

Discovery of N-glycan Biomarkers for the Canine Osteoarthritis

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Table S1. The percentiles of samples on frequency distribution.

<i>f</i>	Healthy Control		Patient	
	N-glycan	%	N-glycan	%
100~90%	55	17%	64	11%
90~80%	4	1%	13	2%
80~70%	5	2%	11	2%
70~60%	6	2%	17	3%
60~50%	10	3%	27	5%
50~40%	11	3%	43	7%
40~30%	12	4%	42	7%
30~20%	20	6%	81	14%
20~10%	40	13%	165	28%
<10%	154	49%	135	23%
Total	317		598	

Table S2. The number of N-glycans in each class based on the frequency. (A) healthy control and (B) patient group.

(A)

<i>f</i>	Total	Major	Minor	Trace
>90%	55	36	19	0
80%	4	0	3	1
70%	5	0	3	2
60%	6	0	3	3
50%	10	0	0	10
40%	11	0	1	10
30%	12	0	1	11
20%	20	0	0	20
10%	40	0	0	40
SUM	163	36	30	97

(B)

<i>f</i>	Total	Major	Minor	Trace
>90%	64	48	16	0
80%	13	1	12	0
70%	11	0	11	0
60%	17	0	17	0
50%	30	1	23	6
40%	40	0	17	23
30%	42	0	4	38
20%	81	0	1	80
10%	165	0	1	164
SUM	463	50	102	311

Table S3. The composition, frequency, and the class of N-glycans assigned (A) healthy control and (B) patient group.

(A)

Composition	Frequency	Class
3_2_0_0_0	100.0%	MAJOR
3_2_1_0_0	100.0%	MAJOR
5_4_1_2_0	100.0%	MAJOR
6_5_0_1_0	100.0%	MAJOR
4_3_0_1_0	100.0%	MAJOR
6_4_1_1_0	100.0%	MAJOR
4_3_0_0_0	100.0%	MAJOR
3_3_1_0_0	100.0%	MAJOR
6_4_0_1_0	100.0%	MAJOR
5_4_1_1_0	100.0%	MAJOR
4_3_1_0_0	100.0%	MAJOR
3_4_1_0_0	100.0%	MAJOR
5_4_0_0_1	100.0%	MAJOR
7_4_0_1_0	100.0%	MAJOR
3_4_0_0_0	100.0%	MAJOR
5_4_1_0_0	100.0%	MAJOR
5_4_0_0_0	100.0%	MAJOR
5_4_0_1_0	100.0%	MAJOR
8_2_0_0_0	100.0%	MAJOR
9_2_0_0_0	100.0%	MAJOR
5_2_0_0_0	100.0%	MAJOR
5_4_0_2_0	100.0%	MAJOR
3_3_0_0_0	100.0%	MAJOR
4_4_1_0_0	100.0%	MAJOR
7_2_0_0_0	100.0%	MAJOR
6_2_0_0_0	100.0%	MAJOR
4_2_0_0_0	100.0%	MAJOR
5_4_0_1_1	100.0%	MAJOR
4_4_0_1_0	100.0%	MAJOR
4_4_0_0_0	100.0%	MAJOR
6_4_0_2_0	100.0%	MAJOR
6_3_0_1_0	100.0%	MAJOR
6_4_0_1_1	100.0%	MAJOR
5_3_0_1_0	100.0%	MAJOR
5_3_1_0_0	100.0%	MAJOR
5_5_2_0_0	92.7%	MAJOR
5_3_0_0_0	100.0%	MINOR
6_3_1_0_0	100.0%	MINOR
6_3_1_0_1	100.0%	MINOR
5_4_0_0_2	100.0%	MINOR
4_4_1_1_0	100.0%	MINOR
6_4_1_0_0	100.0%	MINOR
4_3_1_1_0	100.0%	MINOR
4_3_0_0_1	100.0%	MINOR
6_3_0_0_0	100.0%	MINOR
6_5_0_2_0	100.0%	MINOR
6_4_0_0_1	97.6%	MINOR

