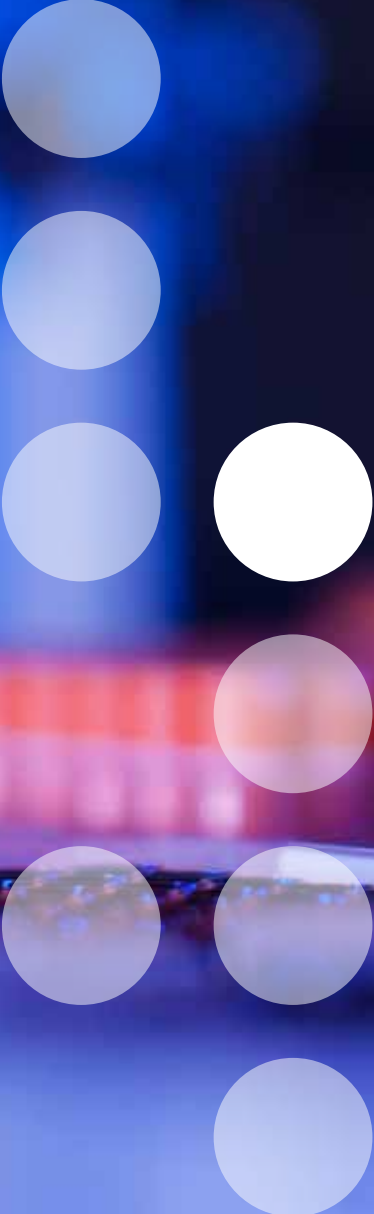


RNA Services

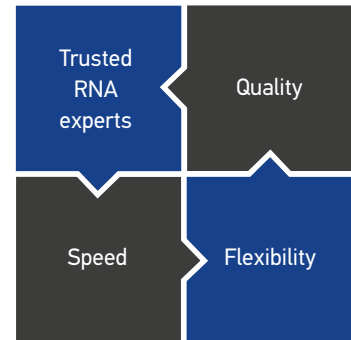
Complete sample-to-answer services by the RNA experts

- 
- Isolation of RNA and exosomes
 - Next Generation Sequencing
 - qPCR

Welcome to Exiqon RNA Services

Send Exiqon your samples and let us perform your RNA experiments. We offer high-quality **RNA isolation**, and expression analysis of **coding and non-coding RNA** using the best available **Next Generation Sequencing** and **qPCR** technologies.

All experiments are performed by a team of seasoned **RNA experts** in state-of-the-art **automated** laboratories with rigorous **quality control** and **fast** turnaround times.



At a glance

- **Comprehensive** all-inclusive RNA analysis services ranging from genome-wide screening to single target validation
- **Flexible** sample-to-answer service tailored to your research needs and budget
- **Complete data analysis** with industry-leading service reports and support
- **Close consultation** throughout your project with experienced RNA scientists
- **Automated** processes for high reproducibility and efficiency
- **>10 years' experience** with RNA analysis
- **SOPs, LIMS, and rigorous QC** at every stage
- **Track projects** via secure web portal
- **Fast turnaround times** – projects completed in 4-6 weeks

How much sample or RNA do I need?

Sample / RNA	Isolation Services	NGS Services	qPCR Services
Total RNA	N/A	100 ng + 60 ng for QC	65-130 ng + 40 ng for QC
Fresh frozen tissue	✓	4-5 mg	1-5 mg
FFPE sections	✓	6 x 10 µm sections of 1 cm ²	2 x 10 µm sections of 1 cm ²
Cells	✓	2x10 ⁶ cells	1x10 ⁶ cells
LCM	✓	Please enquire	>1000 cells
Whole blood e.g. PAXgene	✓	Please enquire	Please enquire
Exosomes	✓	Please enquire	Please enquire
Biofluids	✓	500 µl	250 µl

Amounts stated are minimum recommended input amounts. For microRNA and small RNA sequencing of FFPE samples, 1 µg RNA + 60 ng for QC is required. microRNA qPCR analysis may be performed on rodent biofluids using 75 µl biofluid. For exosome isolation, larger volumes of biofluid are required. Contact us exiqon.com/contact or see Guidelines for more information: exiqon.com/services.

