Product Profile

QIAseq® FastSelect RNA Removal Kits

For removal of rRNA and globin mRNA during RNA-seq library preparation for next-generation sequencing (NGS)

Removing highly expressed, but biologically unimportant RNA transcripts makes NGS more efficient and enables higher sample throughput with improved sensitivity. The QIAseq® FastSelect RNA Removal Kits remove unwanted RNAs, such as cytoplasmic and mitochondrial rRNA and/or globin mRNA, producing an RNA-seq library containing transcriptome RNAs of primary interest. Using only a single pipet step during RNA fragmentation and cDNA synthesis, QIAseq FastSelect is a quick and simple way to integrate RNA removal into your existing library construction workflow.

QIAseq FastSelect RNA Removal Kits provide:

- Compatible with QIAGEN®, Illumina®, NEB® and KAPA® RNA stranded library kits
- Flexible – use 1 ng to 1 µg fresh, high-quality RNA, FFPE RNA or degraded RNA
- Convenient – single, integrated step during RNA fragmentation and cDNA synthesis
- Efficient – high-performance rRNA and/or globin mRNA removal in just 20 minutes
- Versatile – customizable by RNA transcript

Fast, simple process integrates with your existing workflow

Most RNA removal or depletion strategies associated with RNA-seq library construction are sample pre-treatment strategies involving hybrid-capture or enzymatic removal of unwanted RNA. Our unique QIAseq FastSelect procedure seamlessly integrates with QIAGEN, Illumina, NEB and KAPA stranded library preparation kits with rRNA and/or globin mRNA removal in a single, 20-minute inline step (Figure 1). This is dramatically faster than competing RNA depletion ▷

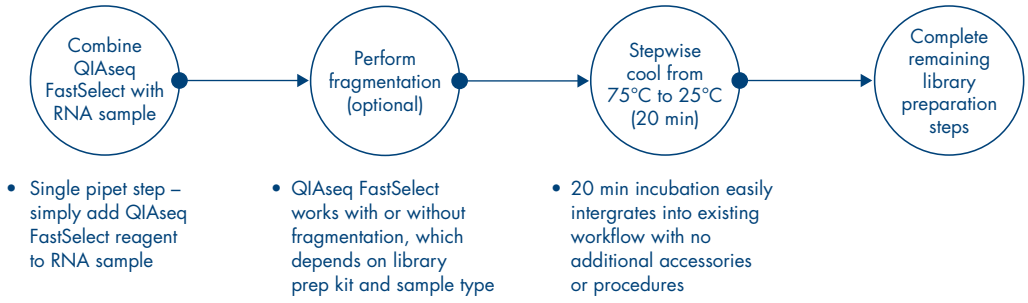

Figure 1. QIAseq FastSelect workflow completes in as little as 20 minutes. QIAseq FastSelect RNA Removal is a one-step rRNA and/or globin mRNA depletion solution. Simply add QIAseq FastSelect reagent (rRNA Removal and/or Globin Removal) to RNA sample, perform fragmentation (if required), stepwise cool the reaction from 75°C to 25°C for 20 minutes and then complete the remaining library preparation steps. QIAseq FastSelect works with or without RNA fragmentation, providing the flexibility to use RNA from FFPE samples or degraded RNA samples, or high-quality RNA as part of a standard RNA-seq library construction workflow.

kits, which require pre-treatment protocols involving more than 25 steps and 2 hours to complete. Furthermore, QIAseq FastSelect accommodates fresh, high-quality RNA as well as degraded RNA or RNA from FFPE (formalin-fixed paraffin-embedded) samples.

QIAseq FastSelect has been tested with the QIAseq Stranded Total RNA Lib Kit (QIAGEN), TruSeq® Stranded (Illumina), NEBNext® Ultra II Directional (New England Biolabs®) and KAPA RNA HyperPrep (KAPA Biosystems®) library preparation kits. Specific requirements for fragmentation, as well as the duration of the fragmentation process, depend on the library preparation kit and sample type. Fragmentation is not required for QIAseq FastSelect performance.

Variety of QIAseq FastSelect options

QIAseq FastSelect RNA Removal Kits are available in a variety of different formats and sizes to suit your specific applications. QIAGEN offers kits for removing human, mouse and rat RNA, as well as a customizable product designed for the species and RNA of your choice (Table 1).

