

Supplementary Tables

Simulated Data Set	Noise Condition	Regression method	RMSE (\pm std. dev)
300,000-spot arrays (high density arrays) (100 replicates)	Normal	<i>Linear</i>	0.0689\pm0.0072
		Quadratic	0.0721 \pm 0.0074
		Logistic	0.0855 \pm 0.1182
		Spline	0.0811 \pm 0.0466
	Dye-bias	Linear	0.4402 \pm 0.5681
		Quadratic	0.1683 \pm 0.2501
		Logistic	0.1136 \pm 0.5439
		<i>Spline</i>	0.0133\pm0.0119
	Very noisy	Lowess	0.3246\pm0.0659
		Linear	0.2505 \pm 0.0491
		Quadratic	0.3720 \pm 0.0702
		Logistic	0.3814 \pm 0.6658
40,000-spot arrays (median density array). (100 replicates)	Normal	Linear	0.2791 \pm 0.1779
		Quadratic	0.2906 \pm 0.1855
		Logistic	0.2515 \pm 0.1575
		<i>Spline</i>	0.2122\pm0.0963
	Dye-bias	Linear	0.5371 \pm 0.2671
		Quadratic	0.4059 \pm 0.1893
		Logistic	0.2731 \pm 0.1343
		<i>Spline</i>	0.1975\pm0.1563
	Very noisy	Lowess	0.3149\pm0.0557
		Linear	0.2701 \pm 0.1008
		Quadratic	0.3708 \pm 0.1253
		Logistic	0.3129 \pm 0.1133
Very noisy	<i>Spline</i>	0.2193\pm0.1542	

Table S1. The rooted mean square error (RMSE) of each regression method. Values in dark italic are the lowest error in the category. Values highlighted with yellow color are results obtained from applying Lowess normalization directly to simulated data (only to dye-biased condition where Lowess nonlinear normalization is necessary).