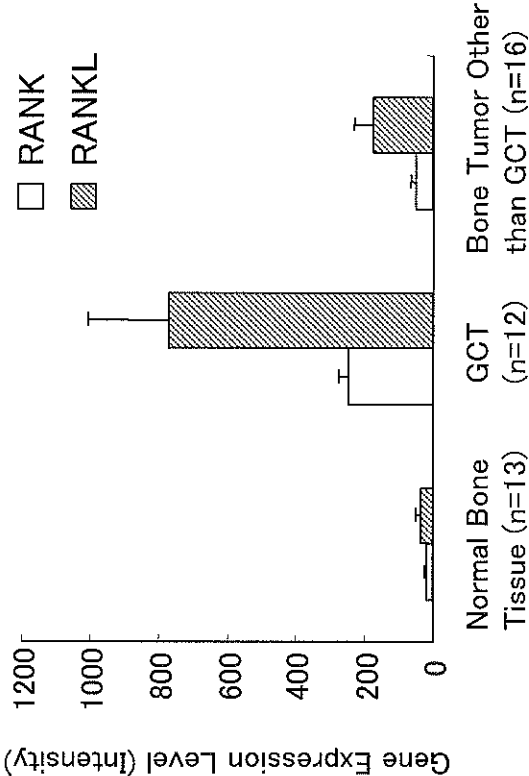


Figure 1

(A)



(B)

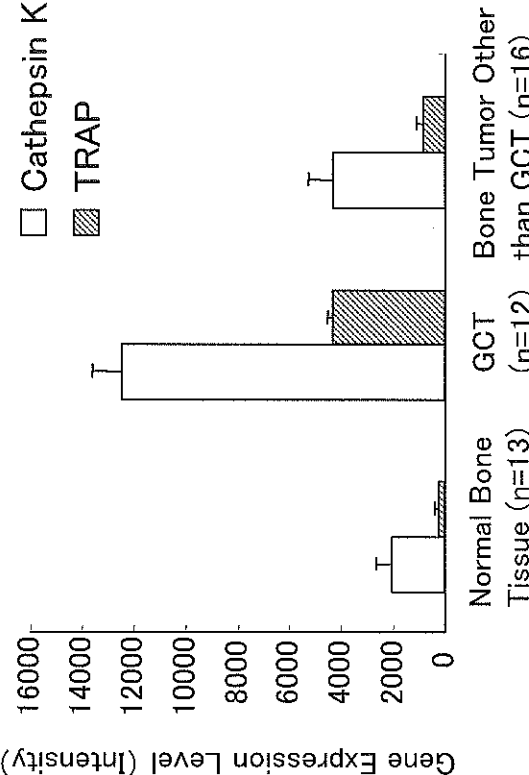


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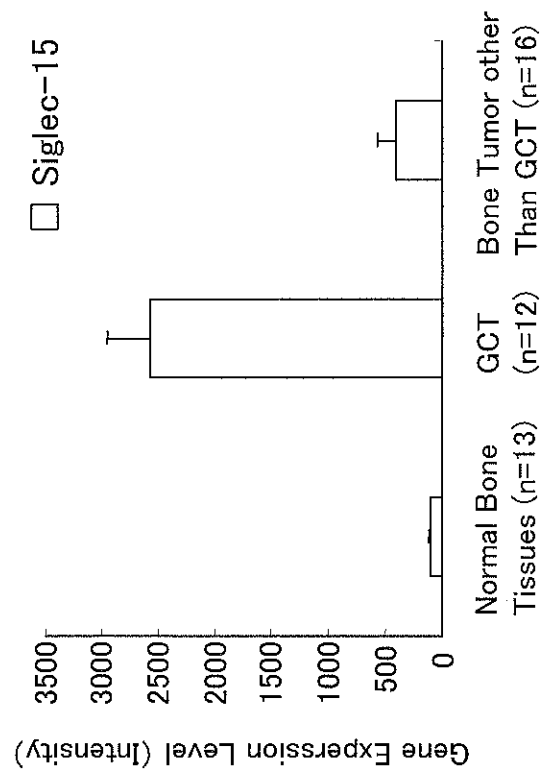


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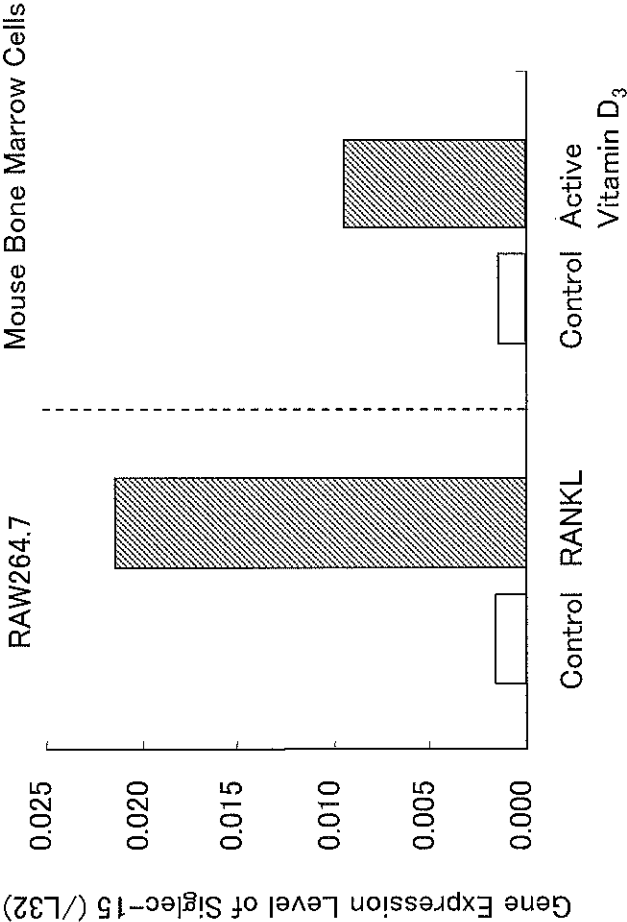


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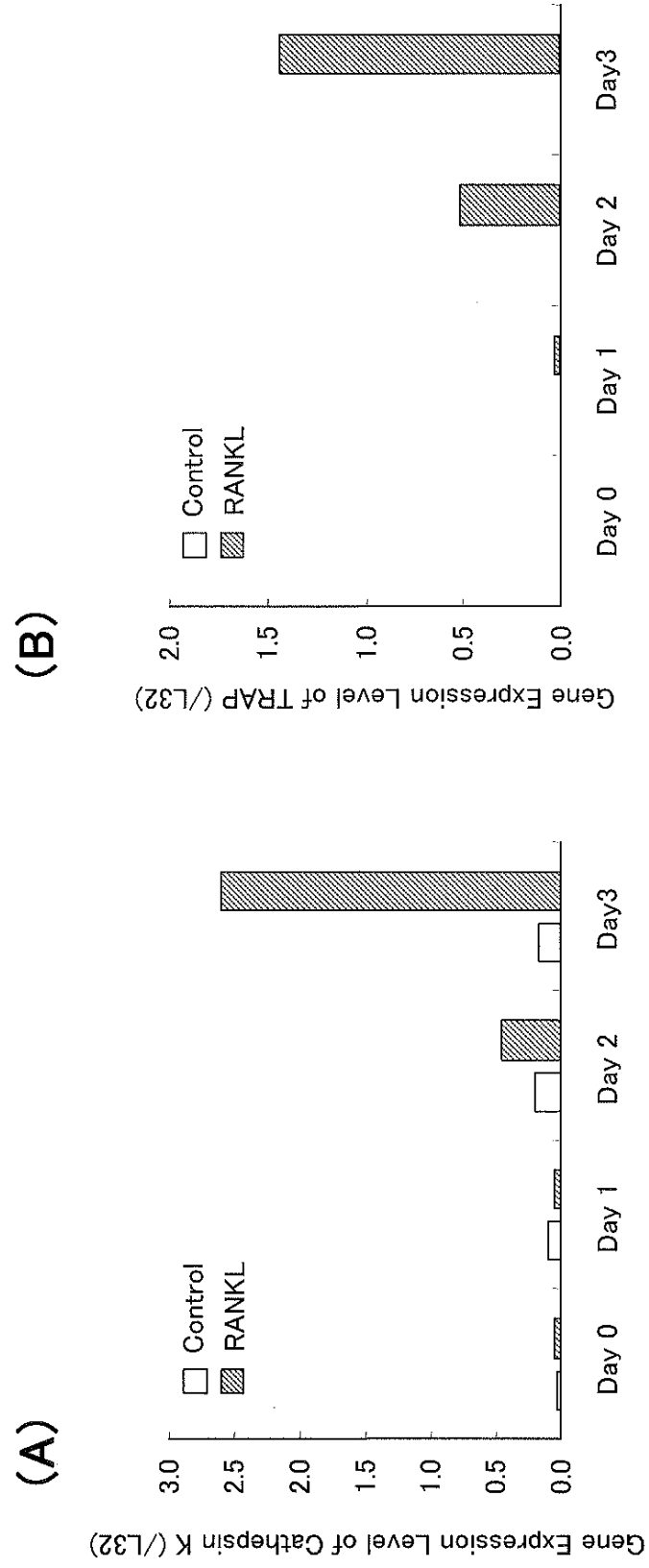


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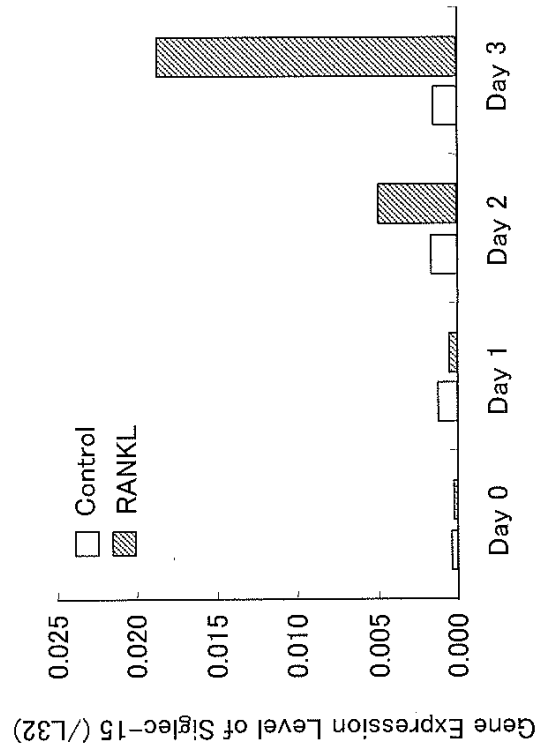


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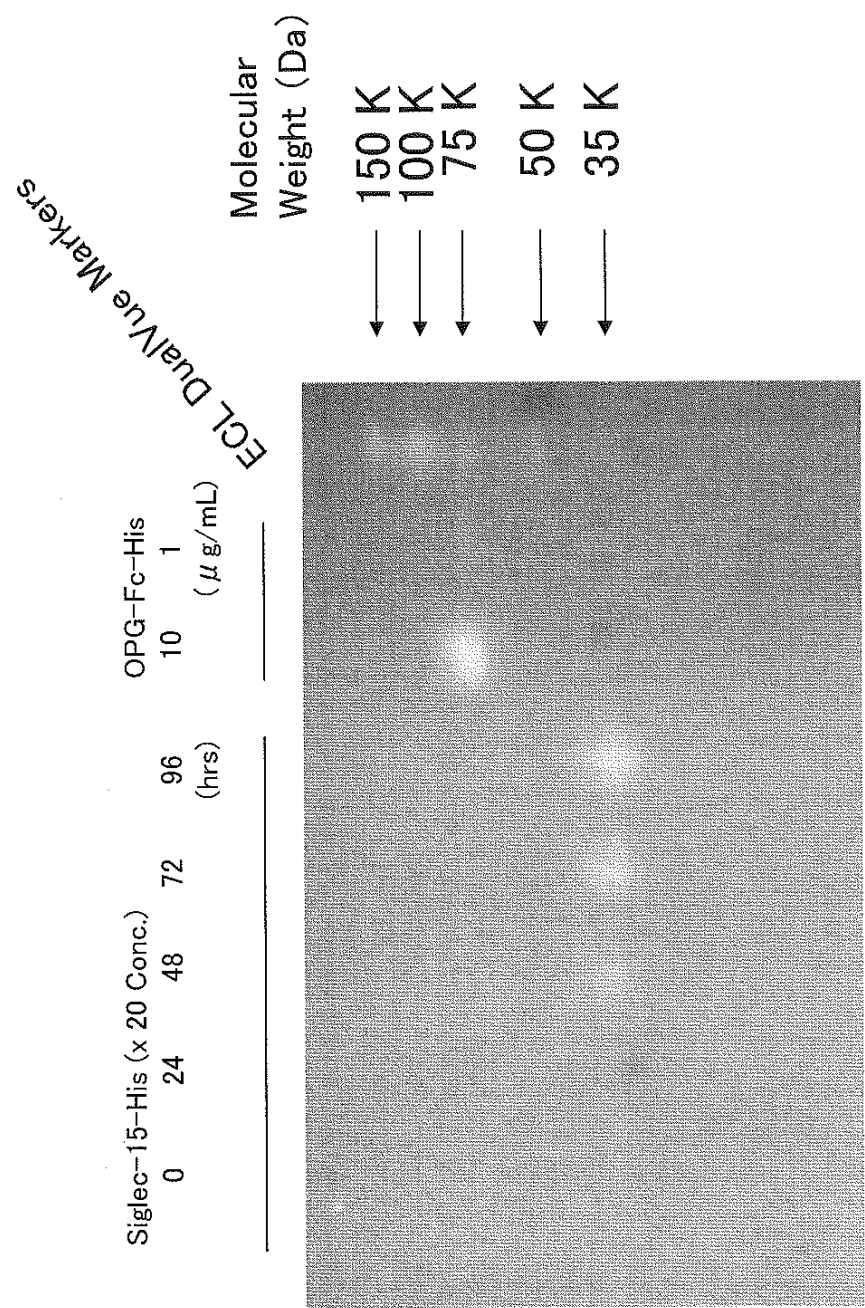


