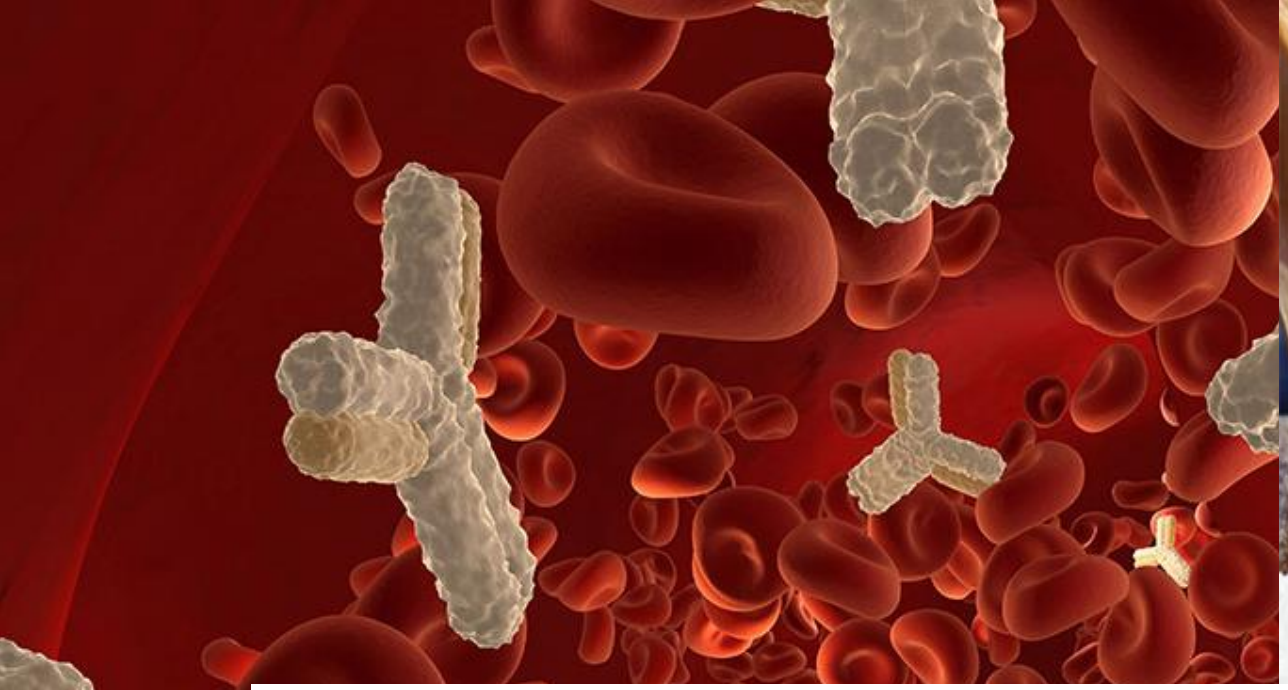

2023 Global Healthcare Conference

Diet Effects on Sialic Acids and Its Association with Inflammation - Adventist Health Study 2

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Grants for Research and Partnership-Int'l: 2170258

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LOMA LINDA UNIVERSITY HEALTH

