Silicon Valley Health Institute

Host of the Smart Life Forum

June 2025 Newsletter

June 25, 2025

Hans Vink, PhD

10:00 AM California Time
6:00 PM London Time

"The Endothelial Glycocalyx: From Hemodynamic Hypothesis to Clinical Risk Predictor"

NOTE: During censorship challenges, SVHI videos are temporarily parked on Rumble at:
https://rumble.com/user/susanrdowns

Announcements & Upcoming Events

We are evolving to accommodate the times of Covid-19. Currently we are doing approximately one zoom meeting per week and are benefiting from the European expertise. We hope to maintain the forum environment as we welcome the audience's questions. Obviously, staying healthy during the times of the Covid virus is important. We welcome your suggestions for speakers.

We hope to continue our monthly in person meetings as well but we are aware that the Cubberly Community Center space may no longer be available to us. When the monthly in person meetings resume, we plan to have at least one monthly zoom meeting.

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If you have questions please email:

susanrdowns@hotmail.com

Thank you.

June 25, 2025
Hans Vink, PhD
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"The Endothelial Glycocalyx: From Hemodynamic Hypothesis to Clinical Risk Predictor"

Meet Hans Vink, PhD

Hans Vink received his physics degree in 1989 at the University of Amsterdam. After receiving his PhD in Medicine in 1994 and a post-doctoral fellowship at the dept. Molecular Physiology and Biological Physics, University of Virginia, Charlottesville, VA, USA, he returned to the University of Amsterdam and developed a research program on the endothelial glycocalyx, supported by grants from the Netherlands Organization for Scientific Research (NWO 1997 – 1999) and a fellowship from the Royal Netherlands Academy of Sciences (KNAW 2000 – 2005). In 2006 he was awarded an Established Investigatorship by the Netherlands Heart Foundation and moved to the University of Maastricht as a Principal Investigator at the Cardiovascular Research Institute of Maastricht, and he was appointed professor of Circulatory Physics at the University in Amsterdam in 2008. His research on the endothelial glycocalyx progresses towards clinically applicable tools for early diagnosis of cardiovascular risk and new therapeutic approaches to protect the vascular wall against atherogenic challenges and is supported by program grants from the Center for Translational Molecular Medicine, The Netherlands Heart Foundation, The Dutch Diabetes Research Foundation and the Netherlands Kidney Foundation. He founded several companies such as GlycoCheck BV, GlycoCheck US and the GlycoCalyx Research Institute (www.glycocalyx.com) for development of a non-invasive biomedical device to measure the health of the endothelial glycocalyx (the GlycoCheck device) and several glycocalyx specific therapeutics. He has published more than 100 scientific publications and supervised 10 PhD projects.

(Continued on Next Page)

List of paper by Hans Vink

Microvascular hematocrit and red cell flow in resting and contracting striated muscle. B Klitzman, B R Duling. Am J Physiol. 1979 Oct;237(4):H481-90. https://pubmed.ncbi.nlm.nih.gov/495734/

A comparison of microvascular estimates of capillary blood flow with direct measurements of total striated muscle flow. B R Duling, I H Sarelius, W F Jackson. Review Int J Microcirc Clin Exp. 1982;1(4):409-24. https://pubmed.ncbi.nlm.nih.gov/6765284/

Microvessel hematocrit: measurement and implications for capillary oxygen transport. C Desjardins, B R Duling. Am J Physiol. 1987 Mar;252(3 Pt 2):H494-503. https://pubmed.ncbi.nlm.nih.gov/3548438/

Heparinase treatment suggests a role for the endothelial cell glycocalyx in regulation of capillary hematocrit. C Desjardins 1, B R Duling. Am J Physiol. 1990 Mar;258(3 Pt 2):H647-54. https://pubmed.ncbi.nlm.nih.gov/2316679/

Identification of distinct luminal domains for macromolecules, erythrocytes, and leukocytes within mammalian capillaries. H Vink , B R Duling. Circ Res. 1996 Sep;79(3):581-9. https://pubmed.ncbi.nlm.nih.gov/8781491/

