

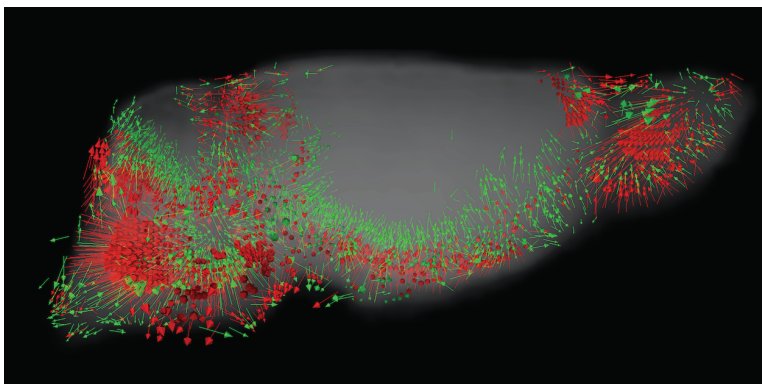
# ISNVD Webinar

## NEUROFLUIDS: Physiology, Methods and Disease

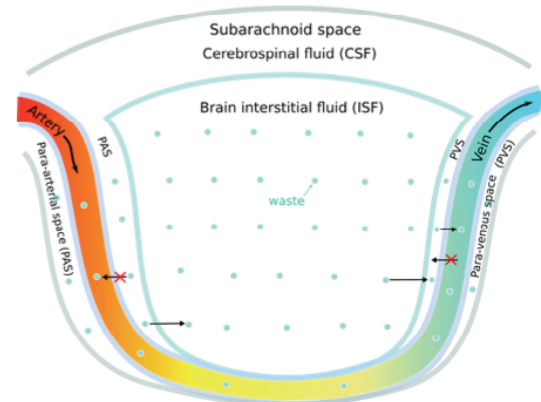
March 26th, 2021

09:00 in New York | 14:00 in Italy  
21:00 in Beijing | 22:00 in Japan

Organizers: Prof. E F Toro and Dr. Lucas Müller  
University of Trento, Italy



Courtesy: Helene Benveniste & Allen Tannenbaum



Courtesy: Jiani Hu and collaborators

### Summary:

This webinar is sponsored by the International Society for Neurovascular Disease (ISNVD) and is devoted to NEUROFLUIDS, that is all major extracellular fluid compartments of the central nervous system seen in a holistic and interactive manner. The focus will be on physiology, methods of study and associated diseases.

### Join Zoom Meeting

[https://zoom.us/webinar/register/WN\\_Jp9dFw6DReW6wPnIO3qkVg](https://zoom.us/webinar/register/WN_Jp9dFw6DReW6wPnIO3qkVg)

### Guidelines for Joining Zoom Webinar

- After you click the link above, you will be directed to a page that requests your name and institution before you access the webinar meeting link.
- After your registration, you will be able to access the direct Webinar meeting link.
- Please join the webinar 15 minutes early to minimize last minute technical issues.
- Ensure that you have downloaded the Zoom and your device meets the system requirements for running this application.
- For participants, the audio and video will be turned off during the meeting, you are encouraged to ask questions in the Q/A session and chat room.
- If you have any questions, please contact Mr Li Jiang at [li.jiang@isnvd.org](mailto:li.jiang@isnvd.org)

## **PROGRAMME (time shown in US EDT)**

**09:00-09:05**

INTRODUCTION: **Prof. Yulin Ge (president of ISNVD) and Prof. E F Toro (organizer)**

Chairperson: **Dr. Meiyun Wang**

**09:05-09:20**

MRI Methods to Study Glymphatic-Lymphatic Fluid Flow Dynamics - **Prof. Helene Benveniste**. Yale Medical School, USA.

**09:20-09:35**

Towards the visualization of Neurofluids dynamics by MR using IV-GBCA - **Prof. Shinji Naganawa**. Nagoya University Graduate School of Medicine. Japan.

**09:35-09:50**

MICRO Imaging as a Means to Study the Brain's Microvasculature in Neurodegenerative Diseases - **Prof. E. Mark Haacke**. Department of Radiology, Wayne State University, Detroit, Michigan, USA.

**09:50-10:00**

Questions and Discussions. Discussion Panellists: **Prof. Yulin Ge, Prof. Meiyung Wang and Prof. Allen Tannenbaum**.

