

Supplemental material

Circulating miR-375 correlates with response of human individuals to short-term cold exposure

Table S1: Demographical characteristics of the samples used in the array

	Male	Female
included patients (N)	12	12
Age (y), mean (range)	28.0 (23-39)	26.0 (21-30)
Body mass index, $\pm$ SEM	23.2 $\pm$ 0.44	21.7 $\pm$ 0.63

Table S2: Demographical characteristics of serum samples used in the validation assays

	Individuals
included patients (N)	169
Age (y), mean (range)	26.1 (18-52)
Gender (f:m)	97:72
Body mass index, $\pm$ SEM	24.6 $\pm$ 0.37

Table S3: Analyzed data of the pooled samples (female/ male) using the Human Serum/Plasma Focus, miRCURY LNA miRNA Focus PCR Panel. Data were normalized to the internal housekeeping miRNA genes of the array using the $2^{-\Delta\Delta C_q}$ method. AC= after cold exposure, BC= before cold exposure, FOC = fold of change

	Male			Female		
miRNA	BC	AC	FOC	BC	AC	FOC
hsa-let-7a-5p	0.375	0.765	2.042	0.519	0.537	1.035
hsa-let-7b-3p	0.018	0.026	1.404	0.026	0.019	0.717
hsa-let-7b-5p	1.458	1.278	0.877	0.843	0.923	1.094
hsa-let-7c-5p	0.251	0.826	3.294	0.484	0.564	1.165
hsa-let-7d-3p	0.111	0.272	2.462	0.148	0.175	1.181
hsa-let-7d-5p	0.158	0.436	2.770	0.355	0.481	1.357
hsa-let-7e-5p	0.127	0.274	2.158	0.209	0.256	1.223
hsa-let-7f-5p	0.014	0.015	1.072	0.018	0.017	0.953
hsa-let-7g-5p	0.284	0.596	2.099	0.494	0.755	1.526
hsa-let-7i-5p	0.443	0.962	2.173	1.113	0.982	0.883
hsa-miR-1	N.A.	0.007	N.A.	N.A.	N.A.	N.A.
hsa-miR-7-1-3p	N.A.	0.014	N.A.	N.A.	N.A.	N.A.
hsa-miR-7-5p	0.029	0.037	1.266	0.063	0.045	0.712
hsa-miR-10b-5p	0.058	0.149	2.549	0.093	0.083	0.895
hsa-miR-15a-5p	0.891	1.520	1.705	1.530	1.574	1.028
hsa-miR-15b-3p	0.030	0.072	2.378	0.041	0.064	1.548
hsa-miR-15b-5p	0.605	0.843	1.395	0.765	0.719	0.940
hsa-miR-16-2-3p	0.042	0.060	1.424	0.053	0.075	1.414
hsa-miR-16-5p	14.867	30.358	2.042	19.481	24.830	1.275
hsa-miR-17-5p	0.744	1.698	2.282	1.438	1.389	0.966
hsa-miR-18a-5p	0.112	0.271	2.412	0.232	0.204	0.877
hsa-miR-18b-5p	0.061	0.093	1.537	0.096	0.101	1.050
hsa-miR-19a-3p	3.640	4.640	1.275	4.420	4.482	1.014
hsa-miR-19b-3p	5.042	4.737	0.940	4.904	4.153	0.847
hsa-miR-20a-5p	2.778	3.040	1.094	2.352	2.574	1.094
hsa-miR-20b-5p	0.042	0.105	2.479	0.094	0.092	0.979
hsa-miR-21-5p	3.665	5.007	1.366	3.147	3.019	0.959
hsa-miR-22-3p	1.520	0.996	0.655	1.235	1.105	0.895
hsa-miR-22-5p	0.014	0.022	1.569	0.045	0.022	0.486
hsa-miR-23b-3p	0.704	1.951	2.770	1.342	1.201	0.895
hsa-miR-24-3p	1.951	3.444	1.765	1.201	2.683	2.235
hsa-miR-25-3p	4.672	5.256	1.125	2.241	3.061	1.366
hsa-miR-26a-5p	0.749	1.758	2.346	1.408	1.520	1.079
hsa-miR-26b-5p	0.404	0.714	1.765	0.584	0.749	1.283
hsa-miR-27a-3p	0.605	1.448	2.395	1.113	1.105	0.993
hsa-miR-27b-3p	0.271	0.820	3.031	0.560	0.537	0.959
hsa-miR-28-3p	0.029	0.078	2.694	0.045	0.071	1.580
hsa-miR-28-5p	0.017	0.062	3.555	0.043	0.051	1.165
hsa-miR-29a-3p	0.288	0.377	1.310	0.352	0.288	0.818
hsa-miR-29b-3p	0.020	0.045	2.189	0.026	0.037	1.395
hsa-miR-29c-3p	0.560	0.572	1.021	0.609	0.657	1.079
hsa-miR-30a-5p	0.063	0.163	2.603	0.124	0.124	0.993
hsa-miR-30b-5p	0.458	0.545	1.189	0.385	0.622	1.613