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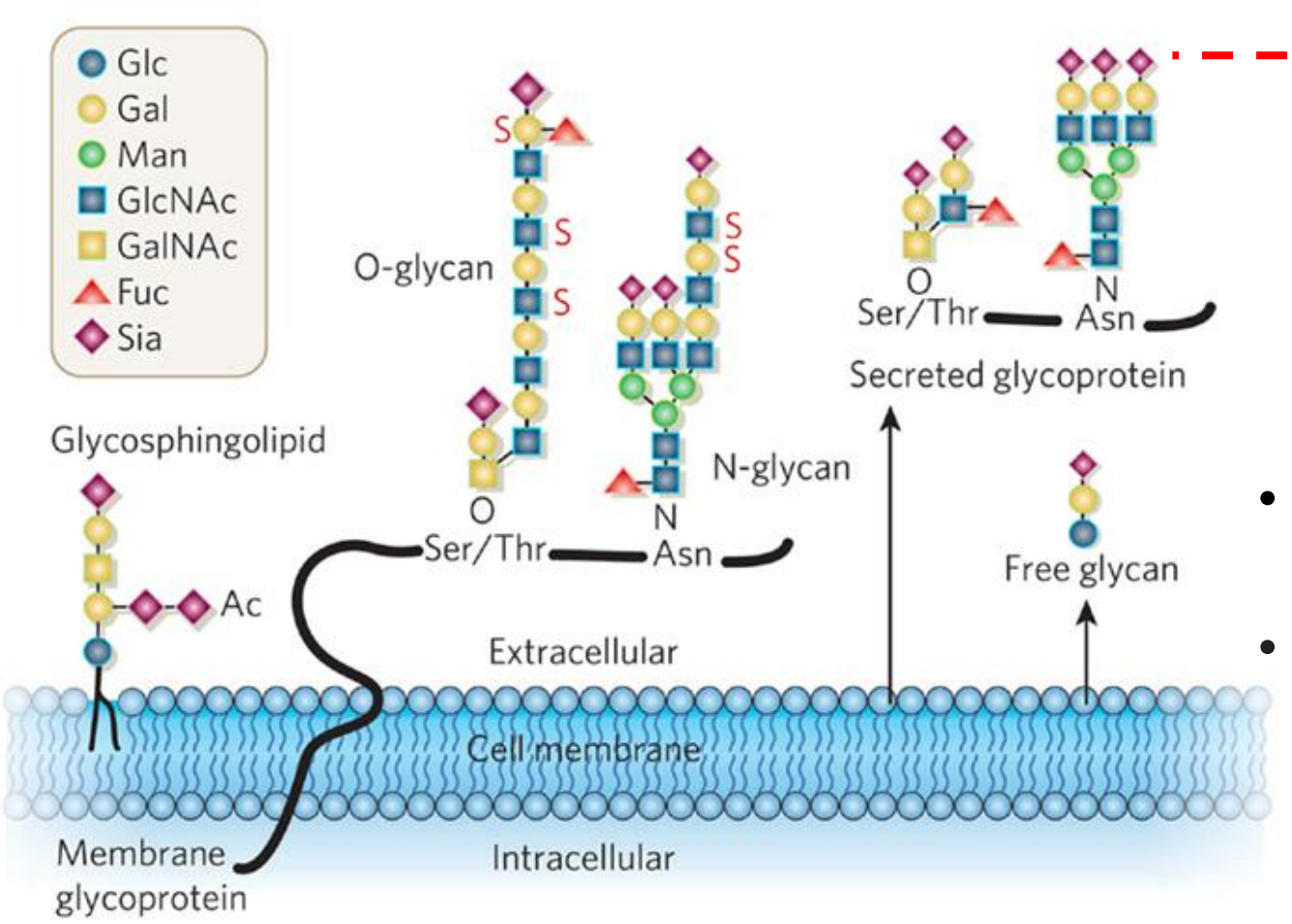