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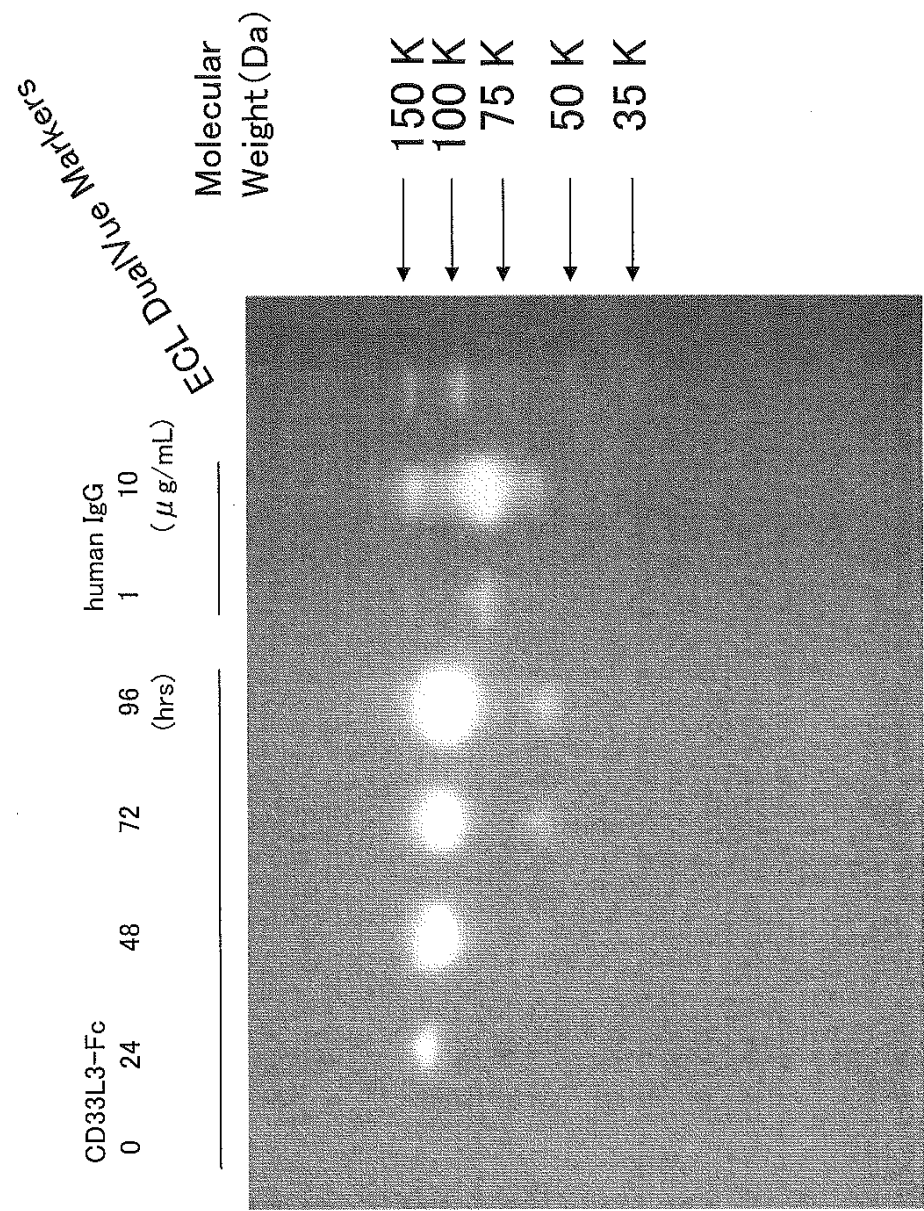


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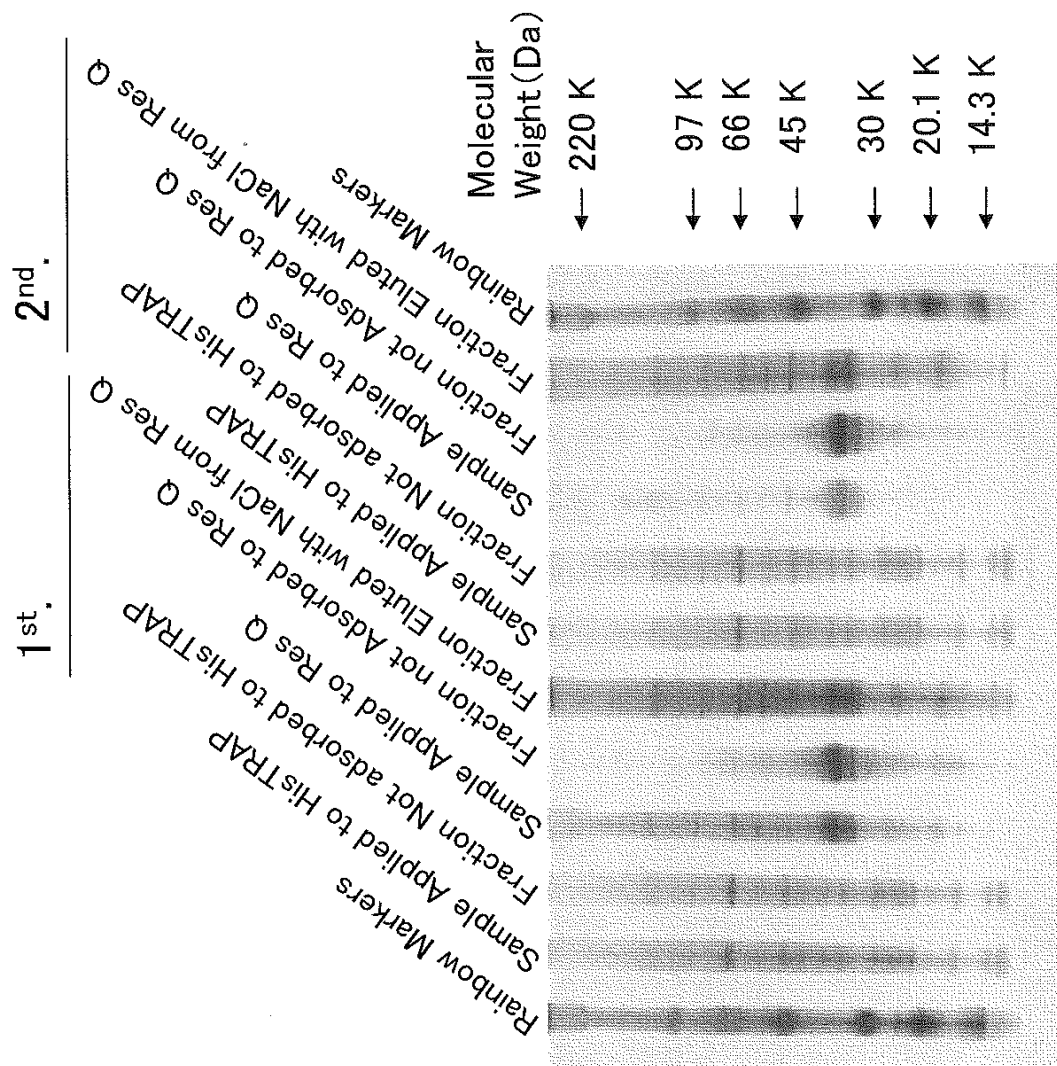


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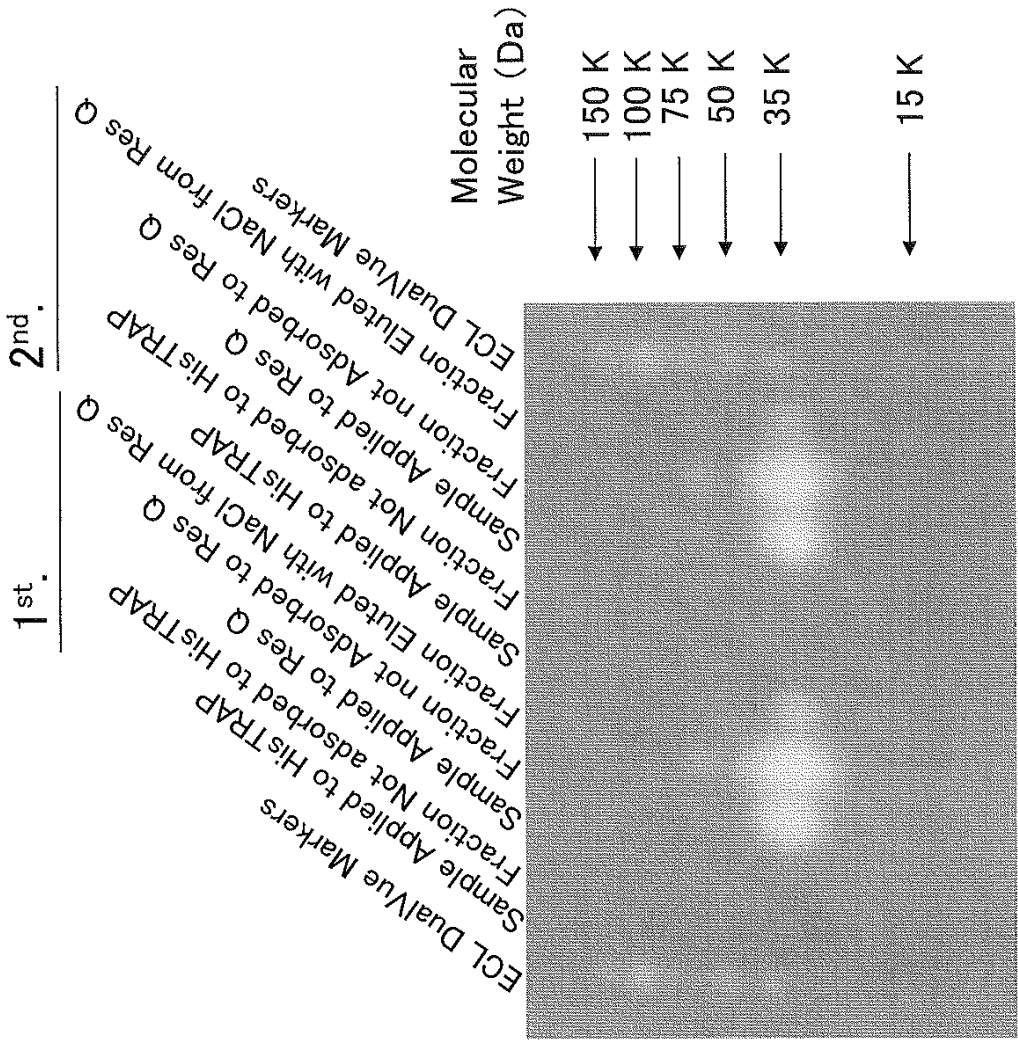


