1135-92-2366 **Lora D Weiss*** (ldweiss@uci.edu) and **Natalia L Komarova**. *The stability of cellular networks against mutations.* Preliminary report.

Cellular tissue consists of stem cells and a hierarchy of more differentiated cells. It is constantly in flux, with differentiated cells dying, and stem cells replenishing the removed cells. In order to maintain constant size, cellular processes must be regulated by control networks of intra-cellular signaling. Here we study the robustness of such control networks against cancerous mutations. Beginning with a stable cellular network, we investigate consequences of different types of mutations, and in particular, which mutations cause a stable network to fail. Relevant to the theory of cancer, these network failures may lead to unlimited growth of mutant cell populations. We use differential equations, linear analysis, and modeling to analyze different networks and how they are affected by different mutations. We find that only specific mutations may cause a stable network to fail. (Received September 26, 2017)