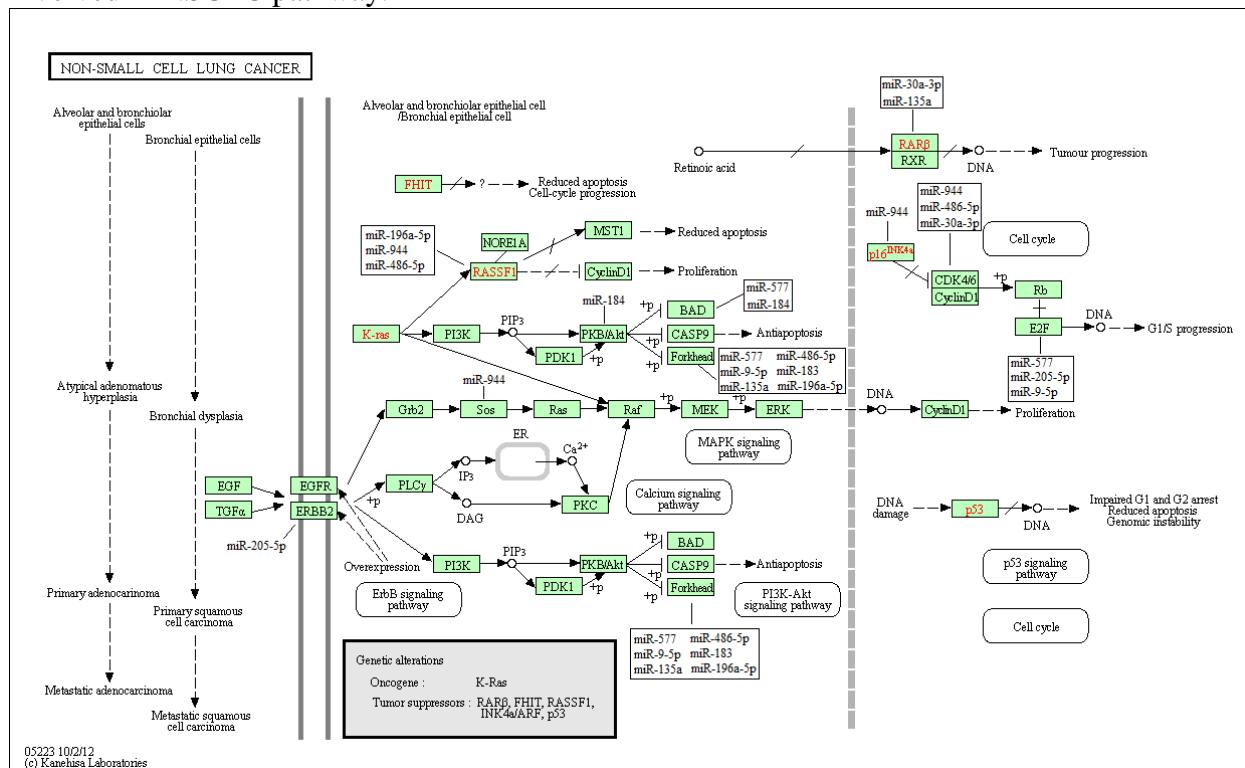
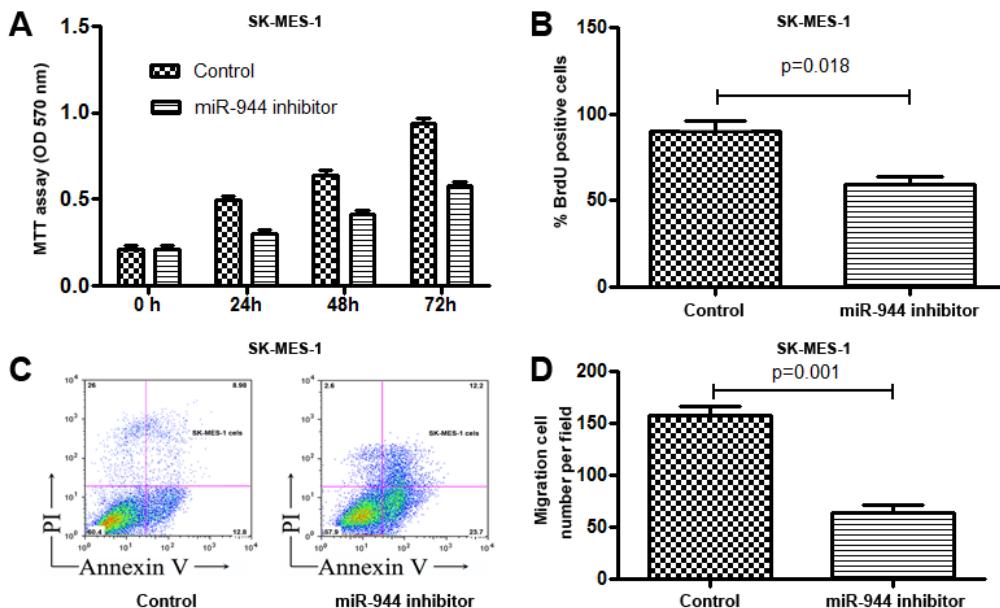


