

Supplementary Materials

Targeted microRNA profiling reveals that Exendin-4 modulates the expression of several microRNAs to reduce steatosis in HepG2 cells

Olfa Khalifa¹, Khalid Ouararhni², Khaoula Errafii³, Nehad M. Alajeze^{4,5}, Abdelilah Arredouani^{1,5}

¹Diabetes Research Center, Qatar Biomedical Research Institute, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar.

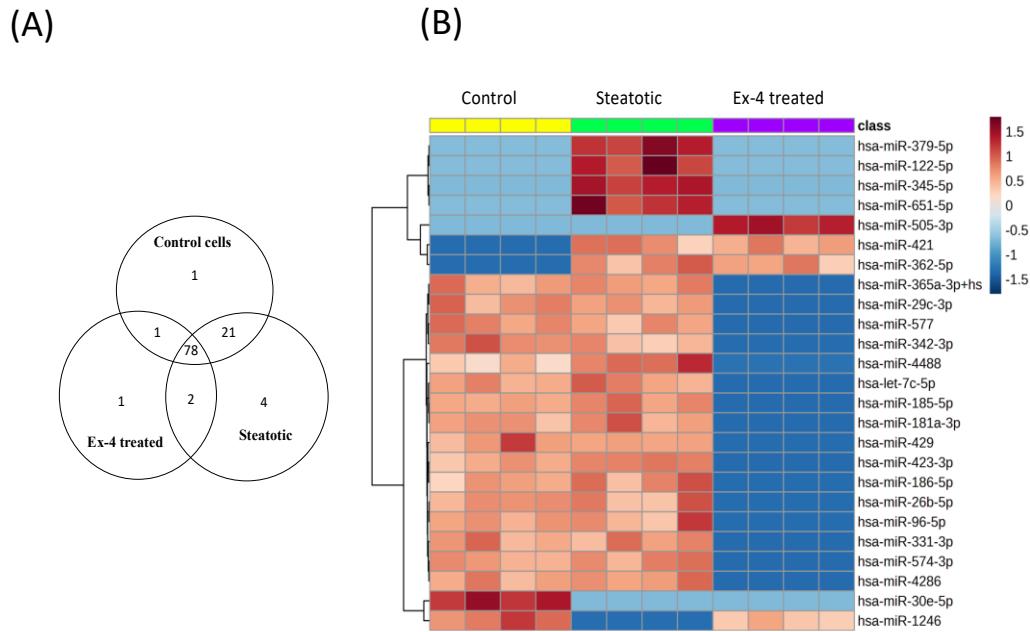
²Genomic core, Qatar Biomedical Research Institute, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar.

³African Genome Center, Mohammed VI Polytechnic University (UM6P), Ben Guerir 43151, Morocco.

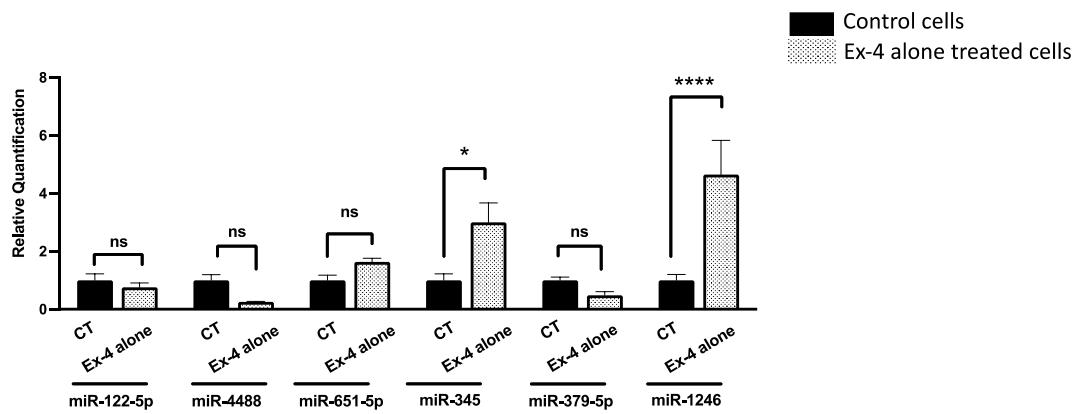
⁴Translational Cancer and Immunity Center Qatar Biomedical Research Institute, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar.

⁵College of Health & Life Sciences, Hamad Bin Khalifa University Qatar Foundation, Doha, Qatar

*Corresponding author: arredouani@hbku.edu.qa
Qatar Biomedical Research Institute
Hamad Bin Khalifa University
PO Box: 34110
Tel: +974 445 42947
Fax: +974 445 41770
Doha, Qatar



Supplementary Data S1. Heatmap and Venn diagram depicting microRNA expression. A. Venn diagram of the overlap of miRNA profiles in control, steatotic, and Ex-4-treated cells. The miRNAs differentially expressed in three are depicted in three overlapping circles. B. Heat map of the top 30 differentially expressed microRNAs between control, steatotic, and Ex-4-treated cells (n=4 for each condition). The miRNA species are shown on the right. Cluster analysis classified the samples into groups based on miRNA expression levels in each sample. The dendrogram shows significantly different expression levels of miRNAs among samples. Red indicates high miRNA expression, and blue indicates relatively low miRNA expression.



Supplementary data 2: Ex-4 treatment downregulates the expression of miR-122-5p, miR-4488, and miR-379-5p and upregulates the expression of miR-651-5p, miR-345-5p, and miR-1246. mRNA expression levels of miR-122-5p, miR-4488, and miR-651-5p, miR-345, miR-379-5p and miR-1246. All values are expressed as the mean \pm SE ($n = 3$). Ns: not significant, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The experiment was performed in triplicate.

