

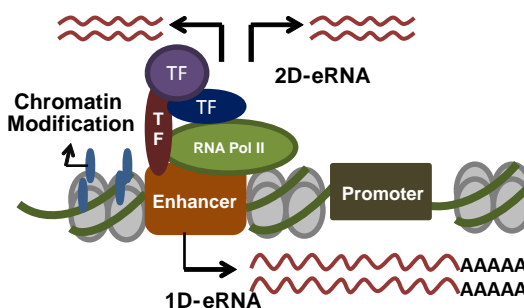
Regulatory RNA qPCR Array

Quantitate Human Regulatory RNAs by real-time qPCR

In the past few decades, Scientists have discovered the regulatory potential of non-coding RNAs. These regulatory, non-coding RNAs are transcribed from enhancers, intergenic regions or antisense strands to coding genes. Aberrant expression of these RNAs has been linked to cancer and other diseases. The potential functions of regulatory RNAs are now being explored as key layers of genome biology. The RNAs holds promise in the areas of identifying novel therapies and for understanding complex cellular network signalling pathways.

Enhancer RNAs (eRNA)

Enhancer RNAs (eRNAs) are short RNA sequences that are transcribed from active enhancer regions of the genome. Active enhancers are marked by high levels of H3K4me1 and H3K4me2 relative to the H3K4me3. There are two types of eRNA, 1D eRNAs and 2D eRNAs. 1D eRNAs are uni-directional RNAs that are polyadenylated but not capped and 2D eRNAs are bidirectional and capped.



eRNAs range in size from 50 to 2000 nt in length and have been identified in all cell types and has been shown to have very significant regulatory function in development and disease.

Regulatory long non-coding RNAs

LncRNAs are long non-coding RNAs that are more than 200 bp long and have a cap and a polyA tail. Some lncRNAs are known to affect specific genes by either activating them or inhibiting them. One example is activating non-coding RNAs (ncRNA-a), which are a type of lncRNA with enhancer-like function. SBI has developed a regulatory RNA qPCR profiler that contains assays for the top 89 RNAs that have been shown to have regulatory functions.

Detection of regulatory RNAs in exosomes

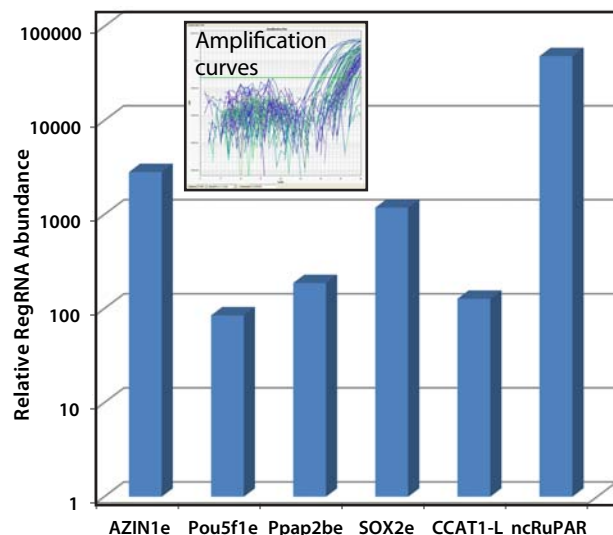
Expression of regulatory RNAs in patient biofluids was explored using serum exosome studies. Exosomes are nano-sized vesicles secreted by all cell types that transport RNAs between cells. These vesicles are present in biofluids such as serum. Exosomes were isolated from human serum using SBI's ExoQuick (cat # EXO5A-1) and exoRNA was isolated using SeraMir Kit (cat # RA800A-1). Exosomal RNA was converted to cDNA using the RNA-Quant kit (cat # RA430A-1). Expression in exosomes was profiled using the regulatory RNA qPCR array and data normalized to the geometric mean of the plate signals. Sample qPCR data are shown to the right.



Highlights

- Enhancer RNAs (eRNA)
- Regulatory lncRNAs (lncRNA)
- Validated qPCR assays across multiple tissue types
- Sensitive and accurate qPCR array and cDNA kit to profile top RNAs
- Discover regulatory RNA profiles in cancer and cellular development

Regulatory RNAs Detected in Human Serum Exosomes



Regulatory RNA qPCR Array

Profile the Expression Levels of Regulatory RNAs using qPCR

SBI's regulatory RNA profiler consists of cDNA synthesis kit and 96 well assay sets. There are 89 Regulatory RNAs that have been annotated from published literature. The primers are validated and tested across several cell and tissue types.

