

**S2 Figure. Fit to** *in vitro* labeling data. The model fits to the label enrichment in DNA from Jurkat cells cultured in medium with either D<sub>2</sub>-glucose, D<sub>2</sub>O or both for seven days and then for an additional seven days in medium only. Experiments 1-6 inclusive (first 12 graphs) were dual labeling experiments, so the cells in D<sub>2</sub>glucose expt 1 are the same as the cells in D<sub>2</sub>O expt 1, etc. Expts 7 and above are independent datasets with no correspondence between the D<sub>2</sub>-glucose and the D<sub>2</sub>O expts. The proliferation rate estimates are plotted in Figure 2 and listed in S1 Table.