## Supplementary file

**Supplementary Fig. 1.** Pathway analysis suggests that dysregulations of the miRNA signatures are involved in NSCLC pathway.



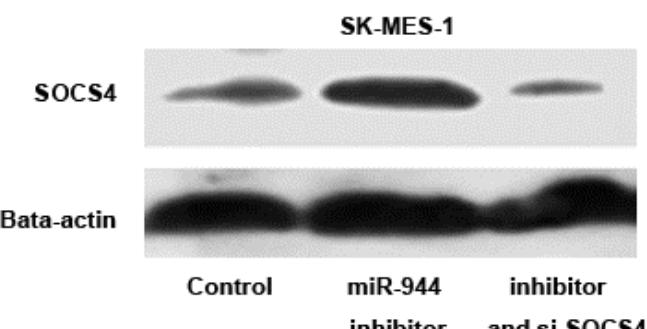
**Supplementary Fig. 2.** Downregulation of miR-944 inhibits NSCLC cell growth, proliferation, migration, and invasion.



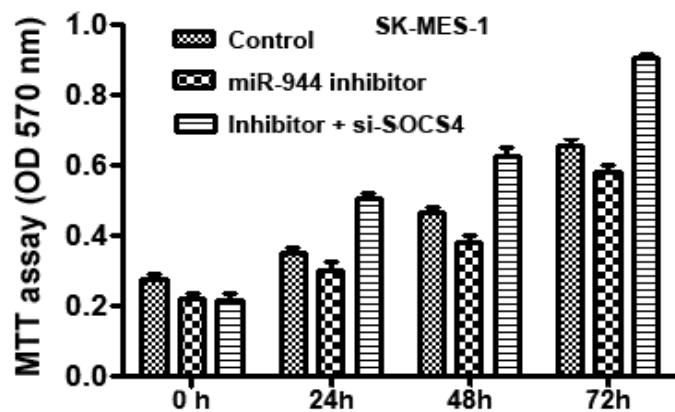
A, reduced expression of miR-944 in SK-MES-1 cells decreased cell growth. B, reduced expression of miR-944 diminished cell proliferation of NSCLC. C, reduced expression of miR-944 in SK-MES-1 cells increased apoptosis. D, reduced expression of miR-944 in SK-MES-1 cells decreased cell invasion and migration. All data were obtained from three independent experiments and shown as mean  $\pm$  SD. The experiments were performed in two cell lines, SK-MES-1 and H292, and generated similar data. The figure only showed the results from SK-MES-1.

