

Figure S1 The entire flowchart of this study of the research.

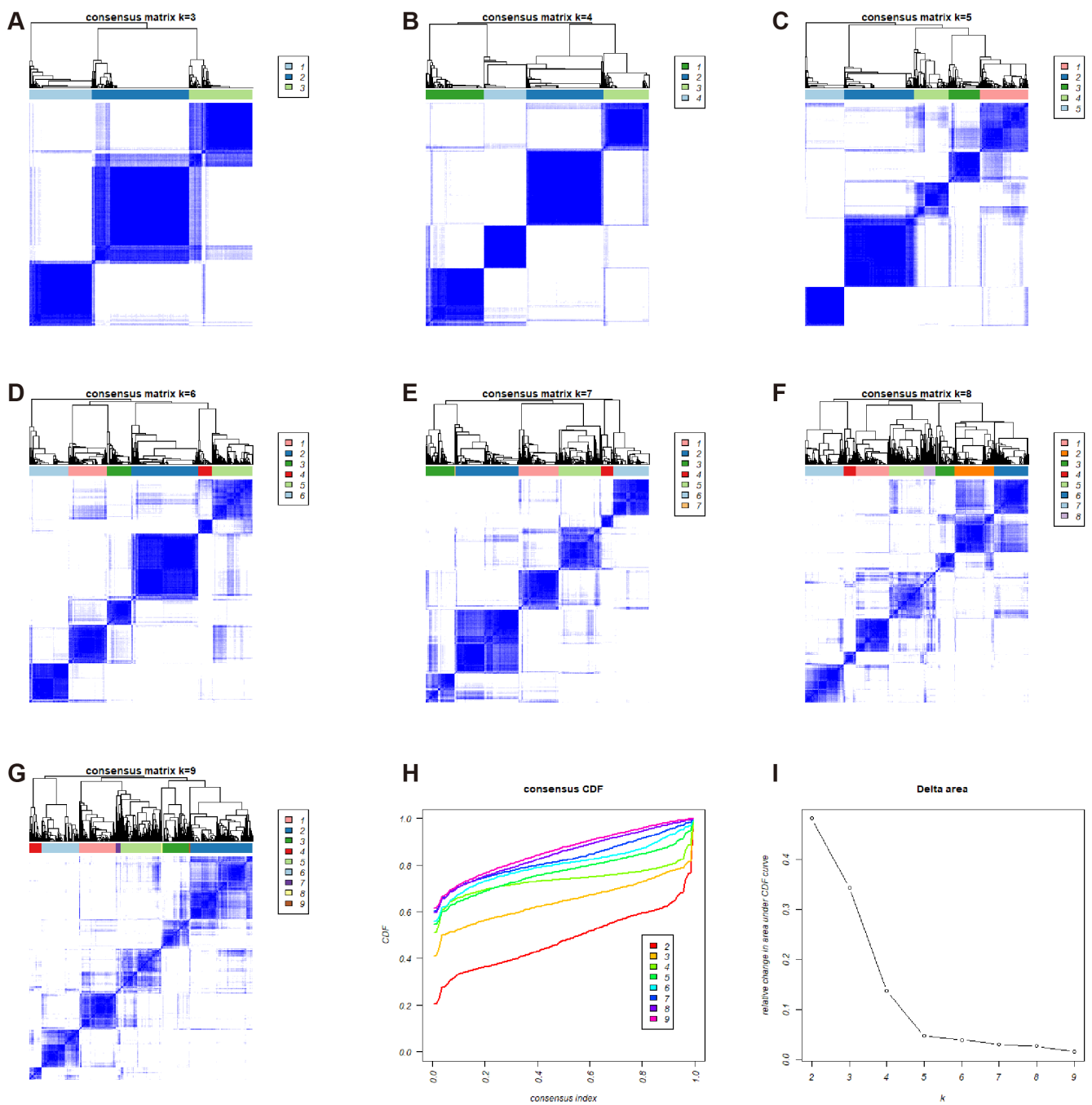


Figure S2 Unsupervised clustering of DFAM related genes and Consensus matrix heatmaps for $k=3-9$.

