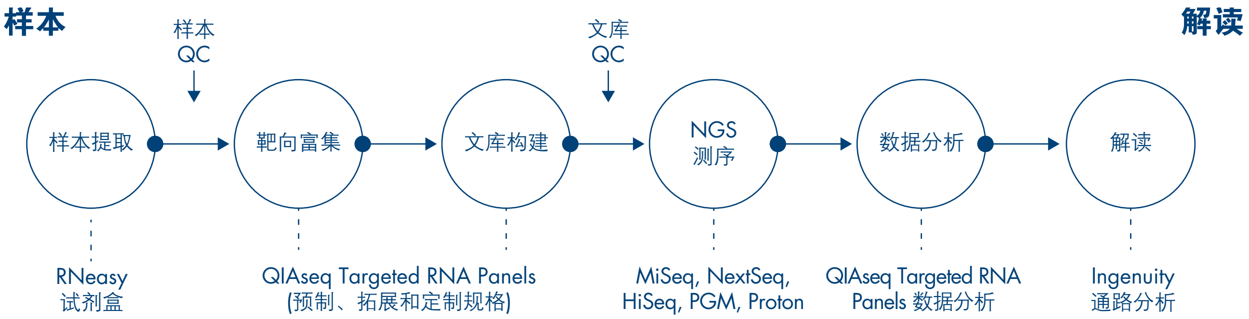
Product Profile

QIAseq Targeted RNA Panels

用于基因表达分析的数字 RNAseq

QIAseq Targeted RNA Panel 可提供：

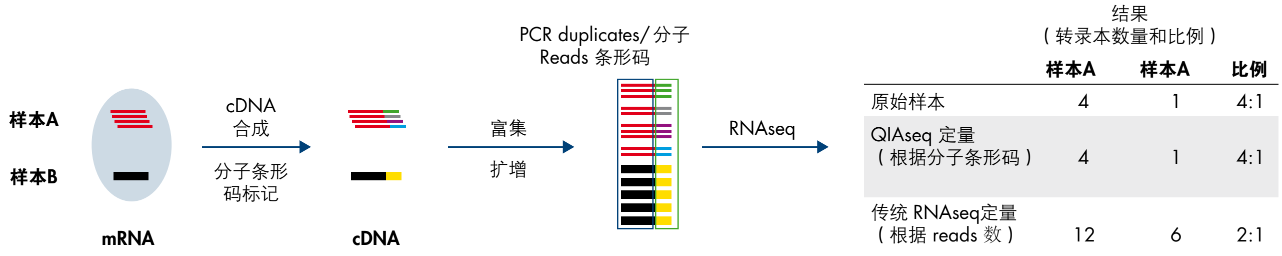
- 使用分子条形码给出的准确数字基因表达图谱
- 轻松应对数百个样本中数百个基因检测
- 170 个疾病或通路相关基因 RNA Panel
- 免费在线数据分析工具对 FASTQ 数据进行解读



QIAseq Targeted RNA Panel 是通过 RNAseq 进行定量基因表达图谱分析的“Sample to Insight®”的解决方案。这些 panel 使用了分子条形码技术和两步法 PCR 综合文库制备方法，突破了传统 PCR 反应中模板复制和扩增引入误差的技术瓶颈，能够获得无偏差、准确、重复性好的基因表达结果。

分子条形码技术：独有的转录本计数，而非 PCR duplicate 计数

PCR duplicates 和扩增偏差会导致使用现行 RNA 测序方法得到不准确的基因表达结果。QIAGEN 利用独有的解决方案，在扩增步骤前，使用分子条形码来标记基因转录本。通过计数这些分子条形码数而不是 PCR duplicates，可以准确地记录独有的基因转录本。所得数据反映 RNA 表达水平的原始比例（图 1）。



	样本A	样本A	比例
原始样本	4	1	4:1
QIAseq 定量（根据分子条形码）	4	1	4:1
传统 RNAseq定量（根据 reads 数）	12	6	2:1

