

Table 2S. Optimal transition times in μs for S-state transitions shown in Figure 5 and Figure S3. Note that the S0-S1 transition time is usually not available because no S0 population is retained under the conditions studied (no S1 peak). At 5°C, insufficient centers can complete the S3-S4-S0 transition to clearly differentiate an advance kinetic (note no local minimum in graphs).

Sample conditions	S1-S2	S2-S3	S3-S4-S0	Total
0 mM DIC, 25 °C	197	530	2250	2980
200 mM DIC, 25 °C	196	850	2410	3460
200 mM DIC, 5 °C	690	920	n/a	n/a
200 mM DIC, 15 °C	260	840	2770	3870
200 mM DIC, 35 °C	154	540	1420	2110
1000 mM DIC, 5 °C	660	860	n/a	n/a
1000 mM DIC, 15 °C	197	780	4020	5000
1000 mM DIC, 35 °C	122	500	1400	2020