It all starts with RNA of the highest quality



Trusted RNA experts

High quality RNA is key to getting the best results from your RNA expression analysis project. At Exiqon Services, we have been handling RNA samples for the last 10 years, so we know how to isolate top quality RNA from a wide range of different sample types.

Our experts are on hand to advise you on sample collection and storage. We have also developed specialized protocols for isolating RNA from samples with limited RNA content e.g. biofluids.

Rigorous RNA Quality Control

RNA QC is a vital part of every project, whether you send us your samples or the isolated RNA.

Our specialists use different approaches depending on the sample type. For standard samples, the integrity, quantity

and purity of each sample is assessed using Bioanalyzer and NanoDrop™ instruments.

RNA PCR QC

We offer qPCR-based QC tests to assess the performance of samples prior to microRNA qPCR profiling. RNA PCR QC is particularly recommended for challenging or low RNA content samples.

RNA PCR QC is used prior to qPCR or NGS to assess RNA from biofluid samples, where standard RNA QC is not applicable.

RNA PCR QC includes:

- Quantification of pre-selected endogenous microRNAs and synthetic RNA spike-ins
- Monitoring of RNA extraction efficiency, presence of inhibitors, hemolysis and identification of any potential outlier samples

Unrivalled support

Close consultation with RNA experts

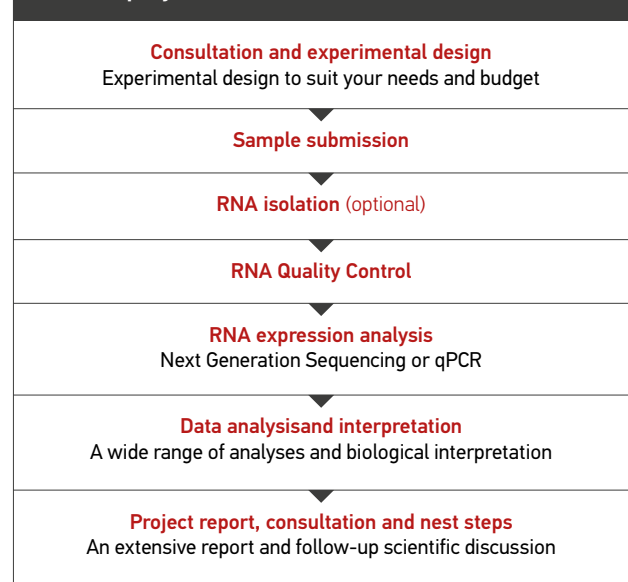
We are committed to providing personalized, accurate and responsive guidance from a dedicated project management team throughout your project.

Together, we design an experimental setup that best satisfies your research needs and budget. We can help you tailor the exact level of service you need, to make sure you get on the fast track to actionable results.

Arrange a free consultation to discuss your project:

exiqon.com/contact

Service project workflow





Isolation Services – Exosomes and RNA

Send us your biological samples and we will prepare high quality total RNA suitable for Exiqon's NGS and qPCR Services, using Exiqon's miRCURY™ RNA Isolation Kits.

We can handle a broad range of sample types including clinical samples, tissue and FFPE samples, cells and biofluids.

We have protocols optimized for samples with minute RNA content, including an automated RNA isolation protocol optimized for Biofluids qPCR.

We also provide high quality exosome recovery from a range of biofluids using miRCURY™ Exosome Isolation Kits.

NGS Services



NGS enables the discovery of novel RNAs as well as global expression profiling. Our NGS experts offer a complete solution from isolation to data interpretation and validation.

Using market-leading Illumina technology (HiSeq, NextSeq and MiSeq), we have flexible capacity to handle all projects from small to very large.

We sequence samples from a wide range of different organisms, and also offer custom sequencing projects. The unique combination of our RNA expertise and advanced bioinformatics pipeline means we deliver top quality RNA sequencing data with the highest mapping percentages.

