1159-92-92 **Jonathon E Mohl*** (jemohl@utep.edu), 500 W University, El Paso, TX 79968, and **Thomas Gerken** and **Ming-Ying Leung**. *Using derived protein feature enhancement values to calculate the propensity for mucin-type O-glycosylation with the ISOGlyP program.*

Mucin-type O-glycosylation is a post-translational modification (PTMs) of proteins. This glycosylation is initiated by the addition of the sugar N-acetylgalactosamine (GalNAc) onto protein Ser and Thr residues by a family of polypeptide GalNAc transferases. In humans there are 20 isoforms that are differentially expressed across tissues that serve multiple important biological roles. Aberrant O-glycosylation or other PTMs have links to many developmental diseases or cancers. Using random peptide substrates, isoform and position specific amino acid preferences were obtained in the form of enhancement values (EV). The EV product (EVP) is the product of the EVs and highlights the propensity for O-glycosylation to occur. These initial calculations have been incorporated within the ISOGlyP O-glycosylation prediction program. The inclusion of EV protein substrate features (such as secondary structure and surface accessibility) was found to increase sensitivity with minimal loss of specificity, when tested with three different published in vivo O-glycoproteomics data sets, thus increasing the overall accuracy of the ISOGlyP predictions. The generation of new EV tables and the flexible use of an extended EVP calculation incorporating the additional features is the focus of this talk. (Received July 31, 2020)