Table S1. List of miRNAs in CT, OA and Ex-4 group after normalization

CT	OA	Ex-4
hsa-miR-769-5p	hsa-miR-122-5p	hsa-miR-769-5p
hsa-miR-197-3p	hsa-miR-345-5p	hsa-miR-30d-5p
hsa-miR-577	hsa-miR-769-5p	hsa-miR-505-3p
hsa-miR-145-5p	hsa-miR-197-3p	hsa-miR-302d-3p
hsa-miR-186-5p	hsa-miR-577	hsa-miR-362-5p
hsa-miR-30d-5p	hsa-miR-145-5p	hsa-miR-1246
hsa-miR-4488	hsa-miR-186-5p	hsa-miR-30e-3p
hsa-miR-429	hsa-miR-30d-5p	hsa-miR-95-3p
hsa-miR-302d-3p	hsa-miR-4488	hsa-miR-149-5p
hsa-miR-140-5p	hsa-miR-429	hsa-miR-574-5p
hsa-miR-10a-5p	hsa-miR-651-5p	hsa-miR-4532
hsa-miR-365a-3p+hsa-miR-365b-3p	hsa-miR-302d-3p	hsa-miR-374b-5p
hsa-miR-342-3p	hsa-miR-140-5p	hsa-miR-421
hsa-miR-29c-3p	hsa-miR-10a-5p	hsa-miR-590-5p
hsa-miR-1246	hsa-miR-365a-3p+hsa-miR-365b-3p	hsa-miR-30b-5p
hsa-miR-30e-3p	hsa-miR-342-3p	hsa-miR-92a-3p
hsa-miR-423-3p	hsa-miR-29c-3p	hsa-miR-34a-5p
hsa-miR-95-3p	hsa-miR-362-5p	hsa-miR-26a-5p
hsa-miR-149-5p	hsa-miR-30e-3p	hsa-miR-642a-5p
hsa-miR-574-3p	hsa-miR-423-3p	hsa-miR-132-3p
hsa-miR-30e-5p	hsa-miR-95-3p	hsa-miR-183-5p
hsa-miR-574-5p	hsa-miR-379-5p	hsa-miR-324-5p
hsa-miR-4532	hsa-miR-149-5p	hsa-miR-340-5p
hsa-let-7c-5p	hsa-miR-574-3p	hsa-let-7f-5p
hsa-miR-374b-5p	hsa-miR-574-5p	hsa-miR-142-3p
hsa-miR-1260a	hsa-miR-4532	hsa-miR-361-5p
hsa-miR-590-5p	hsa-let-7c-5p	hsa-miR-20a-5p+hsa-miR-20b-5p
hsa-miR-96-5p	hsa-miR-374b-5p	hsa-miR-31-5p
hsa-miR-4286	hsa-miR-1260a	hsa-miR-423-5p
hsa-miR-30b-5p	hsa-miR-421	hsa-miR-196a-5p
hsa-miR-92a-3p	hsa-miR-590-5p	hsa-miR-196b-5p
hsa-miR-34a-5p	hsa-miR-96-5p	hsa-miR-126-3p
hsa-miR-181a-3p	hsa-miR-4286	hsa-miR-301a-3p
hsa-miR-185-5p	hsa-miR-30b-5p	hsa-miR-151a-3p
hsa-miR-26a-5p	hsa-miR-92a-3p	hsa-miR-16-5p
hsa-miR-642a-5p	hsa-miR-34a-5p	hsa-miR-148b-3p
hsa-miR-132-3p	hsa-miR-181a-3p	hsa-miR-148a-3p
hsa-miR-183-5p	hsa-miR-185-5p	hsa-miR-18a-5p
hsa-miR-324-5p	hsa-miR-26a-5p	hsa-miR-28-5p
hsa-miR-331-3p	hsa-miR-642a-5p	hsa-miR-24-3p
hsa-miR-340-5p	hsa-miR-132-3p	hsa-miR-19b-3p
hsa-let-7f-5p	hsa-miR-183-5p	hsa-miR-107