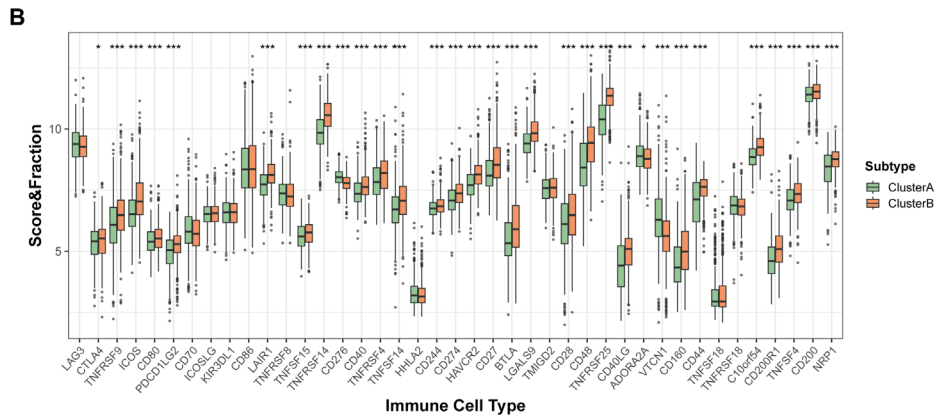
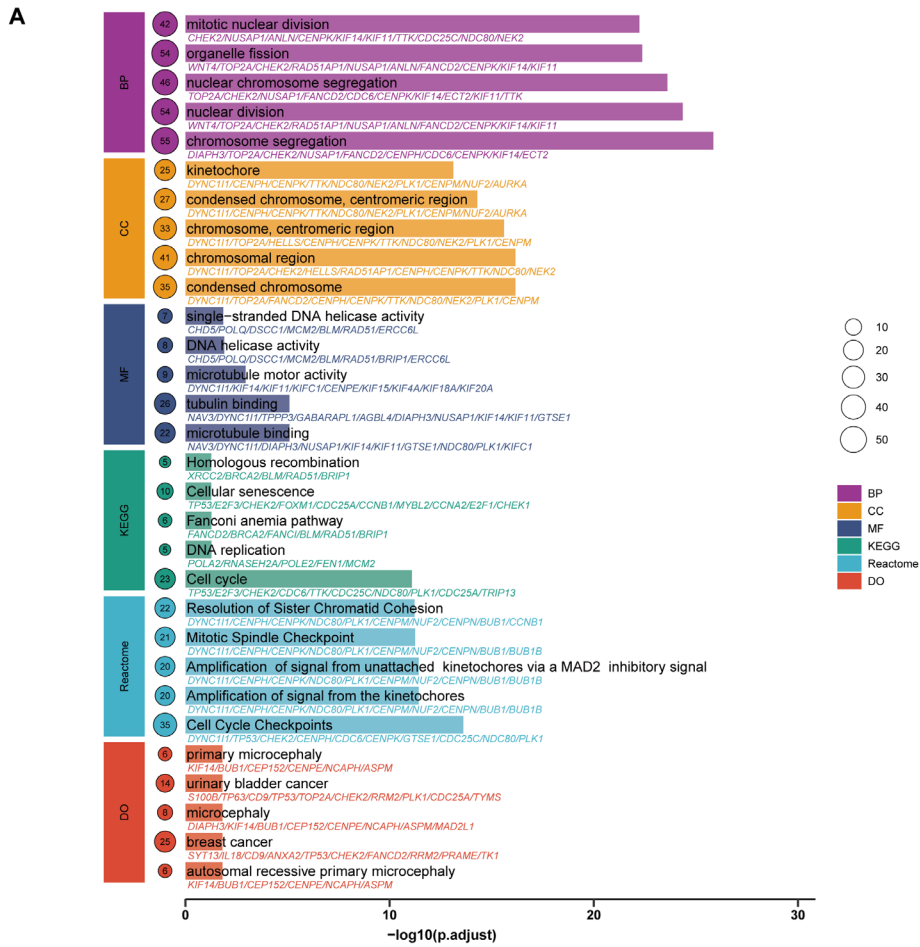


Figure S3 Distinct molecular and functional profiles of novel DFAM subtype.

