



Figure S7: Toggle model experiment design with non-zero initial sensitivities (a) Degradation rate of  $\lambda cI$  is controlled by UV as shown in Fig. 7(a). The magnitude and duration ( $\beta$ ) of UV exposure are free experiment design parameters, along with the time between measurements  $\Delta t$ . (b) E-optimality (the smallest eigenvalue of the FIM) versus the 3-dimensional experiment design space, where the FIM is computed using (b) the reference parameter set, (c) by averaging the E-optimality over 100 unique parameter sets and (d) using the “true” parameter values. The black circle is the optimal design chosen according to (c). The black triangle denotes a nearby, but less informative, experiment. (e) For the experiments corresponding to the black circle and triangle in (b-d), E-optimality values are shown for each sampled parameter set.