



**Supplementary Figure 12. Selection of elastic net parameters.** (a) Shown is a scatter plot of the quality of a marker prediction ( $\log_{10}$  scale, y axis) versus the quality of cell quantity prediction (x axis) based on the lung complex tissue data. Each black dot was generated by running DCQ with a different combination of model parameters ( $\lambda$ .min.ratio and  $\alpha$  in the ranges 0.01-0.09 and 0.1-0.9, respectively, a total of 400 parameter combinations). The red dot indicates the actual parameter values that were used in this study ( $\lambda$ .min.ratio=0.2,  $\alpha$ =0.05). (b) The distribution of true positive rates (x axis) attained by running elastic net with 400 combinations of  $\lambda$ .min.ratio and  $\alpha$  parameters (both ranging as mentioned in a, false positive rate = 0.1). Bottom arrows represent the true positive rate attained by the alternative deconvolution methods.