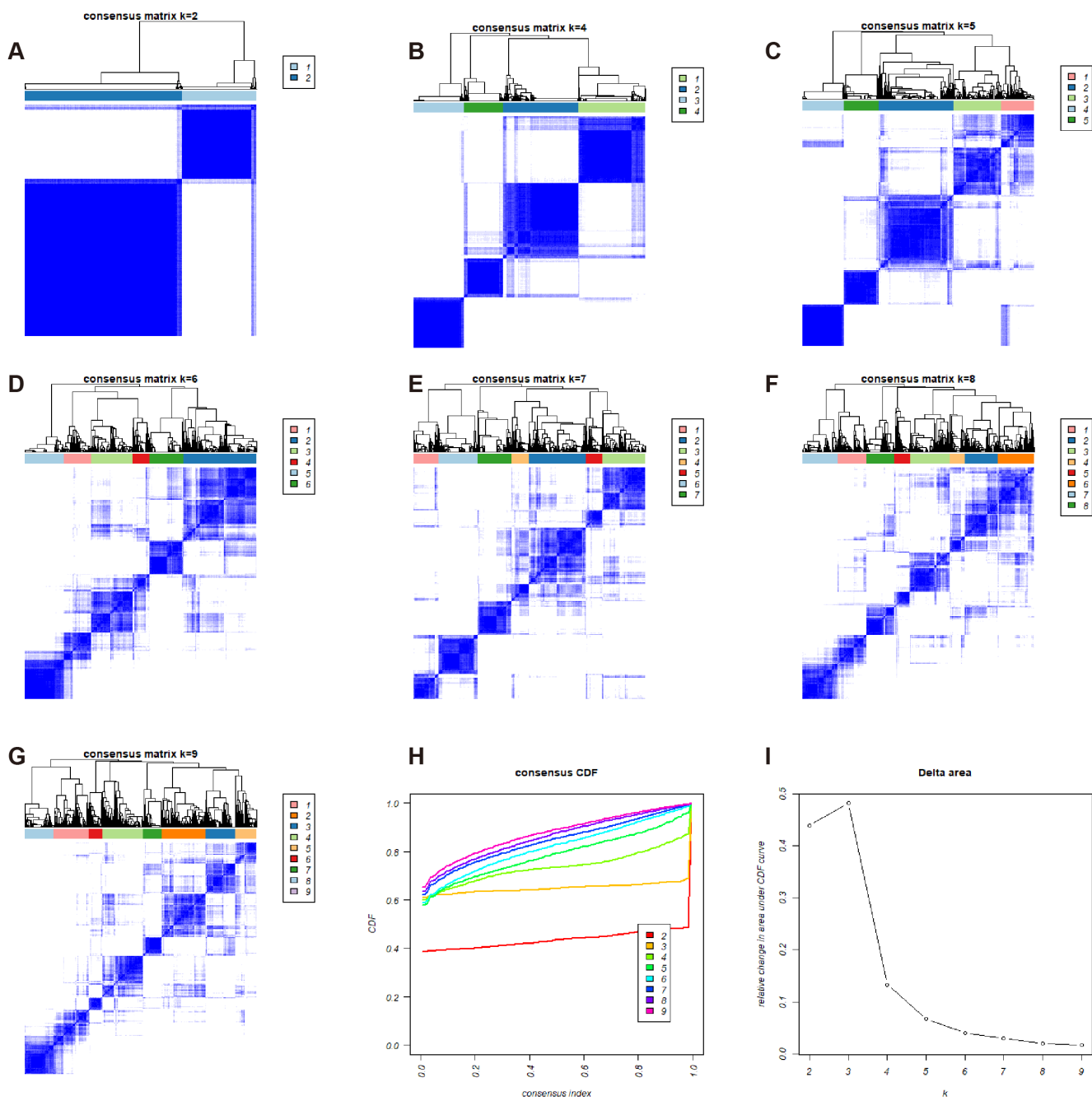


Figure S4 Identification of new gene subtypes based on the hub genes among two DFAM subtypes and WGCNA analysis in NB cohort.