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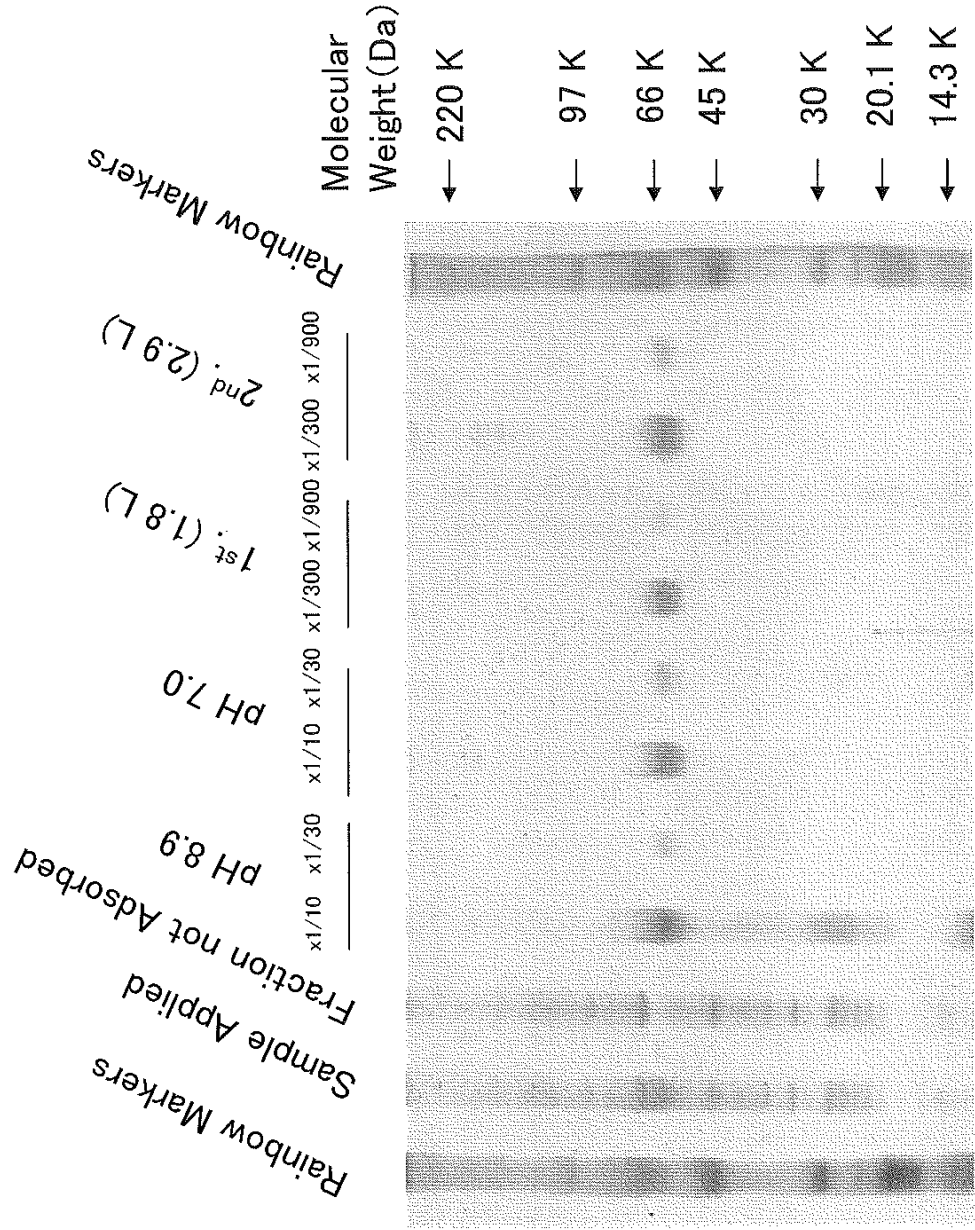
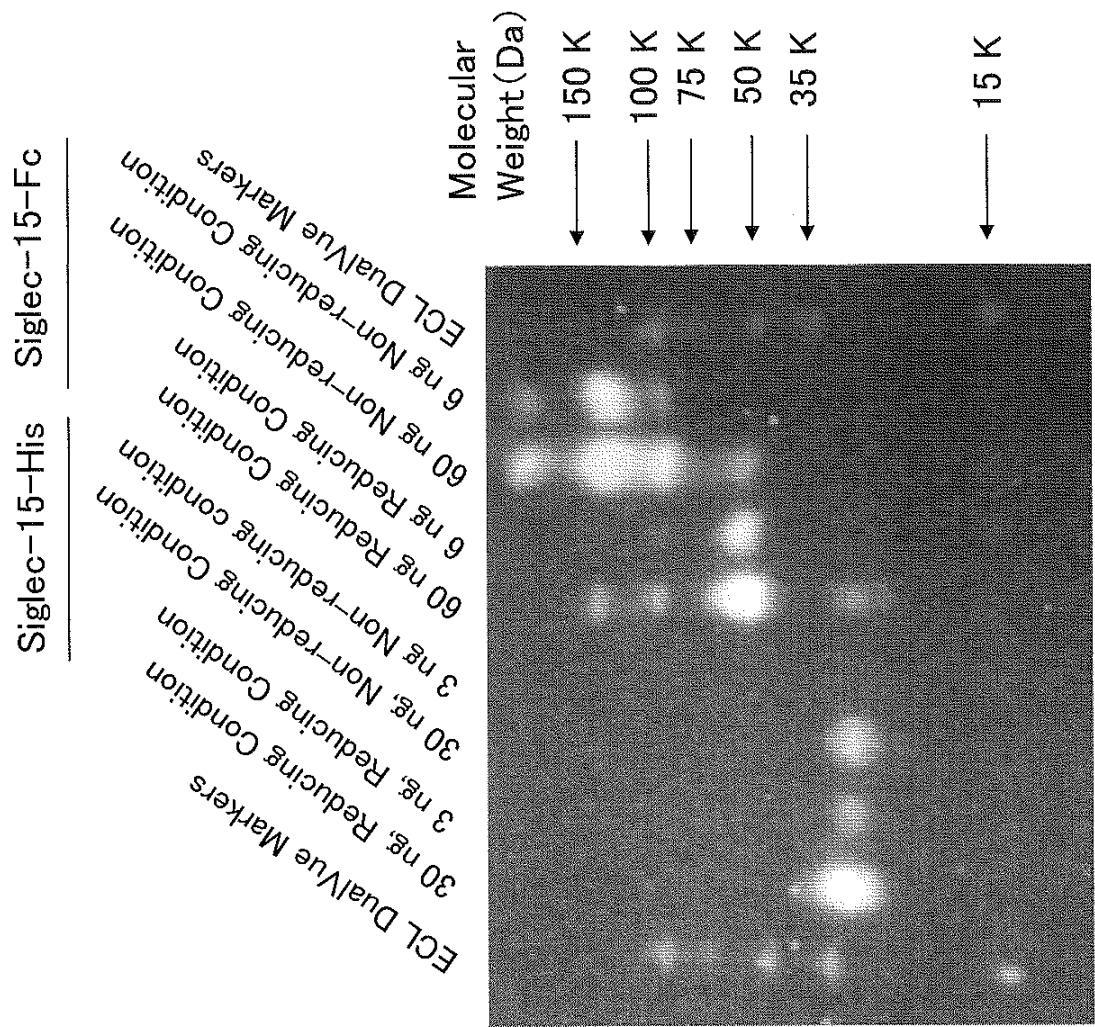


