

Improved low-rank matrix recovery method for predicting miRNA-disease association

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Supplementary Information

Supplementary Table 1. The top 50 breast cancer-related miRNAs candidates predicted by ILRMR and the confirmation of these associations. Forty-eight of the top 50 potential breast cancer miRNAs candidates have been confirmed based on the update HMDD, dbDEMC and mir2disease.

rank	miRNA name	evidences	rank	miRNA name	evidences
1	hsa-mir-340	HMDD,dbDEMC	26	hsa-mir-193b	HMDD, dbDEMC, miR2disease
2	hsa-let-7i	HMDD,dbDEMC,miR2disease	27	hsa-mir-520h	HMDD
3	hsa-mir-301a	HMDD	28	hsa-mir-203	HMDD,miR2disease,dbDEMC
4	hsa-let-7b	HMDD, dbDEMC	29	hsa-mir-96	HMDD,dbDEMC, miR2disease
5	hsa-mir-328	HMDD,dbDEMC, miR2disease	30	hsa-mir-191	HMDD, dbDEMC, miR2disease
6	hsa-mir-99a	dbDEMC	31	hsa-mir-338	HMDD,dbDEMC
7	hsa-mir-101	HMDD,dbDEMC, miR2disease	32	hsa-let-7c	HMDD,dbDEMC
8	hsa-mir-7g	HMDD,dbDEMC	33	has-mir-27a	HMDD, dbDEMC, miR2Disease
9	hsa-mir-301b	HMDD	34	hsa-mir-31	HMDD, dbDEMC, miR2disease
10	hsa-mir-28	dbDEMC	35	hsa-mir-16	HMDD, dbDEMC
11	hsa-mir-29c	HMDD,dbDEMC,miR2disease	36	hsa-mir-27b	HMDD, dbDEMC
12	hsa-mir-92a	HMDD	37	hsa-mir-98	dbDEMC, miR2disease
13	hsa-mir-24	HMDD,dbDEMC	38	hsa-mir-212	dbDEMC
14	hsa-mir-183	HMDD,dbDEMC	39	has-mir-126	HMDD,dbDEMC,miR2Disease,
15	hsa-let-140	HMDD,dbDEMC	40	hsa-mir-542	Unconfirmed
16	hsa-mir-152	HMDD,dbDEMC, miR2disease	41	hsa-mir-372	dbDEMC
17	hsa-mir-612	dbDEMC	42	hsa-mir-181a	HMDD,dbDEMC, miR2Disease
18	hsa-mir-181c	dbDEMC	43	has-mir-373	HMDD,dbDEMC, miR2Disease
19	hsa-mir-18b	HMDD,dbDEMC	44	hsa-mir-182	HMDD,dbDEMC, miR2Disease
20	hsa-mir-224	HMDD,dbDEMC,	45	hsa-mir-106a	dbDEMC
21	has-mir-100	dbDEMC	46	hsa-mir-137	HMDD,dbDEMC
22	hsa-mir-15b	dbDEMC	47	hsa-mir-514	Unconfirmed
23	hsa-mir-182	HMDD,dbDEMC,miR2Disease	48	hsa-mir-130a	dbDEMC
24	hsa-mir-128b	miR2Disease	49	has-mir-150	dbDEMC
25	has-mir-22	HMDD,dbDEMC,miR2Disease	50	hsa-mir-124	HMDD, dbDEMC, miR2disease

Supplementary Table 2. The top 50 lung cancer-related miRNAs predicted by ILRMR and the confirmation of these associations. Forty-eight of the top 50 potential lung cancer miRNAs candidates have been confirmed based on the update HMDD, dbDEMC and mir2disease.

