1161-37-58   **Cara Sulyok***, csulyok@vols.utk.edu, and **Judy Day** and **Suzanne Lenhart**. *A Mathematical Framework to Augment the Q-MARSH Score in the Diagnosis of Celiac Disease.* Preliminary report.

This work provides a mathematical framework to better understand the effects of immune activation on gut health. This mathematical model uses a system of ordinary differential equations to track changes in villus and crypt cell densities as well as intraepithelial lymphocytes to better understand the dynamics of small intestinal destruction. The model will be used to investigate and analyze various theories behind the progression of celiac disease by focusing on understanding the dynamics of the small intestine in situations mirroring healthy function, celiac disease, and refractory celiac disease. By doing so, we can assist in further quantifying and augmenting diagnostic measures and investigate potential therapies to mitigate the negative effects of celiac disease. (Received August 06, 2020)