High performance with RNA from FFPE and fresh samples

RNA from FFPE samples and degraded RNA samples are challenging for RNA removal and can result in suboptimal performance. With our quick, integrated QIAseq FastSelect protocol you can achieve greater rRNA removal and high downstream reproducibility with RNA from FFPE and fresh samples. In our experiments, we compared QIAseq FastSelect to the Ribo-Zero® Gold rRNA Removal Kit. Using total RNA isolated from FFPE samples, QIAseq FastSelect required less time and resulted in dramatically improved rRNA depletion (Figure 2, A and B). QIAseq FastSelect also demonstrated highly reproducible gene expression data following rRNA depletion for RNA extracted from FFPE samples (Figure 2, C and D).

Table 1. Wide selection of QIAseq FastSelect RNA Removal products

Product	Species available	Targets	Number of samples	Catalog number
QIAseq FastSelect RNA Removal Kit	Human, mouse and rat	rRNA or globin mRNA	24, 96 or 384	333180
QIAseq FastSelect Multi-RNA Removal Kit	Human, mouse and rat	rRNA and globin mRNA	24, 96 or 384	333280
QIAseq FastSelect Custom RNA Removal Kit*	Your choice	Any RNA	1156	333190

* In development.

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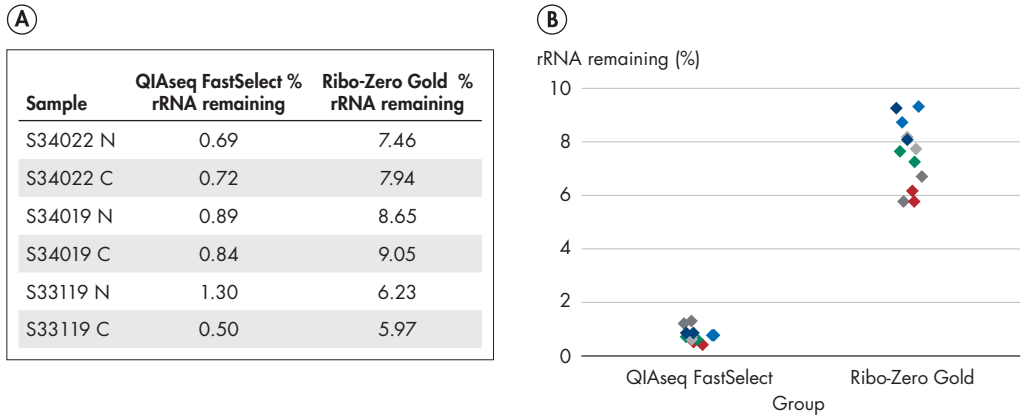
Sample	QIAseq FastSelect % rRNA remaining	Ribo-Zero Gold % rRNA remaining
S34022 N	0.69	7.46
S34022 C	0.72	7.94
S34019 N	0.89	8.65
S34019 C	0.84	9.05
S33119 N	1.30	6.23
S33119 C	0.50	5.97



