

Supplementary Information

Circulating microRNAs in Pancreatic Juice as Candidate Biomarkers of Pancreatic Cancer

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Supplementary Table S1: Pancreatic juice microRNA (miRNA) expression profiles in patients with pancreatic ductal adenocarcinoma (PDAC).

miRNA	<i>P</i> value	Fold change	miRNA expression in cancer ^a	miRNA expression in PDAC
hsa-miR-492	.013	3.29	Metastatic hepatoblastoma↑	-
hsa-miR-1247	.000	3.28	-	-
hsa-miR-34a	.015	3.27	Ovarian cancer↓, diffuse large B-cell lymphoma↓, non-small cell lung cancer↓, small-cell lung carcinoma↓, kidney cancer↓, bladder cancer↓, breast cancer↓, retinoblastoma↓, gastric cancer↑, prostate cancer↓, oral cancer↓	Downregulated
hsa-miR-200a*	.004	3.10		
hsa-miR-617	.024	2.96	-	-
hsa-miR-519e*	.005	2.89	-	-
hsa-miR-1228*	.035	2.87	-	-
hsa-miR-516a-5p	.041	2.87	-	-

hsa-miR-210	.017	2.84	Lung squamous cell carcinoma (SCC)↑, adrenocortical carcinoma↑, clear cell renal cell carcinoma (ccRCC)↑, breast cancer↑, prostate cancer↑, oral carcinoma↑, lung cancer↑, ovarian carcinoma↑, head and neck cancer↑, oligodendroglioma↑, gastric carcinoma↓	Upregulated
hsa-miR-711	.002	2.83	Cutaneous T-cell lymphoma↑	-
hsa-miR-670	.031	2.79	-	-
hsa-miR-206	.003	2.79	Estrogen receptor (ER) α -positive endometrial endometrioid adenocarcinoma↓, ER α -positive breast cancer↓, ccRCC↓, lung cancer↑, rhabdomyosarcoma↑	-
hsa-miR-382	.018	2.70	-	-
hsa-miR-542-5p	.030	2.68	Osteosarcoma↑, neuroblastoma↓, endometrial carcinosarcoma↑,	-
hsa-miR-495	.030	2.67	Breast cancer↑, KRAS-positive adenocarcinoma of the lung↑	-
hsa-miR-605	.026	2.63	miR-605 AG/GG genotype carriers in colorectal cancer and gastric cancer: at least 1 G allele of miR-605 associated with increased risk of lung cancer	-
hsa-miR-525-5p	.033	2.60	-	-
hsa-miR-648	.024	2.53	-	-
hsa-miR-365	.006	2.50	Breast cancer↑	-
hsa-miR-493	.003	2.37	-	-
hsa-miR-1469	.033	2.31	-	-
hsa-miR-331-3p	.037	2.25	Prostate cancer↓, lung cancer↑, gastric cancer↓	-
hsa-miR-1303	.004	2.25	-	-
hsa-miR-432	.013	2.23	-	-
hsa-miR-129-5p	.014	2.22	-	-
hsa-miR-30b*	.020	2.21	-	-
hsa-miR-1208	.022	2.19	-	-
hsa-miR-1972	.041	2.19	-	-
hsa-miR-708	.003	2.14	Renal cancer↓, bladder urothelial carcinoma↑, lung cancer↑	-
hsa-miR-1276	.048	2.14	-	-
hsa-miR-373	.020	2.12	Breast cancer↑, colon cancer↓, hepatocellular	-