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hsa-miR-30c-5p	0.292	0.605	2.071	0.263	0.370	1.404
hsa-miR-30d-5p	0.396	1.017	2.567	0.605	0.787	1.301
hsa-miR-30e-3p	0.016	0.035	2.235	0.023	0.026	1.125
hsa-miR-30e-5p	0.294	0.879	2.990	0.600	0.635	1.057
hsa-miR-32-5p	0.028	0.044	1.558	0.073	0.065	0.889
hsa-miR-33a-5p	0.027	0.043	1.580	0.078	0.078	1.000
hsa-miR-34a-5p	0.008	0.010	1.283	0.012	0.023	2.028
hsa-miR-92a-3p	9.088	11.503	1.266	8.901	10.296	1.157
hsa-miR-92b-3p	0.010	0.012	1.117	0.011	0.013	1.149
hsa-miR-93-3p	0.058	0.056	0.966	0.032	0.019	0.582
hsa-miR-99a-5p	0.034	0.134	3.945	0.074	0.082	1.117
hsa-miR-99b-5p	0.027	0.052	1.972	0.058	0.045	0.785
hsa-miR-101-3p	1.113	1.468	1.320	0.996	1.017	1.021
hsa-miR-106a-5p	0.982	1.663	1.693	1.541	1.489	0.966
hsa-miR-106b-3p	0.013	0.024	1.919	0.017	0.011	0.683
hsa-miR-106b-5p	0.501	1.296	2.585	0.787	1.038	1.320
hsa-miR-107	0.652	1.574	2.412	1.287	1.489	1.157
hsa-miR-122-5p	0.709	0.820	1.157	0.765	0.630	0.824
hsa-miR-125a-5p	0.160	0.247	1.548	0.184	0.190	1.035
hsa-miR-125b-5p	0.082	0.226	2.770	0.140	0.122	0.871
hsa-miR-126-3p	2.034	2.435	1.197	1.845	2.105	1.141
hsa-miR-126-5p	0.391	0.317	0.812	0.284	0.231	0.812
hsa-miR-127-3p	0.005	0.011	2.362	0.014	0.017	1.197
hsa-miR-128-3p	0.017	0.029	1.682	0.051	0.035	0.688
hsa-miR-130a-3p	0.137	0.244	1.778	0.372	0.402	1.079
hsa-miR-130b-3p	0.027	0.036	1.347	0.045	0.048	1.057
hsa-miR-132-3p	0.013	0.032	2.497	0.022	0.025	1.149
hsa-miR-133a-3p	0.018	0.040	2.297	0.071	0.038	0.525
hsa-miR-133b	N.A.	0.014	N.A.	N.A.	0.013	N.A.
hsa-miR-136-3p	N.A.	0.007	N.A.	N.A.	0.011	N.A.
hsa-miR-136-5p	0.005	0.021	4.028	0.011	0.022	2.014
hsa-miR-139-5p	0.014	0.030	2.144	0.035	0.037	1.072
hsa-miR-140-3p	0.428	0.685	1.602	0.505	0.541	1.072
hsa-miR-140-5p	0.049	0.071	1.444	0.043	0.037	0.865
hsa-miR-141-3p	0.007	0.010	1.395	0.010	0.002	0.193
hsa-miR-142-3p	1.858	2.241	1.206	2.385	1.992	0.835
hsa-miR-143-3p	0.061	0.217	3.555	0.130	0.121	0.933
hsa-miR-144-3p	2.778	2.352	0.847	4.124	3.742	0.908
hsa-miR-144-5p	0.030	0.057	1.892	0.036	0.083	2.329
hsa-miR-145-5p	0.153	0.484	3.160	0.765	0.605	0.790
hsa-miR-146a-5p	0.251	0.484	1.932	0.385	0.422	1.094
hsa-miR-146b-5p	0.021	0.072	3.458	0.018	0.065	3.555
hsa-miR-148a-3p	0.121	0.280	2.313	0.242	0.195	0.807
hsa-miR-148b-3p	0.198	0.161	0.812	0.127	0.181	1.424
hsa-miR-150-5p	1.640	3.326	2.028	1.629	2.164	1.329
hsa-miR-148b-3p	0.198	0.161	0.812	0.127	0.181	1.424
hsa-miR-150-5p	1.640	3.326	2.028	1.629	2.164	1.329
hsa-miR-151a-3p	0.125	0.218	1.741	0.103	0.153	1.495

