

We address the problem of robust, computationally-efficient design of biological experiments. Classical optimal experiment design methods have not been widely adopted in biological practice, in part because the resulting designs can be very brittle if the nominal parameter estimates for the model are poor, and in part because of computational constraints. We present a method for robust experiment design based on a semidefinite programming relaxation. We present an application of this method to the design of experiments for a complex calcium signal transduction pathway, where we have found that the parameter estimates obtained from the robust design are better than those obtained from an “optimal” design.