图 1. RNA 表达水平。QIAseq Targeted RNA Panel 使用分子条形码保持基因水平的原始状态，从而降低随后步骤中的 PCR 扩增所带来的偏倚误差。

快速简易的工作流程：在 1 天时间内完成从样本制备到测序

构建 RNA 测序文库是一个复杂而漫长的过程，QIAseq Targeted RNA Panel 通过提供快速简易的工作流程解决了这一难题。构建文库只需要 25 ng 总 RNA，整个操作时间仅需 6 个小时（图 1）。QIAseq Targeted RNA 系统是一个一体化解决方案，提供第一链合成所用试剂、分子标记物、基因富集引物对、反应纯化磁珠、文库接头和 sample index（图 2）。

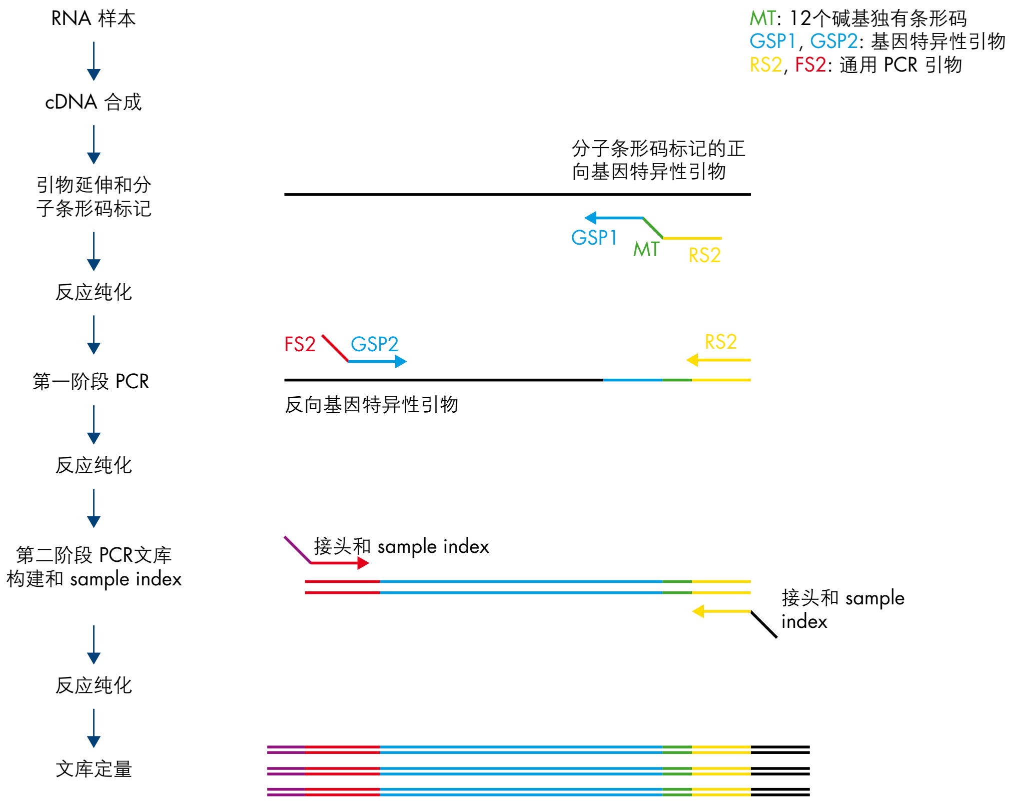


图 2、简单的程序。

从 25 ng 总的未片段化 RNA 合成 cDNA。在 cDNA 合成之后并且在进行任何扩增之前，每个 cDNA 分子立即用独有的分子条形码进行标记。然后带独有标记的 cDNA 分子经历一个两阶段的 PCR 步骤，进行富集和文库构建。接着，对制备的文库进行定量分析，准备好进行测序。

