Bone & Joint Research

Supplementary Material

10.1302/2046-3758.1212.BJR-2023-0021.R2

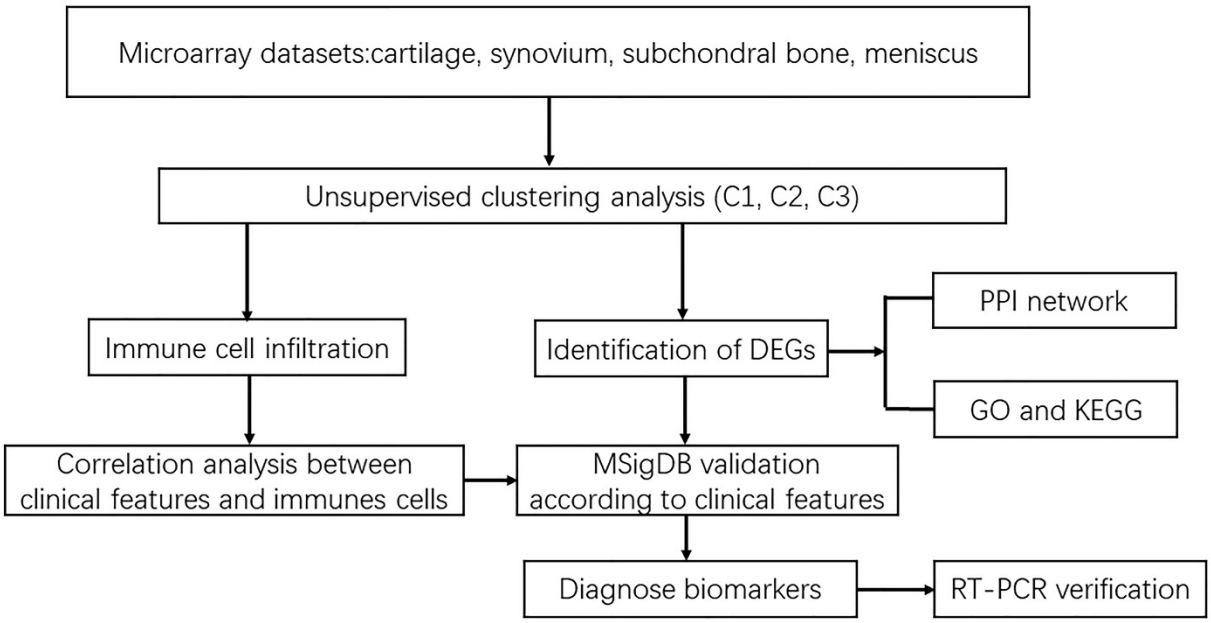

Fig a. Flowchart of osteoarthritis subtype model construction and diagnostic marker validation. DEG, differentially expressed gene; GO, Gene Ontology; KEGG, Kyoto Encyclopedia of Genes and Genomes; MSigDB, Molecular Signatures Database; PPI, protein-protein interaction; RT-PCR, real-time polymerase chain reaction.

