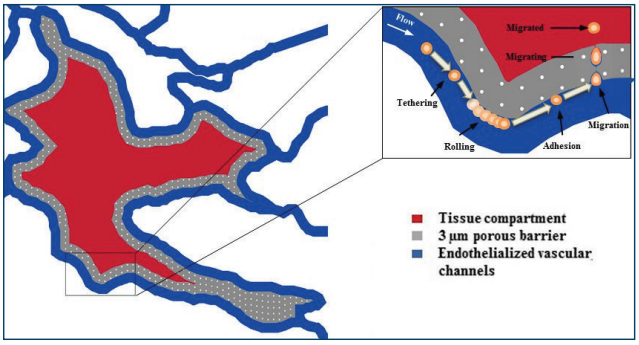
SynRAM 3D Inflammation Model

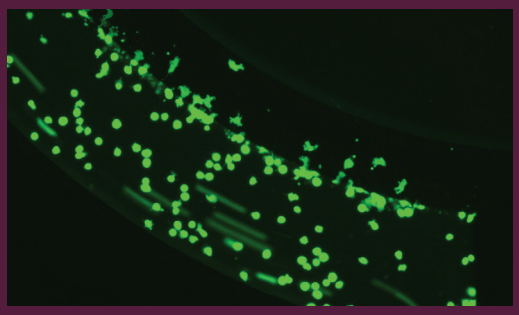
SynRAM™ allows the study of the entire inflammation pathway in a realistic and dynamic environment. By a histological slice of co-cultured tissue and/or tumor cells with a lumen of endothelial cells, SynRAM delivers a physiologically realistic model and enables real-time tracking of rolling, adhesion and migration processes. SynRAM has been successfully validated against *in vivo* studies showing excellent correlation with rolling velocities, adhesion patterns, and migratory processes.

- Physiological flow within a microvascular environment
- *In vivo* like vascular morphology with fully formed lumen
- Co-culture capability for cell-cell interactions
- Quantitative real-time rolling, adhesion, and migration data from a single experiment

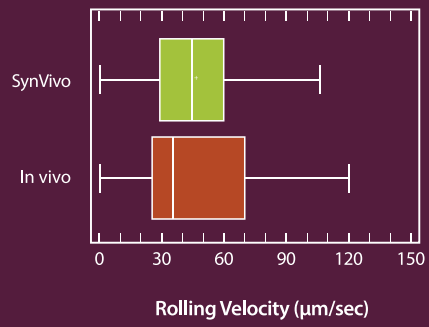


SynRAM enables real-time assessment of cellular interactions compromising of rolling, adhesion and migration through multiple cellular layers in a single experiment with close correlation to in vivo results.

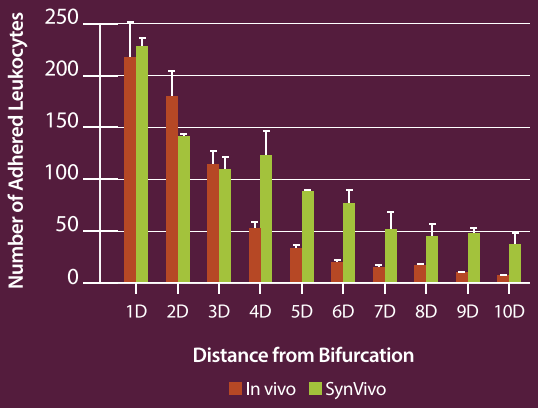
The SynRAM model reproduces inflammation responses observed in vivo



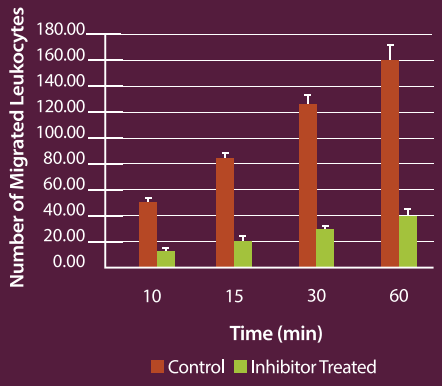
Real-time visualization of leukocyte rolling, adhesion, and migration across an inflammed endothelium in SynRAM 3D model.