Microvascular differences in individuals with obesity at risk of developing cardiovascular disease. Anouk I M van der Velden, Bernard M van den Berg, Ton J Rabelink, Hans Vink et al. Obesity (Silver Spring). 2021 Sep;29(9):1439-1444. https://pubmed.ncbi.nlm.nih.gov/34338418/

Impaired Endothelial Glycocalyx Predicts Adverse Outcome in Subjects Without Overt Cardiovascular Disease: a 6-Year Follow-up Study. Ignatios Ikonomidis et al. J Cardiovasc Transl Res. 2022 Aug;15(4):890-902. https://pubmed.ncbi.nlm.nih.gov/34713396/

Microvascular and proteomic signatures overlap in COVID-19 and bacterial sepsis: the MICROCODE study. Alexandros Rovas, Hans Vink, Philipp Kümpers et al. Observational Study Angiogenesis. 2022 Nov;25(4):503-515. https://pubmed.ncbi.nlm.nih.gov/35723762/

The Effect of 4-Month Treatment with Glycocalyx Dietary Supplement on Endothelial Glycocalyx Integrity and Vascular Function in Patients with Psoriasis. Ignatios Ikonomidis et al. Randomized Controlled Trial Nutrients. 2024 Aug 5;16(15):2572. https://pubmed.ncbi.nlm.nih.gov/39125451/

Role of dietary interventions on microvascular health in South-Asian Surinamese people with type 2 diabetes in the Netherlands: A randomized controlled trial. Anouk I M van der Velden, Hans Vink, Ton J Rabelink, Bernard M van den Berg et al. Randomized Controlled Trial Nutr Diabetes. 2024 Apr 10;14(1):17. https://pubmed.ncbi.nlm.nih.gov/38600065/

(End of Meet Hans Vink)

June 25, 2025
Hans Vink, PhD
10:00 AM California Time / 6:00 PM London Time
"The Endothelial Glycocalyx: From Hemodynamic Hypothesis to Clinical Risk Predictor"

The Glycocalyx Research Institute, Alpine USA (www.glycocalyx.com)

The endothelial glycocalyx is essential for microvascular health, and that identification of glycocalyx damage can identify (early) cardiovascular risk in patients and healthy individuals. This is based on over four decades of research on the glycocalyx. Recent development of specific glycocalyx therapeutics show great potential for improvement of microvascular health Ongoing clinical trials are currently testing its potential impact on cardiovascular risk in a variety of clinical conditions.

The endothelial glycocalyx is a network of membrane-bound proteoglycans and glycoproteins, covering the endothelium. The endothelium is a single layer of squamous endothelial cells that line the interior surface of blood and lymphatic vessels.

Past studies on several apparent capillary hemodynamic discrepancies that led to the original glycocalyx hypothesis concerning vascular endothelial function and microvascular health..
These studies include observations of very low and variable capillary tube hematocrit (Klitzman and Duling, 1979), discrepancies between estimates of capillary blood flow with measurements of total muscle flow (Duling, Sarelius and Jackson, 1982), measurements of capillary discharge hematocrit (Desjardins and Duling, 1987), the impact of heparinase treatment on capillary hematocrit (Desjardins and Duling, 1990), and the first direct observation of distinct luminal domains for plasma macromolecules and erythrocytes within mammalian capillaries (Vink and Duling, 1996).

Based on the observation that a healthy glycocalyx keeps flowing red blood cells at a considerable distance from the endothelial cell surface, the GlycoCheck system was developed to assess glycocalyx damage non invasively in both experimental as well as clinical settings, resulting in the publication of more than 120 peer-reviewed papers that not only confirm that breakdown of the glycocalyx correlates with patients' complications in a wide range of diseases, but also that assessment of glycocalyx damage in healthy individuals predicts future risk of adverse cardiovascular events (Ikonomidis, 2022).

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Join Zoom Meeting

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(End of Hans Vink's Presentation)

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For questions, please contact Susan Downs at susanrdowns@hotmail.com.

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