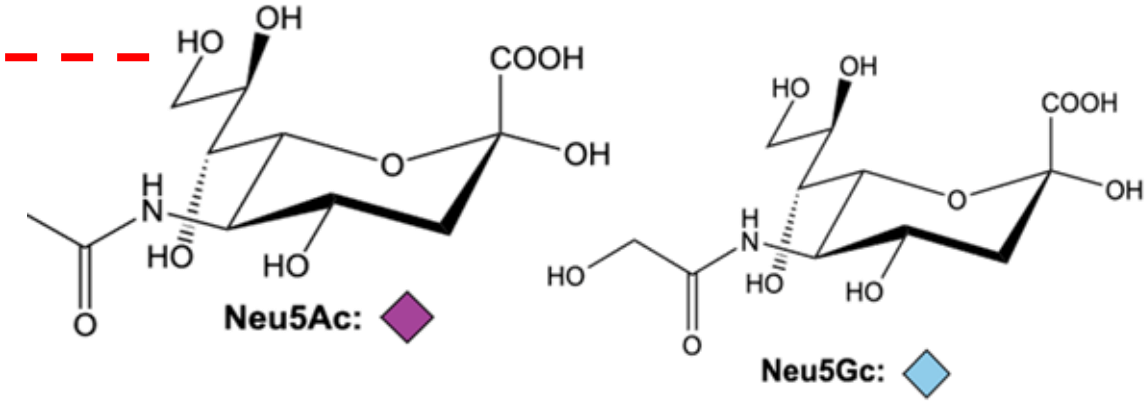
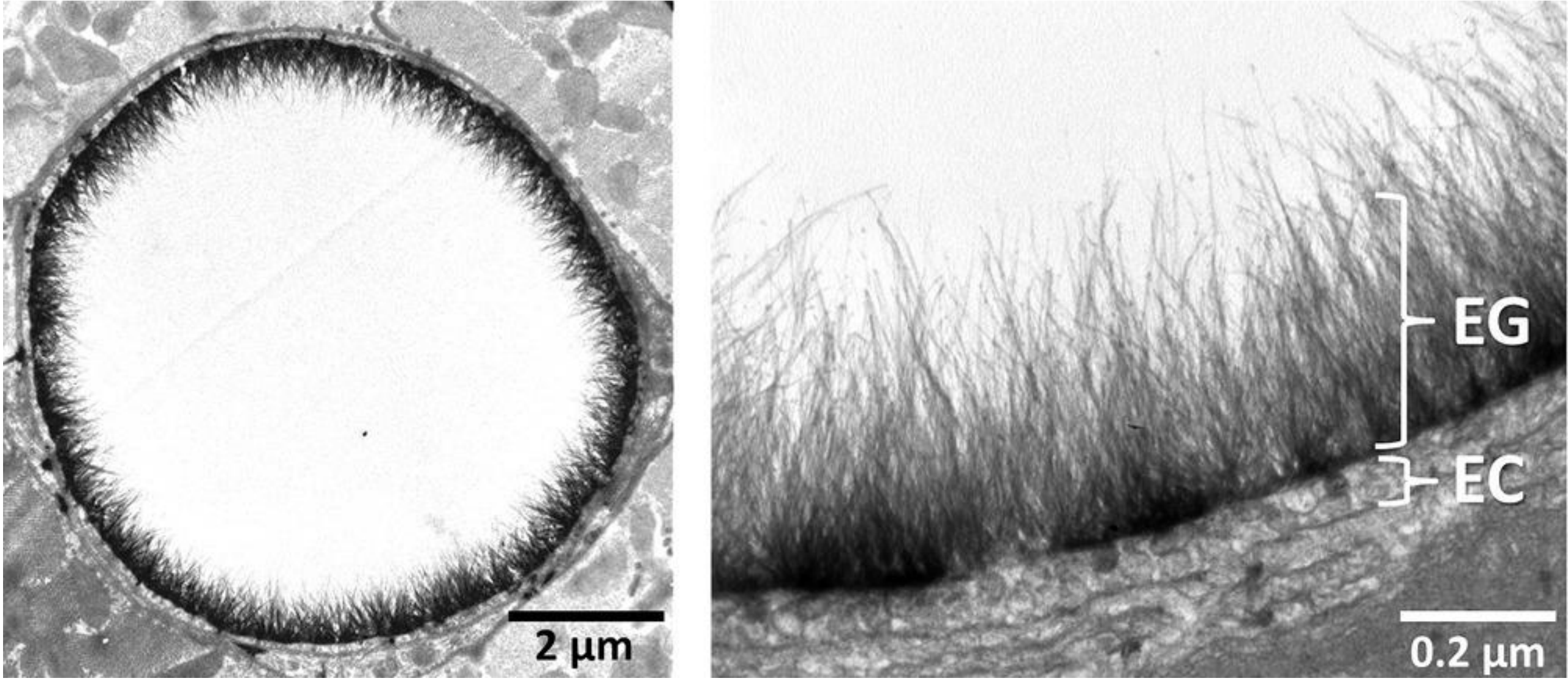