7_4_1_0_0	97.6%	MINOR
7_4_0_0_0	95.1%	MINOR
10_2_0_0_0	92.7%	MINOR
7_6_1_0_1	92.7%	MINOR
5_3_1_1_0	92.7%	MINOR
6_4_0_0_0	92.7%	MINOR
6_3_1_1_0	90.2%	MINOR
4_4_0_0_1	90.2%	MINOR
4_3_2_0_0	85.4%	MINOR
6_5_2_0_0	82.9%	MINOR
6_3_0_0_1	80.5%	MINOR
5_4_2_0_0	78.0%	MINOR
6_4_3_0_0	78.0%	MINOR
6_5_0_3_0	75.6%	MINOR
3_4_0_0_2	65.9%	MINOR
6_5_3_2_1	65.9%	MINOR
4_5_0_0_2	61.0%	MINOR
7_6_0_0_0	46.3%	MINOR
4_4_3_0_1	39.0%	MINOR

(B)

Composition	Frequency	Class
3_2_0_0_0	100.0%	MAJOR
3_2_1_0_0	100.0%	MAJOR
3_4_3_0_0	100.0%	MAJOR
4_4_3_0_0	100.0%	MAJOR
5_4_1_2_0	100.0%	MAJOR
4_3_0_1_0	100.0%	MAJOR
6_4_1_1_0	100.0%	MAJOR
4_3_0_0_0	100.0%	MAJOR
7_4_0_0_0	100.0%	MAJOR
3_3_1_0_0	100.0%	MAJOR
6_4_0_1_0	100.0%	MAJOR
5_3_0_0_0	100.0%	MAJOR
5_4_1_1_0	100.0%	MAJOR
6_3_1_0_0	100.0%	MAJOR
4_3_1_0_0	100.0%	MAJOR
3_4_1_0_0	100.0%	MAJOR
5_4_0_0_1	100.0%	MAJOR
7_4_0_1_0	100.0%	MAJOR
6_4_0_0_1	100.0%	MAJOR
3_4_0_0_0	100.0%	MAJOR
5_4_1_0_0	100.0%	MAJOR
5_4_0_0_0	100.0%	MAJOR
5_4_0_1_0	100.0%	MAJOR
8_2_0_0_0	100.0%	MAJOR
9_2_0_0_0	100.0%	MAJOR
5_4_0_0_2	100.0%	MAJOR
5_2_0_0_0	100.0%	MAJOR
5_4_0_2_0	100.0%	MAJOR
3_3_0_0_0	100.0%	MAJOR

4_4_1_0_0	100.0%	MAJOR
7_2_0_0_0	100.0%	MAJOR
6_2_0_0_0	100.0%	MAJOR
4_2_0_0_0	100.0%	MAJOR
4_4_1_1_0	100.0%	MAJOR
5_4_0_1_1	100.0%	MAJOR
4_4_0_1_0	100.0%	MAJOR
4_4_0_0_0	100.0%	MAJOR
6_4_0_2_0	100.0%	MAJOR
6_4_1_0_0	100.0%	MAJOR
6_3_0_1_0	100.0%	MAJOR
5_3_0_1_0	100.0%	MAJOR
5_3_1_0_0	100.0%	MAJOR
4_4_2_1_0	98.9%	MAJOR
10_2_0_0_0	98.9%	MAJOR
6_3_1_0_1	98.9%	MAJOR
7_4_1_0_0	98.9%	MAJOR
5_5_2_0_0	98.9%	MAJOR
6_4_0_1_1	97.8%	MAJOR
3_4_0_0_2	81.5%	MAJOR
4_4_3_0_1	54.3%	MAJOR
5_4_3_0_0	100.0%	MINOR
6_3_0_0_0	100.0%	MINOR
6_3_1_1_0	100.0%	MINOR
5_3_1_1_0	100.0%	MINOR
4_4_0_0_1	100.0%	MINOR
7_7_5_2_2	97.8%	MINOR
6_5_0_2_0	97.8%	MINOR
4_3_1_1_0	96.7%	MINOR
7_4_2_0_0	96.7%	MINOR
6_5_1_0_0	96.7%	MINOR
6_4_0_0_0	96.7%	MINOR
4_5_2_0_0	95.7%	MINOR
4_3_0_0_1	94.6%	MINOR
6_5_0_0_0	94.6%	MINOR
7_7_3_2_1	93.5%	MINOR
6_4_2_0_0	91.3%	MINOR
6_7_4_0_0	89.1%	MINOR
6_3_0_0_1	89.1%	MINOR
6_5_0_1_0	88.0%	MINOR
6_5_1_1_0	88.0%	MINOR
6_5_0_0_1	88.0%	MINOR
3_6_0_0_1	87.0%	MINOR
7_6_3_2_1	84.8%	MINOR
6_3_2_0_0	81.5%	MINOR
6_7_4_1_0	80.4%	MINOR
4_3_0_0_2	80.4%	MINOR
6_5_0_3_0	80.4%	MINOR
11_2_0_0_0	80.4%	MINOR
5_5_1_0_0	79.3%	MINOR
4_7_3_1_0	78.3%	MINOR
5_7_3_1_0	77.2%	MINOR