**Supplementary Fig. 3.** SOCS4 is involved in miR-944-induced suppression of cell migration and invasion of NSCLC.

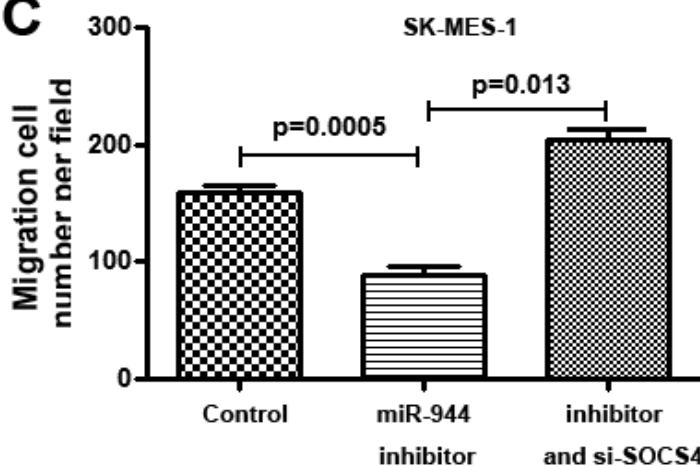
**A**



**B**



**C**



A, SK-MES-1 cells treated with both miR-944 inhibitor and si-SOCS4 exhibited a lower level of SOCS4 expression compared with cells treated with miR-944 inhibitor alone. B, SK-MES-1 cells treated with both miR-944 inhibitor and si-SOCS4 had a higher rate of cell growth compared with cells treated with miR-944 inhibitor. C, SK-MES-1 cells treated with both miR-944 inhibitor and si-SOCS4 had higher levels of migration and invasion compared with cells treated with miR-944 inhibitor.

**Supplementary Table 1.** Demographic and histopathological characteristics of 108 NSCLC patients

Parameter	Mean	%
Age, years	68.3	
Gender		
Men	69	63.8
Women	39	36.2
Race		
White American	80	74
African American	28	26
Histology		
Squamous cell carcinoma	54	50
Adenocarcinoma	54	50
Stage		
I	68	63
II	20	18.5
III-IV	20	18.5

Abbreviations: NSCLC, non-small cell lung cancer.

**Supplementary Table 2.** Demographic and clinical characteristics of 52 SCC patients and the association with miR-944 expression in tumor tissue specimens

Characteristics		Number of cases	(%)	p
Gender	Male	39	75.00%	0.629
	Female	13	25.00%	
Age, year	≥60	38	73.08%	0.183
	<60	14	26.92%	
T status	1	21	40.38%	0.465
	2	25	48.08%	
	3	3	5.77%	
	4	3	5.77%	
N status	No	31	59.62%	0.002
	Yes	21	40.38%	
Stage I	I	28	53.85%	0.036
	II	8	15.38%	
	III-IV	16	30.77%	

**Supplementary Table 3.** 14 novel miRNA candidates

<u>provisional id</u>	<u>consensus mature sequence</u>	<u>consensus star sequence</u>	<u>consensus precursor sequence</u>
1_1515	uagaauaagugggaggccc	ugaaaaccacuacucuga	uagaauaagugggaggccccuggugcccccugucuccagcaaggggacagagugggcaaggccagaggugaaaaccacuacucuga
16_23294	ugcaggcagaagggauuggagg	guccgcacccacuucugccugcag	ugcaggcagaagggauuggugagggugcgaacccucugccugcagcccacuucugccugcag
9_22255	agcuacagagccucaucuca	agguggaguuuugcaguga	agguggaguuuugcagugagcugagauugugcagacucuacugccugageuacagagccucaucuca
1_2301	uagaauaagugggaggccc	ugaaaaccacuacucuga	uagaauaagugggaggccccuggugcccccugucuccagcaaggggacagagugggcaaggccagaggugaaaaccacuacucuga
16_35434	ugcaggcagaagggauuggagg	guccgcacccacuucugccugcag	ugcaggcagaagggauuggugagggugcgaacccucugccugcagcccacuucugccugcag
22_44042	aggcacccagaaagucuuuu	aaaagagacuuucuggagec	aggcacccagaaagucuuuuccccaggagaaggaaaaagacuuucuggagec
9_14371	agcuacagagccucaucuca	agguggaguuuugcagugagc	agguggaguuuugcagugagcugagauugugcagacucuacugccugageuacagagccucaucuca
22_28242	aggcacccagaaagucuuuu	aaaagagacuuucuggagcc	aggcacccagaaagucuuuuccccaggagaaggaaaaagacuuucuggagcc
9_10537	agcuacagagccucaucuca	agguggaguuuugcagugag	agguggaguuuugcagugagcugagauugugcagacucuacugccugagcuaacagagccucaucuca
15_35470	acaagaccuguuucuacuaccu	gguagauaaguaggucuuga	gguagauaaguaggucuugaauuuuuuuugcaaacaagaccuguuucuacuaccu
9_22615	agcuacagagccucaucuca	gagguggaguuuugcagugagc	gagguggaguuuugcagugagcugagauugugcagacucuacugccugagcuaacagagccucaucuca
2_7287	aaaaacugcgauuacuuuuugca	caaaagcaaucgcuguuuuugc	caaaagcaaucgcuguuuuugcauugaagacaacacugcgauuacuuuuugca
16_21682	ugcaggcagaagggauuggagg	ucagcccccacuucugccugca	ugcaggcagaagggauuggugagggugcgaacccucugccugcagcccacuucugccugca
7_13901	aauuacagauugucucagaga	ucucucggacaagcuguaggu	aauuacagauugucucagagaaaacaaugaguuacucucucggacaagcuguaggu

