

		True value	Method of Moments	Maximum likelihood
5 samples per group	<i>a</i>	3.00	Mean=3.12 SD=0.574	Mean=3.00 SD=0.086
	<i>b</i>	1.00	Mean=1.01 SD=0.330	Mean=1.00 SD=0.034
	$(ab)^{-1}$	0.333	Mean=0.333 SD=0.004	Mean=0.333 SD=0.004
10 samples per group	<i>a</i>	3.00	Mean=3.01 SD=0.141	Mean=3.00 SD=0.068
	<i>b</i>	1.00	Mean=1.00 SD=0.051	Mean=1.00 SD=0.026
	$(ab)^{-1}$	0.333	Mean=0.333 SD=0.003	Mean=0.333 SD=0.003

Table 1. Mean and standard deviation of estimates for model parameters within 2000 simulations

		Size of Test		
		P < 0.01	P < 0.005	P < 0.001
5 samples per group	Individual Variance	0.00998	0.00498	0.00098
	Pooled Variance	0.01963	0.01377	0.00687
	Random Variance	0.00999	0.00499	0.00100
10 samples per group	Individual Variance	0.01003	0.00496	0.00099
	Pooled Variance	0.0336	0.0255	0.0145
	Random Variance	0.00996	0.00496	0.00099

Table2. Observed type 1 error (false positive rate) for tests on simulated data

		Size of Test		
		P < 0.01	P < 0.005	P < 0.001
5 samples per group	Individual Variance	0.00949	0.00465	0.00091
	Pooled Variance	0.02116	0.01497	0.00745
	Random Variance	0.00953	0.00464	0.00092
10 samples per group	Individual Variance	0.01023	0.00507	0.000998
	Pooled Variance	0.02127	0.01521	0.00749
	Random Variance	0.0103	0.00511	0.00102

Table3. Observed type 1 error (false positive rate) for tests on simulated data

Figure 1a)

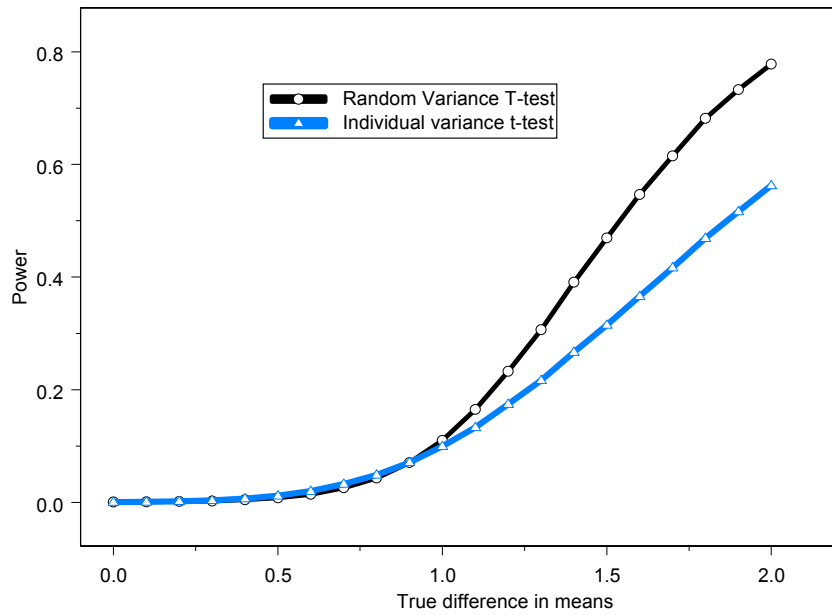


Figure 1b)

