Signal/noise Dependent Performance of the Segmentation Methods

To assess whether the comparative performance of the three methods was independent of the magnitude of the signal/noise ratio defined as the ratio of the proportion of the tumor cells to the noise variability (P_t/sd), samples were divided into five groups depending on the signal/noise ratio: between 1-2, between 2-3, between 3-4, between 4-5 or above 6. All breakpoints were evaluated within one clone localization error window (w=1). The overall performance is also listed for reference.

Although the FDR decreased and the sensitivity increased with increasing signal/noise, the comparative performance did not change except in the case where sensitivity could not increase or FDR could not decrease much further, as was the case for DNAcopy going towards and past signal/noise ratios of 5. DNAcopy consistently performed the best while GLAD was least sensitive and HMM had the highest FDR.

FDR:

P_t/sd	HMM	DNAcopy	GLAD
1-2	0.74	0.31	0.67
2-3	0.58	0.17	0.50
3-4	0.42	0.08	0.33
4-5	0.30	0.00	0.22
5-6	0.14	0.00	0.14
Above 6	0.20	0.00	0.13
Overall	0.47	0.10	0.37

Sensitivity:

P_t/sd	HMM	DNAcopy	GLAD
1-2	0.32	0.44	0.31
2-3	0.57	0.72	0.50
3-4	0.76	0.88	0.70
4-5	0.89	0.93	0.81
5-6	0.92	0.95	0.89
Above 6	1.00	1.00	0.92
Overall	0.72	0.85	0.67