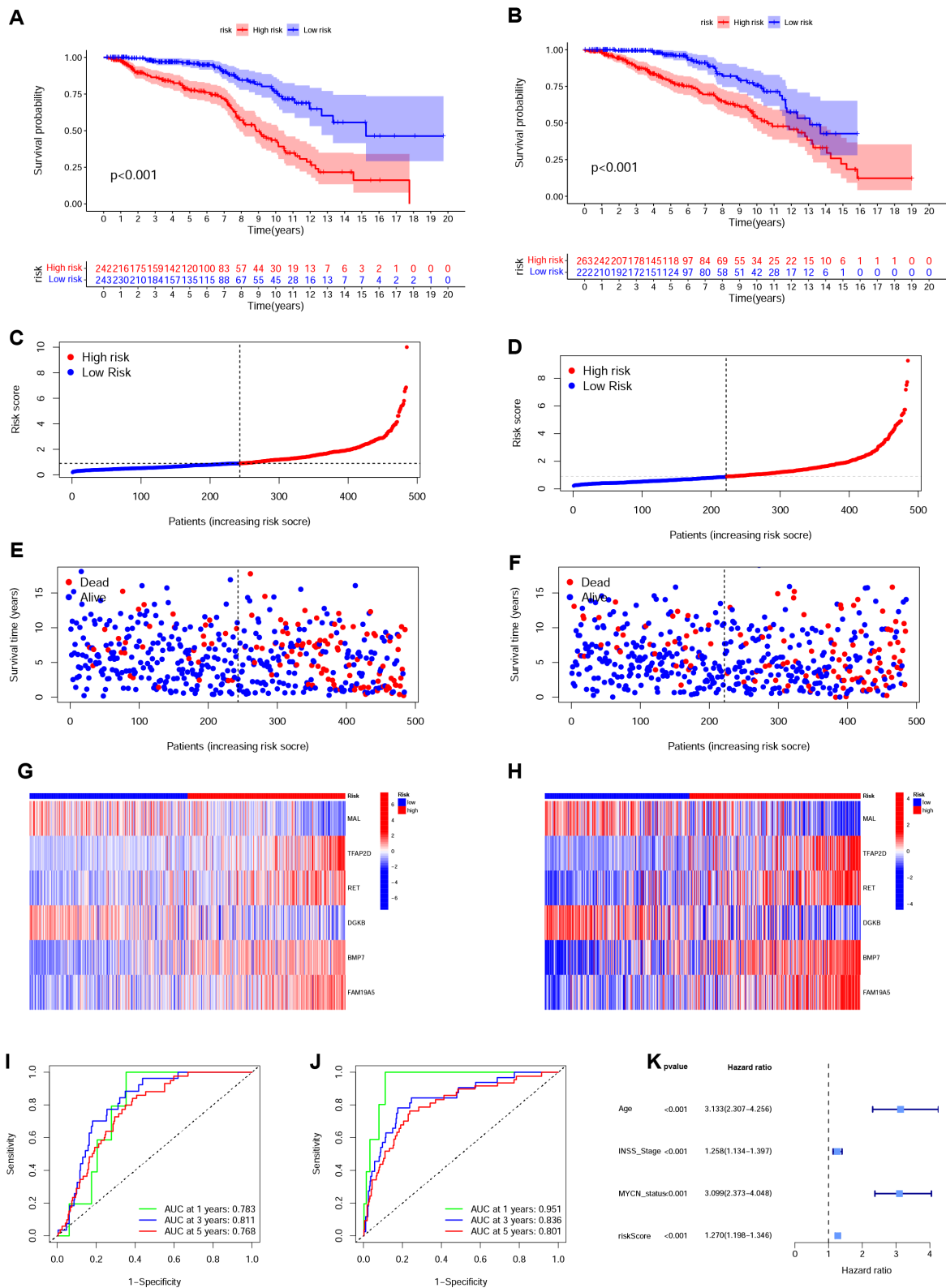


Figure S5 Validation of DFAM score in training and testing dataset.