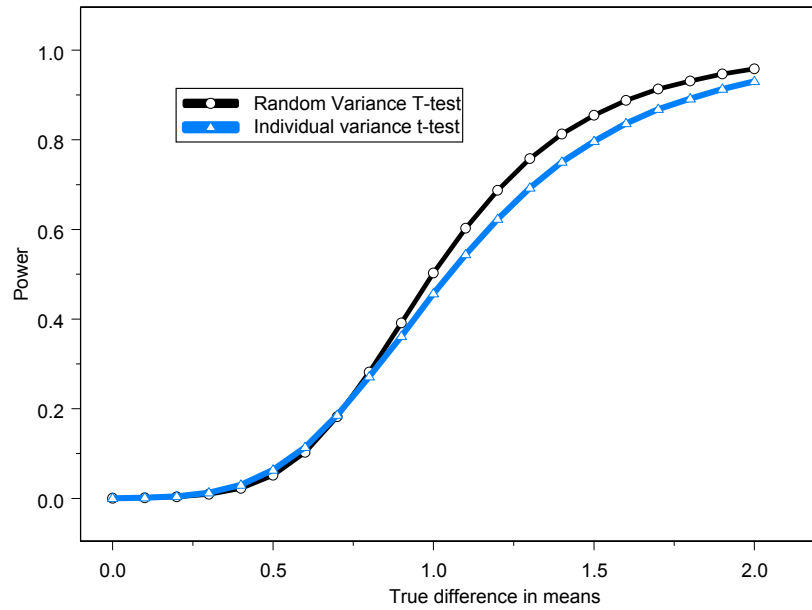


Figure 1 Detection power for $P < 0.001$ level test in simulation as a function of true difference between sample means. Figure 1a) depicts results for 5 samples per group. Figure 1b) depicts results for 10 samples per group.

Figure 2a)

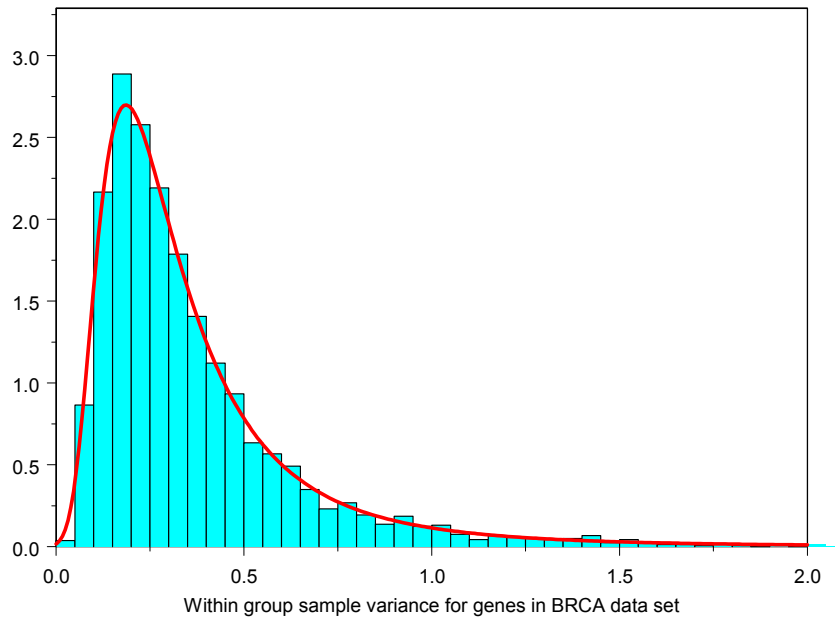


Figure 2b)

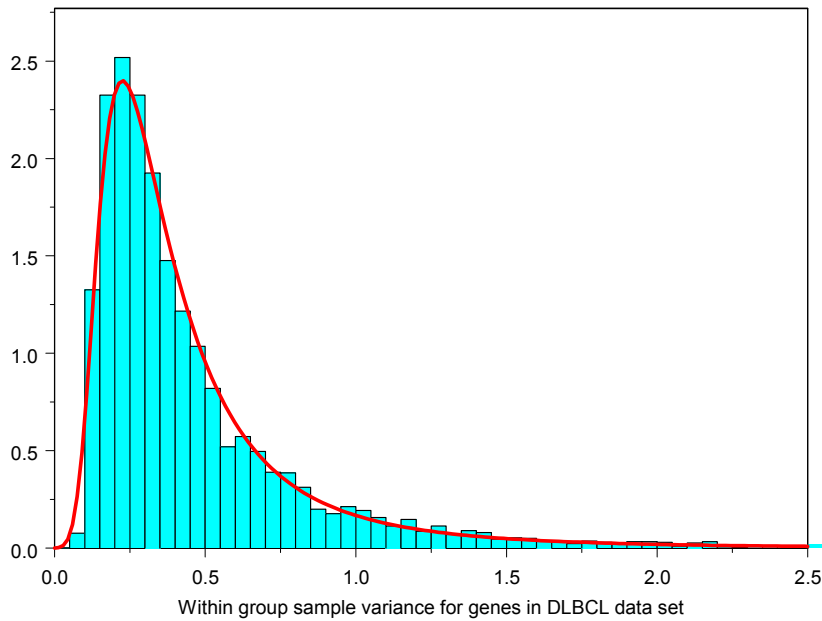


Figure 2 Histograms of observed within sample variances of genes. Red line represents the theoretical sample variance distribution according to equation (16) with a and b values estimated from data. Figure 2a) depicts the BRCA data. Figure 2b) depicts the DLBCL data.