NGS 的强大魅力：多样本得到多基因表达图谱的经济方法

如果要对数百个样本建立表达图谱，常规方法诸如 qPCR 和数字 qPCR 等，要么是多重检测太严苛，要么费用太高。QIAseq Targeted RNA Panel 通过对数百个样本中数千个基因同时进行表达分析，克服了上述方法的局限性。例如，MiSeq® 平台可以针对 25 个样本，500 个基因的表达水平进行分析，而在 NextSeq 平台可对 400 个样本，500 个基因的表达水平进行分析。

qPCR 般的准确性：数字定量

由于在扩增步骤引入了 PCR 复制步骤，通常会对利用靶向 RNA 测序进行基因表达分析带来结果偏差。QIAseq Targeted RNA Panel 在扩增之前使用独有的分子条形码标记每一个 cDNA 分子，因而确保定量结果和传统 qPCR 方法一样准确（HBRR 和 UHRR 是参考 RNA 样本）（图 3）。

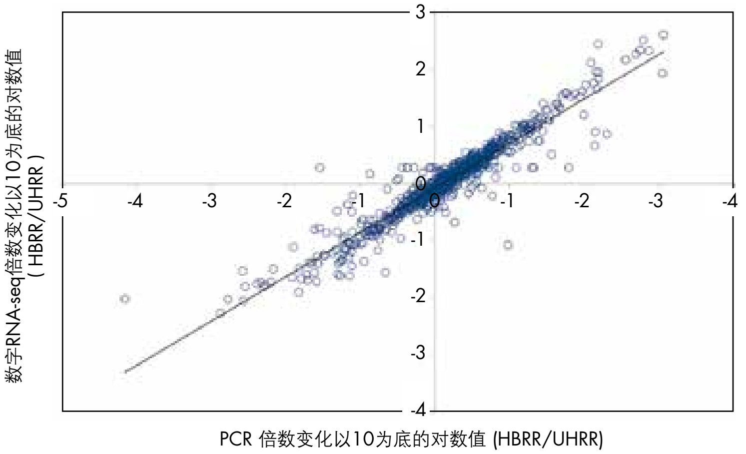


图 3. 与 qPCR 一 致。 采用 QIAseq Targeted RNA Panel 和 qPCR 技术对人脑参考 RNA（HBRR）和通用人体参考 RNA（UHRR）测定了 384 个基因的表达水平。表达水平进行了均一化处理，同时为每个基因计算了样本之间的倍数变化（HBRR/UHRR），并对这种变化进行了比较。

有价值的解读：易使用的数据分析

RNAseq 数据的分析异常繁琐，QIAseq Targeted RNA Panel 通过提供自动化的免费在线数据分析，为解决这一问题提供了全新的解决方案。只需上传您的 FASTQ 或 BAM 文件到指定的网站，就可以完全自动地进行碱基判读、QC 评分、read 比对和对准、分子条形码计数以及倍数变化转换，并得到以数字基因计数和倍数变化的输出结果。更进一步，您可以将这些分析结果可以输入到（需额外获取）Ingenuity® 通路分析（IPA）中，获得有价值的生物学意义解读。