5_7_4_1_0	77.2%	MINOR
7_4_1_1_0	77.2%	MINOR
4_5_1_0_0	76.1%	MINOR
4_3_2_0_0	76.1%	MINOR
6_4_3_0_0	72.8%	MINOR
7_4_1_0_1	71.7%	MINOR
7_7_3_4_0	70.7%	MINOR
5_4_2_0_0	70.7%	MINOR
4_7_4_1_0	68.5%	MINOR
3_6_0_0_4	68.5%	MINOR
7_7_1_0_4	68.5%	MINOR
7_7_1_3_1	68.5%	MINOR
7_6_3_3_0	67.4%	MINOR
4_3_2_1_0	65.2%	MINOR
4_3_2_0_2	65.2%	MINOR
6_7_2_2_0	64.1%	MINOR
7_7_2_3_1	64.1%	MINOR
4_6_1_1_0	64.1%	MINOR
4_7_0_1_0	64.1%	MINOR
5_6_5_2_0	63.0%	MINOR
7_7_5_1_2	62.0%	MINOR
7_7_5_0_3	62.0%	MINOR
3_3_2_0_0	62.0%	MINOR
6_6_2_0_0	62.0%	MINOR
5_6_4_1_0	60.9%	MINOR
4_3_1_0_2	59.8%	MINOR
4_4_2_0_0	59.8%	MINOR
6_7_3_2_0	58.7%	MINOR
5_7_2_1_0	58.7%	MINOR
4_5_2_1_0	58.7%	MINOR
7_7_5_0_4	57.6%	MINOR
7_7_1_2_2	57.6%	MINOR
7_6_1_0_1	55.4%	MINOR
7_7_5_0_1	55.4%	MINOR
5_6_0_1_0	55.4%	MINOR
6_3_2_1_0	55.4%	MINOR
6_4_2_1_0	55.4%	MINOR
7_4_0_0_3	54.3%	MINOR
4_5_0_0_2	54.3%	MINOR
6_6_5_3_0	53.3%	MINOR
6_5_2_2_0	53.3%	MINOR
5_4_3_0_3	53.3%	MINOR
5_7_4_0_0	52.2%	MINOR
4_6_1_0_3	52.2%	MINOR
5_7_0_0_1	52.2%	MINOR
5_4_3_1_0	51.1%	MINOR
7_7_1_4_0	50.0%	MINOR
7_7_3_1_0	50.0%	MINOR
7_6_1_3_1	48.9%	MINOR
5_3_2_1_0	48.9%	MINOR
3_4_2_0_0	48.9%	MINOR
5_5_4_2_0	47.8%	MINOR

6_5_2_0_0	46.7%	MINOR
4_6_3_0_0	46.7%	MINOR
3_6_4_0_0	46.7%	MINOR
6_4_0_0_3	45.7%	MINOR
7_7_3_2_2	45.7%	MINOR
7_7_3_0_1	43.5%	MINOR
7_6_0_0_0	43.5%	MINOR
7_4_3_0_0	42.4%	MINOR
5_7_4_2_0	41.3%	MINOR
5_6_5_0_0	41.3%	MINOR
7_7_3_1_2	41.3%	MINOR
6_7_3_1_0	41.3%	MINOR
7_7_5_1_3	40.2%	MINOR
6_7_5_3_0	39.1%	MINOR
6_7_5_0_0	39.1%	MINOR
7_7_5_3_1	33.7%	MINOR
6_5_3_2_1	30.4%	MINOR
4_6_5_1_0	26.1%	MINOR
7_7_1_0_2	10.9%	MINOR

