —2:20PM PST

· KEYNOTE ·

2:20-3:00 PST	Moderators:	Prakash Ambady Portland, Oregon	Edward Neuwelt Portland, Oregon	
	Keynote: Cultivating the Next Generation of Translational Scientists			Stuart Grossman Baltimore, Maryland
	Panel Discussion			Helmi Lutsep Portland, Oregon Shivaani Kummar Portland, Oregon

Friday, March 12th

All times listed are PST

· New Funding Opportunities for Translational Research on the NVU ·

8:00-9:00 PST	Moderators:	William Timmer Bethesda, Maryland	Bjoern Bauer Lexington, Kentucky	
	Expanding Opportunities and Awareness for the BBB			Francesca Bosetti Rockville, Maryland
	Writing a Really Good Specific Aims Page			William Timmer Bethesda, Maryland
	Maximizing Your Chances of Getting a NVU/BBB Grant Funded			Paul Lockman Morgantown, West Virginia
	Enhancing Diversity in Neuroscience			Michelle Jones-London Rockville, Maryland
	Panel Discussion			

· New Investigator Presentations: Scholarship Awardees ·

9:00-9:30 PST	Moderator	Prakash Ambady Portland, Oregon
	Anticancer Drug Transport at the Blood-Brain Barrier: Impact of the Treatment of Glioblastoma	Julia Schulz Lexington, Kentucky
	Azacitidine is Effective in Treating Triple Negative Breast Cancer Brain Metastases through Regulation of DNA Methylation of the Keratin 18 Gene	Samuel Sprowls Morgantown, West Virginia
	Engineered Nanocarriers to Enhance Drug Delivery across the Blood-Brain Barrier	Joelle Straehla Boston, Massachusetts

Break, 9:30am—9:40am PST

· Blood-Labyrinth Barrier (BLB): Approaches to Otoprotection ·

9:40-10:40 PST	Moderators:	Edward Neuwelt Portland, Oregon	William Timmer Bethesda, Maryland	Kristin Knight Portland, Oregon	Penelope Brock Tonbridge, United Kingdom
	Structure and Function of the Strial BLB and Noise-Induced Hearing Loss				Xiaorui Shi Portland, Oregon
	Clinical Translation of STS Chemoprotection in South America				Sidnei Epelman São Paulo, Brazil
	Development of Clinical Practice Guideline for the Prevention of Cisplatin-Induced Ototoxicity in Children				Kristin Knight Portland, Oregon
	Panel Discussion/Q & A				

Friday, March 12th Cont.

All times listed are PST

Break and Mentor Sessions, 10:40am — 12:05pm PST

· Cultivating the Next Generation of Translational Scientists: One-on-One Mentor Sessions ·
- See Mentor Sessions Tab to Sign Up -

Session 1
10:42—11:22 PST

Bjoern Bauer Lexington, Kentucky	Adrienne Boire New York, New York	Joseph Frank Bethesda, Maryland	Sadhana Jackson Bethesda, Maryland
Paul Lockman Morgantown, West Virginia	Tiffany Lyle West Lafayette, Indiana	Robert Thorne South San Francisco, California	

Session 2
11:24—12:04 PST

Francesca Bosetti Rockville, Maryland	Lester Drewes Duluth, Minnesota	Stuart Grossman Baltimore, Maryland	Troy Lund Minneapolis, Minnesota
Sanjay Malhotra Portland, Oregon	Leslie Muldoon Portland, Oregon	William Timmer Bethesda, Maryland	

· The Blood-Tumor Barrier, Cancer Biology and Clinical Treatment Advances: State of the Field ·