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hsa-miR-151a-5p	0.186	0.226	1.214	0.274	0.242	0.883
hsa-miR-151a-5p	0.186	0.226	1.214	0.274	0.242	0.883
hsa-miR-152-3p	0.074	0.143	1.932	0.185	0.127	0.688
hsa-miR-154-5p	0.007	0.013	1.815	0.013	0.008	0.620
hsa-miR-155-5p	0.014	0.013	0.979	0.012	0.012	0.979
hsa-miR-181a-5p	0.090	0.220	2.445	0.140	0.260	1.853
hsa-miR-185-5p	0.630	2.452	3.891	1.113	1.323	1.189
hsa-miR-186-5p	0.090	0.138	1.537	0.122	0.107	0.877
hsa-miR-192-5p	0.124	0.160	1.283	0.132	0.142	1.072
hsa-miR-193a-5p	0.044	0.090	2.071	0.047	0.057	1.223
hsa-miR-194-5p	0.082	0.114	1.395	0.119	0.140	1.173
hsa-miR-195-5p	0.005	0.009	1.866	0.013	0.013	1.050
hsa-miR-197-3p	0.208	0.580	2.789	0.184	0.315	1.717
hsa-miR-199a-3p	0.204	0.385	1.892	0.471	0.304	0.646
hsa-miR-199a-5p	0.064	0.090	1.404	0.162	0.148	0.914
hsa-miR-200a-3p	N.A	N.A	N.A	N.A	N.A	N.A
hsa-miR-200c-3p	0.010	0.021	2.129	0.007	0.013	2.014
hsa-miR-205-5p	0.020	0.059	2.949	0.042	0.052	1.257
hsa-miR-208a-3p	N.A	N.A	N.A	N.A	N.A	N.A
hsa-miR-210-3p	0.024	0.045	1.840	0.052	0.072	1.404
hsa-miR-215-5p	0.109	0.128	1.173	0.103	0.117	1.141
hsa-miR-221-3p	0.300	0.690	2.297	0.488	0.580	1.189
hsa-miR-222-3p	0.095	0.300	3.160	0.194	0.226	1.165
hsa-miR-223-3p	13.123	42.341	3.227	22.848	25.528	1.117
hsa-miR-223-5p	0.027	0.058	2.114	0.022	0.026	1.181
hsa-miR-301a-3p	0.030	0.087	2.908	0.059	0.064	1.094
hsa-miR-320a	0.792	1.499	1.892	1.252	1.448	1.157
hsa-miR-320b	0.375	0.709	1.892	0.588	0.739	1.257
hsa-miR-320c	0.440	0.873	1.986	0.739	0.949	1.283
hsa-miR-326	0.037	0.044	1.181	0.147	0.090	0.611
hsa-miR-328-3p	0.071	0.108	1.505	0.119	0.153	1.292
hsa-miR-331-3p	0.057	0.074	1.292	0.066	0.084	1.283
hsa-miR-335-3p	0.011	0.024	2.144	0.012	0.012	1.014
hsa-miR-335-5p	0.014	0.025	1.753	0.006	0.018	3.160
hsa-miR-338-3p	0.052	0.093	1.778	0.095	0.090	0.953
hsa-miR-339-3p	NA	0.018	NA	NA	0.013	NA
hsa-miR-339-5p	0.029	0.050	1.717	0.226	0.089	0.392
hsa-miR-342-3p	0.370	0.635	1.717	0.388	0.622	1.602
hsa-miR-361-5p	0.049	0.272	5.540	0.085	0.153	1.803
hsa-miR-362-3p	0.004	0.013	3.317	0.013	0.021	1.636
hsa-miR-363-3p	0.117	0.244	2.085	0.189	0.197	1.042
hsa-miR-365a-3p	0.022	0.031	1.366	0.021	0.022	1.014
hsa-miR-374a-5p	0.232	0.385	1.659	0.284	0.261	0.920
hsa-miR-374b-5p	0.137	0.209	1.526	0.138	0.124	0.901
hsa-miR-375	0.074	0.036	0.493	0.083	0.041	0.497
hsa-miR-376a-3p	0.034	0.075	2.219	0.067	0.077	1.149
hsa-miR-376c-3p	0.030	0.064	2.099	0.052	0.074	1.404
hsa-miR-382-5p	0.024	0.042	1.765	0.017	0.037	2.158

