Figure S1. Degree distributions for diseases and miRNAs in the disease-miRNA association network. The left panel shows the bar diagram of the degree distributions of disease. The right panel shows the bar diagram of the degree distributions of miRNAs.
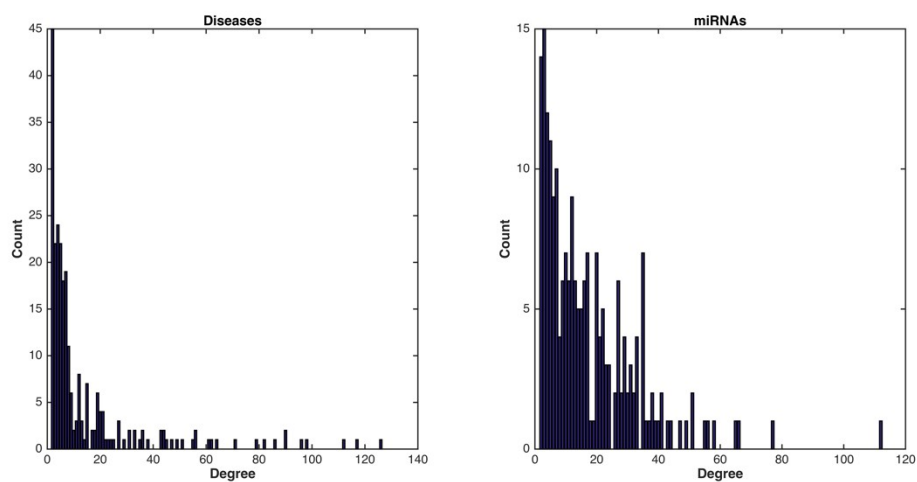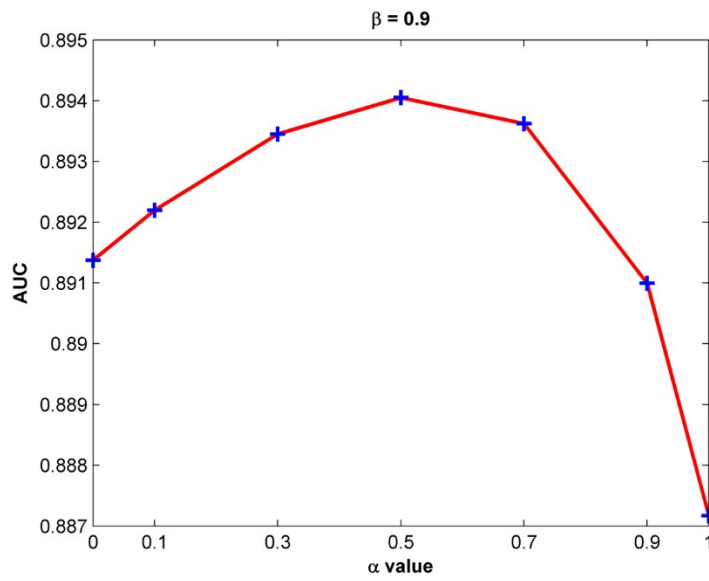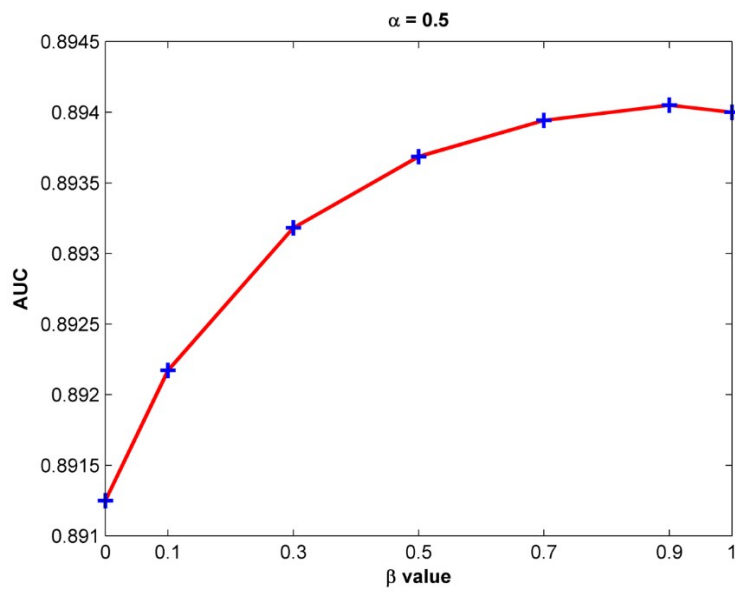
Figure S2. Prediction performance affected by α value, β value.