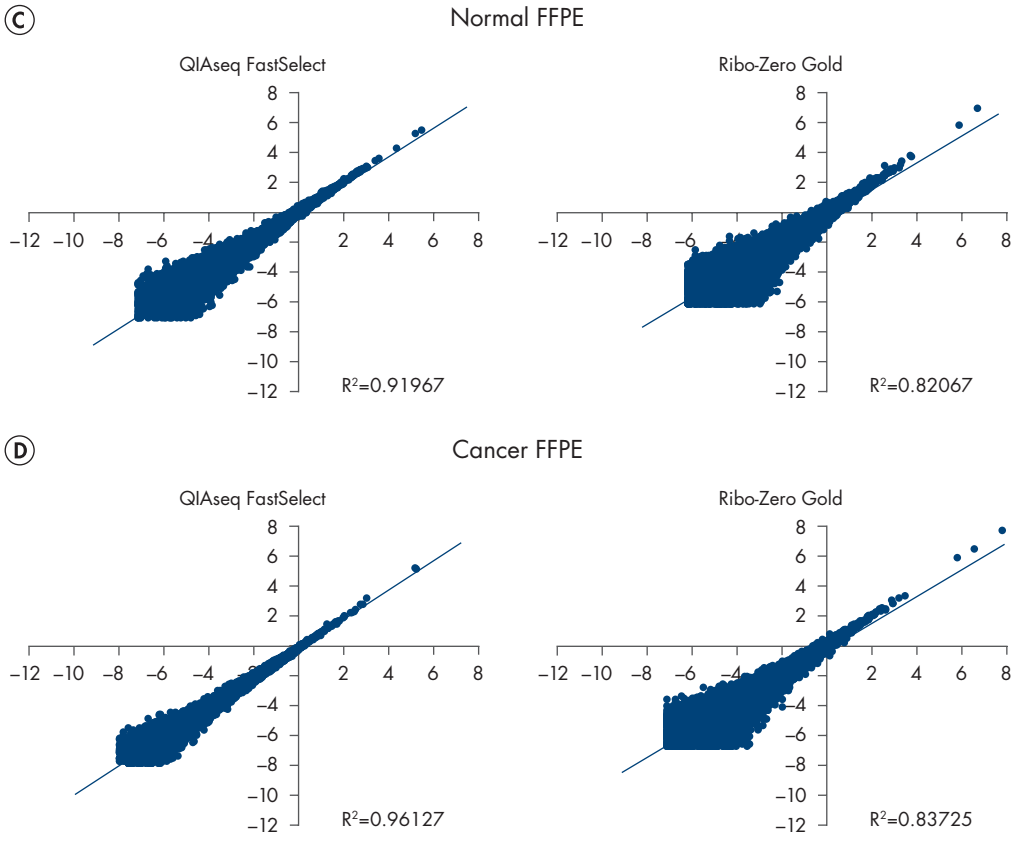


Figure 2. QIAseq Fast Select shows robust performance with RNA from FFPE samples. Total RNA was isolated from 5 µm normal and cancer lung FFPE sections using the miRNeasy® FFPE Kit. Stranded transcriptome libraries were subsequently prepared from 100 ng aliquots using the QIAseq Stranded Total RNA Lib Kit. For rRNA depletion, QIAseq FastSelect or Ribo-Zero Gold was used. Sequencing was performed on a NextSeq® 550 (Illumina) and data analysis was performed using CLC Biomedical Workbench. **QIAseq FastSelect:** During the QIAseq library preparation, rRNA removal reagent was combined with each RNA sample and 5x RT Buffer, heated to 75°C for 2 min and stepwise cooled to 25°C for 20 minutes. Afterwards, the remaining library preparation steps were performed. **Ribo-Zero Gold:** Prior to QIAseq library preparation, rRNA was removed from each RNA sample using Ribo-Zero Gold, which required over 2 hours to complete. Afterwards, QIAseq RNA library preparation was performed.

QIAseq FastSelect results in highly efficient removal of rRNA from fragmented samples. Average % rRNA remaining is provided in **A** and plotted in **B** with identical colors representing replicates of the same sample. Ribo-Zero Gold required substantially more amplification cycles than the QIAseq FastSelect libraries, suggesting some sample may be lost with Ribo-Zero Gold. Performing rRNA depletion using QIAseq FastSelect achieved highly reproducible gene expression results (log_2 normalized gene expression) for **C** normal FFPE RNA and **D** cancer FFPE RNA. Two replicates were performed for each sample type.

QIAseq FastSelect – your RNA removal solution

QIAseq FastSelect delivers rapid, reliable RNA removal for FFPE and fresh sample RNA sources. Compatible with a range of RNA library kits, QIAseq FastSelect easily integrates into your existing workflow, saving you time and increasing your productivity. For greater NGS efficiency and higher sample throughput with higher sensitivity, QIAseq FastSelect is your solution for high-performance RNA removal.

Ordering Information

Product	Contents	Cat. no.
QIAseq FastSelect RNA Removal Kit	Reagents for rRNA removal or globin mRNA removal for 24, 96 or 384 samples; human, mouse or rat	333180
QIAseq FastSelect Multi-RNA Removal Kit	Reagents for rRNA and globin mRNA removal for 24, 96 or 384 samples; human, mouse or rat	333280
QIAseq FastSelect Custom RNA Removal Kit*	Reagents for RNA removal for 1156 samples; customized for RNA and species	333190

* In development.

The QIAseq FastSelect RNA Removal Kit is intended for molecular biology applications. This product is not intended for the diagnosis, prevention or treatment of a disease.

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