

**Supplementary Table 6. Evaluation of 6-NRL signature based on time-dependent ROC and C-index.**

Models	1 years	3 years	5 years	<i>p</i> -value	C-index[95%(CI)]	HR[95%(low, high)]	<i>p</i> -value	PMID
NRLs signature	0.784	0.827	0.764	<0.001	0.759[0.721, 0.797]	1.322(1.158-1.510)	<0.001	-
Song-JH signature	0.593	0.729	0.683	0.015	0.615[0.584, 0.646]	2.212(1.437-3.404)	<0.001	34291083
Ye-JC signature	0.611	0.704	0.709	0.006	0.599[0.569, 0.629]	2.251(1.353-3.747)	0.002	34764976
Zhao-MN signature	0.561	0.701	0.736	0.030	0.574[0.545, 0.603]	1.909(1.018-3.581)	0.044	35371305
Yao-JN signature	0.591	0.700	0.659	0.022	0.584[0.555, 0.613]	2.018(1.201-3.390)	0.008	34926275
Hu-ZN signature	0.573	0.700	0.780	0.028	0.552[0.524, 0.580]	1.910(0.818-4.460)	0.135	34840568
Yi-LL signature	0.747	0.688	0.627	0.002	0.659[0.626, 0.692]	1.651(1.298-2.101)	<0.001	32810627
Zhao-FC signature	0.610	0.688	0.666	0.286	0.573[0.544, 0.602]	2.430(0.750-7.872)	0.139	35309940
Wang-L signature	0.588	0.678	0.740	0.023	0.624[0.593, 0.655]	1.640(1.253-2.146)	<0.001	34257547
Zhao-FC signature	0.555	0.676	0.691	0.009	0.542[0.515, 0.569]	2.238(0.986-5.077)	0.054	35646892
Xiong-K signature	0.645	0.670	0.611	0.011	0.611[0.580, 0.642]	2.632(1.533-4.517)	<0.001	35497331
Zhuang-WT signature	0.652	0.669	0.579	0.003	0.619[0.588, 0.650]	1.924(1.058-3.500)	0.032	34976055
Liu-W signature	0.584	0.663	0.688	0.046	0.546[0.519, 0.573]	2.534(0.912-7.039)	0.075	36180848
Shi-XB signature	0.603	0.661	0.574	0.133	0.604[0.574, 0.634]	1.386(1.130-1.700)	0.002	35121801
Lian-L signature	0.619	0.644	0.637	0.020	0.602[0.572, 0.632]	1.973(1.305-2.982)	0.001	35557566
Zhang-CQ signature	0.583	0.636	0.658	0.029	0.577[0.548, 0.606]	1.952(1.009-3.774)	0.047	32883946
He-WW signature	0.650	0.634	0.640	0.254	0.599[0.569, 0.629]	2.367(1.389-4.036)	0.002	31423201
Xie-JH signature	0.528	0.628	0.741	0.241	0.531[0.504, 0.558]	1.512(1.123-2.036)	0.006	35282133
Xiao-WY signature	0.522	0.625	0.666	0.141	0.545[0.518, 0.572]	2.618(1.104-6.206)	0.029	35789548
Lan-T signature	0.583	0.615	0.694	0.444	0.565[0.537, 0.593]	2.456(1.180-5.112)	0.016	31966072
Chen-FN signature	0.558	0.613	0.703	0.020	0.566[0.538, 0.594]	1.939(1.247-3.013)	0.003	35611939
Zheng-ZJ signature	0.526	0.611	0.467	0.193	0.552[0.524, 0.580]	1.456(1.115-1.902)	0.006	35432441
Song-KW signature	0.566	0.606	0.730	0.048	0.560[0.532, 0.588]	2.038(1.172-3.544)	0.012	36072903
Zhang-CQ signature	0.581	0.599	0.602	0.203	0.558[0.530, 0.586]	2.753(0.776-9.763)	0.117	32898328
Sun-K signature	0.559	0.599	0.534	0.632	0.555[0.527, 0.583]	2.407(0.874-6.632)	0.089	35840882
He-ZK signature	0.598	0.594	0.693	0.121	0.596[0.566, 0.626]	2.523(1.126-5.650)	0.025	35574385
Cui-HY signature	0.531	0.593	0.562	0.218	0.524[0.498, 0.550]	2.801(0.353-22.198)	0.329	34336650
Zhao-FC signature	0.684	0.592	0.609	0.160	0.616[0.585, 0.647]	2.486(1.469-4.205)	<0.001	35912250
Liu-Y signature	0.608	0.592	0.522	0.120	0.596[0.566, 0.626]	2.499(1.449-4.310)	<0.001	32133283
Zhang-JF signature	0.606	0.589	0.535	0.223	0.587[0.558, 0.616]	1.947(1.398-2.711)	<0.001	35578166
Wu-D signature	0.682	0.583	0.579	0.113	0.604[0.574, 0.634]	2.242(1.100-4.567)	0.026	34170806
Peng-L signature	0.524	0.577	0.619	0.892	0.510[0.485, 0.536]	2.605(0.436-15.564)	0.294	31815134
Feng signature	0.608	0.568	0.598	0.630	0.577[0.548, 0.606]	1.506(1.199-1.892)	<0.001	34404882
Zhao-MN signature	0.573	0.568	0.571	0.313	0.574[0.545, 0.603]	2.435(0.826-7.174)	0.106	35899307
Xu-T signature	0.504	0.561	0.746	0.447	0.501[0.476, 0.526]	2.359(0.524-10.628)	0.264	35116551
Zhu-T signature	0.524	0.558	0.480	0.336	0.542[0.515, 0.569]	2.468(0.839-7.263)	0.101	33748133
Pang-JJ signature	0.671	0.554	0.730	0.049	0.629[0.598, 0.660]	2.602(1.168-5.800)	0.002	34659345
Du-HL signature	0.540	0.552	0.529	0.213	0.542[0.515, 0.569]	2.264(0.713-7.192)	0.166	33708944
Pu-Y signature	0.577	0.548	0.497	0.221	0.573[0.544, 0.602]	2.200(0.673-7.190)	0.192	35284129
Chen-YH signature	0.586	0.545	0.535	0.238	0.550[0.523, 0.578]	2.199(1.024-4.721)	0.043	33960364
Zhang-HP signature	0.622	0.537	0.561	0.485	0.579[0.550, 0.608]	1.782(1.111-2.859)	0.017	34234806
Chen-FF signature	0.511	0.528	0.492	0.639	0.504[0.479, 0.529]	2.442(0.362-16.458)	0.359	35928921
Meng-J signature	0.620	0.524	0.469	0.179	0.594[0.564, 0.624]	2.782(1.202-6.440)	0.017	29160958
Zhang-WG signature	0.473	0.523	0.691	0.731	0.468[0.445, 0.491]	2.514(0.378-16.734)	0.341	36071753
Tan-LL signature	0.546	0.489	0.465	0.494	0.560[0.532, 0.588]	2.135(0.935-4.876)	0.072	34814273
Lu-T signature	0.523	0.464	0.348	0.514	0.595[0.565, 0.625]	2.193(0.591-8.144)	0.241	33981829
Gao-JY signature	0.534	0.455	0.360	0.937	0.536[0.509, 0.563]	2.349(0.243-22.697)	0.460	33718151
Zhang-CQ signature	0.614	0.451	0.424	0.304	0.576[0.547, 0.605]	2.335(0.947-5.754)	0.065	33392181
Zhang-CQ signature	0.544	0.408	0.302	0.695	0.547[0.520, 0.574]	3.217(0.038-269.472)	0.605	35224157