Virtual panels: ：可用于任何应用的内容

研究领域	细胞凋亡研究	生物标志物研究	癌症研究	细胞周期研究
每个 QIAseq Targeted RNA Virtual Panel 含有84个基因和 5 个管家基因，这些 Panel 通过挖掘文献以及专有的 QIAGEN Knowledge Base，构建了超过 170 个具有生物学和疾病相关基因 RNAseq panel。	Apoptosis	Alzheimer’s Disease	Angiogenesis	Apoptosis
	Autophagy	Angiogenesis	Apoptosis	Autophagy
	Cancer PathwayFinder	Breast Cancer and Estrogen Receptor Signaling	Breast Cancer and Estrogen Receptor Signaling	Cancer PathwayFinder
	Cell Cycle	Cancer PathwayFinder	Cancer Drug Resistance and Metabolism	Cell Cycle
	DNA Damage Signaling Pathway	Cell Surface Markers	Cancer PathwayFinder	DNA Damage Signaling Pathway
	DNA Repair	Dendritic and Antigen Presenting Cell	Cell Cycle	DNA Repair
	Endothelial Cell Biology	Epigenetic Chromatin Modification Enzymes	DNA Damage Signaling Pathway	Epithelial to Mesenchymal Transition (EMT)
	Heat Shock Proteins	Epigenetic Chromatin Remodeling Factors	EGF/PDGF Signaling Pathway	MAP Kinase Signaling Pathway
	NFκB Signaling Pathway	Epithelial to Mesenchymal Transition (EMT)	Epithelial to Mesenchymal Transition (EMT)	mTOR Signaling
	Oxidative Stress and Antioxidant Defense	Extracellular Matrix and Adhesion Molecules	MAP Kinase Signaling Pathway	Neurogenesis and Neural Stem Cell
	p53 Signaling Pathway	Glucose Metabolism	p53 Signaling Pathway	NFκB Signaling Pathway
	PI3K-AKT Signaling Pathway	Hematopoietic Stem Cells and Hematopoiesis	PI3K-AKT Signaling Pathway	p53 Signaling Pathway
	Stress and Toxicity PathwayFinder	Homeobox (HOX) Genes	Protein Phosphatases	PI3K-AKT Signaling Pathway
	TNF Ligand and Receptor	Mesenchymal Stem Cell	TGFβ BMP Signaling Pathway	Protein Phosphatases
	Tumor Suppressor Genes	Stem Cell	Tumor Metastasis	Signal Transduction PathwayFinder
	Ubiquitination Pathway	T-cell and B-cell Activation	Tumor Suppression Genes	Transcription Factors
	Unfolded Protein Response	Th1-Th2-Th3	WNT Signaling Pathway	Ubiquitination Pathway

炎症研究	ECM/粘附研究	神经科学研究	信号转导研究	干细胞研究	毒理学/药物 ADME 研究
Chemokines & Receptors	Angiogenic Growth Factors & Angiogenesis Inhibitors	Alzheimer's Disease	cAMP/Ca2+ Signaling PathwayFinder	Adipogenesis	Cancer Drug Resistance and Metabolism
Common Cytokine	Atherosclerosis	Apoptosis	EGF/PDGF Signaling Pathway	Dendritic and Antigen Presenting Cell	Cancer PathwayFinder
Inflammasomes	Chemokines and Receptors	Autophagy	G Protein Coupled Receptors	Embryonic Stem Cells	Cardiotoxicity
Inflammatory Cytokines and Receptors	Common Cytokine	Drug Transporters	GPCR Signaling PathwayFinder	Hedgehog Signaling Pathway	Cell Cycle
Inflammatory Response and Autoimmunity	Embryonic Stem Cells	Embryonic Stem Cells	Heat Shock Proteins	Hematopoietic Stem Cells and Hematopoiesis	DNA Damage Signaling Pathway
Interferon α, β Response	Endothelial Cell Biology	GPCR Signaling PathwayFinder	Hedgehog Signaling Pathway	Homeobox (HOX) Genes	Drug Metabolism
Interferon and Receptor	Extracellular Matrix and Adhesion Molecules	Heat Shock Proteins	Insulin Signaling Pathway	Lipoprotein Signaling and Cholesterol Metabolism	Drug Metabolism: Phase I Enzymes
JAK/STAT Signaling Pathway	Glycosylation	Hedgehog Signaling Pathway	JAK/STAT Signaling Pathway	Mesenchymal Stem Cell	Drug Metabolism: Phase II Enzymes
NFκB Signaling Pathway	MAP Kinase Signaling Pathway	Huntington's Disease	MAP Kinase Signaling Pathway	Neurogenesis and Neural Stem Cell	Drug Transporters
T Cell Anergy & Immune Tolerance	Mesenchymal Stem Cell	Hypoxia Signaling Pathway	mTOR Signaling	Neurotrophin and Receptors	GPCR Signaling PathwayFinder
T-cell and B-cell Activation	NFκB Signaling Pathway	Mesenchymal Stem Cell	NFκB Signaling Pathway	Notch Signaling Pathway	Hepatoxicology
TGFβ BMP Signaling Pathway	Osteogenesis	Neurogenesis and Neural Stem Cell	Nuclear Receptors and Coregulators	Osteogenesis	Lipoprotein Signaling and Cholesterol Metabolism
Th17 for Autoimmunity and Inflammation	TGFβ BMP Signaling Pathway	Neuroscience Ion Channels and Transporters	PI3K-AKT Signaling Pathway	Stem Cell Signaling	Mitochondria
Th1-Th2-Th3	TNF Ligand and Receptor	Neurotransmitters Receptors and Regulators	Signal Transduction PathwayFinder	T-cell and B-cell Activation	Molecular Toxicology 384HT
TNF Ligand and Receptor	Tumor Metastasis	Neurotrophin and Receptors	TGFβ BMP Signaling Pathway	Terminal Differentiation Marker	Nephrotoxicity
Toll-Like Receptor Signaling Pathway	VEGF Signaling	Nitric Oxide Signaling Pathway	Transcription Factors	TGFβ BMP Signaling Pathway	Oxidative Stress and Antioxidant Defense
Tumor Necrosis Factor (TNF) Ligand and Receptor	Wound Healing	Notch Signaling Pathway	Wnt Signaling Pathway	Wnt Signaling Pathway	Stress and Toxicity PathwayFinder