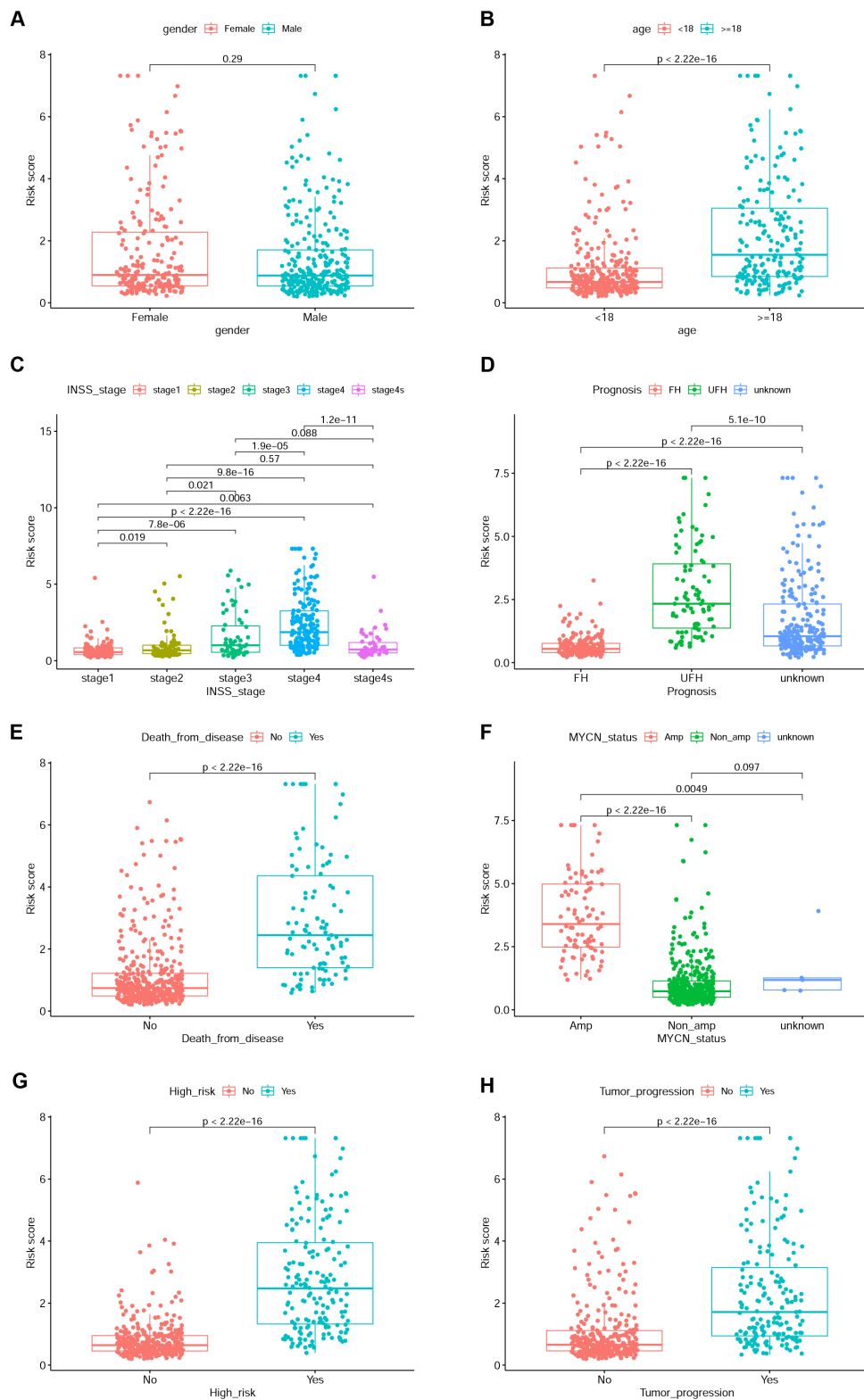


Figure S6 The correlation between DFAM score and clinical relevance in 498 NB patients (GSE49710).

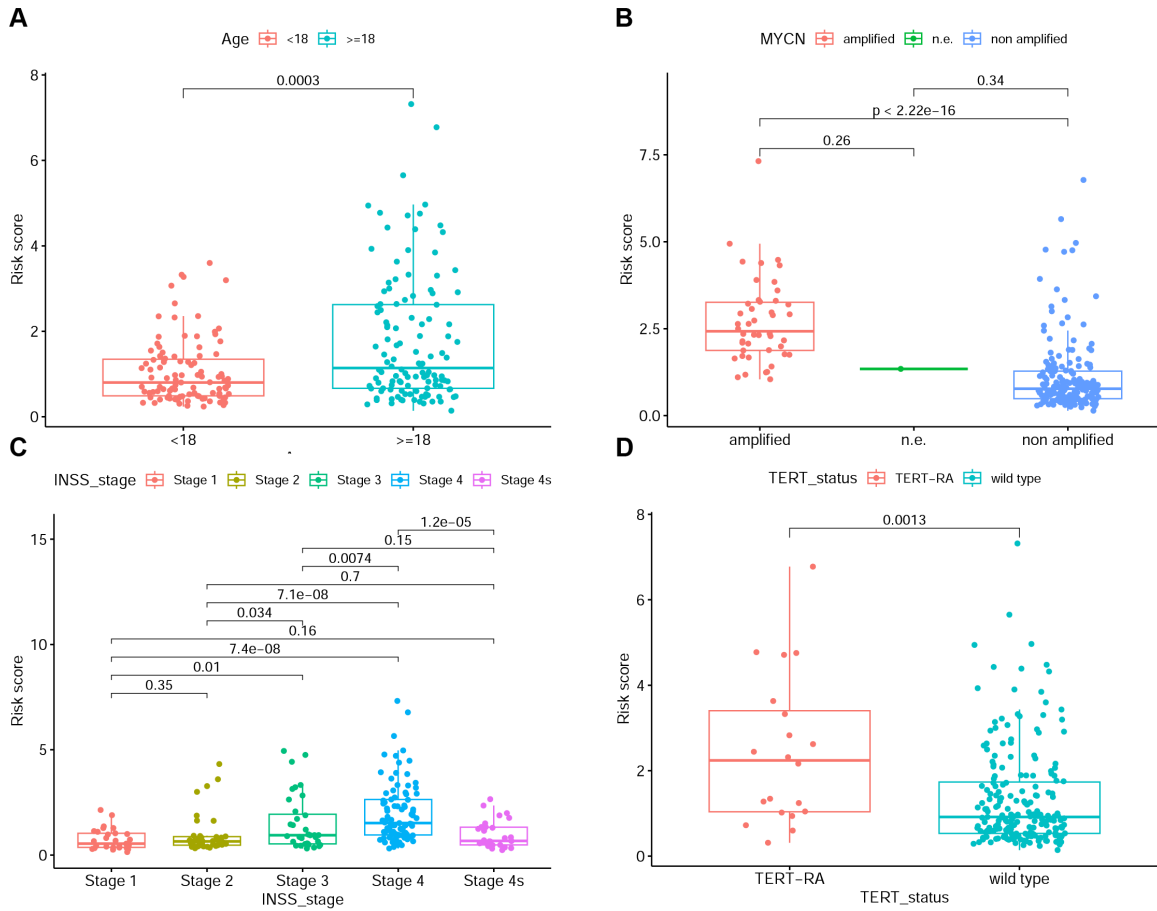


Figure S7 The correlation between DFAM score and clinical relevance in 223 NB patients (E-MTAB-8248).

