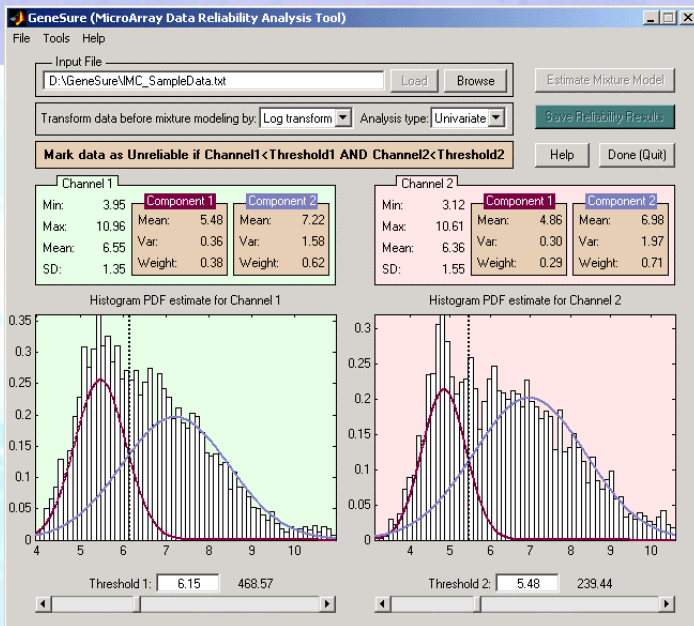


GeneSure is a Windows application (tested under Windows™ ME, 2000, and XP) that does reliability analysis of microarray data. GeneSure is free for academic use and can be downloaded from <http://rc.kfshrc.edu.sa/bssc/staff/MusaAsyali/Downloads.asp>. Installation and operation of GeneSure is very easy. For commercial use or any other inquiries, please contact: [asyali@kfshrc.edu.sa](mailto:asyali@kfshrc.edu.sa)

# GeneSure

## MICROARRAY DATA RELIABILITY ANALYSIS AND SIGNAL THRESHOLD ESTIMATION



Determining "optimum signal intensity thresholds" to identify reliable array elements is of crucial importance.

Reliability analysis enables filtering of microarray data before estimating the expression ratios. This reliability-based filtering can dramatically reduce number of false positives.

### GeneSure Main Features

- Underlying algorithms (patent pending) are validated with real biological data (Asyali MH, Shoukri MM, Demirkaya O, and Khabar KSA. Assessment of reliability of microarray data and estimation of signal thresholds using mixture modeling. Nucleic Acids Research. 32, 8: 2323-2335, 2004).
- Works on the raw data, not on the expression ratios that may be based on unreliable signals.
- Finds optimal thresholds (univariate analysis) or decision-boundary (bivariate analysis) for the classification of microarray data as reliable or unreliable.
- Assigns reliability probability to each microarray data point and filters data based on probabilities.
- Can analyze both cDNA and oligonucleotide microarray data (accepts single or dual channel data).
- While analyzing dual channel data in bivariate mode, it takes the correlation between the channels into account, leading to further accurate assessments of reliability.
- With several built-in data transformation options, it is adaptable to any data distribution to find the best possible normal mixture model for the data.
- Reports the results (reliability probabilities and filtering decisions for each data point) in a tab-delimited ASCII file for maximum portability.

DNA microarray is an important tool for studying gene activities but resultant data consisting of thousands of points are error-prone.

A serious limitation is the unreliability of data from low signal intensities. Such data may produce erroneous gene expression ratios, which in turn causes costly post-analysis follow-up tasks.