Leukocyte rolling, ve;ocities are similar to those observed in vivo



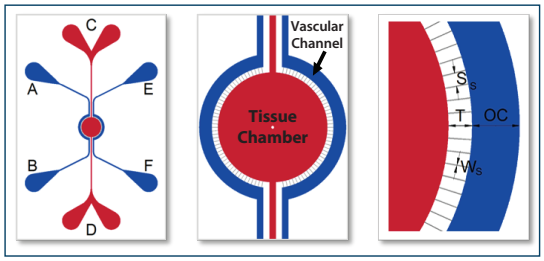
Leukocyte adhesion pattern in SynRAM matches leukocyte adhesion in vivo



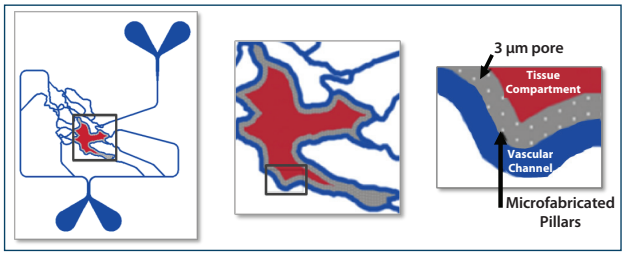
Screening of inhibitors in SynRAM model. In the presence of inhibitor, migration drops significantly (by more than 75%) compared to control conditions

Simultaneously visualize rolling, adhesion and migration in a single experiment

IMN2 Idealized network co-culture Chips



SMN2 microvascular network Co-Culture Chips



Chip Schematics - Depending on your specific research applications you can select from basic IMN2 or SMN2 microvascular co-culture chip configurations.

Product Purchase Options

Catalog#	Description	Price
401002, 401004	SynRAM inflammation Model Starter Kit - Includes 12 chips, pneumatic priming device tubing, clamps, syringes, and needles. Choose from IMN2 radial or SMN2 microvascular network chips	**IMN2 Kit - $2,100** **SMN2 Kit - $2,500**
102008 -SR3	SynRAM IMN2 - Radial Chips (8um pillars) - Pack of 3	**$375**
105001-SR3	SynRAM SMN2 - microvascular network chips - Pack of 3	**$499**

Assay Development and Screening using SynRAM

RAM Models Available	• Monoculture using primary endothelial cells/cell line • Co-Culture with stromal/tissue cells
Types of Service Projects	• Immune cells (primary, cell lines) rolling, adhesion and migration across the endothelium • Inflammation-induced vascular permeability • Drug-induced vascular injury • Inflammation-induced biomarker analysis • Therapeutic screening • Screening for cell surface biomarkers • Target Identification • Screening for activators/inhibitors of inflammation

Don't see your model or assay of interest?

Contact our expert scientific team to discuss your needs

Selected Publications using the SynRAM Model

(1) **The Role of Tyrosine Phosphorylation of Protein Kinase C Delta in Infection and Inflammation.** Yang Q et al (2019). *Int J Mol Sci*. 2019 Mar 26; 20 (6)

(2) **PKCδ Inhibition as a Novel Medical Countermeasure for Radiation-Induced Vascular Damage.** Soroush F et al (2018). *The FASEB Journal*. Vol. 32, No. 12.

(3) **A Novel Microfluidid Assay Reveals a Key Role for Protein Kinase C δ in regulating human Neutro-Phil-Endothelium Interaction.** Soroush F et al (2016). *J Leukoc Biol*. 100:1027-1035.

(4) **Bioinspired Microfluidic Assay for In Vitro Modeling of Leukocyte-Endothelium Interactions.** Lamberti, G et al (2014). *Anal. Chem*. 2014, 86 (16), 8344-8351

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