

Background

Qiagen's RNA extraction range is the incumbent in most research and applied labs. All Qiagen RNA kits share the same red box branding, which can create the impression that they are interchangeable. They are not. The kits differ significantly in their chemistry and in what RNA size classes they capture. Understanding those differences is the key to identifying where *RNAGEM* is a direct replacement and where it is not yet positioned to compete.

How *RNAGEM* Works

RNAGEM uses the same temperature-driven extremophilic enzyme chemistry as the rest of the Exymes range. Cells are lysed at 75°C by a thermophilic proteinase that strips RNA of proteins and destroys RNases. At 95°C the enzyme is deactivated. The result is a single-tube, no-wash, no-column extract containing **total RNA across the full-size range**, from large ribosomal and messenger RNA down to miRNA and other small RNAs of approximately 18 nucleotides upwards. **No chaotropic salts. No phenol or chloroform. No spin columns.** The extract goes directly to RT-qPCR or other downstream applications.

Current validated applications: cells and soft tissue. *RNAGEM* is **not currently validated for blood or faecal RNA**. This does not mean it cannot be used, but Exymes does not currently have supporting evidence.

Qiagen RNA Kit Comparison: Replacement Guidance

Qiagen Kit	Chemistry / Method	<i>RNAGEM</i> Status	Rationale
RNeasy Mini Kit (most common red box)	Guanidine-isothiocyanate lysis + silica column. Captures RNA >200 nt only. Small RNAs excluded.	DIRECT REPLACEMENT	<i>RNAGEM</i> captures total RNA including the small RNA fraction that RNeasy Mini loses. Single tube, no column, faster workflow. Any application on cells or soft tissue where the customer does not specifically need column-grade RNA purity for RNA-seq, is a conversion target.
RNeasy Plus Mini Kit	As above with additional gDNA eliminator column. Captures RNA >200 nt. Small RNAs excluded.	DIRECT REPLACEMENT	The gDNA removal column is an additional step and cost. <i>RNAGEM</i> lysis at 75°C produces an RNA-enriched extract with minimal gDNA interference for RT-qPCR. Where the downstream application is RT-qPCR rather than RNA-seq, this is a straightforward conversion.
RNeasy Plus Universal Kit	QIAzol (phenol-guanidine) lysis + silica column. For tough or fibrous tissue. RNA >200 nt.	PARTIAL OPPORTUNITY	QIAzol provides mechanical lysis assistance for difficult tissues. <i>RNAGEM</i> handles soft tissue well. For fibrous, fatty, or particularly tough tissue types we do not currently have validated data to claim equivalence. Convertible for soft tissue users; hold for fibrous tissue until validation data is available.
RNeasy 96 Kit (high throughput)	Guanidine-isothiocyanate + 96-well silica plate. RNA >200 nt. Automation-compatible.	DIRECT REPLACEMENT	<i>RNAGEM</i> is compatible with 96-well plate formats on a standard thermal cycler. For customers processing cells in high throughput, the single-tube no-wash workflow reduces hands-on time and eliminates column washing steps. The small RNA capture advantage applies here too.
QIAwave RNA Mini Kit (eco rebranding of RNeasy Mini)	Identical chemistry to RNeasy Mini. Same RNA >200 nt cutoff. Concentrated buffer format.	DIRECT REPLACEMENT	QIAwave is a packaging and sustainability rebrand; the chemistry is identical to RNeasy Mini. Same conversion rationale applies. Note: if the customer has moved to QIAwave for sustainability reasons, the Exymes no-chaotrope, minimal-plastic argument is directly relevant and stronger.

Qiagen Kit	Chemistry / Method	RNAGEM Status	Rationale
miRNeasy Mini Kit	QIAzol (phenol-guanidine) + silica column. Captures total RNA from ~18 nt upwards. Includes miRNA.	DIRECT REPLACEMENT (cells/soft tissue)	RNAGEM captures the same full-size RNA spectrum as miRNeasy, including miRNA from approximately 18 nt upwards. The critical difference: RNAGEM achieves this without QIAzol, which requires chloroform, fume hood access, and careful handling. This is a strong conversion opportunity for cells and soft tissue. Not yet validated for blood.
miRNeasy Serum/Plasma Kit	QIAzol lysis + silica column. Designed for cell-free RNA from blood/plasma. Includes miRNA.	NOT CURRENTLY	RNAGEM is not currently validated for blood, serum, or plasma. This is an active gap. Do not position RNAGEM against this kit until blood RNA validation data is available. Flag as a future opportunity.
QIAamp RNA Blood Mini Kit	Silica membrane purification. Designed for up to 1.5 ml whole blood. RNA from blood cells.	NOT CURRENTLY	RNAGEM is not validated for blood RNA extraction. The QIAamp RNA Blood kit is specifically designed for the haemoglobin inhibition and RNase challenges of whole blood. Do not target this customer segment at this time.
RNeasy Micro Kit (very low input)	Silica membrane. For up to 5x10 ⁵ cells or 5 mg tissue. RNA >200 nt.	PARTIAL OPPORTUNITY	RNAGEM performs well at low cell numbers. However, customers using RNeasy Micro are typically working at the extreme low end of input material and often feeding RNA-seq requiring high RIN values. Until we have specific low-input validation data with RIN comparisons, approach these customers with an evaluation offer rather than a direct replacement claim.
PAXgene Blood RNA Kit / Tubes	Proprietary stabilisation + silica purification. Interlocked with PAXgene collection tube system.	NOT CURRENTLY	PAXgene is a closed system: collection tube, stabilisation reagent, and extraction kit are co-dependent. Customers using PAXgene are typically in clinical or longitudinal studies with validated, locked workflows. Not a realistic conversion target at this time.

Targeting Guidance for the Sales Team

Best immediate targets	RNeasy Mini / Plus Mini users working on cells or soft tissue for RT-qPCR. These are the highest-volume Qiagen RNA kit users and the simplest conversion. Lead with workflow simplicity and the small RNA capture advantage they are currently missing.
Strong conversion argument	miRNeasy Mini users. They are already working on small RNA and paying for QIAzol-based chemistry with phenol/chloroform handling requirements. RNAGEM delivers equivalent small RNA capture without the hazardous reagents. This is a compelling safety and simplicity message.
Sustainability-motivated customers	QIAwave users have already signalled interest in greener workflows. The Exymes no-chaotrope, no-phenol, minimal-plastic message is directly relevant and differentiating.
Qualification offer approach	For RNeasy Plus Universal and RNeasy Micro users, do not make a direct replacement claim. Offer a free evaluation kit and position as a trial. Gather data from these customers; it strengthens our future validation case.
Do not target	PAXgene users (locked clinical workflows), QIAamp RNA Blood Mini users, and miRNeasy Serum/Plasma users. Blood RNA is an active gap in our validated range.

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