



Supplementary Figure 4: Effects of input resistance (R_{in}) on time-course of PSPs. **(a)** Responses of FS model cell to 100 pA current step. The solid black trace is the voltage response when the resting R_{in} was set to the default FS value of 80 M Ω and the dashed red trace is the response when R_{in} was set to 400 M Ω (the RS default value). In the FS cell, the membrane time constant with the default R_{in} was 8 ms, whereas it was 40 ms when given the larger RS R_{in} . Thus, the voltage response of the cell was larger and required a longer time to approach steady-state when it had a larger R_{in} . However, the actual change in voltage per unit time (dV/dt) was higher with the larger R_{in} . **(b)** EPSP responses to default G_e injections in the FS cell. When the FS cell was given a higher R_{in} (red), the total EPSP rise time (from onset to peak) became longer. However, the rate of rise (dV/dt) became slightly steeper despite the slower τ_m (see inset at faster sweep speed; bottom). In this case, therefore, the cell would reach spike threshold faster if it had the slower τ_m . **(c)** Mixed PSPs in the FS cell when default G_e and G_i were injected together. The effects of switching R_{in} were conceptually similar to those in panel “b”. Obviously, the decay times would become longer in cells with higher R_{in} / slower τ_m .