Three glycosyltransferases identified as significant mutational targets in colon cancer

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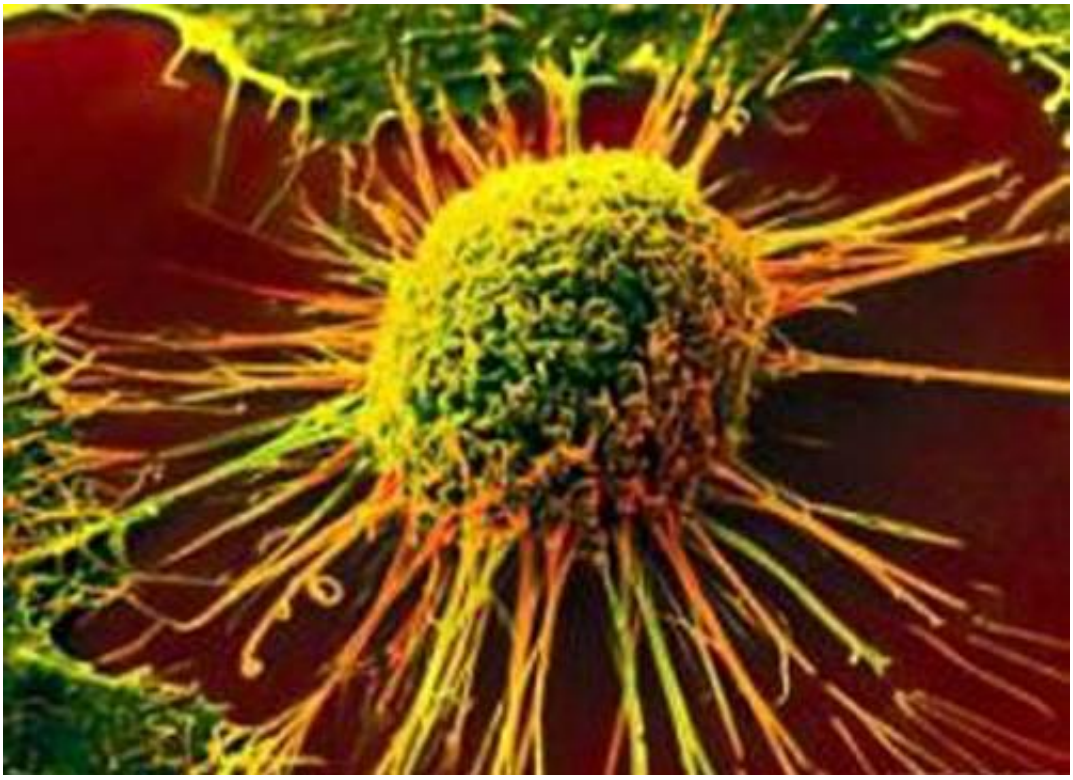

Little is known about the molecular basis of aberrant protein glycosylation, a complex enzymatic process that is a hallmark of many human cancers including colorectal cancers (CRC), and how it may contribute to tumor progression. In a new study published in *Scientific Reports*, an online journal of the Nature Publishing Group, scientists at

Case Western Reserve University School of Medicine have successfully characterized the mutational landscapes of glycosylation-associated genes in colon cancer, identifying three glycosyltransferases as significant mutational targets in CRC.

These findings are significant as they strongly suggest that functionally deleterious mutations in glycosyltransferase genes in part underlie aberrant glycosylation, and contribute to the pathogenesis of molecular subsets of colon and other gastrointestinal malignancies. The study, "Biochemical and functional characterization of glycosylation associated mutational landscapes in colon cancer," can be accessed here.

Kishore Guda, DVM, PhD, assistant professor of general medical sciences (oncology) at the School of Medicine, led this critical research, involving the targeted re-sequencing of 430 glycosylation-associated genes and matched primary tumor tissues. Through this process, Guda and his team identified three glycosyltransferases (B3GNT2, B4GALT2, ST6GALNAC2) as significant mutational targets in CRCs. Analysis of independent large-scale tumor tissue datasets confirmed recurrent mutations within these genes in colon and other gastrointestinal cancers. The study lays important groundwork for the future characterization of these glycosyltransferases that may provide additional insights into the biologic role of these genes in colon cancer progression.

"With so many questions surrounding the potential role of aberrant glycosylation in tumor progression, we were excited to conduct this research that builds on our previous findings of mutations in the gene encoding for the enzyme GALNT12 in a subset of colon cancer cases," said Dr. Guda. "Our findings demonstrate that these mutant glycosyltransferases have a significant impact on the encoded enzymatic activity and/or the migratory potential of colon carcinoma cells, and set up future research that can further explore their role in tumor progression."

Medical Xpress

More information: Srividya Venkitachalam et al. Biochemical and functional characterization of glycosylation-associated mutational landscapes in colon cancer, *Scientific Reports* (2016). DOI: 10.1038/srep23642

Provided by Case Western Reserve University

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