Schedule for TATAA Biocenter qPCR Application Workshop at the qPCR 2007 Event 29th – 30th March 2007

2-day qPCR Biostatistics Module

29th March 2007 - Statistical analysis of qPCR data

09:00-10:00   Basic principles of statistics:
Trueness and precision, concepts of mean, median, percentiles, boxplot, standard deviation, coefficient of variation, standard error of the mean, confidence intervals
Basic principles of statistics

10:00-10:15   Coffee break

10:15-11:30   Advanced principles of statistics:
- the Gaussian distribution
- the Central Limit theorem
- p values and statistical hypothesis testing
- z-scores
- distribution-free (rank based methods, re-sampling methods) vs. normal (Gaussian) distribution dependent tests.
- Multiple testing, ANOVA

11:30-12:30   **LUNCH**

13:15-14:30   Overview of statistical tests:
- when to use which test
- comparison between two (paired/unpaired) groups: (paired) t-test, Mann-Whitney test, Wilcoxon rank sum test
- Outlier detection
- Linear Regression

14:30-14:45   Coffee break

14:45-16:30   Exercises (use of InStat software: www.graphpad.com/demos)
- Comparing test and control samples
- Effect of treatment
- Comparison of multi samples
- Absolute quantification

16:30-17:00   Discussion and Q&A

17.00   End of qPCR Biostatistics day 1

30th March 2007 - qPCR Expression profiling

09:00-10:00   Introduction:
- Introduction to classification
- Data pre-treatment, cluster plot
- Hierarchical clustering
- GeNorm
- Normfinder
- k-means
- Support vector machines

10:30-10:45   Coffee break

10:45-11:30   Exercises (GenEx software, www.multid.se)
- Finding optimum reference genes

11:30-12:30   **LUNCH**

12.30-14:00   Overview
- Principal component analysis
- Potential curves
- Partial Least Squares
- Self Organizing Map
- Neural network
- Trilinear Decomposition

14:00-14:15   Coffee break

14:15-16:45   Exercises (GenEx software, www.multid.se)
- Classification of genes with similar expressions
- Classification of samples
- Comparison of strains based on changes in expression patterns

16:45-17:00   Discussion and Q&A

17.00   End of qPCR Biostatistics day 2

Lunch and coffee are included in the course fee. The courses are focused on practical issues for qPCR statistical analysis (marked in blue). Please bring your own laptops to the course.