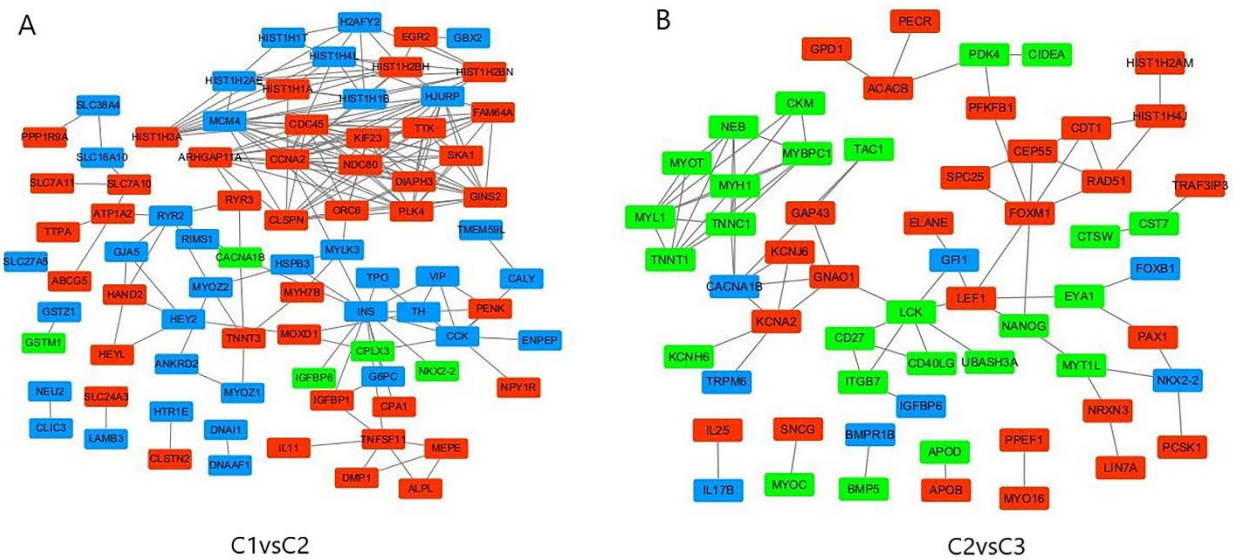

Fig b. Construction of protein-protein interaction (PPI) network. a) PPI network of C1 vs C2 differentially expressed genes (DEGs). b) PPI network of C2 vs C3 DEGs.

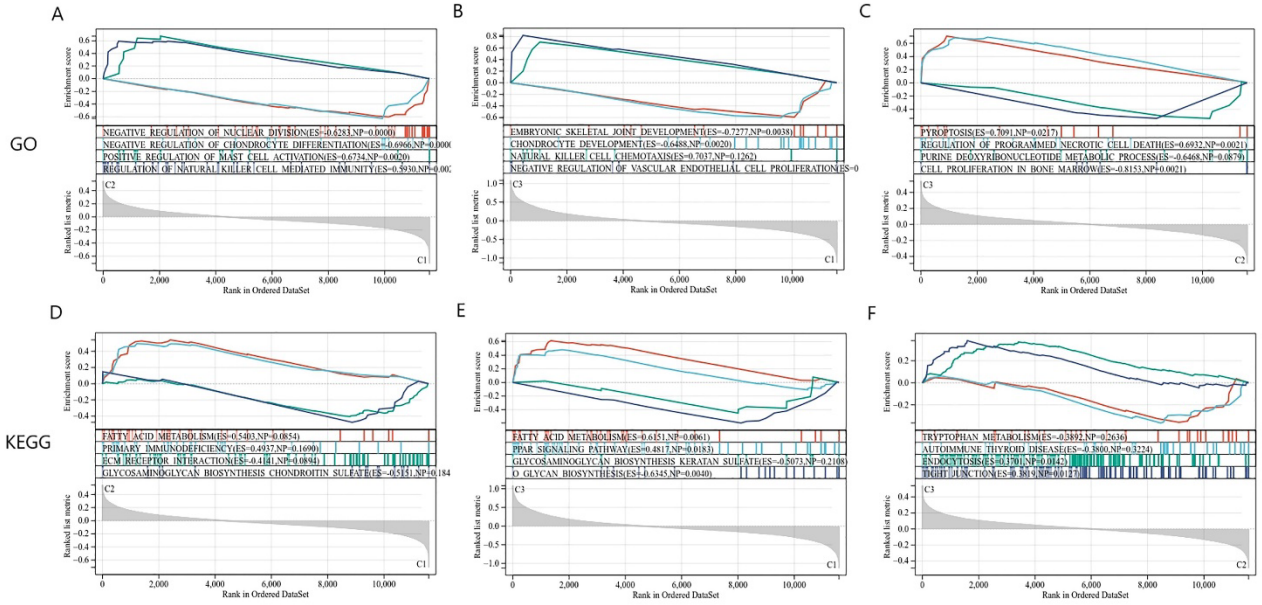

Fig c. Gene set enrichment analysis. a) Gene Ontology (GO) enrichment analysis of C1 vs C2 subtype. b) GO enrichment analysis of C1 vs C3 subtype. c) GO enrichment analysis of C2 vs C3 subtype. d) Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway analysis of C1 vs C2 subtype. e) KEGG pathway analysis of C1 vs C3 subtype. f) KEGG pathway analysis of C2 vs C3 subtype.