Table S1 Summary of 48 recognized DFAM genes

Gene	Type
RAP1GDS1	disulfidptosis_Fatty Acid
HSD17B4	disulfidptosis_Fatty Acid
DLD	disulfidptosis_Fatty Acid
CBR1	disulfidptosis_Fatty Acid
AADAT	disulfidptosis_Fatty Acid
ACAA2	disulfidptosis_Fatty Acid
PRDX6	disulfidptosis_Fatty Acid
PRKAG2	disulfidptosis_Fatty Acid
MDH1	disulfidptosis_Fatty Acid
PECR	disulfidptosis_Fatty Acid
GPX1	disulfidptosis_Fatty Acid
ACBD6	disulfidptosis_Fatty Acid
SDHC	disulfidptosis_Fatty Acid
ACBD5	disulfidptosis_Fatty Acid
PRKAA2	disulfidptosis_Fatty Acid
ACSL3	disulfidptosis_Fatty Acid
GLUL	disulfidptosis_Fatty Acid
ADH5	disulfidptosis_Fatty Acid
HSD17B11	disulfidptosis_Fatty Acid
MID1IP1	disulfidptosis_Fatty Acid
ALDH1B1	disulfidptosis_Fatty Acid
SUCLA2	disulfidptosis_Fatty Acid
HADHA	disulfidptosis_Fatty Acid
DHCR24	disulfidptosis_Fatty Acid
HCCS	disulfidptosis_Fatty Acid
PHYH	disulfidptosis_Fatty Acid
PDHB	disulfidptosis_Fatty Acid
PTGR2	disulfidptosis_Fatty Acid
NDUFAB1	disulfidptosis_Fatty Acid
PTGES3	disulfidptosis_Fatty Acid
CRYZ	disulfidptosis_Fatty Acid
LTA4H	disulfidptosis_Fatty Acid
BLVRA	disulfidptosis_Fatty Acid
GCDH	disulfidptosis_Fatty Acid
YWHAH	disulfidptosis_Fatty Acid
PCCA	disulfidptosis_Fatty Acid
EPHX1	disulfidptosis_Fatty Acid
ME1	disulfidptosis_Fatty Acid
ODC1	disulfidptosis_Fatty Acid
ELOVL4	disulfidptosis_Fatty Acid
RDH11	disulfidptosis_Fatty Acid
LDHA	disulfidptosis_Fatty Acid
ACADM	disulfidptosis_Fatty Acid
ACOT13	disulfidptosis_Fatty Acid
HADHB	disulfidptosis_Fatty Acid
ACADSB	disulfidptosis_Fatty Acid
ACSL1	disulfidptosis_Fatty Acid
ACAT1	disulfidptosis_Fatty Acid
ELOVL1	disulfidptosis_Fatty Acid
NSDHL	disulfidptosis_Fatty Acid
ACAT2	disulfidptosis_Fatty Acid
GPX4	disulfidptosis_Fatty Acid

Table S1 (continued)**Table S1** (continued)

Gene	Type
ECHS1	disulfidptosis_Fatty Acid
GRHPR	disulfidptosis_Fatty Acid
FH	disulfidptosis_Fatty Acid
ETFDH	disulfidptosis_Fatty Acid
SCP2	disulfidptosis_Fatty Acid
AUH	disulfidptosis_Fatty Acid
D2HGDH	disulfidptosis_Fatty Acid
SMS	disulfidptosis_Fatty Acid
ALDOA	disulfidptosis_Fatty Acid
ACO2	disulfidptosis_Fatty Acid
UGDH	disulfidptosis_Fatty Acid
MDH2	disulfidptosis_Fatty Acid
PPT1	disulfidptosis_Fatty Acid
EPHX2	disulfidptosis_Fatty Acid
SERINC1	disulfidptosis_Fatty Acid
HMGCS1	disulfidptosis_Fatty Acid
METAP1	disulfidptosis_Fatty Acid
ELOVL6	disulfidptosis_Fatty Acid
NUDT19	disulfidptosis_Fatty Acid
PCCB	disulfidptosis_Fatty Acid
ACOX1	disulfidptosis_Fatty Acid
ACSL4	disulfidptosis_Fatty Acid
ALDH3A2	disulfidptosis_Fatty Acid
ALDH7A1	disulfidptosis_Fatty Acid
IDI1	disulfidptosis_Fatty Acid
ALDH9A1	disulfidptosis_Fatty Acid
HIBCH	disulfidptosis_Fatty Acid
MMAA	disulfidptosis_Fatty Acid
HSP90AA1	disulfidptosis_Fatty Acid
BCKDHB	disulfidptosis_Fatty Acid
SUCLG1	disulfidptosis_Fatty Acid
HACL1	disulfidptosis_Fatty Acid
GPD2	disulfidptosis_Fatty Acid
IDH1	disulfidptosis_Fatty Acid
PRKAB2	disulfidptosis_Fatty Acid