RNA-seq from microRNA to the whole transcriptome				
Non-coding RNA			Coding RNA	
RNA-seq service	microRNA / Biofluids microRNA	Small RNA	Whole transcriptome	mRNA
Sample preparation	Library size selection	Library size selection	Ribosomal RNA depletion	Poly-A enrichment
RNA fraction	microRNA 15-30 nt: microRNAs, piRNAs	Small RNA 30-200 nt: pre-miRNAs, tRNAs, snoRNAs	All transcripts >170 nt: mRNAs, pre-mRNAs, lncRNAs, snoRNAs, pri-miRNAs	PolyA transcripts >170 nt: mRNAs, poly-A tailed lncRNAs, pri-miRNAs

“Exiqon performed microRNA and RNA sequencing from the exact same samples.”





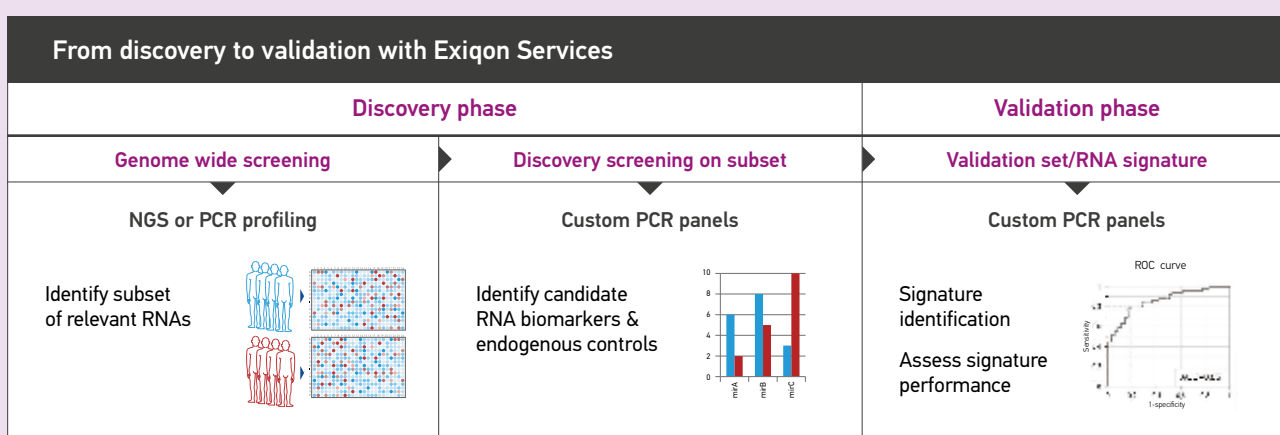
microRNA qPCR Services

A complete microRNA qPCR service using Exiqon's highly sensitive and specific miRCURY LNA™ Universal RT microRNA PCR System – performed by those who know the system best.

Analyze any number of microRNAs - from the full miRNome, to a range of Focus PCR panels, or a custom subset of microRNAs including novel microRNAs. Such flexibility makes the qPCR Service ideal for validation of NGS or microarray data.

qPCR Services are suitable for all sample types, but the unrivalled sensitivity of our microRNA PCR system makes it ideal for biofluid samples with limited RNA content.

We operate the largest qPCR facility in Europe, with high throughput robotic pipetting stations and a template-free environment for set up of qPCR reactions. High quality data is assured through our rigorous QC and unique automated data QC pipeline.



“ The flexibility of Exiqon's qPCR system allows us to identify and focus on the microRNA that carry information.”

Rapid, high quality results

Automated workflows designed for success

Our scientists work in state-of-the-art facilities following strict Standard Operating Procedures. Your samples and all reagent lot numbers are tracked using a Lab Information Management System (LIMS).

We use automated workflows and high-throughput robotic pipetting stations for maximum reproducibility and efficiency. Rigorous QC at every stage of the analysis ensures reliable results delivered in just 4-6 weeks.

“ The speed you need, with complete peace of mind.”

Industry-leading reports

Comprehensive data analysis

We provide an extensive analysis of the data, including unsupervised and supervised analysis, and differential gene expression analysis with statistical analysis according to your defined group comparisons.