hsa-miR-142-3p	hsa-miR-324-5p	hsa-miR-200a-3p
hsa-miR-361-5p	hsa-miR-331-3p	hsa-miR-106b-5p
hsa-miR-20a-5p+hsa-miR-20b-5p	hsa-miR-340-5p	hsa-miR-141-3p
hsa-miR-31-5p	hsa-let-7f-5p	hsa-miR-222-3p
hsa-miR-26b-5p	hsa-miR-142-3p	hsa-let-7e-5p
hsa-miR-423-5p	hsa-miR-361-5p	hsa-miR-98-5p
hsa-miR-196a-5p	hsa-miR-20a-5p+hsa-miR-20b-5p	hsa-miR-1180-3p
hsa-miR-196b-5p	hsa-miR-31-5p	hsa-miR-130a-3p
hsa-miR-126-3p	hsa-miR-26b-5p	hsa-miR-99b-5p
hsa-miR-301a-3p	hsa-miR-423-5p	hsa-miR-181a-5p
hsa-miR-151a-3p	hsa-miR-196a-5p	hsa-miR-23b-3p
hsa-miR-16-5p	hsa-miR-196b-5p	hsa-miR-27b-3p
hsa-miR-148b-3p	hsa-miR-126-3p	hsa-miR-19a-3p
hsa-miR-148a-3p	hsa-miR-301a-3p	hsa-miR-15a-5p
hsa-miR-18a-5p	hsa-miR-151a-3p	hsa-miR-221-3p
hsa-miR-28-5p	hsa-miR-16-5p	hsa-let-7i-5p
hsa-miR-24-3p	hsa-miR-148b-3p	hsa-miR-29a-3p
hsa-miR-19b-3p	hsa-miR-148a-3p	hsa-miR-9-5p
hsa-miR-107	hsa-miR-18a-5p	hsa-miR-125a-5p
hsa-miR-200a-3p	hsa-miR-28-5p	hsa-miR-106a-5p+hsa-miR-17-5p
hsa-miR-106b-5p	hsa-miR-24-3p	hsa-miR-32-5p
hsa-miR-141-3p	hsa-miR-19b-3p	hsa-let-7g-5p
hsa-miR-222-3p	hsa-miR-107	hsa-miR-200b-3p
hsa-let-7e-5p	hsa-miR-200a-3p	hsa-miR-7-5p
hsa-miR-98-5p	hsa-miR-106b-5p	hsa-miR-135b-5p
hsa-miR-1180-3p	hsa-miR-141-3p	hsa-let-7d-5p
hsa-miR-130a-3p	hsa-miR-222-3p	hsa-miR-15b-5p
hsa-miR-99b-5p	hsa-let-7e-5p	hsa-miR-25-3p
hsa-miR-181a-5p	hsa-miR-98-5p	hsa-miR-374a-5p
hsa-miR-23b-3p	hsa-miR-1180-3p	hsa-miR-125b-5p
hsa-miR-27b-3p	hsa-miR-130a-3p	hsa-miR-200c-3p
hsa-miR-19a-3p	hsa-miR-99b-5p	hsa-miR-23a-3p
hsa-miR-15a-5p	hsa-miR-181a-5p	hsa-let-7b-5p
hsa-miR-221-3p	hsa-miR-23b-3p	hsa-miR-93-5p
hsa-let-7i-5p	hsa-miR-27b-3p	hsa-miR-191-5p
hsa-miR-29a-3p	hsa-miR-19a-3p	hsa-miR-21-5p
hsa-miR-9-5p	hsa-miR-15a-5p	hsa-miR-100-5p
hsa-miR-125a-5p	hsa-miR-221-3p	hsa-miR-4454+hsa-miR-7975
hsa-miR-106a-5p+hsa-miR-17-5p	hsa-let-7i-5p	hsa-let-7a-5p
hsa-miR-32-5p	hsa-miR-29a-3p	hsa-miR-29b-3p
hsa-let-7g-5p	hsa-miR-9-5p	
hsa-miR-200b-3p	hsa-miR-125a-5p	
hsa-miR-7-5p	hsa-miR-106a-5p+hsa-miR-17-5p	
hsa-miR-135b-5p	hsa-miR-32-5p	

hsa-let-7d-5p	hsa-let-7g-5p	
hsa-miR-15b-5p	hsa-miR-200b-3p	
hsa-miR-25-3p	hsa-miR-7-5p	
hsa-miR-374a-5p	hsa-miR-135b-5p	
hsa-miR-125b-5p	hsa-let-7d-5p	
hsa-miR-200c-3p	hsa-miR-15b-5p	
hsa-miR-23a-3p	hsa-miR-25-3p	
hsa-let-7b-5p	hsa-miR-374a-5p	
hsa-miR-93-5p	hsa-miR-125b-5p	
hsa-miR-191-5p	hsa-miR-200c-3p	
hsa-miR-21-5p	hsa-miR-23a-3p	
hsa-miR-100-5p	hsa-let-7b-5p	
hsa-miR-4454+hsa-miR-7975	hsa-miR-93-5p	
hsa-let-7a-5p	hsa-miR-191-5p	
hsa-miR-29b-3p	hsa-miR-21-5p	
	hsa-miR-100-5p	
	hsa-miR-4454+hsa-miR-7975	
	hsa-let-7a-5p	
	hsa-miR-29b-3p	

Table S2. miRNAs with VIP score > 1 from PLS-DA analysis of OA versus control samples.

miRNAs	Comp. 1	Comp. 2	Comp. 3	Comp. 4
hsa-miR-345-5p	1.8584	1.7905	1.7882	1.788
hsa-miR-30e-5p	1.8555	1.7915	1.7891	1.789
hsa-miR-1246	1.8509	1.7839	1.7816	1.7814
hsa-miR-379-5p	1.8492	1.7835	1.7811	1.781
hsa-miR-362-5p	1.8409	1.7711	1.7687	1.7686
hsa-miR-651-5p	1.8351	1.7677	1.7654	1.7653
hsa-miR-421	1.8349	1.7792	1.7769	1.7768
hsa-miR-122-5p	1.8249	1.7629	1.7606	1.7604
hsa-miR-4532	1.7495	1.6814	1.6791	1.679
hsa-let-7a-5p	1.663	1.5993	1.5971	1.597
hsa-miR-4488	1.6577	1.5932	1.5914	1.5913
hsa-miR-191-5p	1.6038	1.5448	1.5428	1.5427
hsa-let-7b-5p	1.5708	1.5164	1.5144	1.5143
hsa-miR-29b-3p	1.5582	1.5025	1.5006	1.5005
hsa-miR-423-3p	1.5429	1.4954	1.4947	1.4946
hsa-miR-200a-3p	1.5357	1.4774	1.4756	1.4755
hsa-miR-374a-5p	1.53	1.4708	1.4703	1.4702
hsa-miR-423-5p	1.4925	1.4385	1.4366	1.4365
hsa-let-7e-5p	1.4786	1.421	1.4193	1.4192
hsa-miR-302d-3p	1.4609	1.4061	1.4055	1.4054
hsa-miR-342-3p	1.388	1.3624	1.3613	1.3612
hsa-miR-98-5p	1.383	1.3302	1.3285	1.3284
hsa-miR-185-5p	1.3716	1.3299	1.3295	1.3294
hsa-miR-23a-3p	1.3199	1.279	1.2777	1.2777
hsa-miR-7-5p	1.3187	1.2736	1.2719	1.2719
hsa-miR-95-3p	1.2725	1.2324	1.2307	1.2307
hsa-miR-148a-3p	1.1975	1.1699	1.1686	1.1685
hsa-miR-135b-5p	1.1948	1.1529	1.1538	1.1538