Figure 3a)

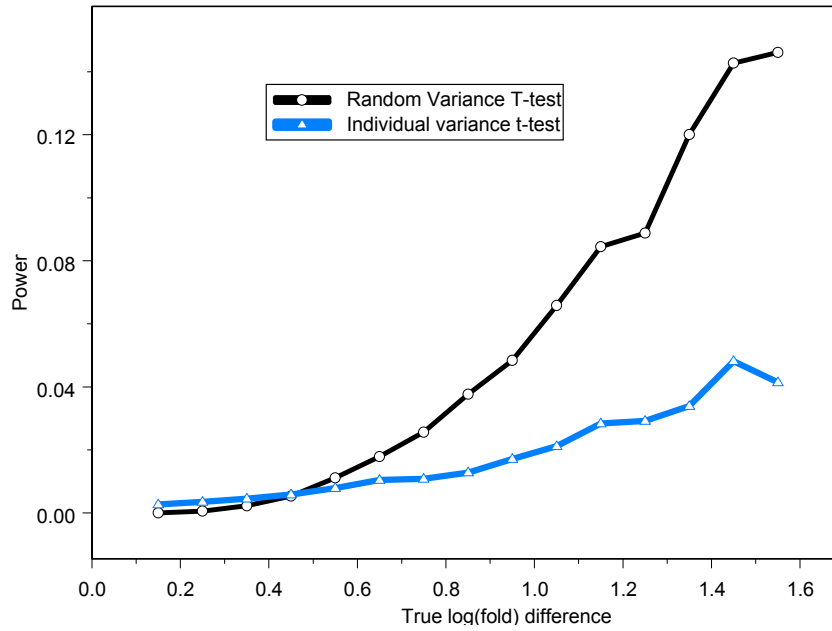


Figure 3b)

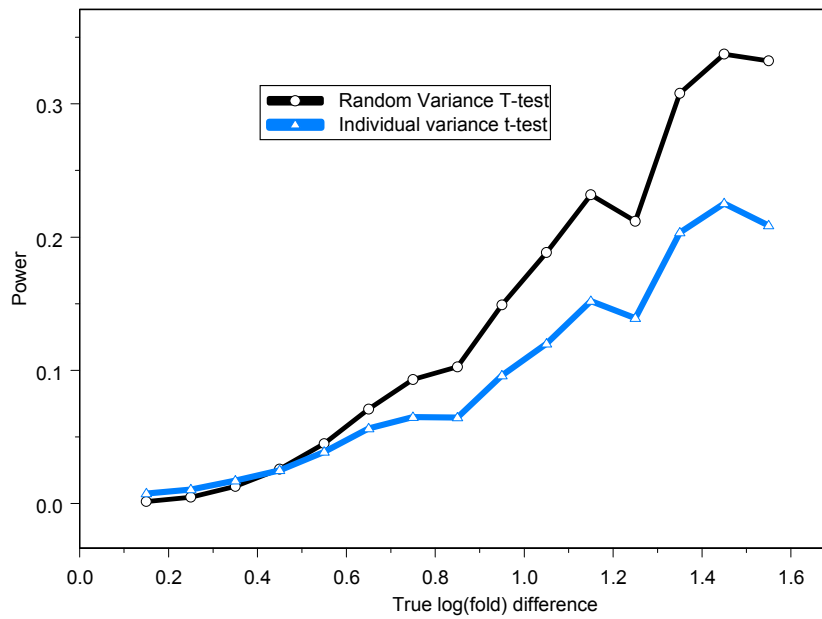


Figure 3 Detection power for P < 0.001 level test for subsets of DLBCL data as a function of true difference between the mean log ratio for GCB and ABC subtypes. Figure 3a) depicts results for subsets of 5 samples per group. Figure 3b) depicts results for subsets of 10 samples per group.