Total perturbation, non-exogenous signatures Prost-AdenoCA Liver-HCC Panc-AdenoCA 100 -Negative log p-value Kidney-RCC.clearcell Ovary-AdenoCA 50 Eso-AdenoCA ColoRect-AdenoCA Breast-AdenoCA Kidney-RCC.papillary Panc-Endocrine Thy-AdenoCA 0 -Kidney-ChRCCNS-Medullo 300 600 900 Effect size log(num samples)

3.5

4.0

4.5

5.0