Table S2 The prognostic values of 85 DFAM in NB patients

ID	HR	HR.95L	HR.95H	P value	km
RAP1GDS1	1.215704634	0.926313673	1.595504635	0.15908741	0.014010385
HSD17B4	1.275057956	0.862970346	1.883926601	0.22245748	0.004078468
DLD	0.735894152	0.522155685	1.037124021	7.98E-02	7.99E-03
CBR1	2.239217311	1.699668845	2.950041816	9.99E-09	2.10E-10
AADAT	0.80273881	0.657170075	0.980552251	0.03137037	0.006997035
ACAA2	1.717708654	1.378369772	2.14058889	1.45E-06	2.84E-10
PRDX6	2.174508484	1.592552946	2.969123983	1.02E-06	1.21E-10
PRKAG2	0.512941719	0.430629015	0.610988107	7.40E-14	1.48E-13
MDH1	1.542885076	1.103315977	2.157581695	0.01125671	0.002343512
PECR	0.923020589	0.693779727	1.228007932	0.58237445	0.035245837
GPX1	1.054419986	0.783458736	1.419093892	0.72659028	0.124523245
ACBD6	3.084243449	2.33599849	4.072159162	1.95E-15	2.66E-15
SDHC	1.179607902	0.884465178	1.573238649	0.26087986	0.033525126
ACBD5	1.052321879	0.868220607	1.275460784	0.60322354	0.120955192
PRKAA2	1.0935901	0.915704948	1.306031282	0.32328138	0.01121256
ACSL3	0.771314456	0.621533766	0.957190136	0.01841582	0.001199422
GLUL	1.039784322	0.800866995	1.349976268	0.76960973	0.097242762
ADH5	1.336107014	0.861850883	2.071335061	0.19520339	0.001306514
HSD17B11	1.556700023	1.221272809	1.984253596	0.00035102	5.75E-07
MID1IP1	1.358168209	1.078466056	1.71041163	0.00926778	1.04E-06
ALDH1B1	1.707690066	1.345185461	2.167883497	1.10E-05	7.40E-11
SUCLA2	0.749716941	0.560606633	1.002620124	5.21E-02	1.53E-03
HADHA	1.479570963	1.091864783	2.00494628	0.01150922	1.19E-05
DHCR24	0.959744302	0.822596427	1.119758238	0.60149547	0.06148838
HCCS	1.786573381	1.394122444	2.289500795	4.53E-06	9.60E-09
PHYH	0.851151343	0.666330663	1.087235886	0.19693554	0.043186549
PDHB	0.99041086	0.729047583	1.345472771	0.95085019	0.148139206
NDUFAB1	3.19457814	2.184999504	4.670632408	2.06E-09	2.10E-11
PTGES3	1.45323813	1.011724304	2.087427428	0.04306808	0.001645152
CRYZ	0.792929986	0.639459287	0.983233766	0.03451335	0.000336339
LTA4H	1.358057508	0.922075209	2.000184126	0.12131362	0.000566828
BLVRA	0.508753909	0.343818324	0.752811942	0.00072439	0.000206343
GCDH	2.053251774	1.587831512	2.655094584	4.13E-08	4.08E-11
YWHAH	0.505081866	0.395454412	0.645100126	4.47E-08	2.19E-08
PCCA	0.625007661	0.430999839	0.906345062	0.01319199	2.22E-04
EPHX1	0.978293423	0.81590881	1.172996308	0.81267613	0.181602545
ME1	0.574040989	0.483767299	0.681160256	2.04E-10	2.70E-10
ODC1	1.586482195	1.393762199	1.805850207	2.86E-12	2.11E-15
ELOVL4	0.640901022	0.539729641	0.761036803	3.87E-07	1.09E-06
RDH11	1.654699185	1.139296244	2.403263777	0.00817303	0.000208625
LDHA	1.52376246	1.268733662	1.830054725	6.58E-06	3.46E-10
ACADM	0.616991032	0.510471877	0.745737329	5.91E-07	1.33E-07
HADHB	0.903601379	0.612541153	1.33296424	0.6093276	0.013548041
ACADSB	1.012204146	0.797882074	1.284096068	0.92040295	0.082150016
ACSL1	0.960664996	0.755527251	1.221500924	0.74334108	0.026950378
ACAT1	0.780212164	0.627052748	0.970781203	0.02601944	0.002010114
ELOVL1	0.770288031	0.569178518	1.04E+00	0.0909088	0.005919269
NSDHL	1.275725931	1.052454552	1.55E+00	0.01310887	1.01E-05
ACAT2	1.220788964	0.96391531	1.55E+00	0.09791144	0.013862145
GPX4	1.216542585	0.878209387	1.69E+00	0.23844461	0.000972162
ECHS1	0.749399393	0.517034351	1.09E+00	0.12766719	0.014366457
GRHPR	1.118973806	0.851338927	1.47E+00	0.42024752	0.058827752
FH	1.43350598	1.032636794	1.99E+00	0.03140792	0.000138216
ETFDH	1.153367843	0.849685148	1.57E+00	0.36009174	0.012239425
SCP2	0.848038849	0.689842987	1.04E+00	0.11764553	0.00672614
AUH	0.460134264	0.359571026	5.89E-01	6.86E-10	4.33E-12

