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Mathematical models of adoptive cell transfer approach for cancer immunotherapy. Preliminary report.

Recent continued breakthroughs in antibody research and advances in T-cell engineering techniques have begun to unleash the curative potential of cancer immunotherapy. Here our model takes into account two means of immunotherapy. First, administration of monoclonal antibodies with high specificity, which will result in an increase in the ability of immune cells to detect and eliminate cancer cells – its killing rate or efficacy. Second, adoptive immune cell transfer, characterized by the infusion of in-vitro engineered and personalized immune cells into patients. These two novel treatment methods can be combined to take advantage of the bistability phenomenon in cancer, and may be applied in concert as combination immunotherapy. We provide a quantitative mathematical framework to provide practical guidance for clinical assessment of immunotherapy. (Received September 02, 2019)