**Supplementary Table 7. Top 20 categories with their representative enriched terms (one per category).**

GO	Category	Description	Count	%	Log10(P)	Log10(q)
hsa04217	KEGG Pathway	Necroptosis	27	100	-62.53	-58.18
hsa05164	KEGG Pathway	Influenza A	12	44.44	-19.92	-15.88
WP4630	WikiPathways	Measles virus infection	8	29.63	-12.55	-8.89
R-HSA-9645723	Reactome Gene Sets	Diseases of programmed cell death	7	25.93	-11.37	-7.98
R-HSA-5218859	Reactome Gene Sets	Regulated Necrosis	6	22.22	-10.86	-7.52
hsa04621	KEGG Pathway	NOD-like receptor signaling pathway	7	25.93	-9.62	-6.61
GO:0009615	GO Biological Processes	response to virus	8	29.63	-9.13	-6.25
GO:0070663	GO Biological Processes	regulation of leukocyte proliferation	7	25.93	-8.51	-5.76
GO:0000302	GO Biological Processes	response to reactive oxygen species	6	22.22	-8.08	-5.41
GO:0043124	GO Biological Processes	negative regulation of I-kappaB kinase/NF-kappaB signaling	4	14.81	-6.91	-4.49
R-HSA-1280215	Reactome Gene Sets	Cytokine Signaling in Immune system	8	29.63	-6.78	-4.38
GO:0002260	GO Biological Processes	lymphocyte homeostasis	4	14.81	-6.48	-4.16
GO:0080135	GO Biological Processes	regulation of cellular response to stress	7	25.93	-5.58	-3.52
GO:0038034	GO Biological Processes	signal transduction in absence of ligand	3	11.11	-5.47	-3.44
WP5083	WikiPathways	Neuroinflammation and glutamatergic signaling	4	14.81	-5.14	-3.17
GO:0001933	GO Biological Processes	negative regulation of protein phosphorylation	5	18.52	-4.93	-2.99
GO:0009612	GO Biological Processes	response to mechanical stimulus	4	14.81	-4.41	-2.54
WP2037	WikiPathways	Prolactin signaling pathway	3	11.11	-4.37	-2.51
GO:1901216	GO Biological Processes	positive regulation of neuron death	3	11.11	-4.12	-2.29
GO:0071496	GO Biological Processes	cellular response to external stimulus	4	14.81	-3.76	-1.97