Abstract: <strong>Introduction</strong>: β-Catenin, the vertebrate homolog of the <em>Drosophila</em> Armadillo protein, is primarily known as a component of the canonical Wnt signal transduction which determines early embryonic axis in <em>Xenopus laevis</em> and probably many other vertebrates. In addition, activation of β-Catenin plays a crucial role in the initiation of human colorectal cancer. Most colorectal tumor cells harbor inactivating genetic mutations in the tumor suppressor gene, <em>APC</em>, which result in protein stabilization and abnormal activation of the proto-oncogene, β-Catenin. Therefore, regulation of β-Catenin function could be beneficial to patients suffering from colon cancer or many other cancers in which β-Catenin is upregulated.<br />

**Methods:** Different cellular, molecular, and biochemical assays have been used for this study including cell culture and transfection, immunofluorescence microscopy, western blotting, GSK-3 kinase assay, immunoprecipitation, gene cloning, PCR, RT-PCR, real-time PCR, etc. <br />

**Results:** The results from my laboratory suggest that activation of the Gq class of Ga proteins positively regulates β-Catenin. We have shown that expression of the wild type or the dominant active mutant of Gaq (GaqQL) in HEK293T cells or <em>Xenopus</em> oocytes leads to inhibition of GSK-3β and cellular accumulation of β-Catenin. Activation of endogenous Gaq in HEK293T and HT-29 colon cancer cells by either expressing M3-muscarinic acetylcholine receptor or treating these cells with thrombin (or carbachol) leads to an increase in endogenous cytoplasmic β-Catenin protein levels followed by upregulation of several β-Catenin-target genes. We have also shown that the Gaq-mediated cellular accumulation of β-Catenin can be blocked by expression of a minigene encoding a specific Gaq inhibitory peptide. <br />

**Conclusion:** Our results open a new avenue toward clinical studies of colon cancer and other human cancers which their initiation and progression are dependent on β-Catenin function.

**Keywords:** Gaq, β-Catenin, human cancer.

**Presentation:** Poster