

Innovation is in non-coding RNAs



Superior PCR Arrays Dedicated for Non-Coding RNAs

- Excellent coverage –Combine the most recent insights and bioinformatics into one single PCR panel
- Biomarker discovery - All the primer sets are fully validated in cell/tissue/serum/plasma samples.
- Fast and easy - Ready-to-use panel plus dedicated analysis tools, generate robust results in hours.

tRNA Repertoire of Isodecoders and Isoacceptors

nrStar™ tRNA PCR Arrays (Human/Mouse)

- Profile 185 Human/Mouse tRNAs cataloged in GtRNAdb for isodecoders and isoacceptors distinguishable by qPCR.
- Insight into the biology and disease impact of cognate, near-cognate, and isodecoder tRNA pools.
- Focus on the high confidence Human tRNAs (tRNAscan score>50).

Primer Name	Target Anticodon	Target tRNA in GtRNAdb or mitotRNAdb	Detection Level	Application	Test (CT)		Control (CT)		Fold Up- or Down-Regulation	T-TEST
					exp1	exp2	exp1	exp2		
Ala-CGC-1	Ala-CGC	Homo_sapiens_tRNA-Ala-CGC-1-1/ Homo_sapiens_tRNA-Ala-CGC-2-1/	Isoacceptor	tRNA Pool/ Repertoire Analysis	23.43	23.57	24.05	24.41	-1.95	0.18
Ala-CGC-2	Ala-CGC	Homo_sapiens_tRNA-Ala-CGC-3-1	Specific Isodecoder(s)	Differential tRNA Isodecoder(s)	29.31	29.46	28.58	28.96	-4.97	0.04
Ala-CGC-3	Ala-CGC	Homo_sapiens_tRNA-Ala-CGC-1-1/ Homo_sapiens_tRNA-Ala-CGC-2-1	Specific Isodecoder(s)	Differential tRNA Isodecoder(s)	29.99	30.09	31.69	33.75	1.98	0.53

rtStar™ tRNA-optimized First-Strand cDNA Synthesis

- tRNA pretreatment to remove heavy modifications prior to cDNA synthesis for a magnitude of signal gains.

tRNA derived fragments (tRFs) and tRNA halves (tiRNAs)

nrStar™ Human tRF&tiRNA PCR Array

nrStar™ Mouse tRF PCR Array

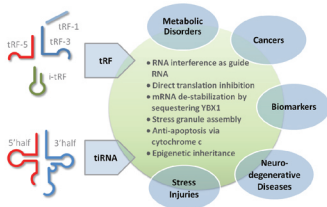
- tRFs&tiRNAs: new small RNA class from tRNA by precise biogenesis.
- Key functions: protein translation regulation, miRNA-like silencing, mRNA stability and apoptosis.
- New class of biomarkers: abundantly enriched in serum and plasma, more so than microRNA.
- Profile prevalent 185 human tRF&tiRNAs or 88 mouse tRFs.

rtStar™ tRF&tiRNA Pretreatment Kit

- To remove modifications in tRF&tiRNA for efficient cDNA reverse transcription

rtStar™ First-Strand cDNA Synthesis Kit (3' and 5' adaptor)

- Especially suited for distinguishing tRFs&tiRNAs from their precursors.



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Small Nucleolar RNA (snoRNA)

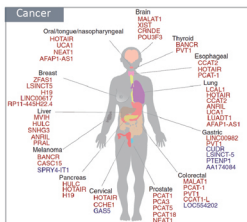
nrStar™ snoRNA PCR Array (Human)

- SnoRNAs: major C/D box and H/ACA box snoRNAs in the nucleolus to guide rRNA modification and processing. Complex with proteins as snoRNP.
- New found functions: miRNA-like silencing, alternative splicing, and cellular stress response.
- Stable in serum and plasma, potential biomarkers in cancers and diseases.
- Profile 359 snoRNAs, covering all the PCR-distinguishable snoRNAs, snoRNA targets, and snoRNP members in one Panel.

Long non-coding RNA (lncRNA)

nrStar™ Functional lncRNA PCR Arrays (Human/Mouse)

- lncRNAs: Gene regulators at transcriptional and post-transcriptional levels pervasively in biology and diseases.
- Profile 372 Human/185 Mouse gold standard lncRNAs with known biological functions or disease associations
- Functional and disease lncRNAs are carefully categorized, annotated and cross-referenced.
- Transcript-specific PCR primers enable unambiguous and accurate detection of each individual lncRNA isoforms



Kidney diseases

ENST00000456816, GAS5, H19-1, H19-2, HIF1A-AS1, HIF1A-AS2, HOTAIR-1, HOTAIR-2, HOTAIR-3, KCNQ1OT1, LOC389332, MEG3-1, MEG3-2, PVT1, RP11-354P17.15-001, TapSAKI, X91348

Diseases

CDKN2B-AS1, H1-UNC25-1, IYMAI, IGF2-AS-1, UNC00271, MEG3-1, MEG3-2, NONRAT021972, PDZRN3-AS1, PVT1

Immune system

GATA3-AS1-1, GATA3-AS1-2, GATA3-AS1-3, IFNG-AS1-1, IFNG-AS1-2, linc-DC, lincRNA-EP5, M18204, MAFTRR, NR4A, NR1R, NIT1, PACERR, RHOF3P1, THRIL

Cell Cycle

CCND1 associated ncRNAs, CDKN2B-AS1, H19-1, H19-2, HULC, KCNQ1OT1, lincRNA-p21, lincRNA-RoR, lincRNA-HEI, PANDAR, TUSC7

Lipid metabolism and adipogenesis

APOA1-AS, HOTAIR-1, HOTAIR-2, HOTAIR-3, HULC, NEAT1-1, NEAT1-2, RP1-130310.2

Transcript name	Transcript ID	Gene	Class	Target	Description [Mechanism of action]	Biological process /Disease association	Ref[PMID]
PACERR	NR_125801	PACERR	Bidirectional	COX-2	Promotes proliferation and metastasis; Occluding repressive NF-κB complexes; [Transcriptional regulation /decoy for transcriptional repressor]	Cancer; Immune system	26476537; 24843008
PANCR	ENST00000503456	PANCR	Intergenic	PITX2	Cardiomyocyte differentiation;	Cardiac development and cardiovascular disease	26783232
PARROT	ENST00000417112	PARROT	Intronic	c-Myc	An upstream regulator of c-Myc affecting cellular proliferation and translation; repressed during senescence of human mammary epithelial cells and overexpressed in some cancers	Cancer	27129154

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