

**Principal Investigator: Dr. Shai Bel**

**Grant Title: Determining how colonic goblet cells control mucus glycosylation**

**(a) Abstract:** The colonic mucus layer separates the host from the billions of microbes that colonize the gut. This mucus layer is produced by colonic goblet cells and mainly comprises the gel-forming mucin MUC2, which is heavily glycosylated with a variety of glycans. These glycans are situated at the contact site between the host and its microbiome, providing adhesion sites and an energy source for those bacteria who are adapted to use it. The host uses these glycans to select its microbiome, while reinforcing the mucus barrier. Our objective was to identify how the host controls this mucus glycosylation. We used a pioneering technology which allows identification of proteins that are being synthesized specifically in goblet cells in vivo. We found that, in response to gut colonization by a pathobiont, goblet cells express specific glycosylation proteins to alter mucus glycosylation patterns. We will continue to determine the role of these specific glycosylation in host defense.