hsa-miR-24-3p	1.1945	1.1579	1.1564	1.1563
hsa-miR-21-5p	1.183	1.1676	1.166	1.166
hsa-miR-149-5p	1.1341	1.1025	1.1025	1.1026
hsa-miR-25-3p	1.1108	1.0903	1.0889	1.0888
hsa-let-7g-5p	1.1037	1.0845	1.0853	1.0852
hsa-miR-126-3p	1.0964	1.0605	1.0596	1.0596
hsa-miR-577	1.0637	1.0472	1.0459	1.0458
hsa-miR-221-3p	1.0496	1.1099	1.1091	1.109
hsa-miR-26a-5p	1.0425	1.0173	1.0163	1.0162
hsa-miR-100-5p	1.0229	1.0402	1.0391	1.039
hsa-miR-30e-3p	1.0198	0.9801	0.98017	0.98037
hsa-miR-31-5p	1.0159	0.97639	0.97857	0.97861
hsa-miR-186-5p	1.0117	0.99637	0.99717	0.9971
hsa-miR-30b-5p	1.0114	0.98978	0.99066	0.99065

Table S3. miRNAs with VIP score > 1 from PLS-DA analysis of Ex-4 versus OA samples.

miRNAs	Comp. 1	Comp. 2	Comp. 3	Comp. 4
hsa-miR-429	1.2876	1.2637	1.2616	1.2614
hsa-miR-423-3p	1.2874	1.2644	1.2623	1.2621
hsa-miR-29c-3p	1.2851	1.2586	1.2565	1.2564
hsa-miR-505-3p	1.2845	1.2689	1.2668	1.2667
hsa-miR-365a-3p+hsa-miR-365b-3p	1.2841	1.2513	1.2491	1.2489
hsa-miR-345-5p	1.2833	1.2525	1.2502	1.2501
hsa-miR-185-5p	1.2827	1.2586	1.2566	1.2565
hsa-miR-4286	1.2824	1.2473	1.2451	1.245
hsa-miR-1246	1.2816	1.2673	1.265	1.2649
hsa-miR-574-3p	1.2799	1.2467	1.2444	1.2443
hsa-miR-577	1.2787	1.2536	1.2513	1.2512
hsa-miR-4488	1.2783	1.2436	1.2417	1.2415
hsa-miR-379-5p	1.277	1.2548	1.2526	1.2525
hsa-miR-331-3p	1.2764	1.2538	1.2523	1.2522
hsa-miR-342-3p	1.275	1.2443	1.242	1.2419
hsa-let-7c-5p	1.2745	1.2579	1.2556	1.2555
hsa-miR-181a-3p	1.2728	1.2555	1.2537	1.2535
hsa-miR-197-3p	1.2715	1.2595	1.2582	1.2581
hsa-miR-186-5p	1.27	1.2303	1.228	1.2279
hsa-miR-651-5p	1.2672	1.2333	1.2312	1.2311
hsa-miR-1260a	1.2611	1.2421	1.24	1.2399
hsa-miR-122-5p	1.2602	1.248	1.2457	1.2456
hsa-miR-10a-5p	1.2593	1.2457	1.2441	1.2441
hsa-miR-26b-5p	1.2593	1.2146	1.2123	1.2122
hsa-miR-96-5p	1.2551	1.2092	1.207	1.2069
hsa-miR-140-5p	1.2539	1.2462	1.2456	1.2454
hsa-miR-145-5p	1.2482	1.2146	1.2129	1.2129
hsa-miR-423-5p	1.2466	1.2528	1.2505	1.2503

hsa-let-7i-5p	1.2297	1.1801	1.1782	1.1781
hsa-miR-4454+hsa-miR-7975	1.2043	1.1557	1.1543	1.1542
hsa-let-7g-5p	1.1791	1.132	1.1311	1.131
hsa-let-7a-5p	1.1718	1.1265	1.1247	1.1246
hsa-miR-1180-3p	1.1603	1.1134	1.1123	1.1122
hsa-miR-30b-5p	1.156	1.1104	1.1105	1.1104
hsa-let-7e-5p	1.147	1.1014	1.0995	1.0994
hsa-miR-21-5p	1.1456	1.1077	1.1058	1.1057
hsa-miR-4532	1.1401	1.0975	1.0963	1.0963
hsa-let-7b-5p	1.1355	1.1016	1.0999	1.0998
hsa-miR-340-5p	1.1348	1.1044	1.1026	1.1025
hsa-miR-181a-5p	1.107	1.063	1.061	1.0609
hsa-miR-106b-5p	1.1012	1.0569	1.0549	1.0549
hsa-miR-29b-3p	1.0991	1.0669	1.0653	1.0652
hsa-miR-200c-3p	1.0901	1.0494	1.048	1.0483
hsa-miR-200a-3p	1.0781	1.0439	1.0428	1.0427
hsa-miR-24-3p	1.0726	1.0338	1.0336	1.0339
hsa-miR-7-5p	1.0664	1.0233	1.0216	1.0216
hsa-miR-141-3p	1.0624	1.0422	1.0408	1.0407
hsa-miR-26a-5p	1.0617	1.0242	1.0223	1.0224
hsa-let-7f-5p	1.055	1.0197	1.0197	1.0196
hsa-miR-106a-5p+hsa-miR-17-5p	1.0435	1.02	1.0181	1.018
hsa-miR-25-3p	1.0414	1.017	1.0152	1.015
hsa-miR-99b-5p	1.0409	1.0195	1.0196	1.0195
hsa-miR-191-5p	1.0273	1.0063	1.0068	1.0067
hsa-miR-30e-3p	1.0222	1.0114	1.0127	1.0127
hsa-miR-29a-3p	1.0116	1.0095	1.0085	1.0085
hsa-miR-374a-5p	1.0055	0.9709	0.96912	0.96909
hsa-let-7d-5p	1.0045	1.0019	1.0003	1.0002

Table S4. NanoString Data.