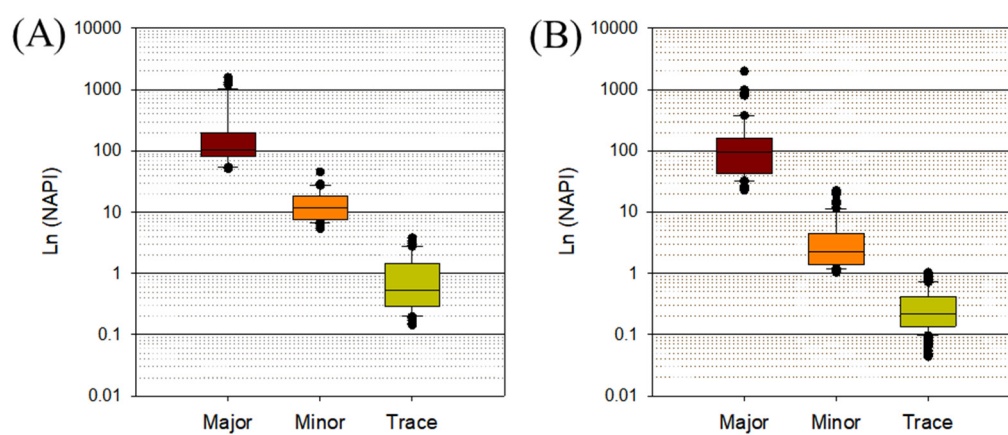


Figure S1. The comparison of peak intensity between Peak Major class, Minor class, and Trace groups. (A) healthy control group, (B) Osteoarthritis patient group.

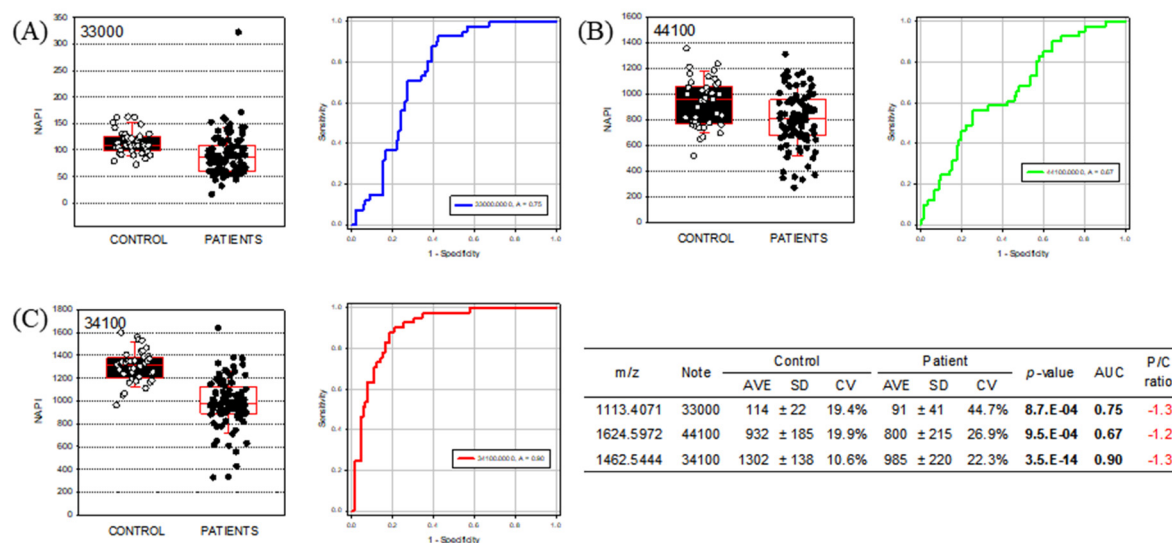


Figure S2. Example of biomarkers with high AUC but low P/C ratio. (A) and (B) has high *p*-value and low AUC. (C) has low *p*-value and high AUC but a similar P/C ratio with (A) and (B). Although N-glycan (C) has a high AUC of 0.90 values of OA patients and healthy control made clusters in close range.