1163-60-628   **Marek Kimmel***, kimmel@rice.edu. *Drivers and passengers: Analysis and simulations of modes of competition of cancer cells.*

In a series of publications, McFarland and co-authors introduced the tug-of-war model of evolution of cancer cell populations. In the present paper, we put the tug-of-war in the context of multitype Moran model and multitype branching process, which serve as mathematical framework for two different types of selection in cell populations. Moran model philosophy can be viewed as "competitive replacement",by which individual cells face each other and inhibit each other's right to be replaced by a direct descendant. Branching process represents the so-called "crowding out" in which a faster-growing clone makes the slower-growing one rare to the extent of nonexistence. We begin with mathematical definitions of the Moran model and branching process versions of tug-of-war. Then we present simulation results, which demonstrate the differences between the long-term behavior of the two versions. We also use some typical population genetics non-neutrality tests to see how the effects of tug-of-war competition are reflected in testing. Finally, in the Discussion section, we discuss the tug-of-war process behavior vis-'a-vis recent simulation and experimental studies of long-term cell population growth. (Received September 10, 2020)