

***Organic Syntheses Seminar Series sponsored by the
Organic Syntheses Inc. and the
The Department of Chemistry and Biochemistry***

Presents a Seminar Titled:

***“Entirely Carbohydrate Vaccine Constructs that are
Specific and Selective for Cancer”***



Presented by:

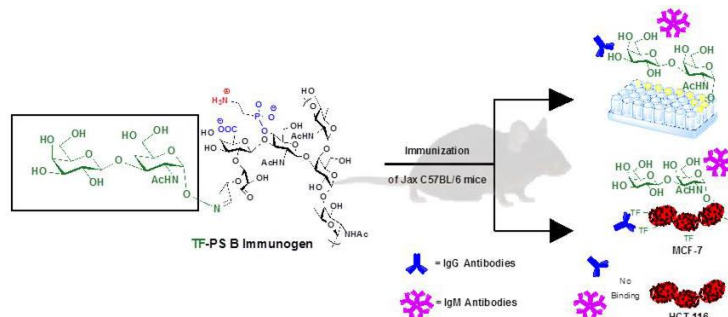
Dr. Peter R. Andreana

Associate Professor

*Department of Chemistry & Biochemistry
School of Green Chemistry & Engineering
University of Toledo*

A predicted global market for cancer vaccines will increase by a compounded annual growth of 20% and expand to 7.1 billion dollars by 2018. The FDA and EC have already approved personalized cellular-based prostate cancer vaccines sipuleucel-T, commonly known as Provenge® and Oncophage in Russia. Neither of these approaches utilize a carrier-protein method; a stark contrast to the numerous commercially available protein conjugate bacterial vaccines including PedvaxHIB®, HIBERIX®, Menjugate®, and Prevenar 13®. There have been very few clinical trials utilizing surface tumor associated carbohydrate antigens (TACAs) (e.g. GM2, TF, STn (Theratope®)), which is surprising because the antigen is located on the cell surface making it optimal for immune targeting.

TACAs are a consequence of mutated chaperone proteins that cause aberrant glycosylations on the surface of tumor cells. These surface antigens are considered to be a focus of prophylactic and therapeutic vaccination efforts arising from their synthetic accessibility. It is well documented that TACAs themselves do not elicit a robust anti-carbohydrate immune response which is a direct cause of the T-cell independent nature of sugars and our immune preference towards peptide/protein/amino acids. In order to overcome the weakly immunogenic nature of carbohydrate antigens, we show that TACAs conjugated to zwitterionic polysaccharides (ZPSs), especially PS A1, can validate a new approach for T-cell immunity by invoking both innate and adaptive immune responses. For this to become a reality, we have been focused on TACA synthesis, isolation of zwitterionic polysaccharides, utilizing a “linkerless” technology and evaluating efficacy using in vivo studies. This talk therefore aims to provide a perspective on entirely carbohydrate-based vaccines and their efficacy in combating cancer.



Friday, February 12, 2016 @ 3:00 in OCNPS 100