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hsa-miR-409-3p	0.023	0.048	2.071	0.025	0.017	0.683
hsa-miR-421	0.011	0.013	1.181	0.011	0.021	1.879
hsa-miR-423-3p	0.120	0.335	2.789	0.635	0.388	0.611
hsa-miR-424-5p	0.292	0.215	0.737	0.212	0.147	0.693
hsa-miR-425-3p	0.028	0.085	3.053	0.080	0.060	0.747
hsa-miR-454-3p	0.024	0.049	2.042	0.037	0.066	1.765
hsa-miR-483-5p	N.A.	0.012	N.A.	N.A.	N.A.	N.A.
hsa-miR-484	0.335	0.798	2.378	0.734	0.639	0.871
hsa-miR-485-3p	0.011	0.021	1.945	0.012	0.022	1.815
hsa-miR-486-5p	14.162	13.214	0.933	6.840	8.658	1.266
hsa-miR-495-3p	0.009	N.A.	N.A.	0.011	N.A.	N.A.
hsa-miR-497-5p	0.009	0.016	1.866	0.034	0.015	0.426
hsa-miR-501-3p	0.010	0.018	1.741	0.011	0.007	0.651
hsa-miR-502-3p	0.020	0.026	1.301	0.029	0.035	1.189
hsa-miR-505-3p	0.018	0.053	2.969	0.023	0.022	0.946
hsa-miR-532-3p	0.029	0.087	2.969	0.052	0.052	0.993
hsa-miR-532-5p	0.029	0.081	2.809	0.064	0.099	1.558
hsa-miR-543	N.A.	0.010	N.A.	N.A.	N.A.	N.A.
hsa-miR-574-3p	0.021	0.027	1.292	0.021	0.042	1.986
hsa-miR-584-5p	0.028	0.051	1.778	0.034	0.050	1.474
hsa-miR-590-5p	0.035	0.050	1.434	0.026	0.061	2.362
hsa-miR-629-5p	N.A.	0.010	N.A.	N.A.	0.012	N.A.
hsa-miR-652-3p	0.128	0.311	2.428	0.167	0.265	1.591
hsa-miR-660-5p	0.041	0.114	2.751	0.054	0.058	1.064
hsa-miR-766-3p	0.036	0.043	1.197	0.075	0.061	0.807
hsa-miR-874-3p	0.013	0.022	1.717	0.034	0.040	1.157
hsa-miR-877-5p	0.008	0.009	1.028	N.A.	0.009	N.A.
hsa-miR-885-5p	0.013	0.026	1.972	0.051	0.035	0.683
hsa-miR-1260a	0.239	0.443	1.853	0.675	0.588	0.871
hsa-miR-2110	0.011	0.026	2.250	0.017	0.022	1.310

TableS4: Go analysis of miR-375 related pathways

GO Category	p-value	Genes
ion binding	2.21E-04	167
gene expression	2.73E-04	25
Fc-epsilon receptor signaling pathway	5.56E-04	11
molecular function	9.77E-04	467
neurotrophin TRK receptor signaling pathway	3.74E-03	13
biological process	3.74E-03	458
cellular component	8.57E-03	468
regulation of protein kinase A signaling	1.69E-02	4
muscle cell differentiation	2.20E-02	6
relaxation of cardiac muscle	2.73E-02	4
cellular component assembly	3.60E-02	43
cell-cell signaling	3.79E-02	26
epidermal growth factor receptor signaling pathway	4.95E-02	11