

Biogazelle course  
qPCR experiment design and data-analysis



Learn . Experience . Achieve .

## Professor Stephen Bustin - Queen Mary University of London:

“The Biogazelle course was ideally pitched for the statistically-challenged biologist. It was very helpful to finally understand some of reasons underlying the use of specific statistical tests. Teaching was of the highest standard, the individual modules were well thought out and there was plenty of time to carry out exercises and hands-on use of the qbase<sup>PLUS</sup> software. I think that attendance at this course is a revelation even for the experienced qPCR user, and highly recommend attendance.”

(June 2009, London)

### qPCR experiment design and data-analysis

While the practical performance of a real-time PCR quantification experiment is relatively straightforward, it is clear that many users experience a genuine need for more in depth training of their experiment design and data-analysis skills. To accommodate this need, Biogazelle organizes focused courses in which the fundamental and advanced principles of experiment design and data-analysis are covered. These courses consist of a balanced mix between theoretical background and practical hands-on data-analysis, and are targeted towards qPCR users with basic experience levels.

Biogazelle is the real-time PCR data analysis company, built upon a decade of experience in real-time PCR. Groundbreaking papers published by Biogazelle's founders, Jo Vandesompele and Jan Hellemans, on normalization of gene expression and data-analysis have been cited more than 3000 times.

Biogazelle's expert knowledge and experience in teaching at international courses and workshops is translated into Biogazelle's own 2-day courses organized in collaboration with Ghent University.

### Course content

#### 1. experiment design

power analysis, experiment layout (sample vs gene maximization), biological and technical replicates, inter-run calibration

#### 2. sample preparation and quality control

pre-amplification, DNase treatment, cDNA synthesis, RNA integrity and purity

#### 3. assay design and quality control

RTprimerDB assay database and primer design, probes vs intercalating dye, design guidelines, in silico evaluation (specificity, splice variants, secondary structures, SNPs), empirical validation (melt curve, electrophoresis, standard curves)

#### 4. qPCR analysis

real-time PCR principle, amplification curve, melt curve, C<sub>q</sub> value determination methods, replicates & controls, speed and throughput considerations. Quantification models (delta-delta-C<sub>q</sub>, Pfaffl, qbase<sup>PLUS</sup>), efficiency correction, inter-run calibration, result rescaling

#### 5. normalization

normalization with multiple reference genes, selection and validation of reference genes (genorm<sup>PLUS</sup>), alternative normalization methods (global mean, expressed repeats)

#### 6. quality control on post-PCR data

melting curve analysis, PCR efficiency, replicates, reference gene stability, negative/positive controls, normalization factors, QC on inter-run calibration

#### 7. bio-statistical analysis

basic principles, descriptive statistics, selection and application of appropriate statistical tests

#### 8. reporting guidelines

MIQE, RDML

Various chapters are accompanied with interactive and hands-on computer exercises in qbase<sup>PLUS</sup>.

### Scheduled 2-day course

**Date:** Monday October 15th (9.30 am)  
Tuesday October 16th (5.30 pm)

**Location:** Exact location to be announced  
Montpellier, France

**Price:** 750 EUR (excl. VAT)

includes lessons - course booklet - lunch and refreshments