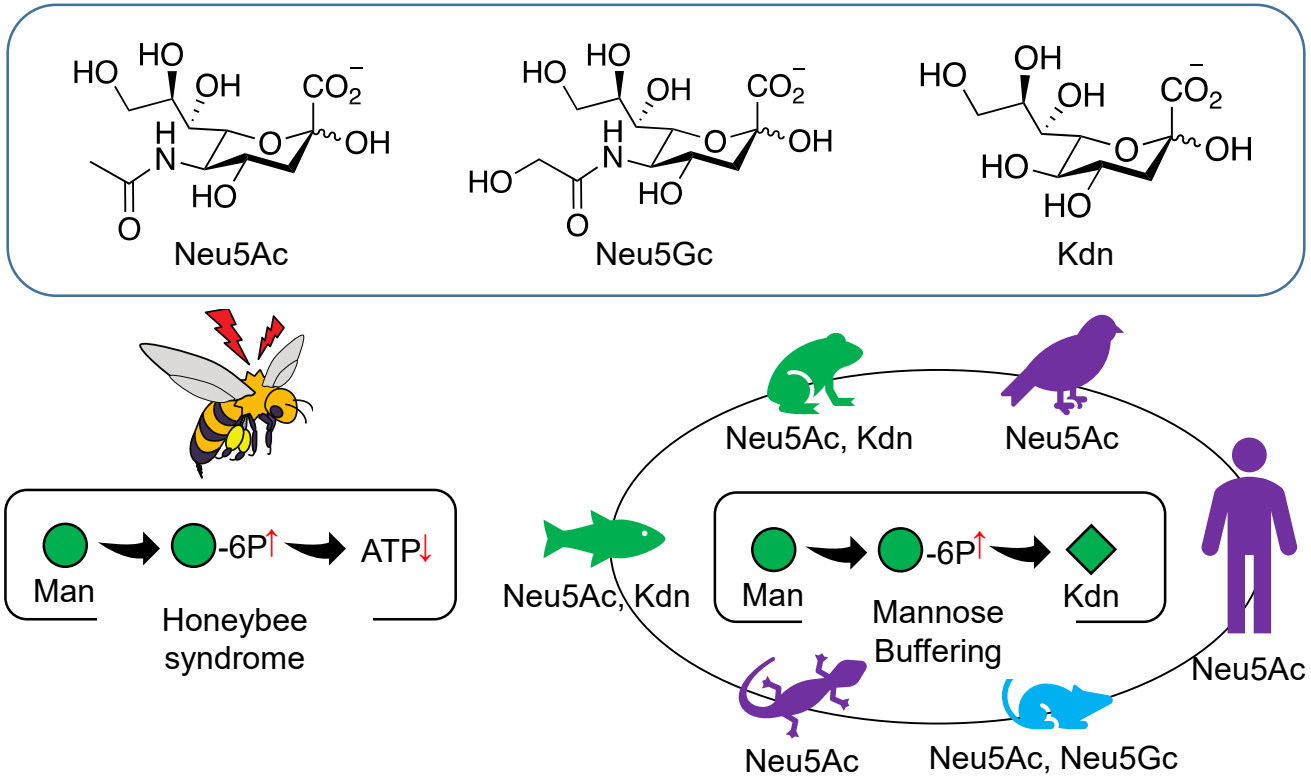
From Laboratory of Experimental Pathology

Evolutionary conservation of human ketodeoxynonulosonic acid production is independent of sialoglycan biosynthesis.



N-acetylneuraminic acid (Neu5Ac) and *N*-glycolylneuraminic acid (Neu5Gc) are two major mammalian sialic acids, which are located in the most outer position of glycome. 2-keto-3-deoxy-d-glycero-d-galacto-2-nonulosonic acid (Kdn) is the other sialic acid, which was discovered in cold-blooded vertebrates. The Kdn precursor mannose is known to be toxic for honeybees due to ATP deficiency. Kdn production pathways remained conserved in mammals but were diminished by an M42T substitution in a key biosynthetic enzyme, *N*-acetylneuraminate synthase. Mammals probably conserve Kdn biosynthesis and modulate it in a lineage-specific manner, not for glycosylation, but to control physiological mannose intermediates and metabolites.

References: Kawanishi K, et al., *J Clin Invest.* 2021;135(5):e137681. https://doi.org/10.1172/JCI137681.

Contact: Assistant Prof. Kunio Kawanishi