12:05-2:15 PST	Moderators:	Robert Thorne South San Francisco, California	Bjoern Bauer Lexington, Kentucky
	Exploring Intricacies of Drug Entry across the Blood-Tumor Barrier		Sadhana Jackson Bethesda, Maryland
	The Neural Regulation of Cancer – Harnessing Activity-Dependent Mechanisms of Glioma Growth for Treatment		Humsa Venkatesh Stanford, California
	NSCLC Brain Metastases: Preclinical Model Development to Advance Clinical Translation		Tiffany Lyle West Lafayette, Indiana
	Cancer Cells Circumvent the Blood-CSF Barrier in Leptomeningeal Metastasis		Adrienne Boire New York, New York
	Panel Discussion: Future of the Field/Q & A		

· Meeting Wrap-Up ·

2:15-2:30 PST	Meeting Highlights and Closing Statements	Edward Neuwelt Portland, Oregon
2:30 PST	***Adjourn***	

Posters

Live Virtual Poster Session - March 11
11:10am PT / 2:10pm ET

1. Barajas RF Jr, Muldoon LL, Neuwelt EA, Zeng D. Improving Radionuclide Therapy with a SMART Approach: Preclinical Discoveries. Oregon Health & Science University, Portland, Oregon

2. Baringer S, Neely B, Simpson I, Connor J. Apo and Holo Transferrin Modulate the Uptake of Brain Iron In Vivo. Penn State College of Medicine, Hershey, Pennsylvania

3. Bohannon DG, Okhravi HR, Kim J, Kuroda MJ, Didier ES, Kim WK. A Subset of Blood-Brain Barrier Microvascular Pericytes Transition to Smooth Muscle Actin-Positive Pericytes during Normal Aging. Eastern Virginia Medical School, Norfolk, Virginia; University of California, Los Angeles, California; University of California, Davis, California

4. Cai Q, Li X, Xiong H, Gao X, Bachoo R, Qin Z. Spatiotemporal Progression and Modulation of the Blood-Brain-Tumor Barrier. University of Texas, Dallas, Texas; University of Texas Southwestern Medical Center, Dallas, Texas

5. Chung TD, Linville RM, Searson PC. Modeling BBB Dysfunction in Response to Acute and Chronic Oxidative Stress in 2D and 3D Tissue Engineered Microvessels. Johns Hopkins University, Baltimore, Maryland

6. Demir Z, Ge Y. In Vivo Plaque Classification Using Diffusion Kurtosis Imaging and Correlation with T1/T2WI in Multiple Sclerosis. Spectrum Health/Michigan State University, Lansing, Michigan; New York University Langone Health, New York, New York

7. Jorgensen C, Ulmschneider M, Searson PC. An Atomistic Model of Solute Transport across the Blood-Brain Barrier. Georgetown University, Washington, D.C.; King's College London, London, United Kingdom; Johns Hopkins University, Baltimore, Maryland

8. Li X, Vemireddy V, Cai Q, Xiong H, Kang P, Li X, Giannotta M, Bachoo R, Qin Z. Modulating the Blood-Brain Barrier by Picosecond Laser Stimulation of Molecular-Targeted Nanoparticles. University of Texas, Dallas, Texas; University of Texas Southwestern Medical Center, Dallas, Texas

9. Li YB, Sodja C, Baumann E, Huang J, Charlebois C, Pandian P, Gilbert A, Stanimirovic D, Jezierski A. Development of a Perfusable iPSC-Derived 3D Blood Brain Barrier on Chip Model for Antibody Mediated Transcytosis. National Research Council of Canada, Ottawa, Ontario, Canada

10. Makrides V, Taslimifar M, Faltys M, Kurtcuoglu V, Verrey F. Human Blood Brain Barrier Amino Acid Transporter Expression, Activity and Modulation Characterized in hCMEC/D3 and by Computational Modeling: Insights. University of Zurich, Zurich, Switzerland

11. McLaughlin R, Alam El Din DM, Laguna A, Top I, Hoffman-Kim D. Capillary-Like Network Disruption after Oxygen-Glucose Deprivation in a 3D Cortical Spheroid Model, Brown University, Providence, Rhode Island

12. Morris D, Kersch C, Muldoon LL, Neuwelt EA. Microglial Galectin-3 Enhances the Metastatic Phenotype of Breast Cancer Cells in Brain Metastases. Oregon Health & Science University, Portland, Oregon