具有生物学研究价值的内容

科学家们在开发 RNAseq Panel 方案时参考了诸多权威性资源，例如：外部数据库、科学出版物和 QIAGEN 专利数据库（图 4）。Panel 内容与许多生物学应用相关：例如，癌症、分子毒理、免疫肿瘤、信号传导、细胞凋亡、炎症和干细胞研究。通过对特定癌症或通路相关基因的靶标进行分析，可高水平实现多样本多重检测，以及与全转录组测序（WTS）相当的可行性解读。

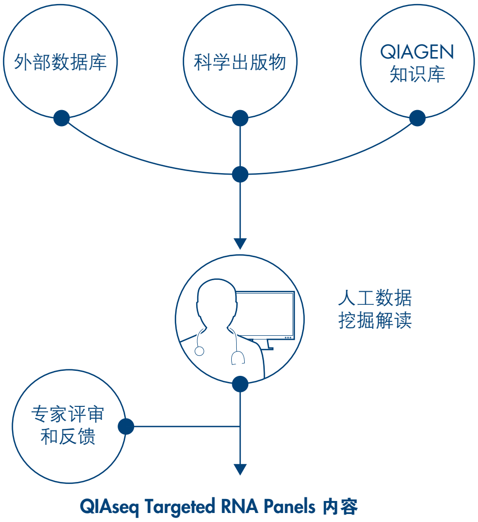


图 4. Panel 内容是生物学驱动的。科学家们已经使用诸多资源，例如：外部数据库、科学出版物和 QIAGEN 专利数据库，对几个 panel 的内容进行了拓展。

定义感兴趣的内容，构建您独有的 panel

客户可简单方便的构建自己感兴趣的特异性的 panel 方案。访问 QIAGEN RNA Custom Panel 定制网页，按照步骤即可方便进行 QIAseq Targeted RNA 个性化定制。

