

## **Neuroimmune Interactions And Its Impact On VCID**

Friday, July 26, 2024 | 8 a.m. – noon

Marriott (Grand Ballroom E) — Philadelphia, USA

All times are in Eastern Standard Time

In-person attendance only

### **Overview**

There is growing appreciation in the role of neuroinflammation in Alzheimer's disease and other neurodegenerative diseases. The role of pathological interactions with blood vessels and the downstream neuroinflammation in vascular contributions to dementia (VCID) is an understudied and potentially therapeutically relevant area of research. Neuroimmune interactions form a dynamic interface between the periphery and the brain. This complex interplay is crucial for maintaining homeostasis and, if disturbed, contributes to neuroinflammatory and neurological disease. In recent years, neuroimmune bi-directional interactions have been heavily investigated, for example, the lung-brain axis, brain-spleen axis, gut-brain axis, and bone marrow-brain axis, but also the interactions between peripheral immune cells with brain vasculature and the downstream effects on neuro-glial networks. The immune system and the brain vascular cells communicate directly as well as through secreted cytokines (e.g.: IL-1 beta, TNF, and IL-6). Moreover, hormones and neurotrophic factors contribute to this complex interplay and downstream effects on brain cells. Recent advances in molecular and cellular tools provide means to probe complex immuno-vascular interactions in order to advance knowledge toward development of therapeutic targets.

This workshop will cover several aspects of neuroimmune interactions, starting from recent discoveries in translational animal models and patient-centered molecular and cellular models. The goal is to understand how to use various cutting-edge tools to derive simple principles from complex biology in order to formulate therapeutic interventions and design translational research projects to build the foundation for future clinical trials.

### **Organizing Committee**

- Oliver Bracko, University of Miami
- Fanny Elahi, Icahn School of Medicine at Mount Sinai
- Amy Nelson, University of South Alabama

## **Presenters**

- Nancy Ruiz-Urbe, Harvard Medical School, Massachusetts General Hospital
- Nikolaos Karvelas, Icahn School of Medicine at Mount Sinai
- Brian Balin, Philadelphia College of Osteopathic Medicine
- Susanne van Veluw, Harvard Medical School, Massachusetts General Hospital
- Samantha Chaney, University of South Alabama
- Lavinia Alberi Auber, VitalizeDx
- Paulo Pires, University of Arizona
- Arvind Shukla, National Institute of Neurological Disorders and Stroke

## **Target Audience**

This ISTAART Immersive workshop is targeted to attendees who are involved in research and is pitched at a beginner-intermediate-advanced level.

## **Learning Objectives**

1. Compare and contrast the state-of-the-science of immuno-vascular interactions from the periphery to the brain in VCID.
2. Perform hands-on measures of cutting-edge techniques from bench-to-bedside to evaluate immuno-vascular interactions in VCID.
3. Discuss scientific concepts with peers interested in immunity, AD and VCID providing synergy to develop new thinking.

## **Registration**

Educational workshops are offered for in-person attendance only. Workshops require a separate registration fee in addition to AAIC full conference registration, or they may be purchased as stand-alone events.

## Agenda

Time	Session Details	Speakers and Moderators
8:00 a.m. - 8:30 a.m.	<b>Light breakfast</b>	
8:30 a.m. - 8:40 a.m.	<b>Welcome</b>	Oliver Bracko, Ph.D. Amy R. Nelson, Ph.D. Fanny Elahi, M.D., Ph.D.
8:40 a.m. - 8:55 a.m.	<b>Rapid teaching points 1 &amp; 2:</b> 1: Vascular oxidative stress contributes to decreased cerebral blood flow and neuroinflammation in a mouse model of Alzheimer's disease 2: Fluid biomarkers for detection and companion to mechanistic studies of VCID	Moderator: Oliver Bracko, PhD Speaker 1: Nancy E. Ruiz-Urbe Speaker 2: Nikolaos Karvelas, MD
8:55 a.m. - 9:25 a.m.	<b><i>Chlamydia pneumoniae</i>, neuroinflammation and pathogenesis of Alzheimer's disease</b>	Moderator: Fanny Elahi, MD, PhD Speaker: Brian Balin, PhD
9:25 a.m. - 9:40 a.m.	<b>Break</b>	
9:40 a.m. - 10:10 a.m.	<b>The role of neuroinflammation in cerebral amyloid angiopathy-related hemorrhages</b>	Moderator: Oliver Bracko, PhD Speaker: Susanne van Veluw, PhD
10:10 a.m. - 10:25 a.m.	<b>Rapid teaching points 3 &amp; 4:</b> 3: Pneumonia and the neurovascular unit 4: Systemic inflammation causes a vascular AD phenotype with memory and olfactory deficits	Moderator: Amy Nelson, PhD Speaker 3: Samantha Chaney Speaker 4: Lavinia Alberi, PhD
10:25 a.m. -	<b>Cerebral microvascular</b>	Moderator: Fanny Elahi, MD, PhD

10:55 a.m.	<b>dysfunction induced by inflammation and nitro-oxidative stress in 5x-FAD mice</b>	Speaker: Paulo Pires, PhD
10:55 a.m. - 11:05 a.m.	<b>Break</b>	
11:05 a.m. - 11:20 a.m.	<b>Moving VCID research forward: funder's perspective</b>	Moderator: Fanny Elahi, MD, PhD Arvind Shukla, PhD
11:20 a.m. - 11:55 a.m.	<b>Panel discussion:</b> methodological gaps in VCID	All moderators and speakers
11:55 a.m. - noon	<b>Survey</b>	
Noon - 1:00 p.m.	<b>Lunch</b>	