Expanded View Figures

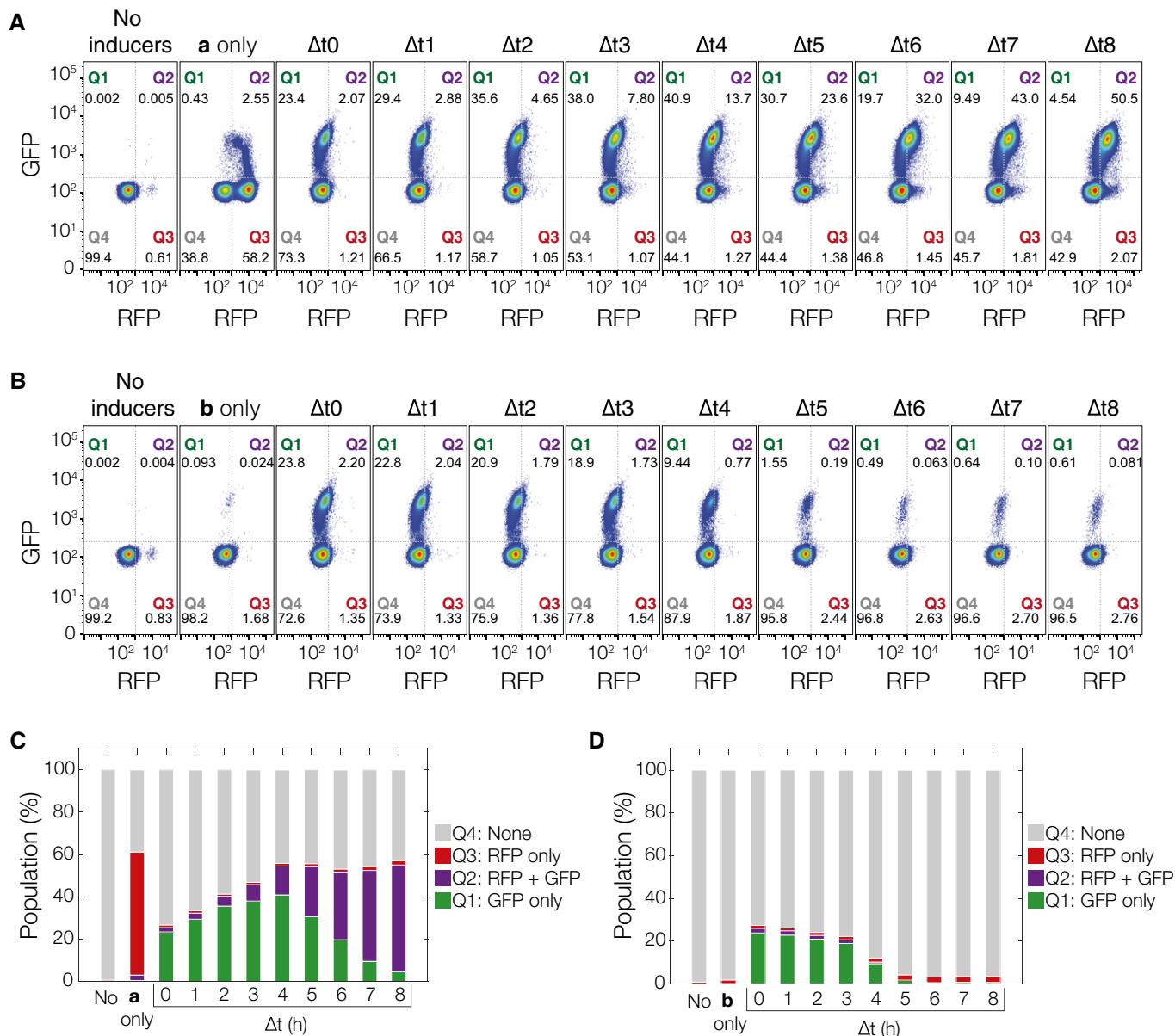**Figure EV1. Flow cytometry data for varying inducer separation time from $\Delta t = 0$ to 8 h (~10^6 cells per population).**

The populations are gated by fluorescence into Q1 (S_{ab}, GFP only), Q2 (S_{ab}, RFP and GFP), Q3 (S_a, RFP only), and Q4 (S_o, S_b, non-fluorescent). There is a transitory phase (Q2) in which cells contain both GFP and RFP. This is due to slow dilution of RFP through cell division even after cells have switched to S_{ab} and begun production of GFP. Cells in Q1 + Q2 are used for the final GFP population fractions in Fig 4C.

A E_{ab} cell populations plotted by their RFP and GFP expression with increasing Δt. Leaky expression of PBAD-intA can be estimated by looking at Q3 of the *No inducers*, ***b*** *only* populations (~0.5–2%). Leaky expression of Ptet-intB can be estimated with Q1 + Q2 fractions of the ***a*** *only* population (~2–3%).

B E_{ba} populations with increasing Δt.

C   Population fractions by quadrant for ***a*** then ***b***, E_{ab}.

D   Population fractions by quadrant for ***b*** then ***a***, E_{ba}. Individual flow cytometry histograms can be found in Appendix Figs S8–S10.