rank	miRNA name	evidences	rank	miRNA name	evidences
1	hsa-let-7g	HMDD,dbDEMC,miR2disease	26	hsa-mir-302d	dbDEMC
2	hsa-mir-140	HMDD,dbDEMC,miR2disease	27	hsa-mir-145	HMDD, dbDEMC
3	hsa-mir-195	dbDEMC, miR2disease	28	hsa-mir-27a	HMDD, dbDEMC
4	hsa-mir-17	HMDD, miR2disease	29	hsa-mir-16	dbDEMC, miR2disease
5	hsa-mir-218	HMDD,dbDEMC,miR2disease	30	hsa-mir-124	HMDD, miR2disease
6	hsa-mir-34b	HMDD, dbDEMC	31	hsa-mir-21	HMDD,dbDEMC,miR2disease
7	hsa-mir-103	HMDD,dbDEMC	32	hsa-mir-29a	HMDD,dbDEMC,miR2disease
8	hsa-mir-429	dbDEMC, miR2disease	33	Has-mir-320	dbDEMC
9	hsa-mir-130a	dbDEMC, miR2disease	34	hsa-mir-203	HMDD,dbDEMC,miR2disease
10	hsa-mir-15b	dbDEMC	35	hsa-mir-130b	dbDEMC
11	hsa-mir-221	HMDD,dbDEMC	36	hsa-mir-302c	dbDEMC
12	hsa-mir-9	HMDD, miR2disease	37	hsa-mir-185	HMDD, dbDEMC
13	hsa-mir-22	HMDD, miR2disease	38	hsa-mir-155	HMDD,dbDEMC,miR2disease
14	hsa-mir-135b	HMDD, dbDEMC	39	hsa-mir-99a	dbDEMC, miR2disease
15	hsa-mir-92a	HMDD	40	hsa-mir-34a	HMDD, dbDEMC
16	hsa-mir-146a	HMDD,dbDEMC,miR2disease	41	hsa-mir-20b	dbDEMC
17	hsa-mir-7	HMDD,dbDEMC,miR2disease	42	hsa-mir-18b	HMDD
18	hsa-mir-24	HMDD, miR2disease	43	hsa-mir-18a	HMDD,dbDEMC,miR2disease
19	hsa-mir-10b	HMDD, dbDEMC	44	hsa-mir-373	dbDEMC
20	hsa-mir-25	HMDD, dbDEMC	45	hsa-mir-222	HMDD,dbDEMC
21	hsa-mir-27b	HMDD, miR2disease	46	hsa-mir-193	HMDD, dbDEMC
22	hsa-mir-451	dbDEMC, miR2disease	47	Has-mir-532	Unconfirmed
23	hsa-mir-423	miR2disease	48	hsa-mir-135a	HMDD, dbDEMC
24	hsa-mir-106a	HMDD, miR2disease	49	has-mir-107	HMDD, dbDEMC
25	hsa-let-7f	HMDD, , miR2disease	50	has-mir-210	HMDD,dbDEMC,miR2disease

Supplementary Table 3. The top 50 breast cancer-related miRNAs candidates predicted by ILRMR and the confirmation of these associations. Forty-seven of the top 50 potential breast cancer miRNAs candidates have been confirmed based on the update HMDD, dbDEMC and mir2disease.

rank	miRNA name	evidences	rank	miRNA name	evidences
1	hsa-mir-200a	HMDD, miR2disease	26	has-mir-608	HMDD, dbDEMC
2	hsa-mir-205	HMDD, miR2disease	27	hsa-mir-299	dbDEMC
3	hsa-let-7i	HMDD,dbDEMC,miR2disease	28	has-mir-367	HMDD
4	hsa-mir-99a	dbDEMC	29	hsa-mir-182	HMDD,dbDEMC,miR2Disease
5	hsa-mir-206	HMDD, miR2disease	30	hsa-mir-199a	HMDD,dbDEMC
6	hsa-mir-17	HMDD, miR2disease	31	hsa-let-7a	HMDD, miR2disease

7	hsa-let-7b	HMDD, dbDEMC	32	hsa-mir-98	dbDEMC, miR2disease
8	hsa-mir-29c	HMDD,dbDEMC, miR2disease	33	hsa-mir-152	HMDD,dbDEMC, miR2disease
9	hsa-mir-125a	HMDD, miR2disease	34	hsa-mir-18b	HMDD,dbDEMC
10	hsa-let-7f	HMDD, miR2disease	35	hsa-mir-132	HMDD,dbDEMC
11	hsa-let-7d	HMDD, miR2disease	36	hsa-mir-362	Unconfirmed
12	hsa-mir-200c	HMDD , miR2disease	37	hsa-mir-24	HMDD,dbDEMC
13	hsa-mir-340	HMDD,dbDEMC	38	hsa-mir-130b	dbDEMC
14	hsa-mir-101	HMDD,dbDEMC,miR2disease	39	hsa-mir-125b	HMDD, miR2disease
15	hsa-mir-181c	dbDEMC	40	hsa-mir-27b	HMDD, dbDEMC
16	hsa-mir-199b	HMDD,dbDEMC	41	hsa-mir-15b	dbDEMC
17	hsa-mir-301b	HMDD	42	hsa-mir-542	Unconfirmed
18	has-mir-27a	HMDD,dbDEMC,miR2Disease	43	hsa-mir-223	HMDD, dbDEMC
19	hsa-mir-144	dbDEMC	44	hsa-mir-200b	HMDD, miR2disease
20	hsa-mir-331	dbDEMC	45	hsa-mir-454	Unconfirmed
21	hsa-let-7g	HMDD,dbDEMC	46	hsa-mir-31	HMDD,dbDEMC,miR2disease
22	has-mir-126	HMDD,dbDEMC,miR2Disease	47	hsa-mir-520b	HMDD,dbDEMC
23	has-mir-148a	HMDD,dbDEMC,miR2Disease	48	hsa-mir-106a	HMDD,dbDEMC
24	hsa-mir-193b	HMDD,dbDEMC,miR2disease	49	hsa-mir-181a	HMDD,miR2Disease,dbDEMC
25	hsa-mir-429	HMDD, miR2disease	50	hsa-miR-150	HMDD, dbDEMC