**Supplementary Table 4.** Expression levels of 14 miRNAs in additional set of 60 NSCLC tissues

MiRNAs	Mean ± in normal tissues	Mean ± in SCC tissues	P	Mean ± in AC tissues	P
miR-577	0.01451 ± 0.003321	0.2018 ± 0.04726	0.01501604	0.4948 ± 0.09611	0.00160966
miR-9-3p	0.5848 ± 0.07936	3.204 ± 1.620	0.271254333	3.536 ± 0.9056	0.02387223
miR-9-5p	1.259 ± 0.3149	16.65 ± 4.736	0.029369532	19.59 ± 4.534	0.00558743
miR-196a-5p	2.537 ± 0.5663	9.595 ± 1.564	0.003337703	9.696 ± 3.83	0.0460627
miR-184	3.914 ± 0.8641	0.2658 ± 0.05591	7.83741E-08	0.3879 ± 0.07444	5.0621E-07
miR-182-3p	0.04403 ± 0.006379	0.1396 ± 0.01755	0.000653285	0.2808 ± 0.04278	0.00031997
miR-205-5p	23.95 ± 5.303	281.6 ± 41.71	7.90502E-05	12.32 ± 2.258	0.02150013
miR-147b	0.1172 ± 0.02934	0.4255 ± 0.05197	0.000147952	0.1708 ± 0.02900	0.25272788
miR-183-3p	2.646 ± 0.2470	6.506 ± 0.9096	0.004026823	2.577 ± 0.3147	0.88670557
miR-944	0.03953 ± 0.004614	0.3364 ± 0.06039	0.001697667	0.03684 ± 0.009015	0.84127419
miR-135a-5p	22.25 ± 5.083	1.469 ± 0.3031	1.60423E-07	10.29 ± 2.894	0.03172971
miR-205-3p	0.03880 ± 0.02018	0.6289 ± 0.1203	0.001766155	0.03461 ± 0.007489	0.81479973
miR-486-5p	228.0 ± 41.94	13.93 ± 6.014	1.44377E-09	11.01 ± 2.483	1.2838E-09
miR-30a-3p	350.9 ± 53.31	19.57 ± 4.587	1.23518E-12	42.46 ± 9.831	2.564E-10

NSCLC , non-small cell lung cancer; SCC, squamous cell carcinoma; AC, adenocarcinoma; SD, standard deviation.

**Supplementary Table 5.** The AUCs of seven miRNAs displaying different expression between SCC and AC

miRNAs	P-value	AUC	95% confidence interval
miR-205-5p	<0.001	0.9133	0.8386 to 0.9881
miR-944	<0.001	0.8967	0.8141 to 0.9793
miR-183-3p	<0.001	0.8931	0.7984 to 0.9878
miR-205-3p	<0.001	0.8931	0.7984 to 0.9878
miR-135a-5p	<0.001	0.8744	0.7809 to 0.9680
miR-147b	<0.001	0.7943	0.6755 to 0.9130
miR-577	0.001	0.76	0.6375 to 0.8825

Abbreviations: AUC, the area under receiver operating characteristic curve.

**Supplementary Table 6.** Kyoto Encyclopedia of Genes and Genomes pathway

pathway	p-value
Pathways in cancer	0.000250605
Non-small cell lung cancer	0.000714102
Glioma	0.000831501
Melanoma	0.001100426
Chronic myeloid leukemia	0.001775331
Focal adhesion	0.01159417
Prostate cancer	0.01160361
Transcriptional misregulation in cancer	0.01187092
Malaria	0.01187092
Pancreatic cancer	0.01187092
HIF-1 signaling pathway	0.01231473
Viral carcinogenesis	0.01808485
Cell cycle	0.01921407
Wnt signaling pathway	0.02074698
Adherens junction	0.02650581
Bladder cancer	0.02899416
VEGF signaling pathway	0.03304023
p53 signaling pathway	0.03304023
B cell receptor signaling pathway	0.03969679
Basal cell carcinoma	0.0463021