1158-92-239 **J. Foo*** (jyfoo@umn.edu), **E. Gunnarsson**, **S. De** and **K. Leder**. *Understanding the role of phenotypic switching in cancer drug resistance.*

The emergence of acquired drug resistance in cancer represents a major barrier to treatment success. While research has traditionally focused on genetic sources of resistance, recent findings suggest that cancer cells can acquire transient resistant phenotypes via epigenetic modifications and other non-genetic mechanisms. Although these resistant phenotypes are eventually relinquished by individual cells, they can temporarily 'save' the tumor from extinction and enable the emergence of more permanent resistance mechanisms. These observations have generated interest in the potential of epigenetic therapies for long-term tumor control or eradication. In this work, we develop a mathematical model to study how phenotypic switching at the single-cell level affects resistance evolution in cancer. We highlight unique features of non-genetic resistance, probe the evolutionary consequences of epigenetic drugs and explore potential therapeutic strategies. (Received March 02, 2020)