sample	C1	C2	C3	C4	OA1	OA2	OA3	OA4	EX1	EX2	EX3	EX4
label	1	1	1	1	2	2	2	2	3	3	3	3
hsa-miR-122-5p					4.576651 092	3.262642 741	6.827164 93	3.640145 606				
hsa-miR-345-5p					4.250797 024	3.262642 741	3.952569 17	4.160166 407				
hsa-miR-769-5p	5.847953 216	4.145077 72	3.266194 883	4.419741 94	4.126268 918	3.188097 768	5.030542 58	4.160166 407	4.076513 013	4.084967 32	5.353319 058	4.504933 131
hsa-miR-197-3p	4.948268 106	3.799654 577	8.169934 641	5.639285 775	4.250797 024	8.156606 852	6.108515 99	5.720228 809				
hsa-miR-577	5.847953 216	5.181347 15	4.084967 32	5.038089 229	4.151117 242	3.262642 741	5.030542 58	4.160166 407				
hsa-miR-145-5p	4.498425 551	4.490500 864	4.084967 32	6.532389 766	6.866175 182	9.564293 305	3.233920 23	7.800312 012				
hsa-miR-186-5p	3.598740 441	5.872193 437	5.443658 138	4.971530 672	7.438894 793	4.350190 321	6.467840 46	8.840353 614				
hsa-miR-30d-5p	3.598740 441	6.217616 58	11.97604 79	7.264134 975	7.970244 421	4.893964 111	7.545813 87	10.92043 682	5.017246 786	3.267973 856	5.353319 058	4.546179 9
hsa-miR-505-3p									3.762935 089	4.084967 32	3.211991 435	3.686631 281
hsa-miR-4488	5.847953 216	4.835924 007	7.352941 176	4.899292 324	9.564293 305	11.41924 959	11.13905 857	17.16068 643				
hsa-miR-429	3.598740 441	4.490500 864	7.352941 176	4.354926 511	4.250797 024	4.350190 321	4.160166 407	4.253717 917				
hsa-miR-651-5p					7.438894 793	3.806416 531	4.671218 11	5.200208 008				
hsa-miR-302d-3p	4.048582 996	5.872193 437	4.899292 324	4.940022 919	7.221069 685	5.437737 901	7.905138 34	8.320332 813	4.703668 862	6.535947 712	6.423982 869	5.887866 481
hsa-miR-140-5p	3.148897 886	3.799654 577	3.267973 856	3.405508 773	3.188097 768	7.612833 061	3.952569 17	4.160166 407				
hsa-miR-10a-5p	4.048582 996	4.145077 72	6.535947 712	5.988023 952	3.719447 396	5.981511 691	8.983111 75	6.240249 61				

hsa-miR-365a-3p+hsa-miR-365b-3p	8.547008547	5.872193437	5.443658138	6.620953374	7.438894793	6.525285481	6.10851599	7.800312012				
hsa-miR-342-3p	6.887494493	8.547008547	6.12745098	5.988023952	6.376195537	4.350190321	3.95256917	4.680187207				
hsa-miR-29c-3p	6.297795771	3.799654577	4.901960784	5.443658138	4.508906829	4.893964111	3.95256917	4.680187207				
hsa-miR-362-5p					4.84447831	3.262642741	5.03054258	6.24024961	4.157509995	4.08496732	5.353319058	3.034243606
hsa-miR-1246	4.498425551	5.18134715	7.621121394	5.766964698					3.135779241	4.08496732	3.211991435	3.034243606
hsa-miR-30e-3p	3.148897886	4.835924007	3.266194883	3.750338925	4.782146652	3.806416531	5.74919152	4.160166407	3.762935089	3.267973856	3.211991435	3.034243606
hsa-miR-423-3p	3.148897886	3.799654577	4.493464052	3.814005505	4.782146652	4.893964111	5.200208008	4.958772924				
hsa-miR-95-3p	5.398110661	6.21761658	5.310457516	6.532389766	7.438894793	5.981511691	6.82716493	7.800312012	5.33082471	5.718954248	3.034243606	4.694674188
hsa-miR-379-5p					4.782146652	4.350190321	6.760270411	5.297535795				
hsa-miR-149-5p	5.847953216	7.944732297	5.310457516	8.165487207	5.056549415	6.376195537	3.5932447	5.200208008	3.762935089	4.901960784	8.565310493	3.467706979
hsa-miR-574-3p	4.048582996	3.799654577	3.267973856	3.266194883	4.060059539	3.188097768	4.31189364	4.680187207				
hsa-miR-30e-5p	3.598740441	4.835924007	3.676470588	4.354926511								
hsa-miR-574-5p	6.297795771	5.526770294	4.493464052	7.07675558	6.376195537	4.350190321	5.03054258	7.800312012	4.703668862	3.267973856	5.353319058	3.901170351
hsa-miR-4532	7.647323437	5.872193437	6.535947712	5.988023952	11.15834219	10.33170201	11.49838304	14.04056162	5.017246786	8.169934641	4.282655246	3.901170351
hsa-let-7c-5p	4.048582996	4.835924007	3.676470588	3.810560697	5.844845909	4.893964111	3.95256917	3.640145606				
hsa-miR-374b-5p	5.847953216	6.21761658	4.901960784	4.354926511	4.250797024	8.156606852	5.03054258	8.840353614	7.212292255	3.267973856	3.211991435	3.901170351