Figure 11



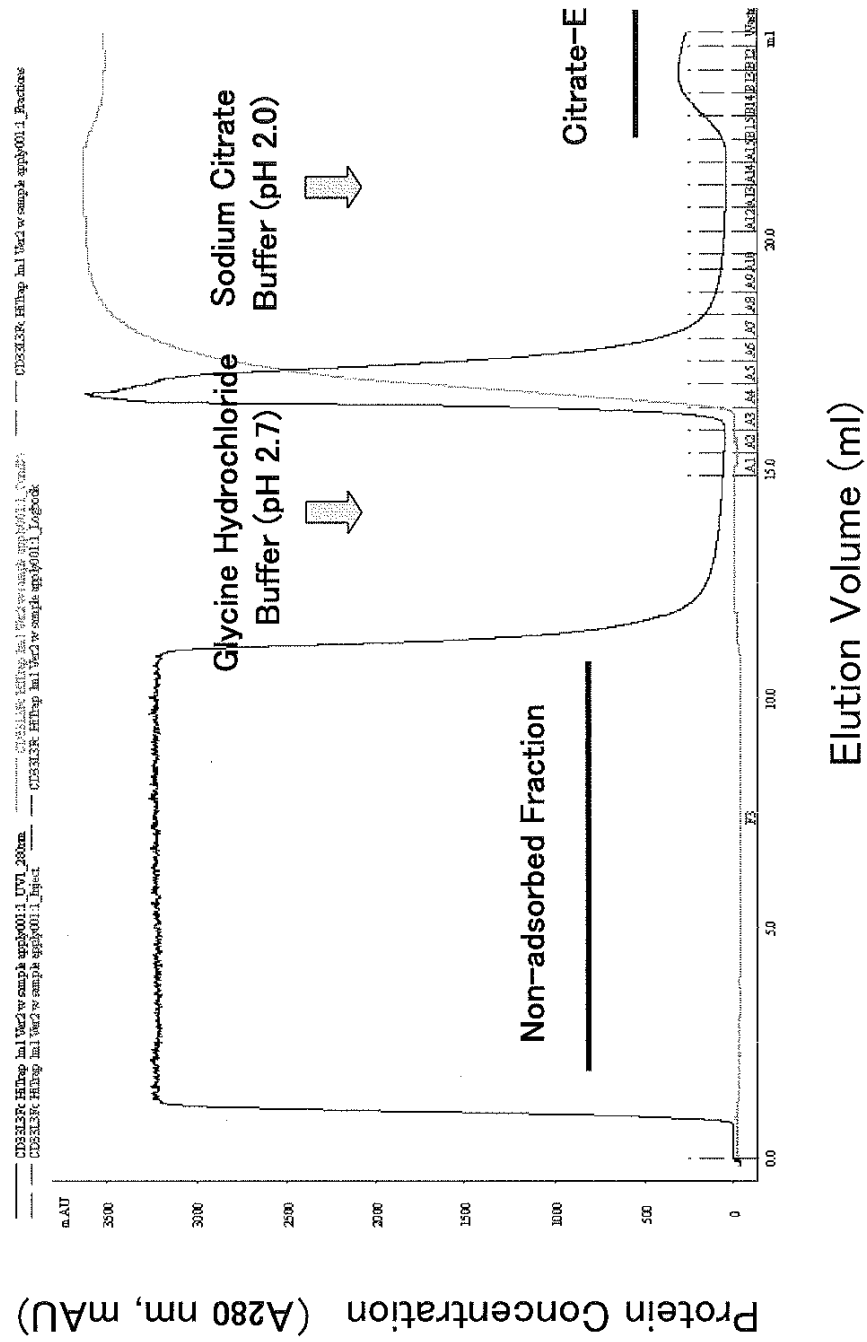


Figure 13

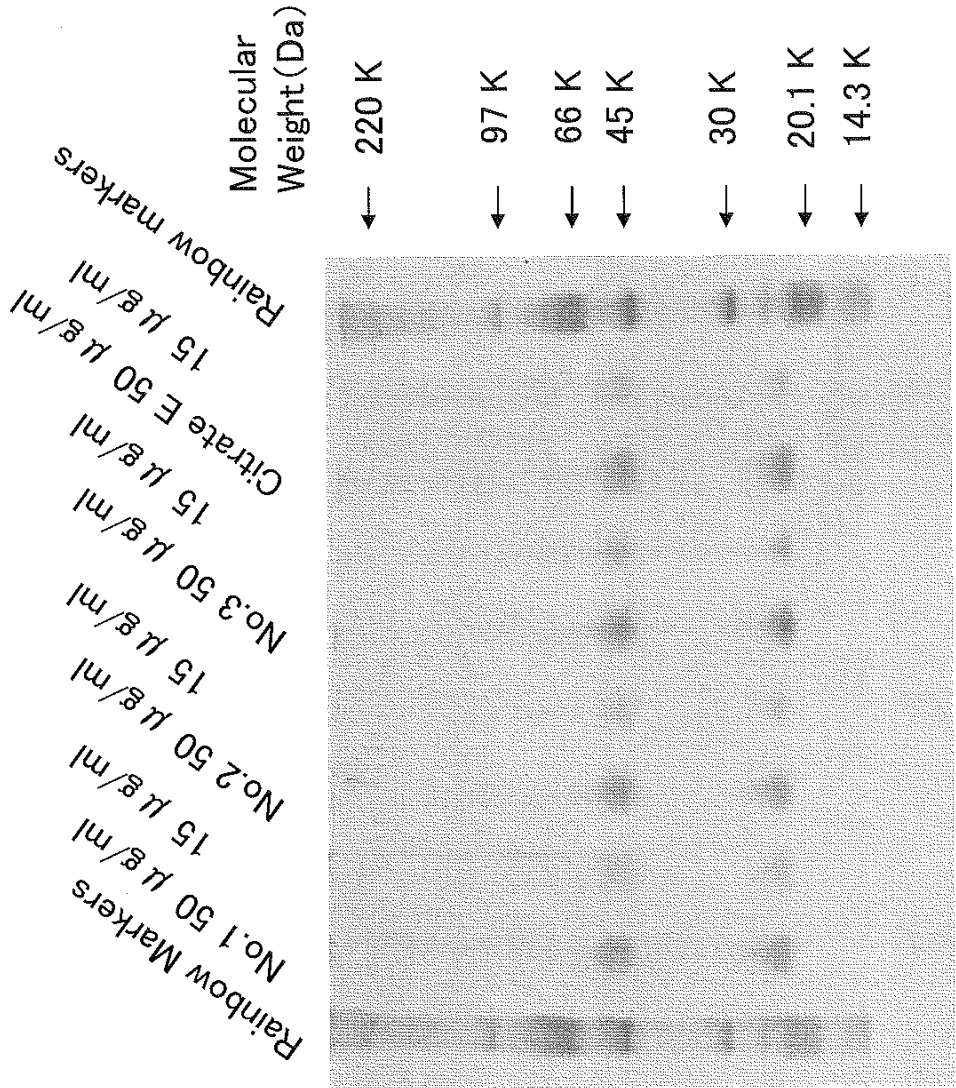


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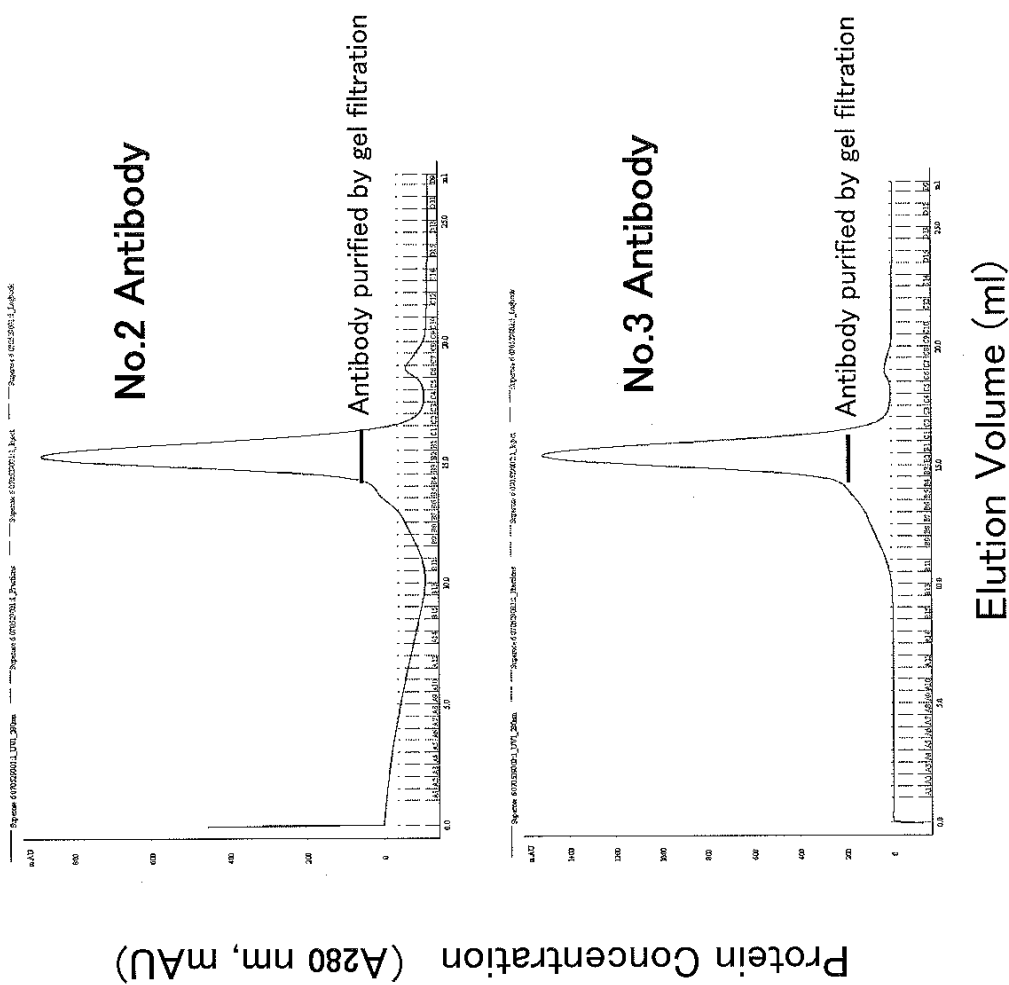


Figure 15

TRAP Activity (A405 nm)

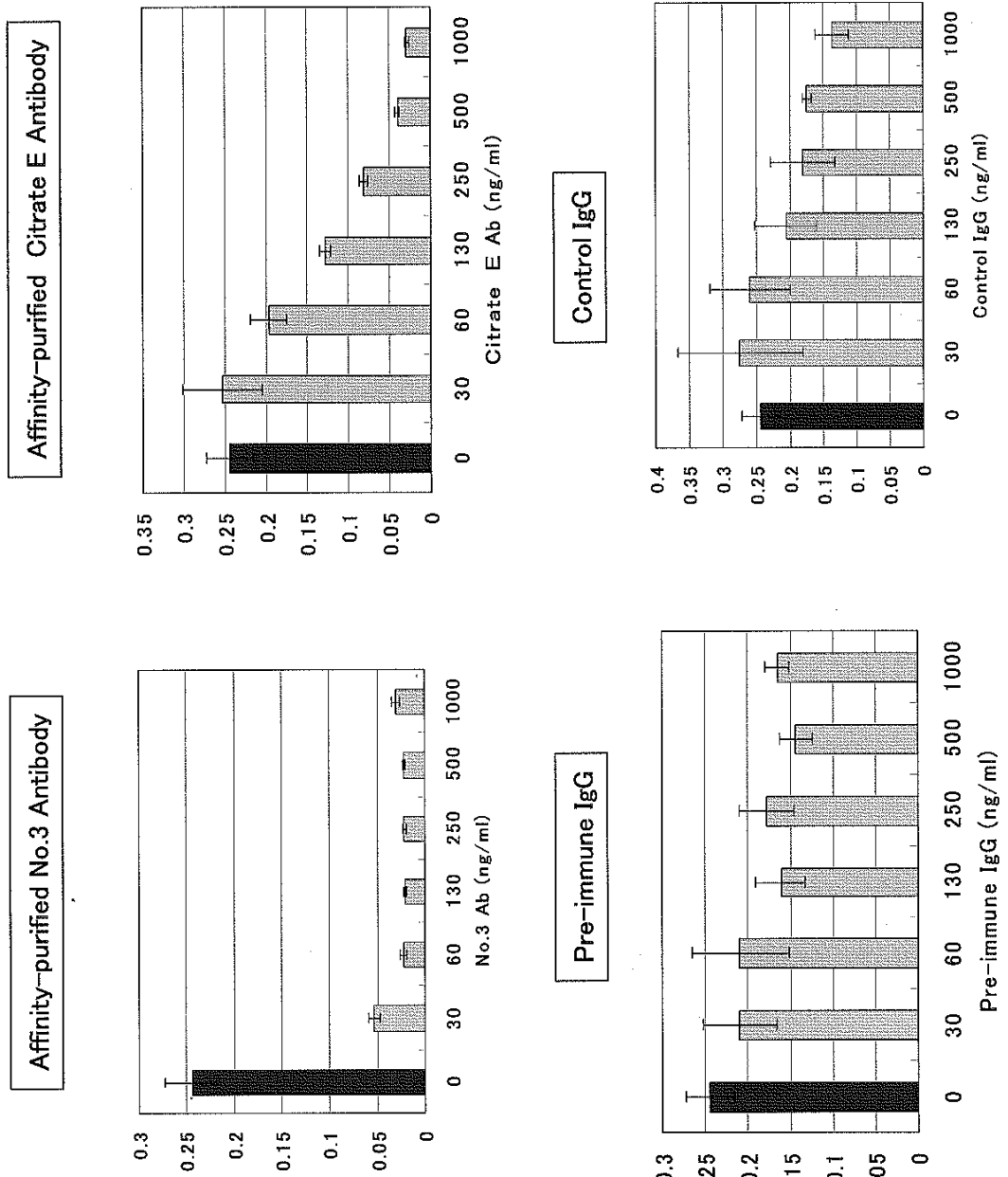


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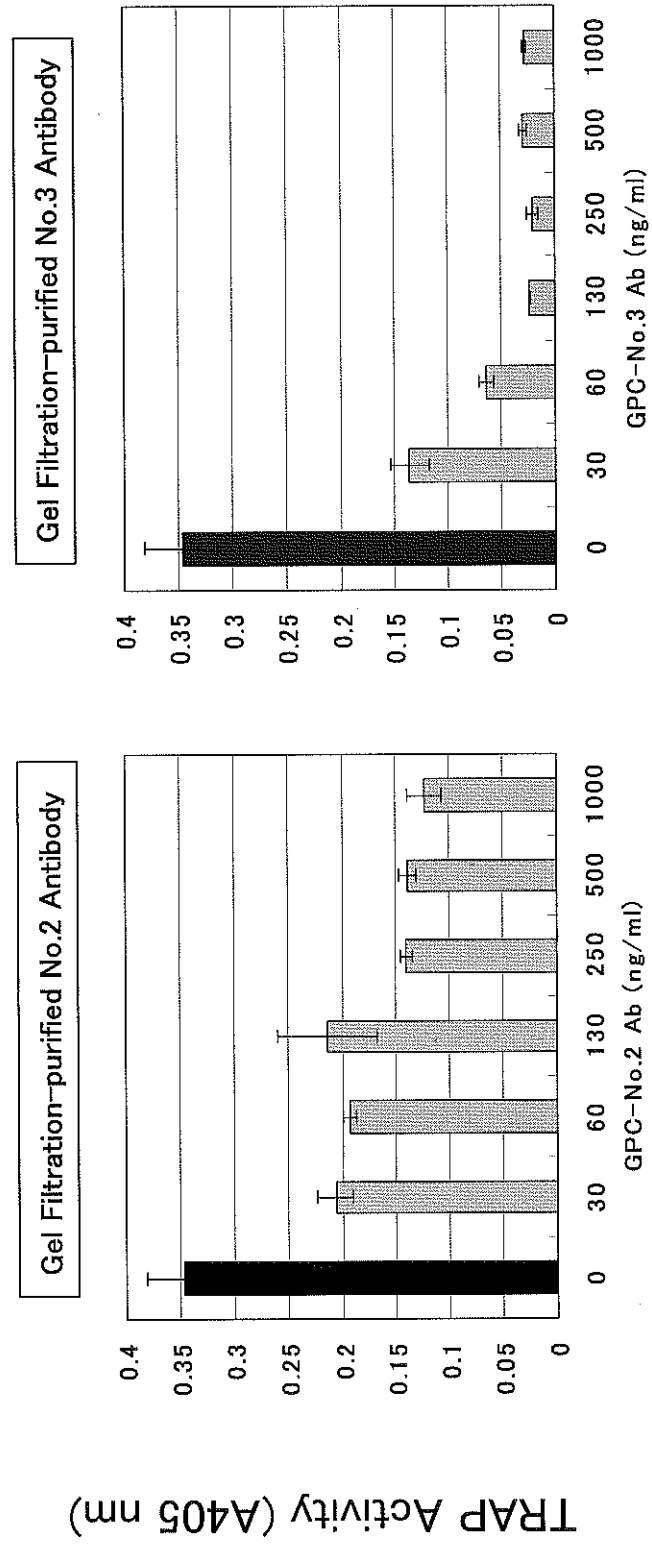


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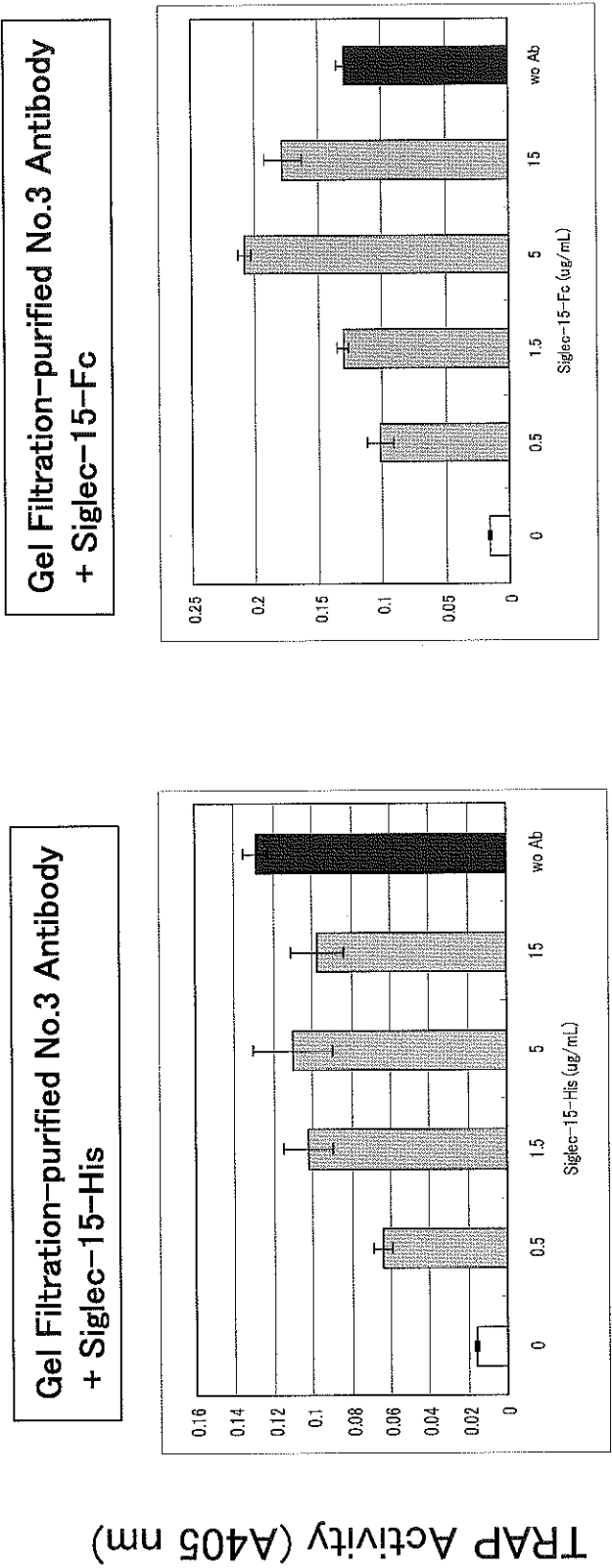