The final report includes:

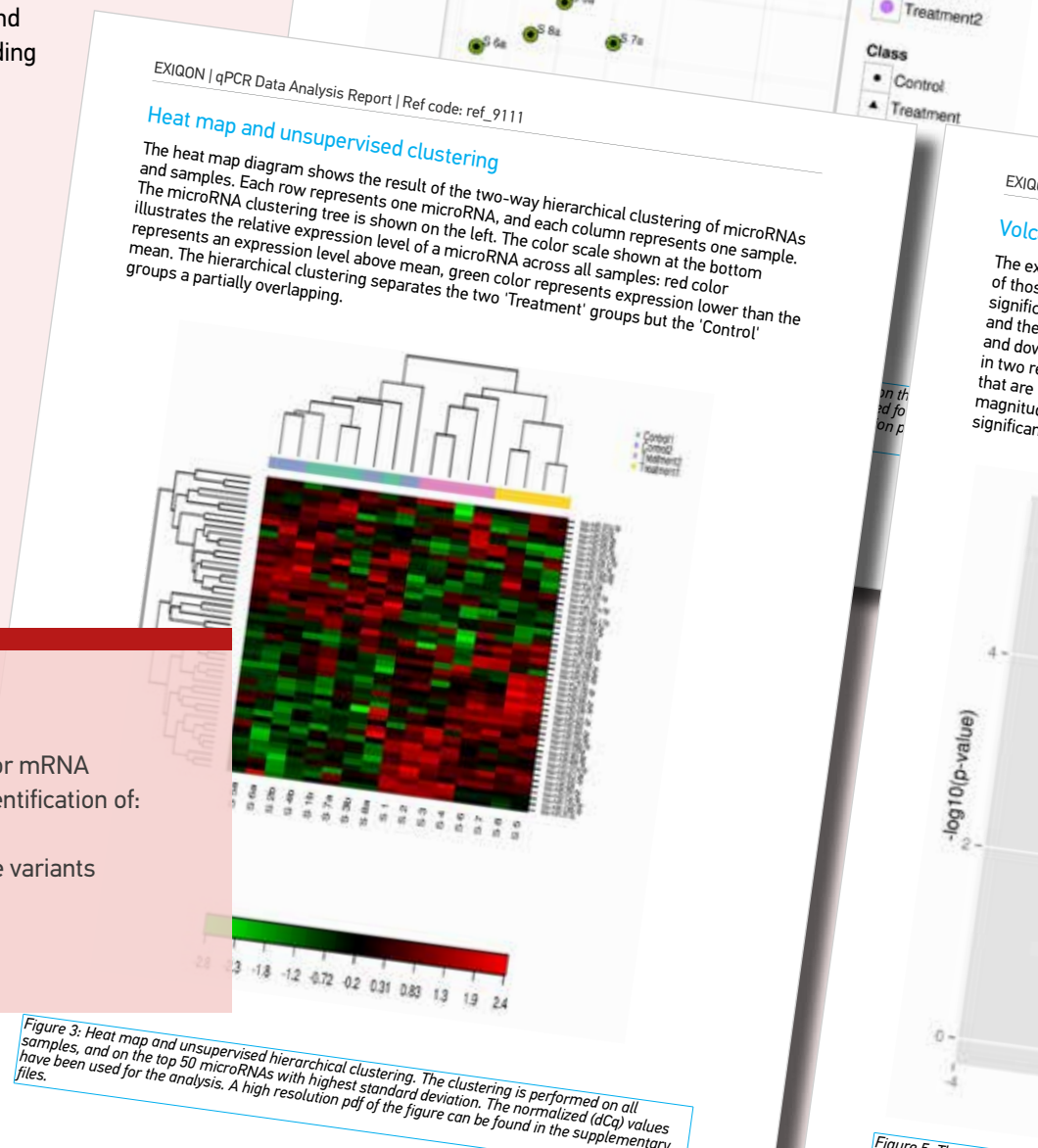
- Easy-to-read data summary report
- Project summary Excel report
- Publication-grade illustrations (heat maps, PCA plots, Volcano plots etc.)
- Complete raw data

In connection with large service projects we also offer extensive customized bioinformatics analysis.

Post-project consultation

Our bioinformaticians will walk you through the analysis, and answer any questions you may have.