hsa-miR-1260a	24.29149 798	8.635578 584	6.944444 444	6.532389 766	4.782146 652	4.893964 111	9.360374 415	6.345495 059				
hsa-miR-421					5.844845 909	5.981511 691	5.030542 58	3.120124 805	4.076513 013	5.718954 248	3.901170 351	4.565545 871
hsa-miR-590-5p	6.747638 327	7.599309 154	5.718954 248	4.899292 324	3.719447 396	5.981511 691	3.233920 23	7.280291 212	5.407966 831	6.535947 712	5.353319 058	4.334633 723
hsa-miR-96-5p	4.948268 106	5.526770 294	4.493464 052	5.443658 138	5.714371 035	4.350190 321	3.952569 17	8.840353 614				
hsa-miR-4286	3.598740 441	4.835924 007	3.266194 883	3.900286 444	4.250797 024	3.806416 531	3.952569 17	5.200208 008				
hsa-miR-30b-5p	7.197480 882	7.253886 01	8.578431 373	5.988023 952	7.438894 793	8.700380 642	7.905138 34	12.48049 922	4.703668 862	4.901960 784	5.353319 058	4.768097 096
hsa-miR-92a-3p	7.197480 882	8.290155 44	9.395424 837	7.621121 394	7.438894 793	7.612833 061	6.467840 46	14.56058 242	7.212292 255	4.084967 32	4.768097 096	5.355118 89
hsa-miR-34a-5p	8.547008 547	5.526770 294	3.676470 588	5.443658 138	9.032943 677	5.437737 901	5.389867 05	9.880395 216	4.703668 862	4.901960 784	4.282655 246	5.201560 468
hsa-miR-181a-3p	4.086028 162	4.498425 551	4.493464 052	3.266194 883	4.709868 881	6.376195 537	3.593244 7	4.160166 407				
hsa-miR-185-5p	3.898394 198	3.799654 577	4.084967 32	3.810560 697	4.690164 759	5.437737 901	3.952569 17	4.680187 207				
hsa-miR-26a-5p	15.29464 687	8.981001 727	7.352941 176	8.165487 207	10.62699 256	10.33170 201	17.60689 903	22.88091 524	8.153026 027	4.901960 784	7.494646 681	5.635023 84
hsa-miR-642a-5p	6.297795 771	5.526770 294	4.493464 052	4.354926 511	6.160339 23	4.250797 024	5.389867 05	8.840353 614	6.898714 331	6.535947 712	6.423982 869	5.635023 84
hsa-miR-132-3p	5.370589 993	4.948268 106	7.352941 176	3.810560 697	4.897168 193	4.782146 652	5.749191 52	4.160166 407	4.769256 675	4.390090 938	4.282655 246	5.635023 84
hsa-miR-183-5p	8.097165 992	8.635578 584	11.43790 85	8.709853 021	5.313496 281	5.981511 691	7.905138 34	13.00052 002	4.703668 862	6.535947 712	9.635974 304	6.068487 213
hsa-miR-324-5p	4.948268 106	6.908462 867	5.310457 516	5.988023 952	6.907545 165	3.806416 531	5.030542 58	8.320332 813	4.390090 938	3.267973 856	7.494646 681	6.068487 213
hsa-miR-331-3p	6.096783 74	7.944732 297	4.901960 784	5.443658 138	4.782146 652	7.612833 061	5.749191 52	6.760270 411				
hsa-miR-340-5p	9.446693 657	11.39896 373	10.21241 83	15.78660 86	10.09564 293	14.13811 854	12.21703 198	10.40041 602	6.585136 406	7.352941 176	4.282655 246	6.501950 585

hsa-let-7f-5p	17.99370 22	15.19861 831	13.88888 889	4.899292 324	24.44208 289	9.244154 432	11.49838 304	22.36089 444	5.957980 558	7.352941 176	6.501950 585	6.604290 773
hsa-miR-142-3p	8.547008 547	8.290155 44	6.535947 712	10.34295 046	7.438894 793	7.612833 061	7.186489 4	14.04056 162	5.644402 634	8.986928 105	4.282655 246	6.935413 958
hsa-miR-361-5p	9.446693 657	10.70811 744	6.535947 712	8.165487 207	7.970244 421	8.156606 852	7.905138 34	14.04056 162	6.898714 331	8.986928 105	9.635974 304	7.368877 33
hsa-miR-20a-5p-hsa-miR-20b-5p	22.94197 031	25.90673 575	19.60784 314	16.87534 023	22.84803 401	17.94453 507	16.16960 115	26.00104 004	13.17027 281	18.79084 967	6.423982 869	7.368877 33
hsa-miR-31-5p	5.847953 216	5.872193 437	3.267973 856	9.798584 649	9.564293 305	8.156606 852	6.827164 93	9.360374 415	5.330824 71	3.267973 856	3.211991 435	7.368877 33
hsa-miR-26b-5p	5.847953 216	7.599309 154	7.352941 176	7.621121 394	8.501594 049	5.437737 901	5.389867 05	10.40041 602				
hsa-miR-423-5p	8.547008 547	10.36269 43	7.761437 908	9.798584 649	12.75239 107	10.87547 58	13.29500 539	10.92043 682	6.585136 406	6.535947 712	7.368877 33	6.829987 15
hsa-miR-196a-5p	11.69590 643	12.08981 002	7.761437 908	8.709853 021	11.15834 219	13.05057 096	13.29500 539	9.880395 216	10.03449 357	13.07189 542	7.494646 681	9.102730 819
hsa-miR-196b-5p	12.14574 899	13.47150 259	8.578431 373	4.354926 511	9.564293 305	3.806416 531	12.21703 198	13.52054 082	9.407337 723	13.07189 542	5.353319 058	9.102730 819
hsa-miR-126-3p	11.24606 388	13.47150 259	16.33986 928	13.06477 953	15.94048 884	17.94453 507	13.29500 539	23.92095 684	12.54311 696	15.52287 582	11.77730 193	9.536194 192
hsa-miR-301a-3p	17.09401 709	17.61658 031	17.56535 948	15.24224 279	20.72263 549	14.68189 233	17.60689 903	24.96099 844	12.85669 489	18.79084 967	8.565310 493	9.536194 192
hsa-miR-151a-3p	11.24606 388	11.74438 687	9.803921 569	12.52041 372	14.87778 959	19.57585 644	7.545813 87	19.76079 043	9.093759 799	10.62091 503	7.494646 681	9.536194 192
hsa-miR-16-5p	21.14260 009	27.97927 461	15.93137 255	18.50843 767	19.12858 661	10.33170 201	12.93568 092	25.48101 924	14.73816 243	6.535947 712	6.423982 869	9.969657 564
hsa-miR-148b-3p	17.54385 965	12.08981 002	15.11437 908	11.43168 209	12.22104 145	11.96302 338	15.81027 668	20.80083 203	12.85669 489	13.88888 889	12.84796 574	10.83658 431
hsa-miR-148a-3p	16.64417 454	17.96200 345	15.11437 908	10.34295 046	19.12858 661	18.48830 886	17.60689 903	26.52106 084	13.48385 074	17.97385 621	11.77730 193	10.83658 431