Supplementary Table 4. The top 50 novel miRNA-diseases associations predicted by ILRMR and the confirmation of these associations.

rank	diseases name	miRNA name	evidences
1	Colonic Neoplasms	hsa-mir-183	dbDEMC,miR2Disease
2	Lung Neoplasms	hsa-mir-542	HMDD
3	Breast Neoplasms	hsa-let-7i	HMDD,dbDEMC,miR2disease
4	Stomach Neoplasms	hsa-mir-451	HMDD, miR2Disease
5	Lung Neoplasms	hsa-mir-222	HMDD,dbDEMC,miR2disease
6	Ovarian Neoplasms	hsa-mir-143	miR2Disease
7	Carcinoma, Hepatocellular	hsa-mir-155	HMDD,dbDEMC,miR2Disease
8	Breast Neoplasms	hsa-mir-301a	HMDD
9	Neoplasms	hsa-mir-222	HMDD, dbDEMC
10	Lung Neoplasms	hsa-mir-204	miR2disease
11	Colonic Neoplasms	hsa-mir-181b	dbDEMC,miR2Disease
12	Breast Neoplasms	hsa-mir-92a	HMDD
13	Melanoma	hsa-mir-141	HMDD, miR2disease
14	Lung Neoplasms	hsa-mir-7	HMDD,miR2disease
15	Breast Neoplasms	hsa-mir-301b	HMDD
16	Colorectal Neoplasms	hsa-mir-137	HMDD,miR2Disease
17	Breast Neoplasms	hsa-mir-612	dbDEMC
18	Ovarian Neoplasms	hsa-let-7d	HMDD, miR2disease
19	Pancreatic Neoplasms	hsa-mir-18a	HMDD,miR2Disease
20	Breast Neoplasms	hsa-let-7b	HMDD, dbDEMC

21	Carcinoma, Hepatocellular	hsa-mir-155	HMDD,dbDEMC,miR2Disease
22	Colonic Neoplasms	hsa-mir-214	dbDEMC
23	Adenocarcinoma	hsa-mir-363	unconfirmed
24	Neoplasms	hsa-mir-125b	HMDD,dbDEMC
25	Ovarian Neoplasms	hsa-mir-34a	HMDD
26	Breast Neoplasms	hsa-mir-128b	miR2Disease
27	Prostatic Neoplasms	hsa-mir-15b	HMDD,dbDEMC
28	Breast Neoplasms	hsa-mir-130a	dbDEMC
29	Carcinoma, Hepatocellular	hsa-mir-29b	HMDD,dbDEMC
30	Breast Neoplasms	hsa-mir-372	dbDEMC
31	Ovarian Neoplasms	hsa-mir-373	miR2Disease
32	Lung Neoplasms	hsa-mir-93	HMDD,dbDEMC,miR2disease
33	Neoplasms	hsa-mir-20b	HMDD
34	Breast Neoplasms	hsa-let-7c	HMDD,dbDEMC
35	Ovarian Neoplasms	hsa-let-7c	HMDD,miR2disease
36	Lymphoma	hsa-mir-9	dbDEMC
37	Melanoma	hsa-mir-125a	HMDD, miR2disease
38	Brain Neoplasms	hsa-mir-16	unconfirmed
39	Breast Neoplasms	hsa-mir-181a	HMDD,dbDEMC,miR2Disease
40	Lymphoma, B-Cell	hsa-mir-221	miR2Disease
41	Pancreatic Neoplasms	hsa-mir-145	HMDD,dbDEMC,miR2disease
42	Lung Neoplasms	hsa-mir-221	HMDD,dbDEMC
43	Melanoma	hsa-mir-155	HMDD
44	Neoplasms	hsa-mir-106a	HMDD, dbDEMC
45	Breast Neoplasms	hsa-mir-203	HMDD,dbDEMC,miR2disease
46	Carcinoma, Hepatocellular	hsa-mir-107	HMDD,dbDEMC,miR2Disease
47	Melanoma	hsa-mir-30c	unconfirmed
48	Breast Neoplasms	hsa-mir-27b	HMDD, dbDEMC
49	Colonic Neoplasms	hsa-mir-31	HMDD,dbDEMC,miR2Disease
50	Lung Neoplasms	hsa-mir-373	dbDEMC