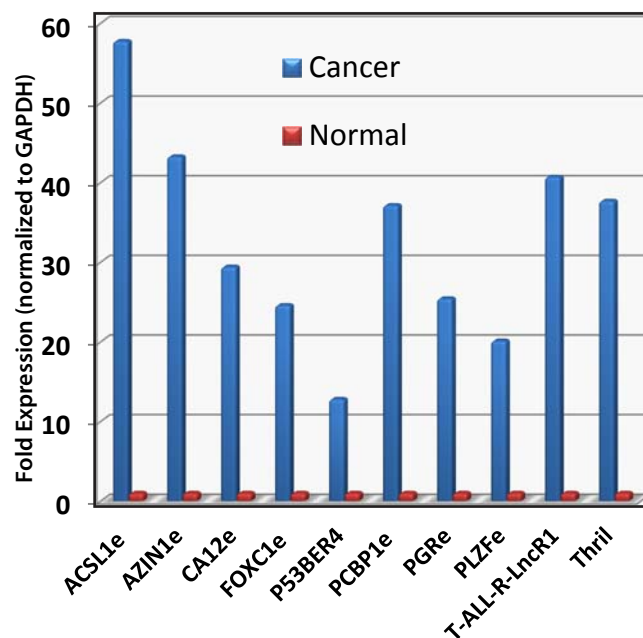
Contents of the Human Regulatory RNA qPCR Array

	1	2	3	4	5	6	7	8	9	10	11	12
A	4q32e	ACSL1e	AZIN1e	CA12e	Lnc-PERP-1	Lnc-KLF14-1	Linc-LAMA4-3	Lnc-LYZL2-1	Linc-LAMA4-2	Lnc-LCP2-1:1	Lnc-FABP5-2:1	Lnc-TMTC3-6:2
B	Lnc-IER3-5:2	Lnc-C21orf33-1	ERBS3/SBNO2e	Epha4e	FKBP5e	FOXC1e	GREB1e	IL1be	IL6e	IRS2e	KLF6e	KLK3e
C	MARCKSe	miR-200be	Nanoge	NKX31e	NRIP1e	P2RY2e	P53BER2	P53BER4	PCBP1e	PGRe	PLZFe	Pou5f1e
D	Ppap2be	SIAH2e1	SLC30A4e	SMAD7e	SOCS3e	SOX2e	TFF1e	TNFSF8e	Wnt-8be	XBP1e	CBR3-AS1	CCAT1-L
E	CD48-AS-	CTBP1-AS	DBE-T	ERIC	FIRRE	GAPInlc	HAS2-AS1	HOTTIP	iL7-mf-lncRNA	Lnc_DC	lncRNA-508851	lncRNA-ATB
F	LOC100132354	MRUL	ncRNA-a1-same as FAI1	ncRNA-a2	ncRNA-a3	ncRNA-a4	ncRNA-a5	ncRNA-a6	ncRNA-a7	ncRuPAR	NONCO2077	NONCO261
G	NONCO2807	NONCO2823	NONCO2913	NONCO526	OIP5-mf	Paupar	PCAT-1	PCGEM1	PCNA-AS1	PINT	PRNCR1	RPLP0P2
H	SENCr	SPRY4-IT1	LncR1	Thril	AS1	BRD4	FOXO3	Actin	GAPDH	U6	18S rRNA	control

Reference control primers for GAPDH, Actin, U6 and 18S rRNA are included in the qPCR array. Researchers can choose any of the reference controls of their choice. In addition, we have also provided qPCR assays for FOXO3 and BRD4 to detect the presence of eRNAs in samples. Additionally, four RNA controls are built-in to the array for normalization. The table above represents the qPCR array arrangement. The qPCR assays marked in blue are for eRNAs, green for lncRNAs and controls are indicated in black.

Profile Regulatory RNAs in Cancer

Regulatory RNAs or eRNAs are aberrantly expressed in cancer cells, disease or during development. There is a significant over expression of regulatory RNAs in cancer cells compared to normal cells. The figure to the right shows representative eRNAs and lncRNAs that are significantly up regulated in cancer cells. RNA from HFF (normal) and HT1080 (cancer) cells were purified, converted to cDNA and the cDNA was profiled for expression across the regulatory RNA profiler.



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