1. Paste groupproject\_IRFsimulate.m into the Matlab folder (usually in Documents\MATLAB)

2. In Matlab, generate a fluorescence decay (two decay components of 0.4 and 3.0ns with relative amplitudes 0.8 and 0.2 acquired over 600s) with an infinitely fast IRF by entering the following command:

[data]=groupproject\_IRFsimulate([0.8,0.2],[0.4,3],600,0);

3. Copy the contents of the Matlab “data” variable (time axis and counts) into an Origin workbook

4. Create a new column where the peak of the decay is at t=0

5. Select the time column and new column and plot as a scatter graph

6. Right click the y axis and, in the Properties menu, choose a log10 scale starting at 1

7. Select the graph window. Click Analysis > Fitting > Non-linear curve fit > Open dialog…

8. In Function Selection, choose ExpDec2. In Data Selection choose Weights > Statistical.

9. Click the “Fit until converged” button (furthest right on the array of buttons)

10. Do the parameters output reflect the parameters used to generate this synthetic data? What if the data is simulated again, this time with an IRF with FWHM of 0.5ns?

[data]=groupproject\_IRFsimulate([0.8,0.2],[0.4,3],600,0.5);

How do the parameter estimates vary if you set t=0 at various other positions up the IRF? (i.e. not the peak)