(A) AUC of leave-one-out cross validation affected by α value when β=0.9

(B) AUC of leave-one-out cross validation affected by β value when α=0.5

Figure S3. The ROC curves for NTSMDA and other methods for 12 diseases. The value in the bracket is the area under NTSMDA's ROC curve for the specific disease.
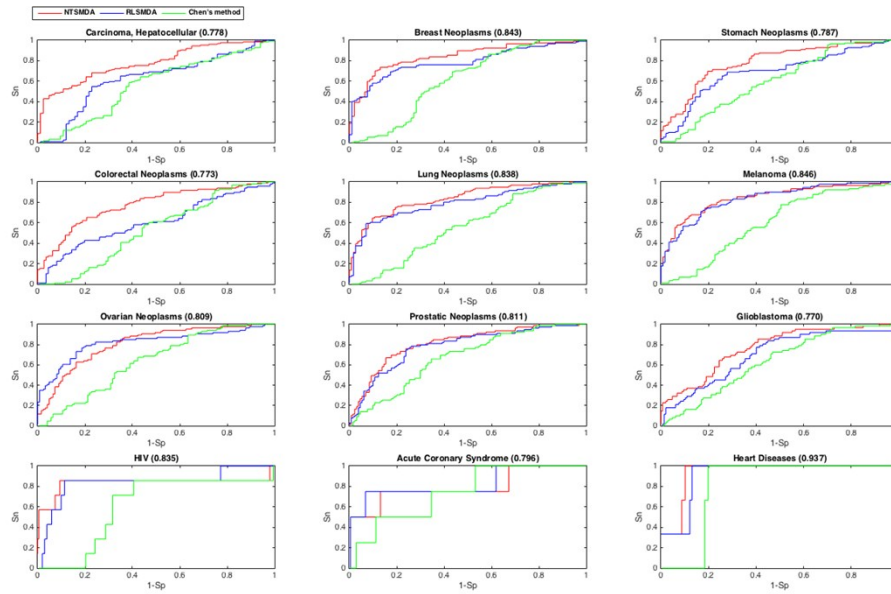
Table S1. The top 30 potential miRNAs of lung neoplasms predicted by NTSMDA and the confirmation for their associations by various databases and literature. all the top 30 miRNAs have been confirmed to be related with lung neoplasms.

Rank	miRNA name	Evidence	Rank	miRNA name	Evidence
1	hsa-mir-15a	PhenomiR2.0, miRCancer	16	hsa-mir-373	PhenomiR2.0
2	hsa-mir-106b	PhenomiR2.0	17	hsa-mir-149	PhenomiR2.0
3	hsa-mir-195	PhenomiR2.0, miRCancer	18	hsa-mir-302b	PhenomiR2.0
4	hsa-mir-15b	PhenomiR2.0, miRCancer	19	hsa-mir-296	PhenomiR2.0
5	hsa-mir-141	PhenomiR2.0, miRCancer	20	hsa-mir-302a	PhenomiR2.0
6	hsa-mir-122	PhenomiR2.0	21	hsa-mir-10a	PhenomiR2.0
7	hsa-mir-99a	PhenomiR2.0	22	hsa-mir-152	PhenomiR2.0
8	hsa-mir-193b	PhenomiR2.0	23	hsa-mir-92b	PhenomiR2.0
9	hsa-mir-429	miRCancer	24	hsa-mir-302c	PhenomiR2.0
10	hsa-mir-23b	PhenomiR2.0	25	hsa-mir-139	PhenomiR2.0
11	hsa-mir-130a	PhenomiR2.0	26	hsa-mir-328	PhenomiR2.0
12	hsa-mir-20b	PhenomiR2.0	27	hsa-mir-181d	PhenomiR2.0, miRCancer
13	hsa-mir-342	PhenomiR2.0	28	hsa-mir-372	PhenomiR2.0
14	hsa-mir-196b	PhenomiR2.0	29	hsa-mir-367	PhenomiR2.0
15	hsa-mir-204	PhenomiR2.0	30	hsa-mir-144	PhenomiR2.0, miRCancer

Table S2. The top 30 potential miRNAs of prostatic neoplasms predicted by NTSMDA and the confirmation for their associations by various databases and literature. 29 of the top 30 miRNAs have been confirmed to be related with prostatic neoplasms. The only 1 miRNA was unconfirmed (Rank 19).

Rank	miRNA name	Evidence	Rank	miRNA name	Evidence
1	hsa-mir-155	miRCancer, PhenomiR2.0	16	hsa-mir-30b	miRCancer, PhenomiR2.0
2	hsa-mir-18a	miRCancer, PhenomiR2.0	17	hsa-mir-192	dbDEMC
3	hsa-mir-19a	PhenomiR2.0	18	hsa-mir-23a	miRCancer, PhenomiR2.0
4	hsa-mir-29c	PhenomiR2.0	19	hsa-mir-20b	Unconfirmed
5	hsa-mir-210	PhenomiR2.0	20	hsa-mir-206	PhenomiR2.0
6	hsa-mir-142	PhenomiR2.0	21	hsa-mir-18b	PMID: 23383988
7	hsa-let-7e	PhenomiR2.0	22	hsa-mir-140	dbDEMC
8	hsa-mir-150	PhenomiR2.0	23	hsa-mir-342	PhenomiR2.0
9	hsa-mir-30a	PhenomiR2.0	24	hsa-mir-302b	PhenomiR2.0
10	hsa-let-7i	PhenomiR2.0	25	hsa-mir-372	PhenomiR2.0
11	hsa-let-7g	PhenomiR2.0	26	hsa-mir-137	PhenomiR2.0
12	hsa-mir-10b	PhenomiR2.0	27	hsa-mir-302c	PhenomiR2.0
13	hsa-mir-125a	PhenomiR2.0	28	hsa-mir-26b	miRCancer, PhenomiR2.0, miR2Disease
14	hsa-mir-199b	miRCancer, PhenomiR2.0	29	hsa-mir-212	miRCancer, PhenomiR2.0
15	hsa-mir-429	miRCancer	30	hsa-mir-302a	miRCancer, PhenomiR2.0