1125-92-886   **Ami Radunskaya***, aer04747@pomona.edu. *Blocking the immune blockers: helping the immune system fight cancer.*

The immune system attacks cells that are foreign, so it must know how to distinguish "self" from "non-self". One component of this recognition system consists of molecules, or *checkpoints* on certain immune cells that need to be switched on in order to initiate an immune response. Cancer cells can use these checkpoints to evade immune cells. When a checkpoint on an immune cell is bound to its partner protein on another cell, the checkpoint signals to the immune cell that it should leave the bound cell alone. Cancer cells masquerade as "normal" by binding to these checkpoints. In a recent breakthrough, drugs have been developed that target these checkpoints, blocking the cancer cells from binding to them, and allowing the immune cells to attack. However, the immune cells will also fail to recognize normal cells, sometimes causing severe side effects.

This is where mathematics can be useful: how should the immune suppressor blockers be administered so that their effect can be most beneficial and least toxic? In this talk we will discuss how mathematical models of the tumor-immune response can be used to answer this question. The underlying model was developed as a REUF project, and results are due to a large group of collaborators of all ages. (Received September 12, 2016)