			carcinoma↑, hilar cholangiocarcinoma↓, esophageal cancer↑, prostate cancer↓, testicular germ cell tumor↑	
hsa-miR-133b	.008	2.11	Colorectal cancer↓, esophageal (SCC)↓, tongue SCC↓, head and neck cancer↓, lung cancer↓, bladder cancer↓, gastric cancer↓	-
hsa-miR-365*	.012	2.10	-	-
hsa-miR-205	.013	2.09	Prostate cancer↓, lung cancer↑, melanoma↓, esophageal SCC↑, renal cancer↓, breast cancer↓, bladder cancer↑, head and neck SCC↑, endometrioid adenocarcinoma↑, ovarian cancer↑	Upregulated
hsa-miR-193a-5p	.021	2.09	-	-
hsa-miR-133a	.040	1.98	Renal cancer↓, esophageal SCC↓, rhabdomyosarcoma↓, bladder cancer↓, squamous cell carcinoma of the tongue↓	-
hsa-miR-665	.044	1.89	-	-
hsa-miR-611	.001	1.88	-	-
hsa-miR-634	.016	1.86	-	-
hsa-miR-516b	.016	1.86	-	-
hsa-miR-373*	.008	1.85	B-cell precursor acute lymphoblastic leukemia↓	-
hsa-miR-551b*	.024	1.82	-	-
hsa-miR-1224-5p	.031	1.76	Lung cancer↓	-
hsa-miR-486-5p	.025	1.74	Lung SCC↓, lung cancer ↓, testicular cancer↓, colon cancer↓, liver cancer↓, ovarian cancer↓, breast cancer↓, prostate cancer↓, lymphoma↓	-
hsa-miR-526b	.028	1.56	-	-
hsa-miR-548q	.012	1.54	-	-
hsa-miR-769-3p	.046	1.54	-	-
hsa-miR-1183	.020	1.51	-	-
hsa-miR-601	.021	-2.46	Gastric cancer↑	-

^a↑ indicates upregulation; ↓, downregulation.

Supplementary Table S2: Mean fold change of pancreatic juice miRNA levels in PDAC, chronic pancreatitis (CP) and non-healthy controls (NPNH).

miRNA	N/CP/PC	^a Mean fold change \pm ^b SEM	P value		
			CP/NPNH	PDAC/CP	PDAC/NPNH
miR-205	NPNH	3.27 \pm 2.50			
	CP	190.20 \pm 105.46	.093	.449	.009
	PDAC	104.03 \pm 36.95			
miR-210	NPNH	1.97 \pm 2.12			
	CP	574.02 \pm 273.37	.051	.969	.010
	PDAC	587.91 \pm 219.44			
miR-492	NPNH	0.494 \pm 2.37			
	CP	15.79 \pm 5.75	.022	.179	.003
	PDAC	30.94 \pm 9.54			
miR-1247	NPNH	-1.22 \pm 1.73			
	CP	3.22 \pm 1.66	.073	.628	.041
	PDAC	4.54 \pm 2.15			

^aMean fold change: the average of fold change for each group.

^bSEM: standard error of the mean.

Supplementary Table S3: Sensitivity, specificity and area under the curve (AUC) for pancreatic juice microRNAs (miRNAs), *CA19-9* and combinations of miRNAs and *CA19-9*.

miRNA/protein	Sensitivity, %	Specificity, %	AUC	95% CI
miR-205	64	74	0.68	0.53-0.83
miR-210	76	95	0.84	0.75-0.94
miR-492	73	82	0.80	0.68-0.92
miR-1247	53	88	0.63	0.50-0.77
<i>CA19-9</i>	77	93	0.89	0.82-0.97
4-miRNA panel	87	88	0.92	0.84-0.99
4-miRNA panel + <i>CA19-9</i>	91	100	0.99	0.94-1.00

CI, confidence interval.

Supplementary Table S4: Relationship of pancreatic juice miR-210 and miR-205 levels with lymph node involvement and tumor differentiation.

MicroRNA expression		Tumor differentiation ^a		No. of lymph nodes involved		p value
		Good to moderate, No. (%)	Poor or not available, No. (%)	0 No. (%)	1 No. (%)	
miR-205	Low	8 (88.89)	12 (30.00)			.001
	High	1 (11.11)	28 (70.00)			
miR-210	Low			40 (54.79)	2 (15.38)	.009
	High			33 (45.21)	11 (84.62)	
miR-205/miR-210	0			28 (38.36)	1 (7.69)	.045
	1			23 (31.51)	4 (30.77)	
	2			22 (30.14)	8 (61.54)	