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EVOLUTION OF SIALIC ACID BIOLOGY IN THE PRIMATE LINEAGE

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Sialic acids are 9-carbon sugars found at the ends of sugar chains attached to cell surface and secreted molecules of vertebrates. They play important roles in cell-cell communication as well as in host-pathogen interactions. In primates, over 55 genes encoding receptors, enzymes and transporters are known to be involved in sialic acid biology. A surprisingly large number of these show human-specific changes in genome structure, expression, and/or function. This suggests that certain phenotypes expressed by sialic acid biology have changed uniquely in the human lineage. It is expected that investigation of the evolution of sialic acid biology in primates give us hints to answer a transdisciplinary question: What makes us human? I will give an overview of the evolution of sialic acid biology in the primate lineage, and discuss about the impact of human-specific changes in sialic acid biology on the human evolution.

Keywords: human evolution, sialic acid, human uniqueness, human-specific change