这是一套突破基因表达图谱分析技术瓶颈的解决方案

	缺点	QIAseq Targeted RNA Panels
全转录组测序 (WTS)	• 高成本 • 复杂的数据分析	• 节约成本 • 简化的数据分析 • 与 FFPE 样本兼容
微阵列	• 高背景噪声 • 低动态范围 • RNA 要求高	• 高特异性 • 高动态范围 • RNA 要求低
qPCR 和 ddPCR	• 有限的样本和实验通量 • 要求很多 RNA	• 高样本和实验通量 • 要求少至25 ng的 RNA
传统的靶向 RNAseq	• 由于 PCR 复制和扩增偏差，导致产生不准确的基因表达图谱	• 可由分子条形码进行精确的基因表达图谱的数字定量

订购信息

产品	规格	货号
QIAseq Targeted RNA Panel (12)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment and library amplification) to enrich predefined genes and construct libraries from up to 12 samples to be sequenced on either Illumina or Ion Torrent™ platforms	333002
QIAseq Targeted RNA Panel (96)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment and library amplification) to enrich predefined genes and construct libraries from up to 96 samples to be sequenced on either Illumina or Ion Torrent platforms	333005
QIAseq Targeted RNA Extended Panel (12)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment, and library amplification) to enrich predefined and extended genes and construct libraries from up to 12 samples to be sequenced on either Illumina or Ion Torrent platforms	333012
QIAseq Targeted RNA Extended Panel (96)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment, and library amplification) to enrich predefined and extended genes and construct libraries from up to 96 samples to be sequenced on either Illumina or Ion Torrent platforms	333015
QIAseq Targeted Virtual Panels	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment and library amplification) to enrich 84 predefined, biologically-relevant, genes and construct libraries to be sequenced on either Illumina or Ion Torrent platforms	Varies
QIAseq Targeted Custom Panel (12)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment, and library amplification) to enrich user-defined genes and construct libraries from up to 12 samples to be sequenced on either Illumina or Ion Torrent platforms	333022
QIAseq Targeted Custom Panel (96)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment, and library amplification) to enrich user-defined genes and construct libraries from up to 96 samples to be sequenced on either Illumina or Ion Torrent platforms	333025
QIAseq Targeted Custom Panel (384)	Complete set of reagents (cDNA synthesis, molecular tags, gene-specific enrichment, and library amplification) to enrich user-defined genes and construct libraries from up to 384 samples to be sequenced on either Illumina or Ion Torrent platforms	333027

订购信息

产品	规格	货号
QIAseq Targeted RNA 12-Index I (48)	Sample indexes in tube format to support indexing of up to 12 samples for Illumina platforms; enough for processing 48 samples	333114
QIAseq Targeted RNA 96-Index I (384)	Sample indexes in tube format to support indexing of up to 96 samples for Illumina platforms; enough for processing 384 samples	333117
QIAseq Targeted RNA 96-Index HT I (384)	Sample indexes in plate format to support indexing of up to 96 samples for Illumina platforms; enough for processing 384 samples	333127
QIAseq Targeted RNA 12-Index L (48)	Sample indexes in tube format to support indexing of up to 12 samples for Ion Torrent platforms; enough for processing 48 samples	333214
QIAseq Targeted RNA 96-Index HT L (384)	Sample indexes in plate format to support indexing of up to 96 samples for Ion Torrent platforms; enough for processing 384 samples	333217

QIAseq Targeted RNA Panel、QIAseq Targeted RNA Extended Panel、QIAseq Targeted Custom Panel 和 QIAseq Targeted RNA Index 仅供用于分子生物学用途。这些产品不可用于疾病的诊断、预防和治疗。

关于最新的许可信息和产品特定的免责声明，请阅读相关的 QIAGEN 试剂盒手册或操作指南。QIAGEN 试剂盒手册和操作指南可在 www.qiagen.com 上下载，或向 QIAGEN 技术服务或当地的经销商索取。

如需更多个性化咨询，请联系 DigitalRNAseq@qiagen.com。

凯杰企业管理（上海）有限公司
电话：021-3865 3865 ▪ 技术支持热线：800-988-0325　400-880-0325
TechService-CN@qiagen.com ▪ www.qiagen.com

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