hsa-miR-18a-5p	16.19433 198	23.83419 689	17.97385 621	21.23026 674	17.53453 773	14.13811 854	17.24757 456	21.84087 363	15.67889 621	20.42483 66	10.70663 812	10.83658 431
hsa-miR-28-5p	17.54385 965	14.85319 516	13.48039 216	14.15351 116	17.53453 773	13.05057 096	16.88825 009	13.52054 082	13.48385 074	10.62091 503	12.84796 574	11.27004 768
hsa-miR-24-3p	10.34637 877	15.88946 459	11.43790 85	10.88731 628	19.12858 661	14.13811 854	12.93568 092	17.16068 643	10.97522 734	9.803921 569	11.77730 193	11.27004 768
hsa-miR-19b-3p	15.74448 943	21.07081 174	11.43790 85	16.33097 441	11.68969 182	13.59434 475	10.77973 41	25.48101 924	12.22953 904	8.986928 105	11.77730 193	11.27004 768
hsa-miR-107	20.24291 498	19.34369 603	16.74836 601	15.78660 86	21.78533 475	17.40076 128	11.13905 857	29.64118 565	13.79742 866	14.70588 235	6.423982 869	11.27004 768
hsa-miR-200a-3p	18.44354 476	17.61658 031	14.29738 562	19.59716 93	22.84803 401	22.29472 539	22.63744 161	28.60114 405	19.12825 337	15.52287 582	10.70663 812	11.70351 105
hsa-miR-106b-5p	19.79307 242	25.90673 575	10.62091 503	16.33097 441	19.65993 624	24.46982 055	17.60689 903	21.32085 283	15.36531 828	13.88888 889	9.635974 304	12.13697 443
hsa-miR-141-3p	26.99055 331	32.46977 547	26.55228 758	27.76265 651	28.16153 029	28.82001 088	28.74595 76	40.04160 166	19.12825 337	24.50980 392	13.91862 955	13.43736 454
hsa-miR-222-3p	20.24291 498	17.61658 031	17.97385 621	10.88731 628	22.84803 401	18.48830 886	15.45095 221	19.76079 043	14.11100 659	11.43790 85	16.05995 717	13.87082 792
hsa-let-7e-5p	16.19433 198	20.37996 546	15.93137 255	21.77463 255	28.16153 029	22.29472 539	23.35609 055	27.04108 164	8.780181 875	16.33986 928	9.635974 304	13.87082 792
hsa-miR-98-5p	22.49212 776	21.41623 489	20.83333 333	28.30702 232	30.28692 88	26.10114 192	28.38663 313	35.36141 446	18.18751 96	28.59477 124	17.13062 099	14.73775 466
hsa-miR-1180-3p	14.84480 432	18.99827 288	12.66339 869	17.41970 604	18.06588 735	16.31321 37	16.16960 115	18.72074 883	14.11100 659	13.88888 889	13.91862 955	14.73775 466
hsa-miR-130a-3p	19.79307 242	23.83419 689	22.05882 353	13.06477 953	15.94048 884	23.92604 676	22.99676 608	28.60114 405	13.17027 281	17.97385 621	6.423982 869	15.17121 803
hsa-miR-99b-5p	37.33693 207	34.19689 119	28.18627 451	31.02885 139	30.81827 843	26.64491 572	26.23068 631	39.00156 006	16.93320 79	25.32679 739	19.27194 861	16.03814 478
hsa-miR-181a-5p	35.08771 93	27.28842 832	18.79084 967	33.75068 046	41.44527 099	26.64491 572	37.72906 935	45.76183 047	20.38256 507	23.69281 046	23.55460 385	17.77199 827
hsa-miR-23b-3p	34.63787 674	33.50604 491	23.69281 046	27.21829 069	36.13177 471	23.92604 676	24.79338 843	36.92147 686	23.51834 431	26.14379 085	31.04925 054	19.07238 838