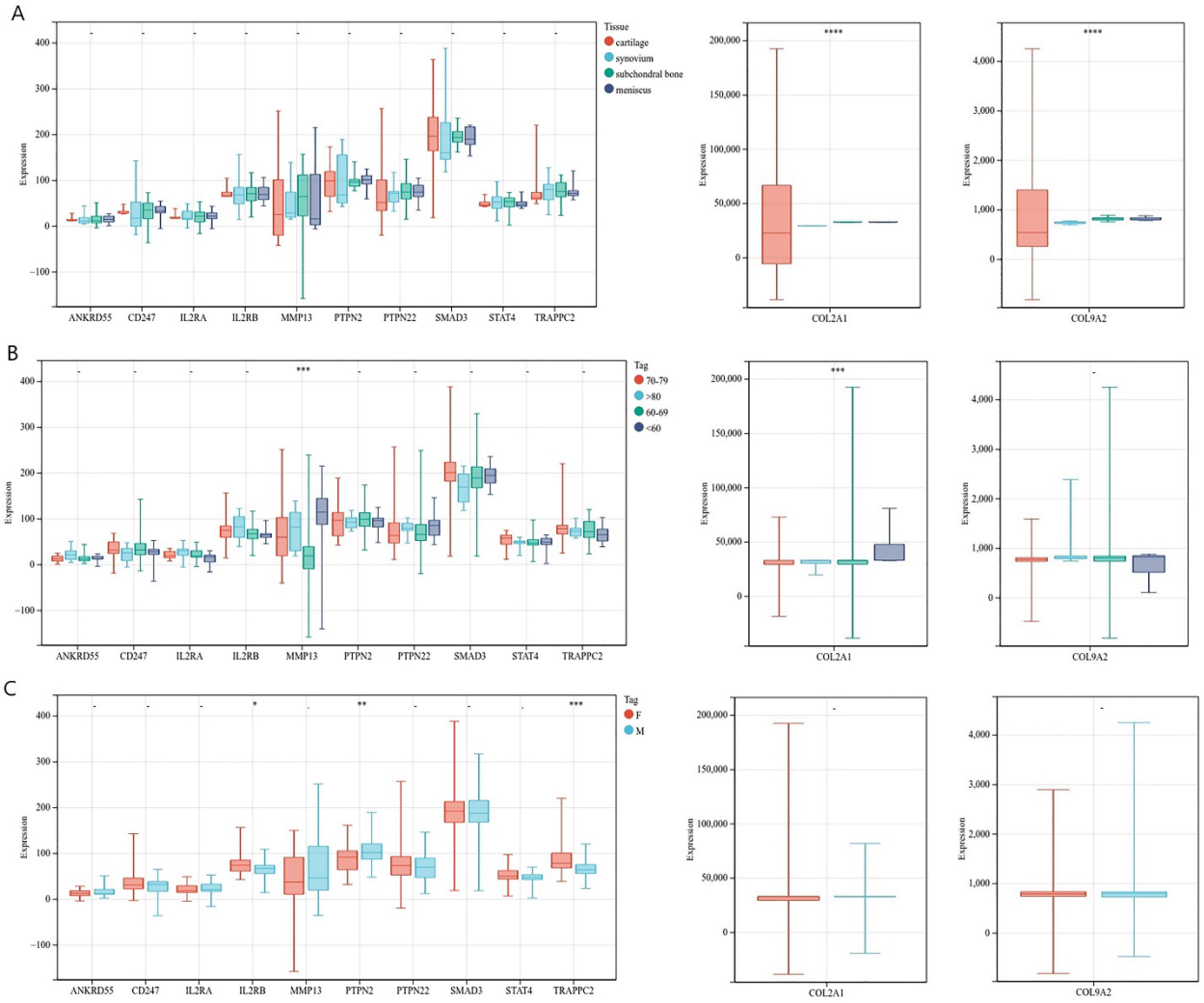

Fig d. Clinical features and osteoarthritis (OA)-related gene validation. a) Expression of OA-related genes in different tissues. b) Expression of OA-related genes across different ages. c) Expression of OA-related genes across different sexes. *p < 0.05, **p < 0.01, ***p < 0.001, ****p < 0.0001, Mann-Whitney U test.