Figure 18

TRAP Activity (A405 nm)

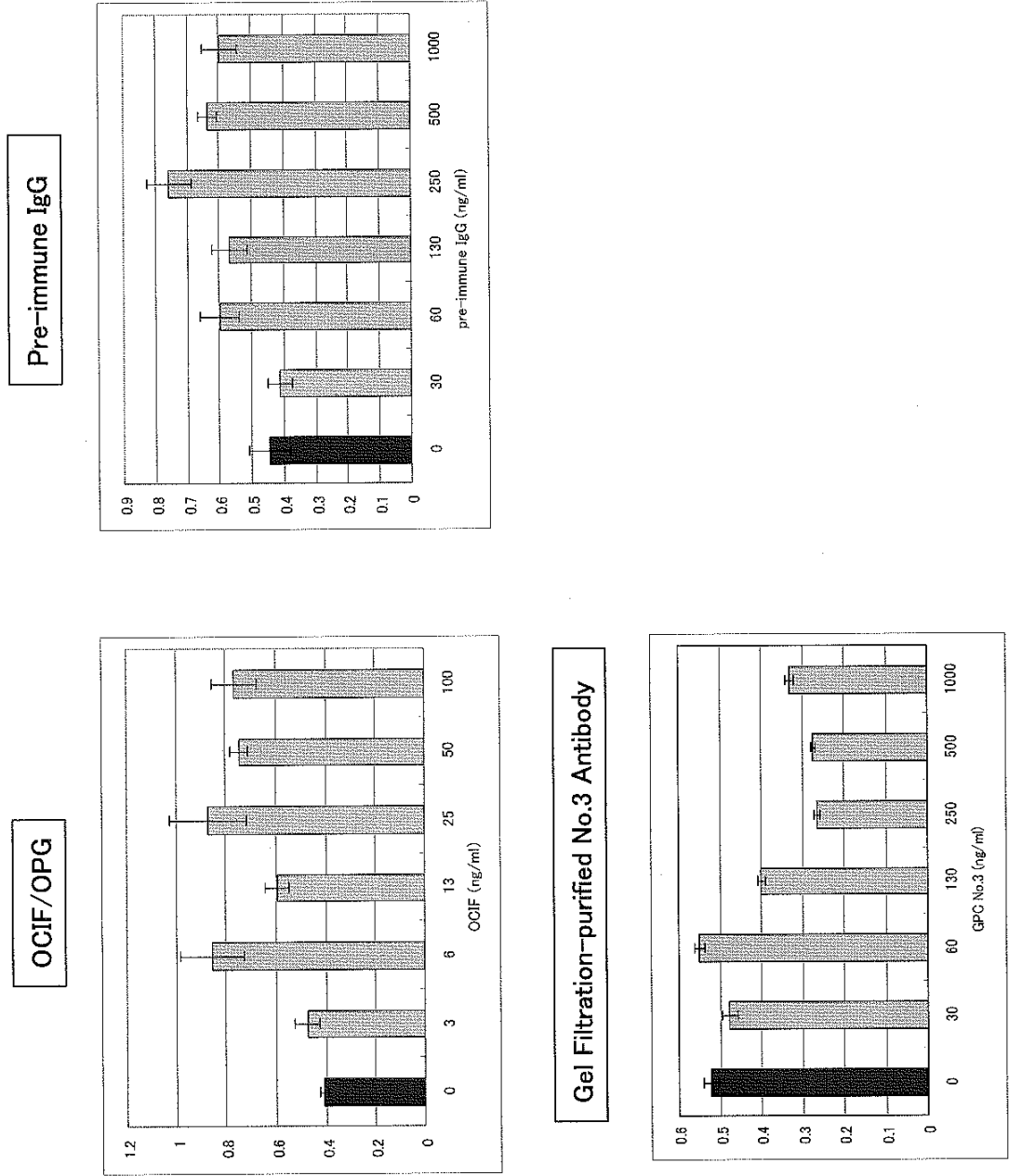
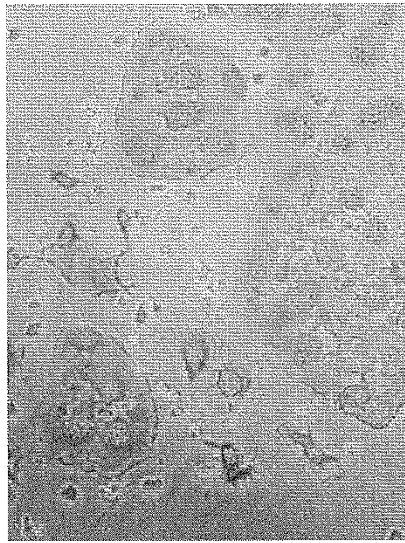
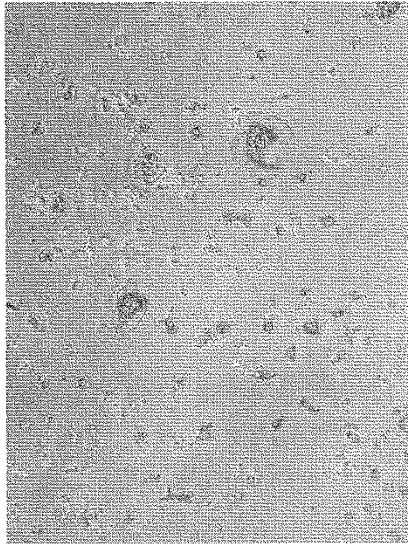


Figure 19

30 ng/ml TNF α



30 ng/ml TNF α + 1000 ng/ml Gel Filtration-purified No.3 Antibody



30 ng/ml TNF α + 100 ng/ml OCIF/OPG

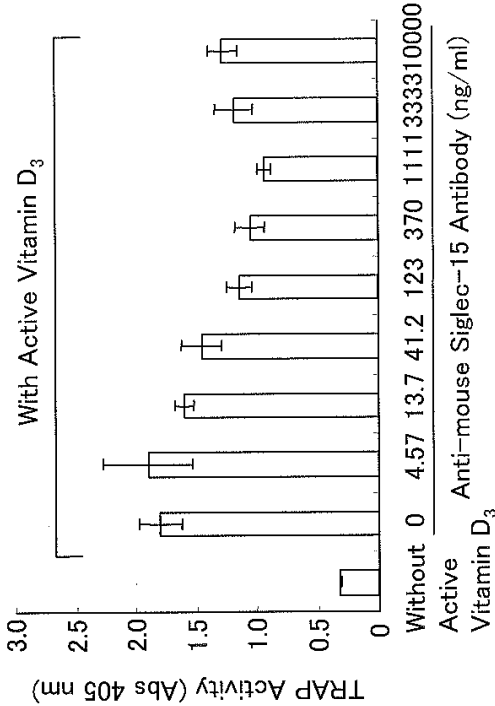


30 ng/ml TNF α + 1000 ng/ml Pre-immune IgG



Figure 20

(A)



(B)

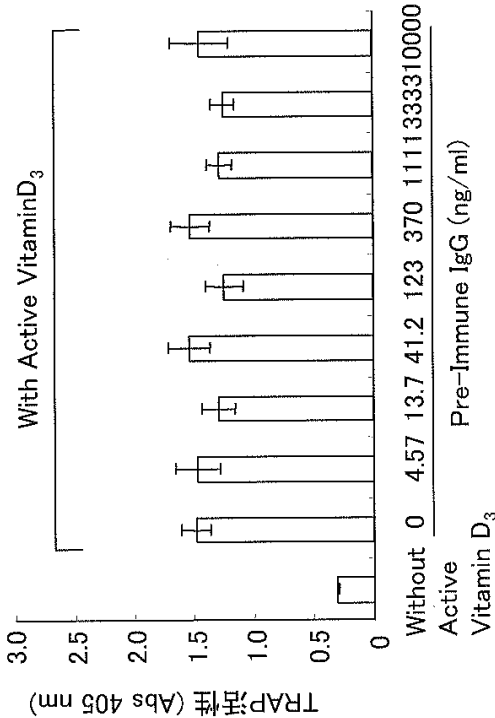
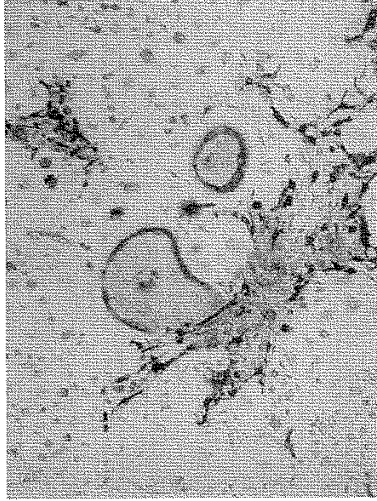


Figure 21

(A) Control



(B) Pre-immune IgG 3,333 ng/ml



(C) Anti-Siglec-15 Antibody 370 ng/ml (D) Anti-Siglec-15 Antibody 3,333 ng/ml

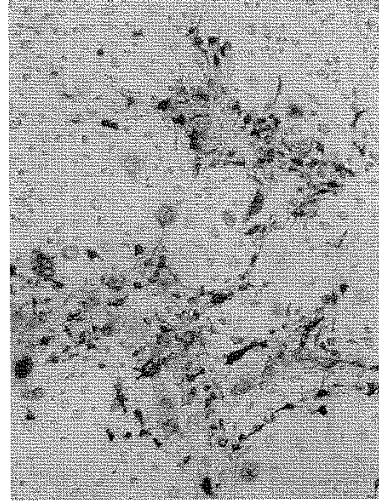
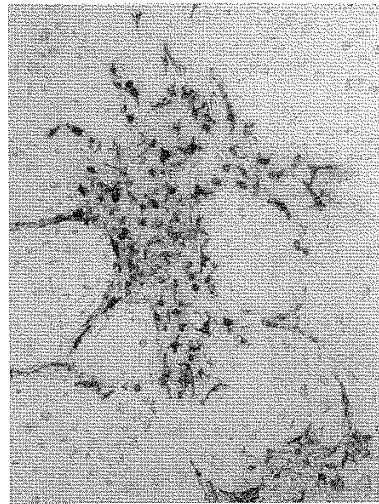
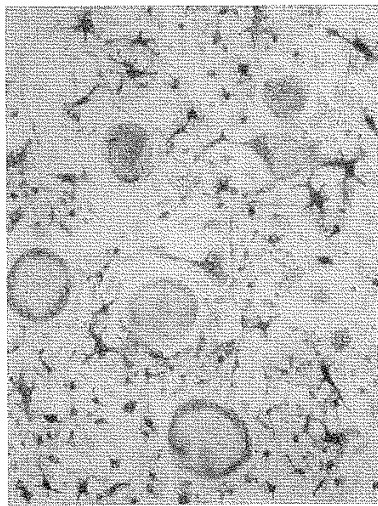
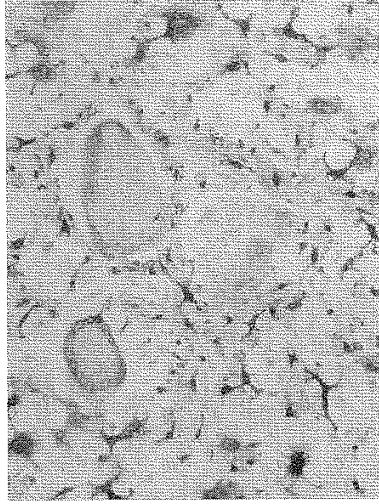


Figure 22

(A) Control



(B) Pre-immune IgG 3,333 ng/ml



(C) Anti-Siglec-15 Antibody 370 ng/ml (D) Anti-Siglec-15 Antibody 3,333 ng/ml

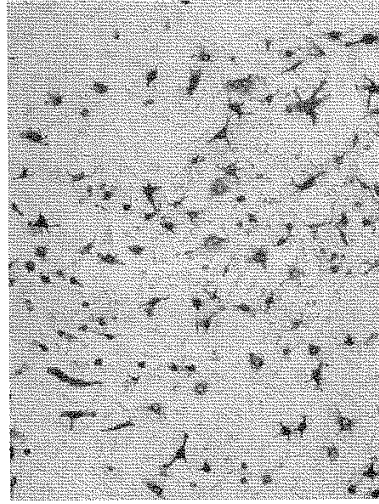
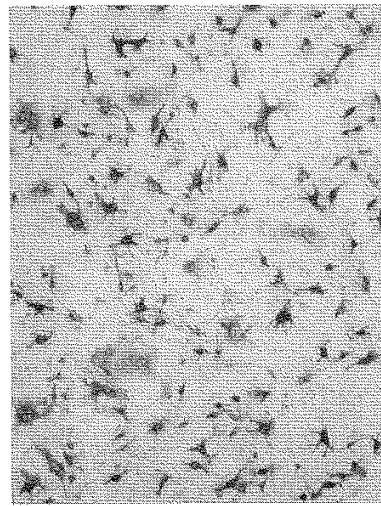