Chairperson: **Prof. Paolo Zamboni**

**10:00-10:15**

Experimental and theoretical study of solute dispersion in the cerebrospinal fluid - **Prof. Andreas Linninger**. Chemical Engineering and Computer Science Research Faculty, Department of Neurosurgery, University of Illinois at Chicago, Chicago, USA.

**10:15-10:30**

Blood composition and physical properties in perfusion and in Covid-19 - **Prof. Hugo ten Cate and Prof. Henri M.H. Spronk**. Cardiovascular Research Institute Maastricht. Director, Thrombosis Expertise Center, Maastricht University Medical Center (MUMC+), Maastricht. The Netherlands.

**10:30-10:45**

Mathematical modelling of craniospinal fluid dynamics. Progress and challenges - **Prof. Eleuterio Toro**. Applied Mathematics Laboratory, DICAM, University of Trento, Italy.

**10:45-11:00**

Questions and Discussion. Discussion Panellists: **Prof. Paolo Zamboni, Prof. Pasquale De Bonis and Dr Lucas Müller**.

## SPEAKERS



**Professor Helene Benveniste, MD, PhD**

Professor of Anesthesiology  
Yale Medical School, USA.

In 2015, Dr. Benveniste's laboratory became involved with studies of the 'glymphatic pathway' which is a novel peri-vascular based system in the central nervous system involved in brain waste removal. Dr. Benveniste has received national and international recognition for her work. In November of 2016, Benveniste moved FROM Stony Brook Medical Center to Yale University, where she joined the Department of Anesthesiology and is expanding her research program in understanding how the glymphatic system and cerebrospinal fluid transport is affected in neurodegenerative disease states and aging.



**Professor Shinji Naganawa, MD, PhD**

Professor and Chair, Department of Radiology, Nagoya University  
Graduate School of Medicine.

As the department chair of university hospital, Prof. Naganawa is responsible for all the work and people in the Radiology Department, which contains both diagnosis and radiation oncology. As the professor of radiology, he is responsible for all the research and education in the department. His research interests are MR imaging of endolymphatic hydrops and MR visualization of glymphatic system.



**Professor Mark Haacke, PhD**

Department of Radiology, Wayne State University, Detroit, Michigan,  
USA.

Professor and Vice-Chairman, Department of Biomedical Engineering,  
Wayne State University, Detroit, Michigan, USA. Director of the Perinatal  
MR Imaging Research Program



**Professor Andreas Linninger, PhD**

Chemical Engineering and Computer Science Research Faculty,  
Department of Neurosurgery, University of Illinois at Chicago, Chicago,  
USA.

Interests: drug delivery to CNS, cerebral haemodynamics,  
hydrocephalous, brain metabolism, intrathecal drug delivery.



**Professor Hugo ten Cate, MD, PhD**

Cardiovascular Research Institute Maastricht. Director, Thrombosis Expertise Center, Maastricht University Medical Center (MUMC+), Maastricht. The Netherlands.

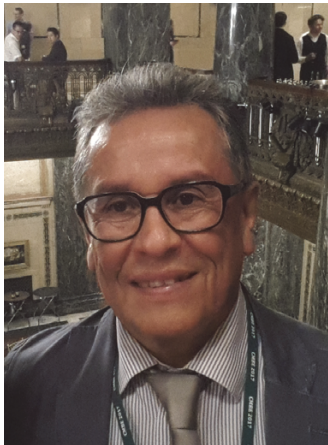
Hugo ten Cate is professor of clinical thrombosis and hemostasis at the Cardiovascular Research Institute of Maastricht University Medical Center (CARIM). He is one of the world's most productive and successful researchers in the field of hemostaseology and already published well over 200 articles in leading journals. His expertise extends beyond the boundaries of his subject, ranging from clinical hemostaseology to vascular biology.



**Professor Henri M.H. Spronk, PhD**

Associate Professor Biochemistry, Maastricht University

Initially he trained in Biochemistry and Molecular Biology at Nijmegen University. Dr. Spronk obtained a PhD in Biochemistry on the effects of impaired vitamin K-dependent protein carboxylation. The focus of his current work is on the bidirectional relation between coagulation and inflammation, as well as on the applicability of functional plasma assays such as thrombin generation, for atherothrombotic risk prediction. He has a special interest in the role of active coagulation factors, mainly thrombin, in activation of protein-activated receptors (PARs) which can regulate the balance between vascular protective and disruptive. Overall, knowledge on the non-haemostatic functions of thrombin and factor Xa enables pharmacological interference in cellular processes contributing to the development and progression of atherosclerosis or atrial fibrillation.