Sialic acids on cell-surface and secreted molecules.

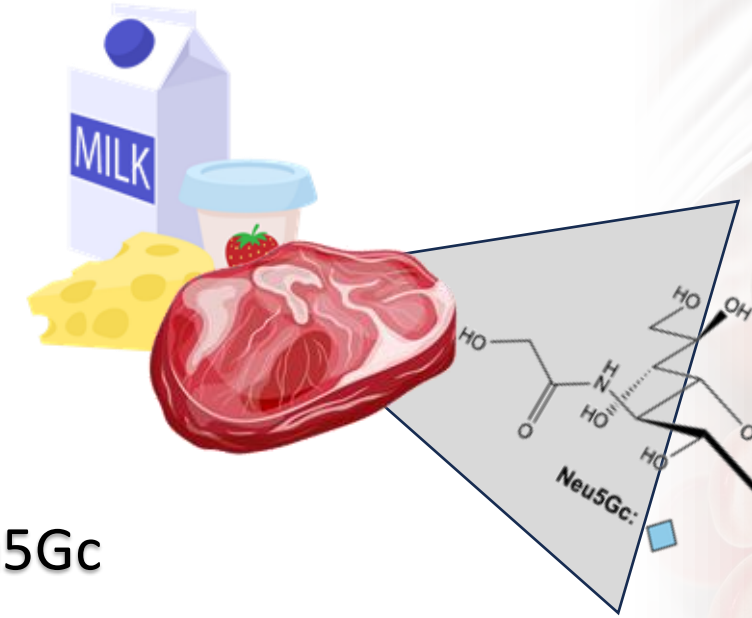
Varki,A. (2007) *Nature* 446(7139):1023–1029.

- Most common Sialic acids: Neu5Ac, Neu5Gc, and KDN.
- Sialic acids can mediate or modulate a wide variety of physiological and pathological processes:
  - Inflammation (triggered by interaction with antibodies)
  - Cardiovascular diseases/atherosclerosis
  - Diabetes
  - Cancer



Electron micrograph of a goat coronary capillary. The brush-like structure of the EG components covers the entire luminal aspect of the vessel. The EG occupies a considerable volume and is multiple times as thick as the ECs. EC, endothelial cell; EG, endothelial glycocalyx. Reproduced with permission from Van den Berg BM et al. Endothelial luminal glycocalyx. In: Aird WC, ed. Endothelial Biomedicine. NewYork, NY: Cambridge University Press; 2007: 689-695

Gaudette,S., et al. (2020) *J.Vet.Emerg.Crit.Care* 30(2):117–134.



Neu5Gc

- It is a type of monosaccharide not produced by humans
- Humans synthesize Ab against Neu5Gc
- Detected in small amounts in normal human epithelial and endothelial cells
- It is found in carcinomas and atherosclerosis plaques of humans.

STUDY AIMS

- Measure Sialic acids in adipose tissue of vegetarians of Non-vegetarian subjects from the Adventist Health Study-2 (AHS2).

- Determine if Neu5Gc and anti-Neu5Gc antibodies correlate with levels of inflammatory biomarkers from subjects of AHS2.

- Examine incorporation of Neu5Gc in colorectal cancer samples from AHS2 individuals with low or high consumption of red meat.

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Sialic acids Neu5Ac and KDN in adipose tissue samples from individuals following habitual vegetarian or non-vegetarian dietary patterns

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FINDINGS

KDN levels were significantly inversely associated with body mass index.

Neu5Gc was not detected in human adipose samples.

Neu5Ac concentration is higher in vegetarians in comparison to non-vegetarian (nearly two times higher).

Higher Neu5Ac levels in adipose tissues of vegetarians are consistent with lower baseline inflammatory status in this group.

ONGOING GOALS

- Measure Sias in serum samples using TQ (ongoing)
- Metabolomics in plasma samples
- Optimization of protocol for human urine samples
- Measure serum Ab against Neu5Gc (Collaboration with Tel Aviv University, Israel – Dr. Padler-Karavani´s Lab) (ongoing)
- Measure level of Neu5Gc in human colo-rectal cancer samples

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