Figure 23

(0) Control (A) Anti-Siglec-15 Antibody 1 μ g/ml

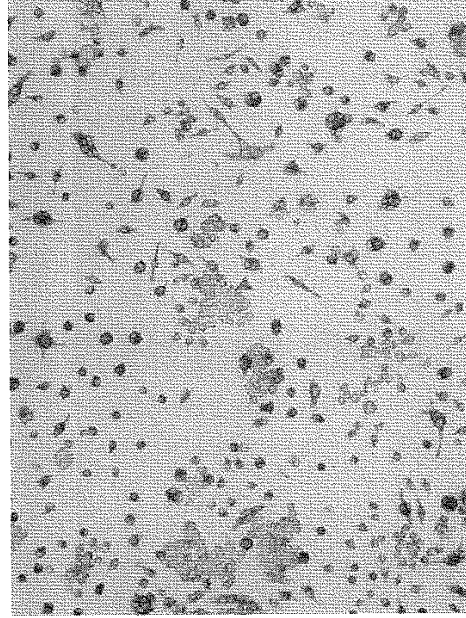
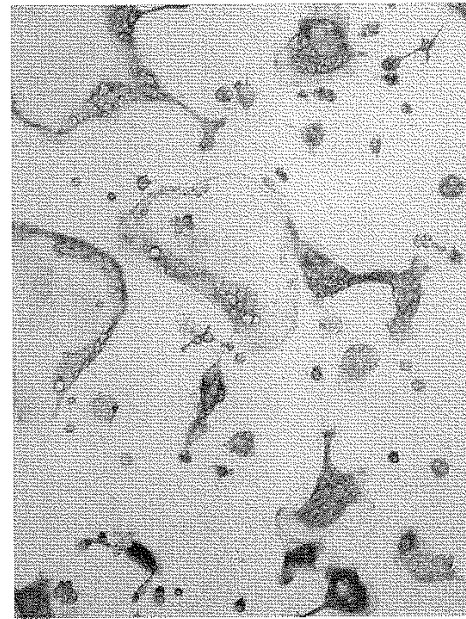
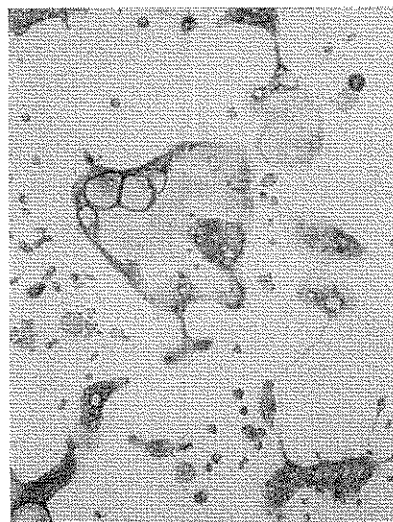
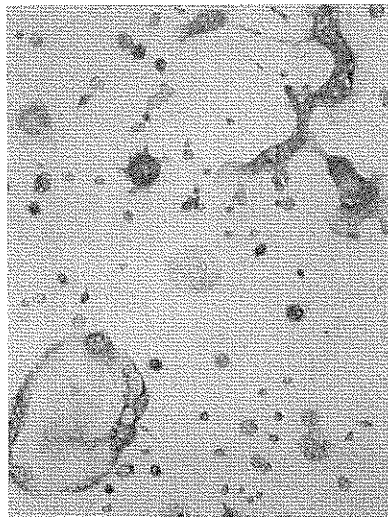


Figure 23

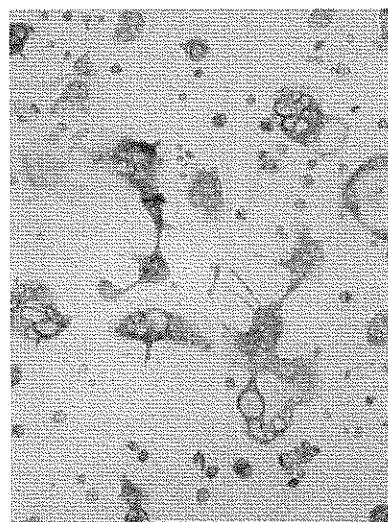
(B) Anti-Siglec-15 Antibody $1\ \mu\text{g/ml}$
+Siglec-15-Fc $1\ \mu\text{g/ml}$



(C) Anti-Siglec-15 Antibody $1\ \mu\text{g/ml}$
+Siglec-15-Fc $10\ \mu\text{g/ml}$



(D) Anti-Siglec-15 Antibody $1\ \mu\text{g/ml}$
+Siglec-15-His $1\ \mu\text{g/ml}$



(E) Anti-Siglec-15 Antibody $1\ \mu\text{g/ml}$
+Siglec-15-His $10\ \mu\text{g/ml}$

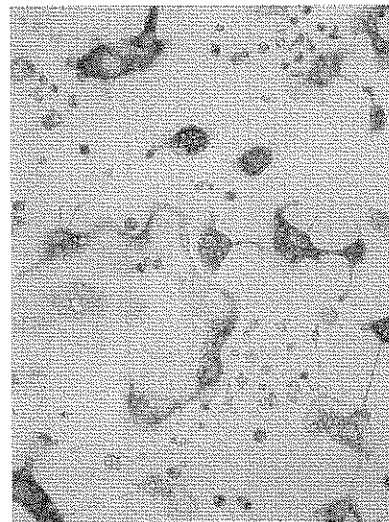


Figure 24

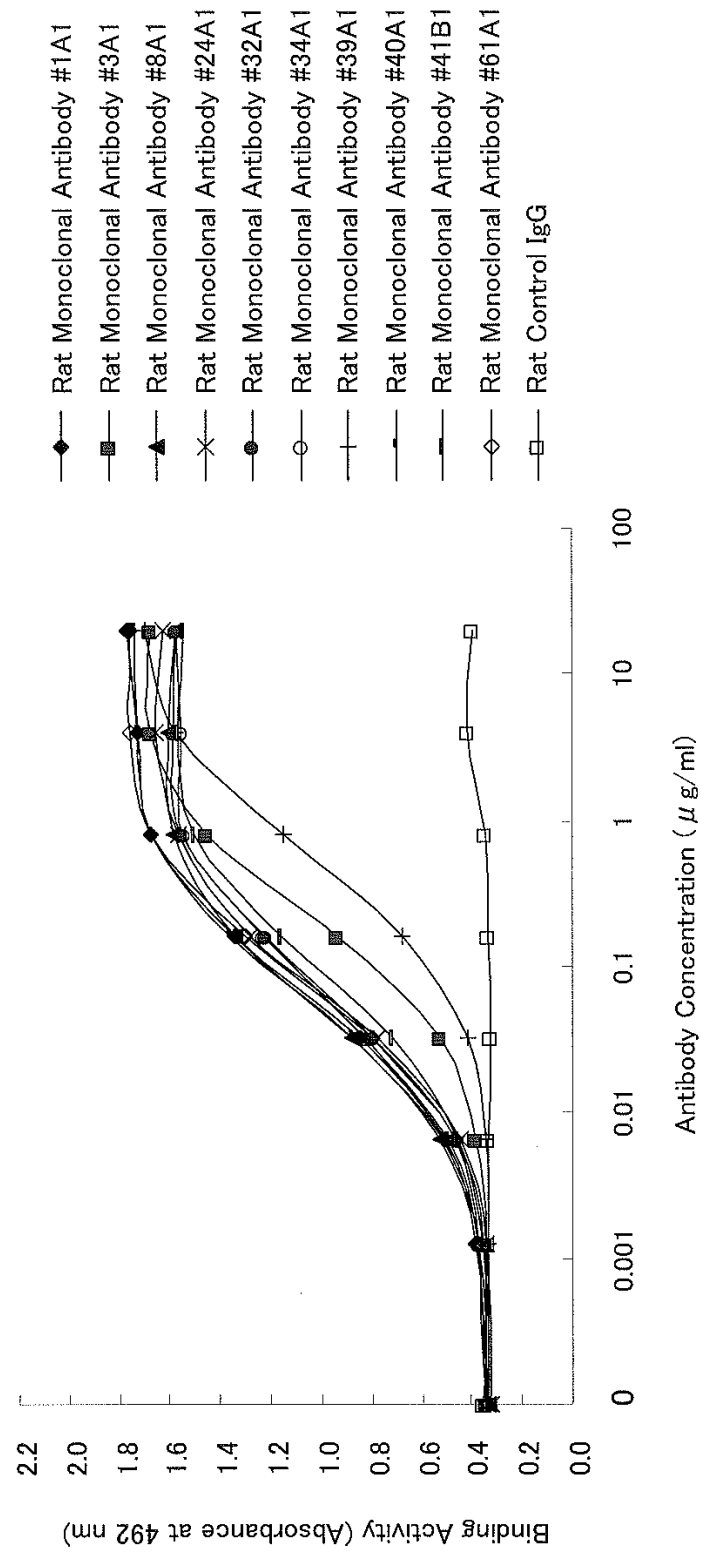


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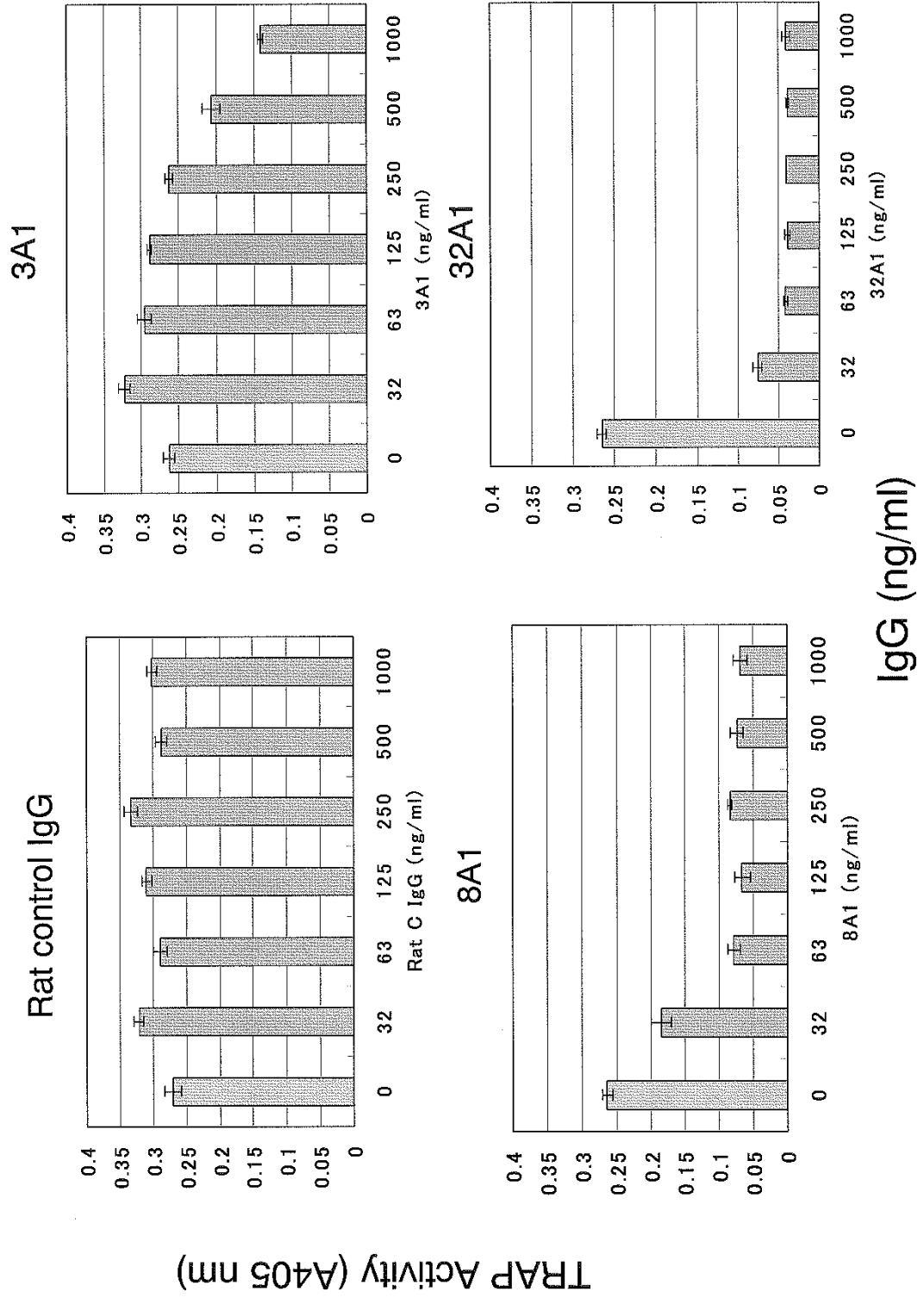


