This thesis deals with a test of normality of gene expressions data. Based on characterization theorems of the normal distribution, the test of normality is replaced by a test of spherical uniformity. Due to strong correlations between the gene expression data, the normality test is conducted with δ sequences.

A new characterization theorem of the normal distribution is proven. Based on that, the normality test is conducted using Kolmogorov's test statistic. The obtained characterization results for the normal distribution are extended to the complete type of distributions and based on that, a test is conducted to verify whether the distributions of the two data sets of the gene expressions belong to the same type.