We are happy to discuss with you the biological meaning of the results and the next steps for the project including validation or functional analysis.



Did you know

Exiqon's Whole transcriptome or mRNA sequencing Service includes identification of:

- Splice junctions
- Alternative splicing and splice variants
- Novel transcripts
- Antisense transcripts
- Gene fusions

Figure 3: Heat map and unsupervised hierarchical clustering. The clustering is performed on all samples, and on the top 50 microRNAs with highest standard deviation. The normalized (dCq) values have been used for the analysis. A high resolution pdf of the figure can be found in the supplementary files.

View a Services report

Download report examples

exiqon.com/services



EXIQON | qPCR Data Analysis Report | Ref code: ref_9111

Data quality control

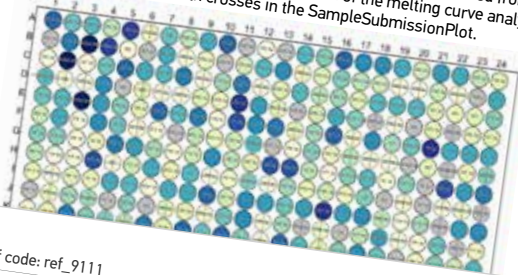
Exiqon Services has developed a rigorous and automated PCR data QC pipeline to achieve maximum benefit of our SYBR® Green based miRCURY LNA PCR assays. Individual amplification product on our PCR panels is scrutinized by:

- Melting curve analysis
- Calculation of amplification efficiency
- Comparison of Cq value to background level in the negative control samples

Data that derive from PCR reactions that fall outside our thresholds and specifications (details below) are flagged and removed. This ensures that the data analysis is performed on a consistent high quality data set.

Melting curve analysis

An additional step in the real-time PCR analysis was performed to evaluate the specificity of the amplification products by generating a melting curve for each reaction. The appearance of a single peak with the expected T_m is an indication that a single specific product was amplified during the qPCR process. PCR reactions that gave rise to multiple melting curves or single peaks with melting temperature that was inconsistent with the specific for the corresponding assay (in-house database) were flagged and removed from the data. In the attached SampleSubmissionPlot the conclusion of the melting curve analysis is shown. Flagged reactions are marked with crosses in the SampleSubmissionPlot.



EXIQON | qPCR Data Analysis Report | Ref code: ref_9111

Volcano plot

Expression data have been plotted in a Volcano plot to enable quick visual identification of differentially expressed microRNAs that display large-magnitude changes that are also statistically significant (see below). The volcano plot is constructed by plotting the p -value on the y-axis, and the log₂ fold change (ddCq) between the two experimental groups on the x-axis, so that up-regulated microRNAs appear equidistant from the center. Plotting points in this way results in regions of interest in the plot: those points that are found towards the top of the plot indicate large fold changes (hence being left- or right- of center), while those points that are found towards the bottom of the plot indicate high statistical significance (hence being left- or right- of center) as well as high statistical significance.

384-well assays that use

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Experts in liquid biopsies

Exiqon Services have years of experience profiling circulating microRNA in serum and plasma and other biofluid samples. As part of our own microRNA biomarker discovery programs, Exiqon has pioneered the analysis of microRNA in biofluids.

- >15,000 biofluid samples processed
- Extensive knowledge of pre-analytical variables
- Specialized sample and data QC procedures
- Unique hemolysis indicator
- Reference ranges for circulating microRNAs

This knowledge has been applied in establishing optimized protocols and special QC procedures for biofluids in our microRNA NGS and qPCR services.

Our ground-breaking Biofluids microRNA NGS Service offers protocols and QC procedures specifically optimized for microRNA sequencing clinical serum / plasma samples, enabling the discovery of novel microRNA biomarkers in liquid biopsies.

Our microRNA qPCR Services use the miRCURY LNA™ Universal RT microRNA PCR System that was designed with biofluids in mind, and has been thoroughly validated on thousands of clinical biofluid samples.

Learn more at

exiqon.com/biofluids

“Exiqon delivers mapped and quantified NGS results in a report that is comprehensible for anyone.”

For more information go to: exiqon.com/services



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