Table S2 (continued)

Table S2 (continued)

ID	HR	HR.95L	HR.95H	P value	km
D2HGDH	0.875823384	0.664093742	1.16E+00	0.34770605	0.241353868
SMS	2.01079473	1.496333184	2.70E+00	3.60E-06	7.96E-09
ALDOA	1.007304276	0.790145911	1.28E+00	0.95315555	0.057267884
ACO2	0.595859519	0.431369972	8.23E-01	0.00168181	5.20E-06
UGDH	2.109628135	1.564761402	2.84E+00	9.73E-07	3.68E-10
MDH2	1.213779358	0.803437757	1.83E+00	0.35740257	0.060033096
PPT1	0.615289819	0.476995549	7.94E-01	0.00018481	9.52E-06
EPHX2	0.576668964	0.468114161	7.10E-01	2.30E-07	8.60E-13
SERINC1	0.494207342	0.415511091	5.88E-01	1.66E-15	0
HMGCS1	1.29879765	1.070402781	1.58E+00	0.00806268	0.000221597
METAP1	2.159478408	1.614984154	2.89E+00	2.06E-07	2.04E-10
ELOVL6	2.472614346	2.029082485	3.01E+00	2.83E-19	0
NUDT19	1.556978216	1.21059167	2.00E+00	0.00056375	0.000150352
PCCB	1.602061779	1.344989808	1.91E+00	1.28E-07	2.56E-12
ACOX1	1.000618185	0.71643294	1.40E+00	0.99710726	0.099784651
ACSL4	0.645713672	0.498824644	8.36E-01	0.00089532	1.33E-05
ALDH3A2	0.584517979	0.484297125	7.05E-01	2.20E-08	1.60E-13
ALDH7A1	1.970329477	1.5070047	2.58E+00	7.11E-07	4.93E-13
IDI1	0.986773106	0.762553901	1.28E+00	0.91935721	0.123303457
ALDH9A1	0.699459671	0.532585775	9.19E-01	0.01015978	0.001303579
HIBCH	0.590852927	0.402861406	8.67E-01	0.00708348	0.001295568
MMAA	1.205489989	0.970084187	1.50E+00	0.09180275	0.024283356
HSP90AA1	1.020224429	0.783212944	1.33E+00	0.88199534	0.056219719
BCKDHB	0.875239902	0.645272078	1.19E+00	0.3915472	0.044194048
SUCLG1	1.078883606	0.722201138	1.61E+00	0.71081861	0.081505313
HACL1	1.552936589	1.171037669	2.06E+00	0.0022406	1.66E-06
GPD2	0.700207128	0.558330644	8.78E-01	0.00203644	2.76E-09
IDH1	1.094033429	0.836935175	1.43E+00	0.51082735	0.016391532
PRKAB2	0.757739534	0.56516734	1.02E+00	0.06369104	0.001346534

Table S3 Sequence of siRNA

Name	Sequence
TFAP2D-siRNA-1	UGUAUCUUCGCCUAAUAAGGA CUUAAUJAGGCGAAGAUACAAU
TFAP2D-siRNA-2	AGAUUCUGUUUGAUGUAGCUA GCUACAUCAAACAGAAUCUUAU
ctrl siRNA	UUCUCCGAACGUGUCACGUTT ACGUGACACGUUCGGAGAATT

Table S4 Sequence of primers for qPCR

Name	Sequence
h-TFAP2D -F	GCCTCAATGCTTCACTCTTGGG
h-TFAP2D-R	GCTTCCGTCTTCTGCTGGTA
h-GAPDH-F	GTCTCCTCTGACTTCAACAGCG
h-GAPDH-R	ACCACCCTGTTGCTGTAGCCAA

Table S5 The antibodies used in this study

Gene name	Catalog number	Manufacturer	Dilution
TFAP2D	18835-1-AP	Proteintech	1:2,000
β -actin	66009-1-Ig	Proteintech	1:50,000