Figure 26

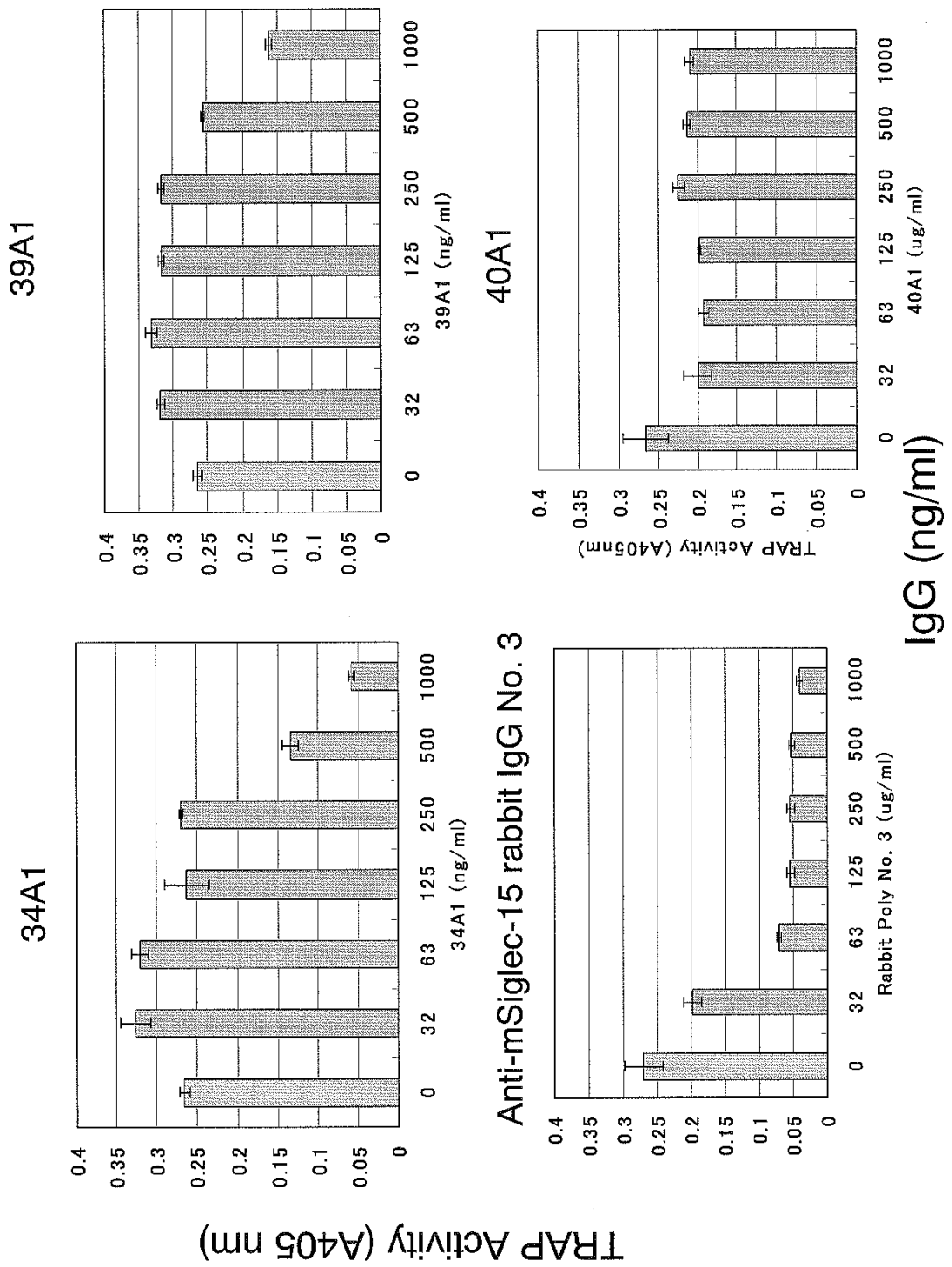


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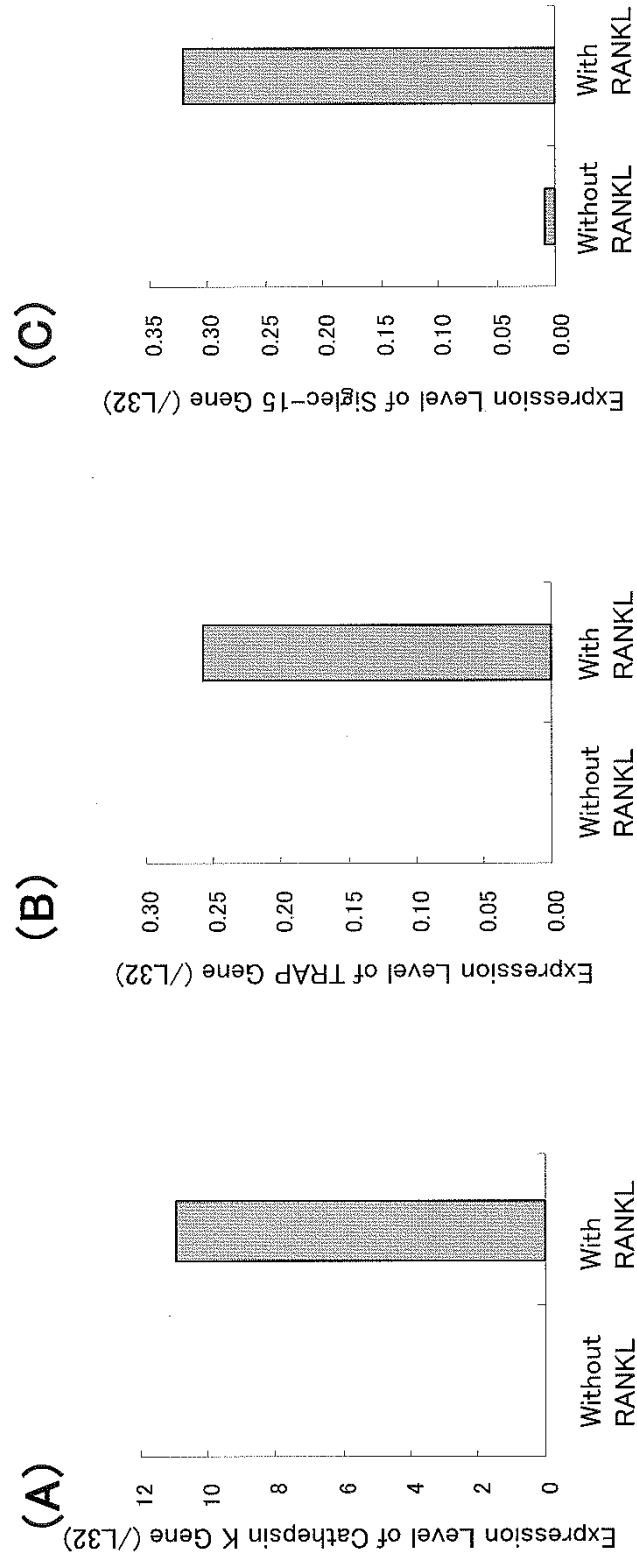


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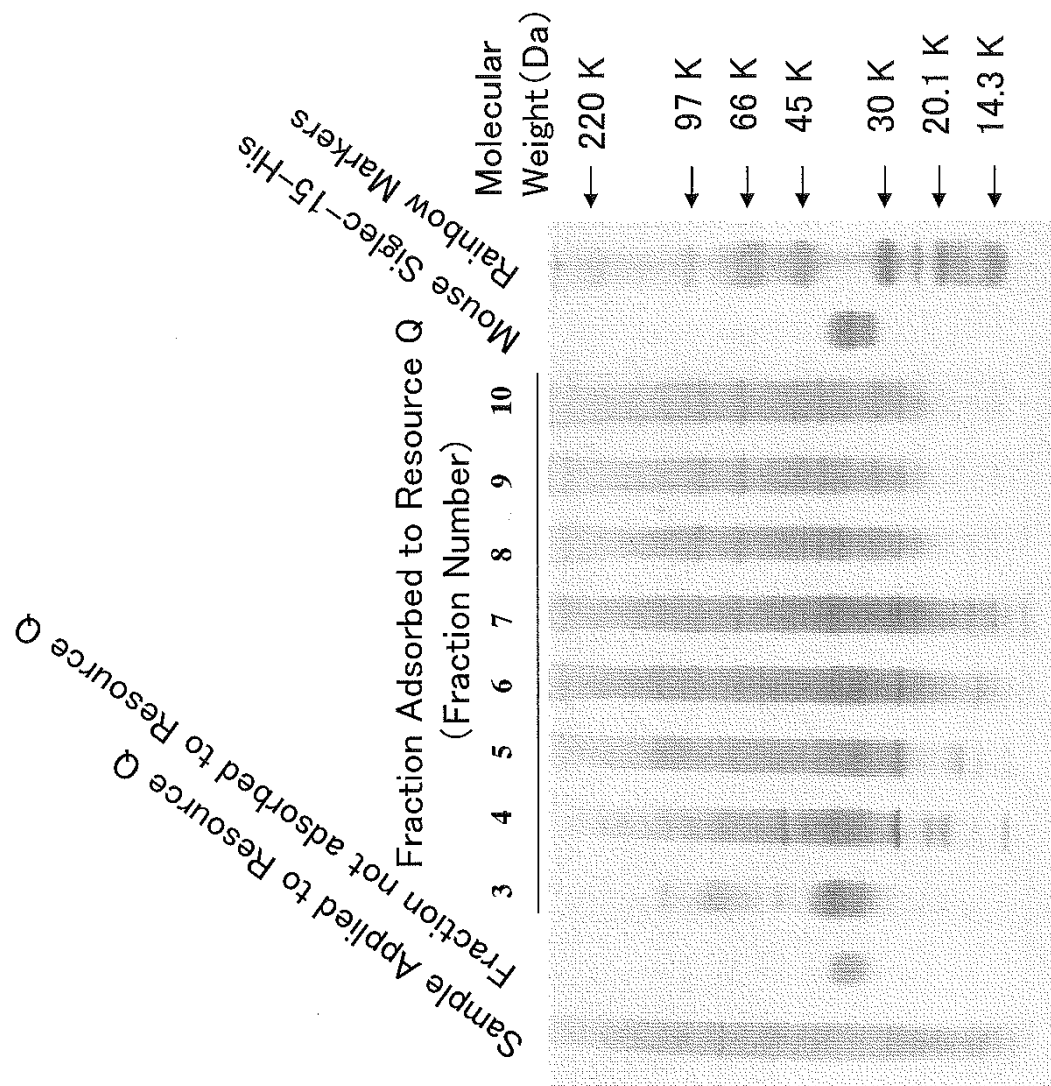


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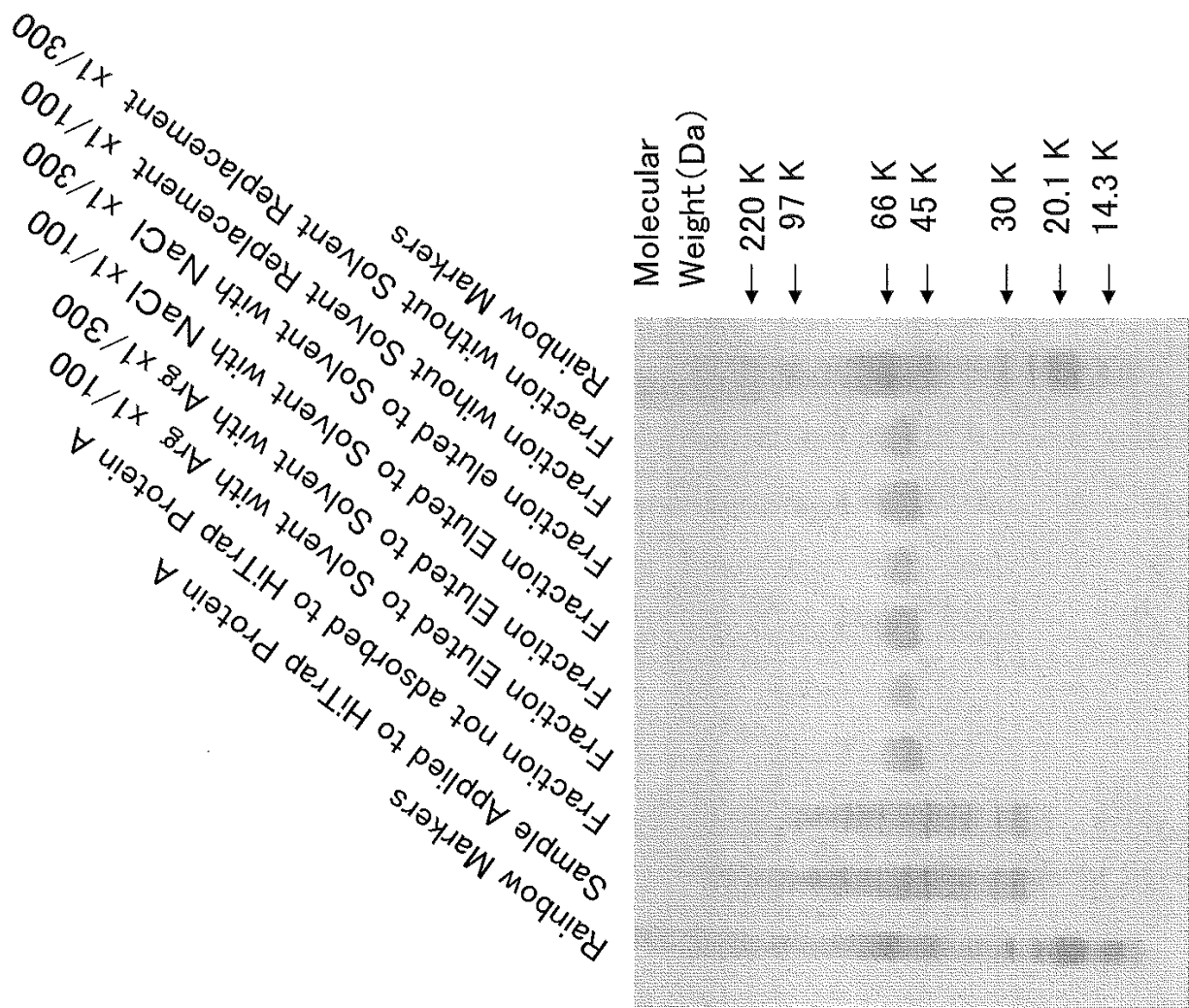


