



Figure S2: Convergence of the Gibbs samplers for noisy ($\alpha_b = 0.01, \beta_s = 0.1$) data. The log-marginals of the samples are plotted in the Y-axis and the corresponding iteration numbers are plotted in X-axis. (a) shows the log-marginals of samples produced by 5 parallel samplers (indicated by five different colors) searching for the potential regulators of the receptor (EGFR) module. (b),(c),(d),(e) and (f) show the same for the adaptor (Grb2SOS), initiator (Ras), MAP3K (RAF), MAP2K (MEK) and MAPK (ERK) modules respectively. It can be noticed that in each subplot, the lines of different colors cover the same area in the plot, suggesting that the parallel samplers were sampling from the same distribution. If the samplers were sampling from different distributions one would expect the lines of different colors not to overlap on each other.