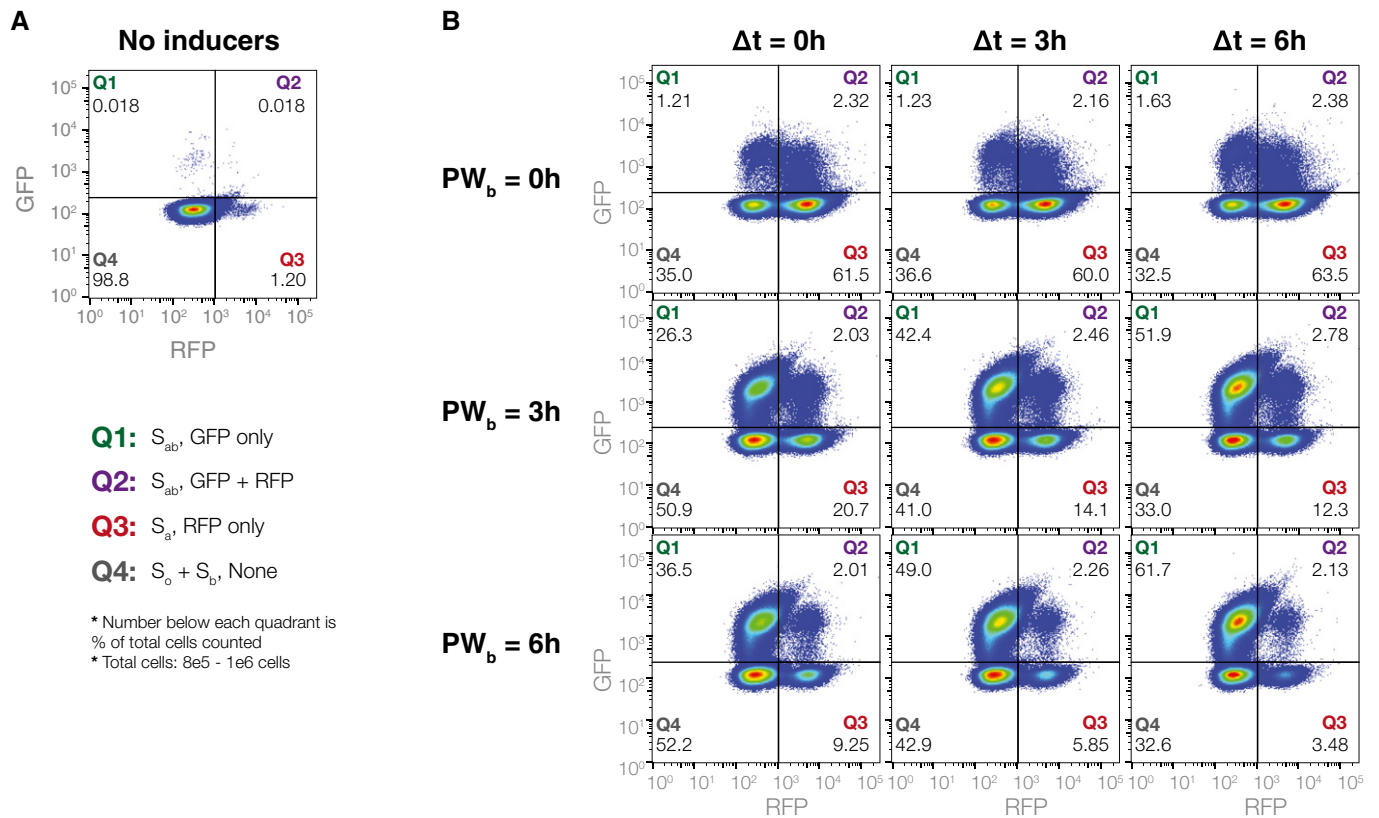Source data are available online for this figure.

Figure EV2. Selected flow cytometry panels for Fig 7C populations.

Cell populations are gated by RFP and GFP fluorescence into quadrants Q1 (S_{ab}, GFP only), Q2 (S_{ab}, RFP and GFP), Q3 (S_a, RFP only), and Q4 (S_o, S_b, non-fluorescent). Percentage of total cells in each quadrant is shown under the quadrant label in each panel.

A   Control population not exposed to any inducers. There is minimal leaky expression (1–2%) into Q3 after 36 h of growth.

B   Populations for PW_b and Δt values of 0, 3, and 6 h. For PW_b = 0 h populations, ~60% of the cells switch to S_a (Q3), with ~3% intB leaky expression going into Q1 and Q2. As PW_b increases, the S_a fraction drops from 60% (PW_b = 0 h) to 10–20% (PW_b = 3 h) to less than 10% (PW_b = 6 h). As Δt increases, the percentage of cells in S_{ab} (Q1) increases from 20–40% (Δt = 0 h) to 40–50% (Δt = 3 h) to 50–60% (Δt = 6 h). S_a populations (Q3) also drift downwards with increasing Δt, rather than staying constant as predicted in simulation. Lower Δt results in higher S_b populations, which, combined with S_o cells, make up Q4. Critically, the percentage of the population expressing both RFP and GFP simultaneously (Q2) is always < 3%. This ensures that RFP is a reliable determinant of S_a state cells, and subsequently, of PW_b.

Source data are available online for this figure.