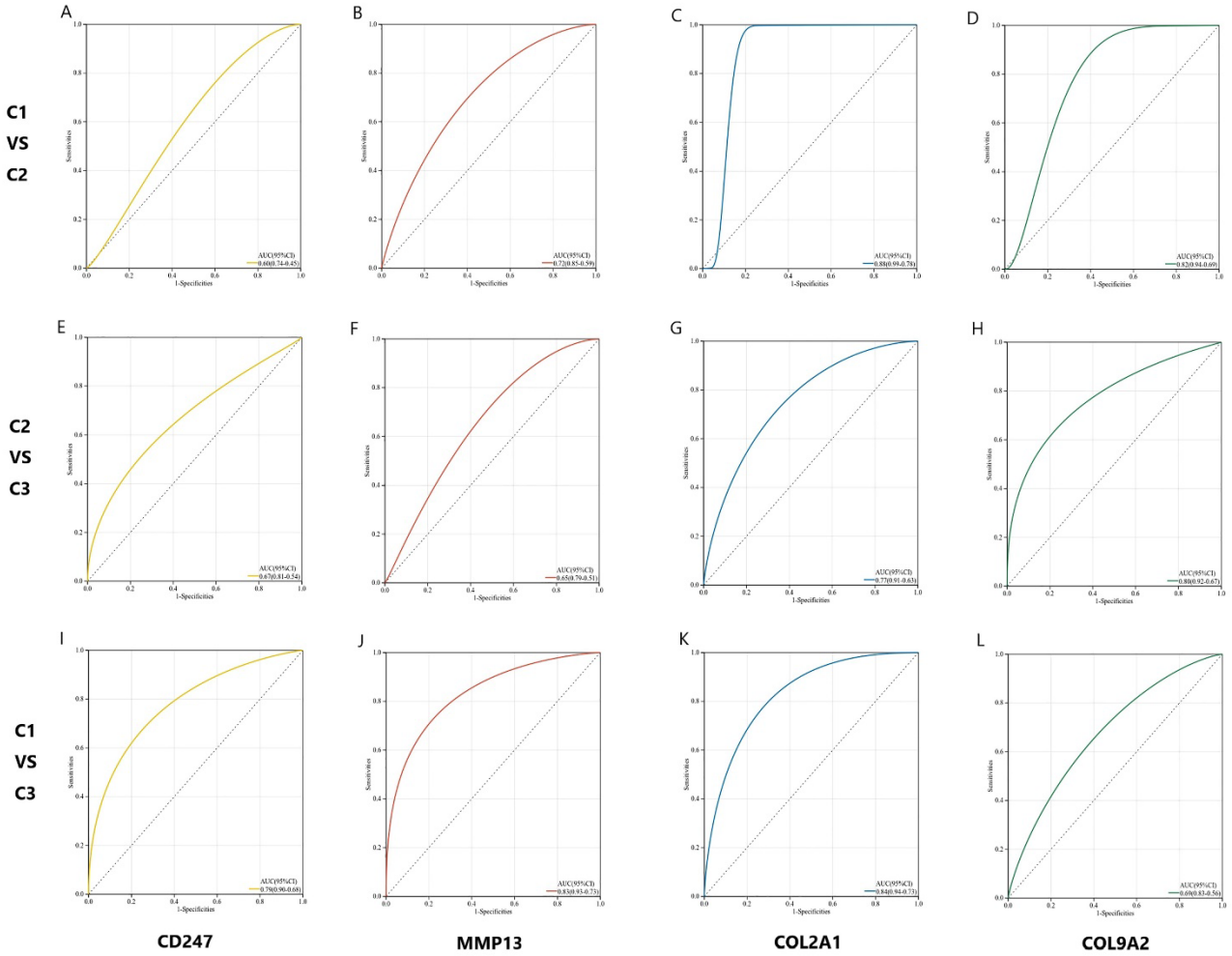

Fig e. Diagnostic value of osteoarthritis (OA)-related genes by receiver operating characteristic (ROC) curve. a) to d) ROC curve of C1- vs C2-related genes. e) to h) ROC curve of C2- vs C3-related genes. i) to l) ROC curve of C1- vs C3-related genes. COL2A1, collagen type II alpha 1 chain; MMP13, matrix metalloproteinase 13.

Table i. Clinical characteristics of the osteoarthritis samples.

Tag	Group	Tissue	Sex	Age, yrs
GSM3130539	C3	Cartilage	F	75
GSM3130540	C2	Cartilage	M	71
GSM3130541	C2	Cartilage	F	82
GSM3130542	C2	Cartilage	F	62
GSM3130543	C1	Cartilage	F	69
GSM3130544	C2	Cartilage	M	70
GSM3130545	C3	Cartilage	F	68
GSM3130546	C2	Cartilage	M	66
GSM3130547	C1	Cartilage	M	66
GSM3130548	C2	Cartilage	M	68
GSM3130559	C1	Cartilage	F	52
GSM3130560	C2	Cartilage	F	57
GSM3130561	C2	Cartilage	F	67
GSM3130562	C1	Cartilage	M	60
GSM3130563	C1	Cartilage	M	51
GSM3130564	C3	Cartilage	M	67
GSM3130565	C2	Cartilage	F	62
GSM3130566	C3	Cartilage	F	69

GSM3130567	C2	Cartilage	F	71
GSM3130568	C2	Cartilage	F	71
GSM1337327	C2	Synovium	F	77
GSM1337328	C2	Synovium	F	71
GSM1337329	C2	Synovium	F	76
GSM1337330	C2	Synovium	F	61
GSM1337331	C2	Synovium	F	75
GSM1337332	C2	Synovium	M	78
GSM1337333	C2	Synovium	M	69
GSM1337334	C2	Synovium	F	71
GSM1337335	C2	Synovium	F	80
GSM1337336	C2	Synovium	F	66
GSM302876	C2	Synovium	F	77
