In this talk, I will review some recent developments in cancer drug research and the challenges of these developments posed to statisticians. These developments include (1) the increasing use of biomarkers in selecting optimal treatments for cancer patients as embodied in the idea of precision medicine; (2) the need for an appropriate measure of treatment effect for immunotherapies when the proportional hazard assumptions is violated; and (3) a need for combining real world data and randomized clinical trials data in drug evaluation. For each topic, I will illustrate the issues and the statistical challenges with real examples and discuss some research work undertaken by me and my collaborators aiming to develop new designs and novel statistical methods in addressing these needs.