hsa-miR-27b-3p	30.13945 119	33.85146 805	25.73529 412	26.12955 906	29.22422 954	25.01359 434	24.07473 949	24.96099 844	20.06898 714	18.79084 967	7.494646 681	19.50585 176
hsa-miR-19a-3p	20.24291 498	46.63212 435	29.41176 471	31.02885 139	27.63018 066	33.17020 12	21.20014 373	39.52158 086	22.89118 846	30.22875 817	20.34261 242	19.93931 513
hsa-miR-15a-5p	23.84165 542	32.12435 233	20.42483 66	25.58519 325	29.75557 917	25.55736 813	24.07473 949	26.52106 084	18.50109 752	28.59477 124	20.34261 242	24.27394 885
hsa-miR-221-3p	62.97795 771	57.68566 494	38.80718 954	52.80348 394	38.78852 285	36.43284 394	29.10528 207	56.68226 729	32.92568 203	41.66666 667	32.11991 435	25.14087 56
hsa-let-7i-5p	58.92937 472	51.46804 836	42.48366 013	47.35982 58	52.07226 355	53.83360 522	47.79015 451	67.08268 331	26.34054 563	30.22875 817	22.48394 004	25.57433 897
hsa-miR-29a-3p	57.13000 45	69.43005 181	49.83660 131	54.98094 72	46.75876 727	47.30831 974	41.68163 852	68.12272 491	26.65412 355	43.30065 359	21.41327 623	25.57433 897
hsa-miR-9-5p	32.83850 652	39.03281 52	32.67973 856	29.39575 395	31.88097 768	33.17020 12	29.82393 101	40.04160 166	29.78990 279	37.58169 935	22.48394 004	26.00780 234
hsa-miR-125a-5p	46.33378 318	50.08635 579	43.30065 359	48.44855 743	49.41551 541	46.76454 595	53.53934 603	73.84295 372	38.25650 674	40.84967 32	17.13062 099	27.74165 583
hsa-miR-106a-5p+hsa-miR-17-5p	71.07512 371	71.84801 382	56.78104 575	62.60206 859	66.95005 313	62.53398 586	61.08515 99	80.60322 413	49.85888 993	50.65359 477	34.26124 197	28.17511 92
hsa-miR-32-5p	38.68645 974	31.08808 29	35.94771 242	44.09363 092	36.13177 471	38.06416 531	25.51203 737	36.40145 606	29.47632 487	46.56862 745	23.55460 385	29.47550 932
hsa-let-7g-5p	82.77103 014	77.02936 097	74.34640 523	64.77953 185	83.42189 16	72.32191 408	103.1261 229	120.6448 258	49.23173 409	32.67973 856	24.62526 767	32.50975 293
hsa-miR-200b-3p	42.28520 018	48.01381 693	42.89215 686	24.49646 162	45.69606 801	28.27623 709	45.27488 322	48.88195 528	35.74788 335	32.67973 856	28.90792 291	32.94321 63
hsa-miR-7-5p	53.08142 15	41.45077 72	44.52614 379	41.91616 766	61.63655 685	45.67699 837	59.28853 755	70.72282 891	40.13797 429	39.21568 627	46.03854 39	37.27785 002
hsa-miR-135b-5p	54.43094 917	49.74093 264	50.24509 804	56.61404 464	61.63655 685	57.09624 796	52.82069 709	65.00260 01	43.27375 353	53.10457 516	31.04925 054	40.31209 363
hsa-let-7d-5p	90.86819 613	84.62867 012	80.47385 621	93.08655 416	104.6758 767	67.97172 376	74.73948 976	103.4841 394	53.30824 71	72.71241 83	48.17987 152	44.21326 398
hsa-miR-15b-5p	69.27575 349	86.70120 898	69.85294 118	82.19923 789	78.63974 495	64.16530 723	56.05461 732	78.52314 093	47.97742 239	59.64052 288	35.33190 578	44.21326 398

hsa-miR-25-3p	94.46693 657	103.6269 43	84.96732 026	76.21121 394	104.6758 767	101.6856 987	92.70571 326	113.8845 554	67.41925 368	88.23529 412	48.17987 152	67.18682 271
hsa-miR-374a-5p	89.06882 591	98.10017 271	77.20588 235	86.00979 858	115.3028 693	119.6302 338	97.73625 584	109.2043 682	83.72530 574	99.67320 261	64.23982 869	80.19072 388
hsa-miR-125b-5p	173.1893 837	197.5820 38	148.6928 105	174.7414 262	177.4707 758	136.4872 213	120.7330 219	197.0878 835	108.8115 397	142.9738 562	111.3490 364	94.49501 517
hsa-miR-200c-3p	129.5546 559	143.6960 276	122.5490 196	127.3816 004	151.4346 44	136.4872 213	112.4685 591	139.8855 954	107.8708 059	107.0261 438	92.07708 779	94.49501 517
hsa-miR-23a-3p	123.2568 601	108.1174 439	110.7026 144	100.7076 756	143.9957 492	110.3860 794	151.2756 019	178.3671 347	99.40420 194	144.6078 431	110.2783 726	97.52925 878
hsa-let-7b-5p	139.9010 346	141.6234 888	122.9575 163	127.3816 004	173.7513 284	166.3947 798	163.4926 338	222.5689 028	111.3201 631	137.2549 02	96.35974 304	98.82964 889
hsa-miR-93-5p	127.3054 431	150.9499 136	114.7875 817	143.7125 749	153.5600 425	135.3996 737	116.0618 038	175.2470 099	106.3029 163	131.5359 477	73.87580 3	100.5635 024
hsa-miR-191-5p	116.5092 218	133.6787 565	116.4215 686	117.5830 158	153.0286 929	151.1691 136	140.1365 433	177.8471 139	114.1423 644	141.3398 693	119.9143 469	123.9705 245
hsa-miR-21-5p	309.0418 354	291.1917 098	279.0032 68	269.4610 778	370.3506 908	278.9559 543	329.5005 39	428.4971 399	172.4678 583	219.7712 418	115.6316 916	133.5067 187
hsa-miR-100-5p	219.0733 243	243.8687 392	212.0098 039	187.2618 4	256.1105 207	217.5095 16	227.0930 65	303.6921 477	190.6553 779	236.1111 111	164.8822 27	166.8833 984
hsa-miR-4454+h sa-miR-7975	1262.708 052	342.6597 582	336.6013 072	344.5835 602	359.1923 486	384.4480 696	359.6837 945	456.5782 631	244.5907 808	245.9150 327	217.3447 537	186.3892 501
hsa-let-7a-5p	808.3670 715	812.0898 1	736.1111 111	688.6227 545	977.1519 66	963.0233 823	948.6166 008	1136.245 45	546.5663 217	714.0522 876	431.4775 161	465.1061 985
hsa-miR-29b-3p	805.6680 162	890.5008 636	747.9575 163	749.0473 598	1026.567 481	930.9407 287	911.9655 049	1073.842 954	693.9479 461	776.9607 843	474.3040 685	578.2401 387