GSM302880	C2	Synovium	F	71
GSM302930	C2	Synovium	F	76
GSM303326	C2	Synovium	F	61
GSM303341	C2	Synovium	F	75
GSM303356	C2	Synovium	M	78
GSM303358	C2	Synovium	M	64
GSM303360	C2	Synovium	F	71
GSM303362	C2	Synovium	F	80
GSM303370	C2	Synovium	F	66
GSM1248769	C3	Subchondral bone	F	55
GSM1248770	C3	Subchondral bone	M	68
GSM1248771	C3	Subchondral bone	M	66
GSM1248772	C3	Subchondral bone	F	71
GSM1248773	C3	Subchondral bone	F	71
GSM1248774	C3	Subchondral bone	M	81
GSM1248775	C3	Subchondral bone	F	67
GSM1248776	C3	Subchondral bone	F	59
GSM1248777	C3	Subchondral bone	M	77
GSM1248778	C3	Subchondral bone	F	71
GSM1248779	C3	Subchondral bone	F	63
GSM1248780	C3	Subchondral bone	F	53
GSM1248781	C3	Subchondral bone	F	77
GSM1248782	C3	Subchondral bone	M	68
GSM1248783	C3	Subchondral bone	M	75
GSM1248784	C3	Subchondral bone	F	67
GSM1248785	C3	Subchondral bone	M	89
GSM1248786	C3	Subchondral bone	F	68
GSM1248787	C3	Subchondral bone	F	76
GSM1248788	C3	Subchondral bone	M	81
GSM1248789	C1	Subchondral bone	F	55
GSM1248790	C1	Subchondral bone	M	68
GSM1248791	C1	Subchondral bone	M	66
GSM1248792	C1	Subchondral bone	M	68
GSM1248793	C1	Subchondral bone	F	63
GSM1248794	C1	Subchondral bone	M	65
GSM1248795	C1	Subchondral bone	F	71
GSM1248796	C2	Subchondral bone	F	60
GSM1248797	C1	Subchondral bone	F	63
GSM1248798	C1	Subchondral bone	F	83
GSM1248799	C1	Subchondral bone	F	77