**Professor Eleuterio Toro, PhD**

Applied Mathematics Laboratory, DICAM, University of Trento, Italy.

Research interests: numerical algorithms for partial differential equations; mathematical modelling and simulation of fluid dynamics in aerospace science, industrial and environmental problems. Mathematical modelling of bodily fluids; blood flow in arteries and veins; cerebrospinal fluid; the lymphatic system; anatomical malformations, disturbed fluid dynamics and diseases.



## CHAIRPERSONS AND DISCUSSION PANELISTS



**Professor Yulin Ge, MD**

Professor of Radiology, New York University (NYU) Grossman School of Medicine. President of International Society for Neurovascular Diseases (ISNVD).



**Professor Meiyun Wang, MD, PhD**

Neuroradiologist, Professor and Chair, the Medical Imaging Center of Henan Province; Department of Medical Imaging, Henan Provincial People's Hospital, China

Dr. Meiyun Wang received her M.D. from Southeast University in 1995, a PhD from Capital University of Medical Sciences in 2005, and then worked as a post-doctoral research fellow at the Massachusetts General Hospital, Harvard Medical School from 2006-2008. Dr. Wang is the President of Overseas Chinese Society for Magnetic Resonance in Medicine (OCSMRM), President-elect of International Society for Neurovascular Disease (ISNVD), a Board of Trustee (BoT) member of the International Society for Magnetic Resonance in Medicine (ISMRM) and "ESMRMB/ISMRM certified teacher in clinical MRI". She is also the Annual Meeting Program Committee (AMPC) member and Vice-Chair of the Chinese Chapter of the ISMRM, Secretary and Chair in 2021 of the Psychiatric MR Spectroscopy & Imaging Study Group in ISMRM, Vice-Chair of the Committee on Women in Chinese Society of Biomedical Engineering (CSBME), Committee member of Chinese Society of Radiology (CSR) and Vice-President of Chinese Society for Magnetic Resonance in Medicine (CSMRM). Dr. Wang's research has focused on exploring the value of advanced MRI methods to improve diagnosis and therapeutic evaluation of diseases of the central nervous system such as gliomas, stroke, and Parkinson's disease. She has led a multidisciplinary team to successfully complete the first MRI-guided Focused Ultrasound treatment on Parkinson's disease in Mainland China. Dr. Wang has published over 120 papers on journals such as JAMA, Nature Communications, Radiology, Molecular Psychiatry, Cerebral Cortex, and IEEE Transactions on Biomedical Engineering, given over 400 invited lectures at international and national scientific and educational meetings. Owing to her contributions to the field, she was awarded the 2018 Outstanding Contribution Award by the OCSMRM and the Gold Medal of the Chinese Society of Radiology.



**Professor Paolo Zamboni, MD**

Chair of Vascular Diseases Center and Program Director of the School of Vascular Surgery, University of Ferrara. Ferrara, Italy.

Research interests: Model in physiology of brain drainage and non-invasive techniques for the investigation of cerebral venous return, anomalies of cerebral venous return related to neurological symptoms.



**Professor Pasquale De Bonis, MD, PhD**

Full Professor of Neurosurgery and Head of the Neurosurgery Residency Program since 2017 at University of Ferrara, Italy.

Main scientific interests are in neuro-oncology, CSF dynamics, and spinal diseases.



**Professor Allen Tannenbaum, PhD**

Distinguished Professor of Computer Science and Applied Mathematics at Stony Brook University. Affiliate Attending Computer Scientist in Medical Physics at Memorial Sloan Kettering Cancer Center.

His research interests are in control and systems, image processing and computer vision, and cancer research.



**Dr Lucas Muller, PhD**

Assistant professor of mathematics, Department of Mathematics, University of Trento, Italy.

Research interests. Numerical methods for hyperbolic partial differential equations, with emphasis on one-dimensional models on networks. Modelling and simulation of the cardiovascular system in physiological and pathological states. Model-based non-invasive estimation of haemodynamical clinical indexes.