Question & Hypothesis

David Li

       Question: How does treating the peptide clearance rate δ_p (essentially, the level of pancreatic beta cells) as a *continuously* and slowly varying parameter affect the qualitative behavior of the scaled reduced immune model developed by Mahaffy and Edelstein-Keshet , and how can those findings be applied to understanding and predicting the onset of type 1 diabetes?

       Hypothesis: If the model for the level of immune cells in the weeks before the onset of type 1 diabetes is analyzed with both a continuously varying and a static peptide clearance rate δ_p, then in the former analysis, the oscillations present in the original model that indicate the onset of diabetes will begin later than in the latter model because previous research has shown this behavior is delayed in other systems when similarly analyzed with a continuously varying parameter.