GSM1248800	C1	Subchondral bone	M	52
GSM1248801	C1	Subchondral bone	M	74
GSM1248802	C3	Subchondral bone	M	68
GSM1248803	C1	Subchondral bone	F	68
GSM1248804	C1	Subchondral bone	M	69
GSM1248805	C1	Subchondral bone	M	89
GSM1248806	C1	Subchondral bone	F	68
GSM1248807	C1	Subchondral bone	F	76
GSM1248808	C1	Subchondral bone	M	81
GSM2627530	C1	Meniscus	M	57
GSM2627531	C1	Meniscus	F	64
GSM2627532	C3	Meniscus	F	53
GSM2627533	C3	Meniscus	F	62
GSM2627534	C1	Meniscus	M	80
GSM2627535	C1	Meniscus	F	67
GSM2627536	C3	Meniscus	F	70
GSM2627537	C3	Meniscus	F	64
GSM2627538	C3	Meniscus	M	61
GSM2627539	C3	Meniscus	F	62
GSM2627540	C1	Meniscus	F	79
GSM2627541	C1	Meniscus	F	64

Table ii. Clinical characteristics of 16 osteoarthritis patients.

Patients	Tissue	KL grade	Sex	Age, yrs
1	All tissues	Ⅲ	F	57
2	All tissues	Ⅲ	F	66
3	All tissues	Ⅲ	F	74
4	All tissues	Ⅲ	F	80
5	Cartilage	Ⅲ	F	58
6	Cartilage	Ⅲ	F	64
7	Cartilage	Ⅲ	F	72
8	Cartilage	Ⅲ	F	81
9	Cartilage	Ⅲ	M	57
10	Cartilage	Ⅲ	M	58
11	Cartilage	Ⅲ	M	62
12	Cartilage	Ⅲ	M	68
13	Cartilage	Ⅲ	M	71
14	Cartilage	Ⅲ	M	75
15	Cartilage	Ⅲ	M	80
16	Cartilage	Ⅲ	M	82

KL, Kellgren-Lawrence.

Table iii. Primers of target genes for quantitative polymerase chain reaction.

Genes	F sequences (5′— 3′)	R sequences (5′— 3′)
GAPDH	GTCTCCTCTGACTTCAACAGCG	ACCACCCTGTTGCTGTAGCCAA
COL2A1	CGAGGCAGACAGTACCTTGA	TGCTCTCGATCTGGTTGTTC
COL9A2	CTCGCTCTGGCGCAGATTAG	GCCCATTGTCACCGTCGAT

MMP13	TGAGAGTCATGCCAACAAATTC	CAGCCACGCATAGTCATGTAGA
PTPN2	AAGCCCACTCCGGAAACTAAA	AAACAAACAACTGTGAGGCAATCTA
TRAPPC2	CGAATCAGTGATACAGTGTCTGTCC	GATGGGAATGCCAGAGCG

COL2A1, collagen type II alpha 1 chain; GAPDH, glyceraldehyde 3-phosphate dehydrogenase; MMP13, matrix metalloproteinase 13; PTPN2, tyrosine phosphatase non-receptor Type 2; TRAPPC2, trafficking protein particle complex subunit 2.