Posters *continued*

*** Indicates 2021 Scholarship Award Recipients*

Live Virtual Poster Session - March 11
11:10am PT / 2:10pm ET

13. Morse SV, Chan TG, Long NJ, Choi JJ. Improved Drug Delivery across the BBB with Focused Ultrasound and Microbubble. Imperial College London, London, United Kingdom

14. Nehra G, Yubolphan R, Zheng J, Mullins S, Sulkowski B, Vivithanaporn P, Bauer B, Hartz AMS. Implications of Blood-Brain Barrier Leakage on Cognition in 5xFAD Mice. University of Kentucky, Lexington, Kentucky; Mahidol University, Nakhon Pathom, Thailand

15. Neves V, Cavaco M, Castanho MARB. Dual-Active Peptides for the Treatment of Brain Metastases. Universidade de Lisboa, Lisboa, Portugal

16. Puris E, Auriola S, Hartman R, Gynther M, de Lange ECM, Fricker G. Altered Protein Expression of ABC and SLC Transporters at the BBB and Brain Cortex of Familial Alzheimer's Disease Rat Model. Heidelberg University, IPMB, Heidelberg, Germany; University of Eastern Finland, Kuopio, Finland; Leiden University, LACDR, The Netherlands

17. Rodgers LT, Schulz JA, Hartz AMS, Bauer B. Repurposing FDA-Approved PI3K/Akt Inhibitors to Improve Anti-Cancer Drug Brain Uptake in GBM Resection Models. University of Kentucky, Lexington, Kentucky

18. **Schulz JA, Hartz AMS, Samala R, Bauer B. Anticancer Drug Transport at the Blood-Brain Barrier: Impact of the Treatment of Glioblastoma. University of Kentucky, Lexington, Kentucky; South University, Savannah, Georgia

19. Smith-Cohn MA, Burley NB, Grossman SA. Transient Opening of the Blood Brain Barrier by Vasoactive Peptides to Increase CNS Drug Delivery: Reality Versus Wishful Thinking? National Institutes of Health, Bethesda, Maryland; Sinai Hospital, Baltimore, Maryland; Johns Hopkins University, Baltimore, Maryland

20. Soto L. New Brain Cancer Methods. University of Mexico, Mexico City, Mexico

21. **Sprowls SA, Butler C, Arsiwala TA, Liu T, Lockman PR. Azacitidine is Effective in Treating Triple Negative Breast Cancer Brain Metastases through Regulation of DNA Methylation of the Keratin 18 Gene. West Virginia University, Morgantown, West Virginia; West Virginia School of Osteopathic Medicine, Lewisburg, West Virginia

22. **Straehla JP, Hajal C, Offeddu G, Safford H, Wyckoff J, Kamm RD, Hammond PT. Engineered Nanocarriers to Enhance Drug Delivery across the Blood-Brain Barrier. Dana-Farber/Boston Children's Cancer and Blood Disorders Center, Boston, Massachusetts; Massachusetts Institutes of Technology, Cambridge, Massachusetts

23. Vazana U, Veksler R, Schori L, Monsonego U, Swissa E, Pell GS, Roth Y, Brodt P, Friedman A, Prager O. TMS-Induced BBB Opening: Proof-of-Concept, Pre-Clinical Characterization and Implications for Brain Cancer Therapy. Ben-Gurion University of the Negev, Beer-Sheva, Israel; Brainsway Ltd., Jerusalem, Israel; McGill University and the Research Institute-McGill University Health Centre, Montreal, QC Canada; Dalhousie University, Halifax, NS Canada

24. Wu J, Ambady P, Kersch C, Muldoon LL, Neuwelt EA. Anti-PD-L1 Morpholino Oligonucleotides Combined with Radiation Reduced PD-L1 Protein Expression of Cancer Cells In Vitro and In Vivo. Oregon Health & Science University, Portland, Oregon

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