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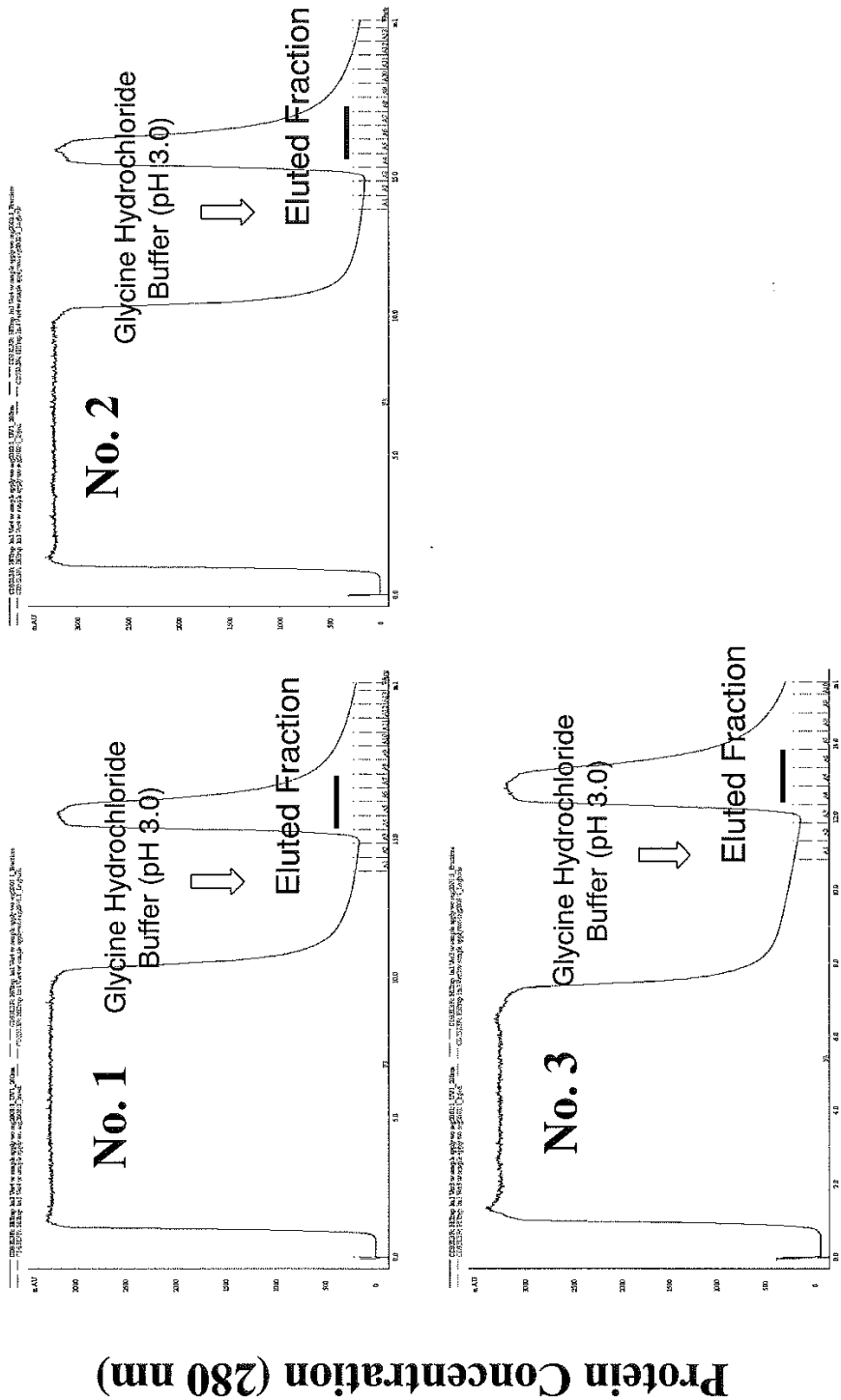
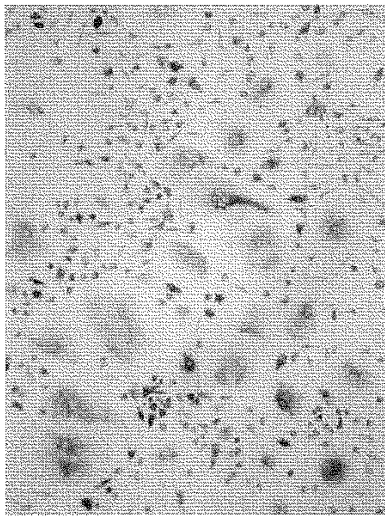
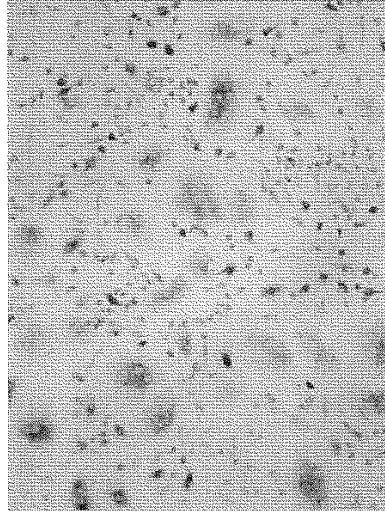


Figure 31

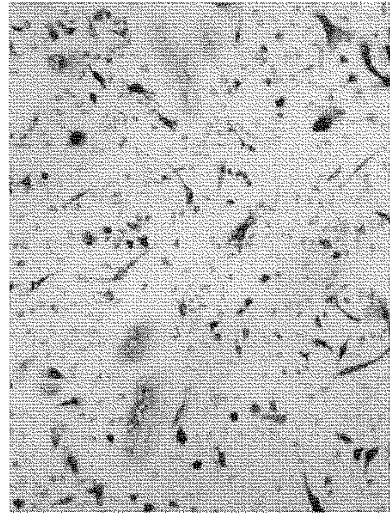
(A) Control



(B) Pre-immune IgG 30 μ g/ml



(C) Anti-Siglec-15 Antibody 3 μ g/ml



(D) Anti-Siglec-15 Antibody 30 μ g/ml

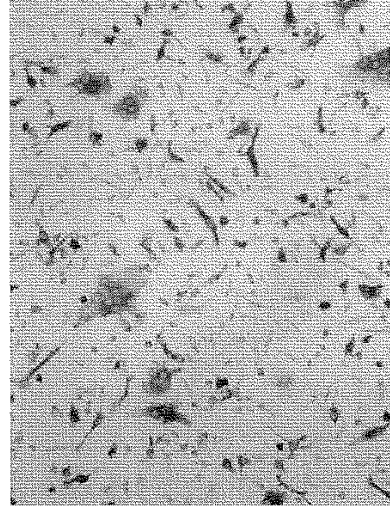


Figure 32

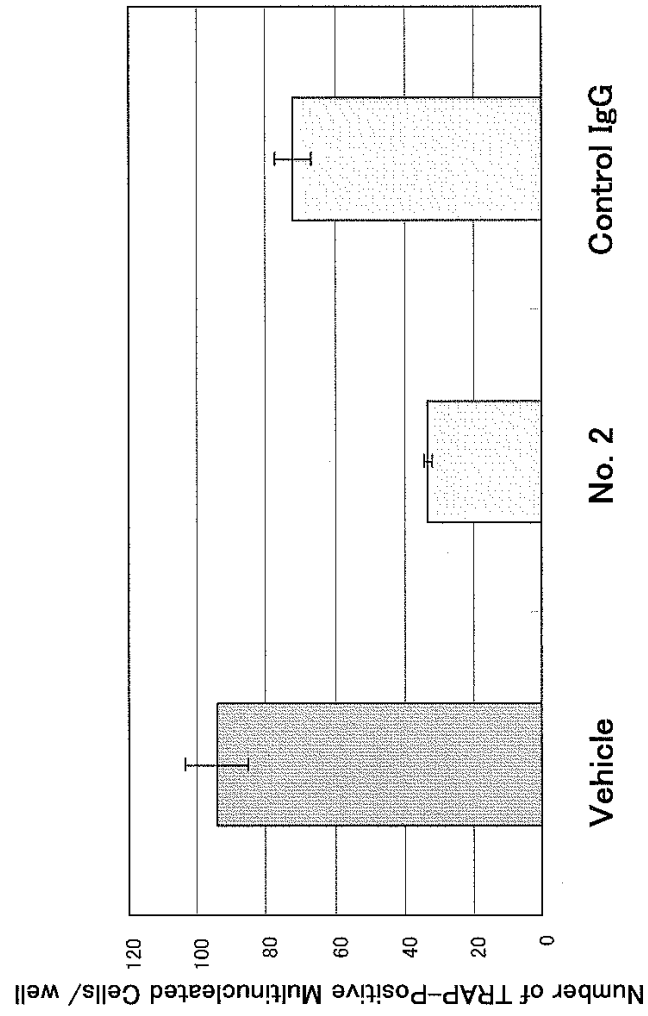


Figure 33

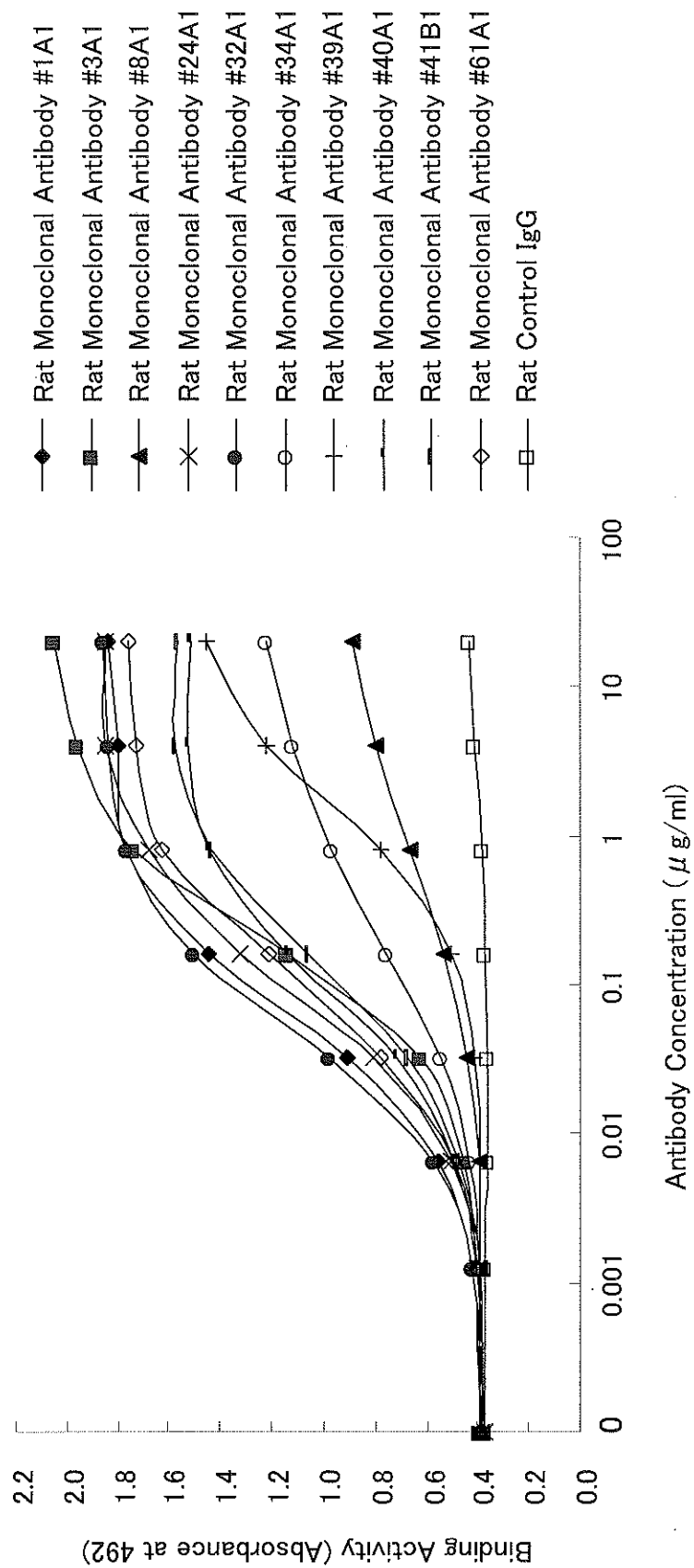
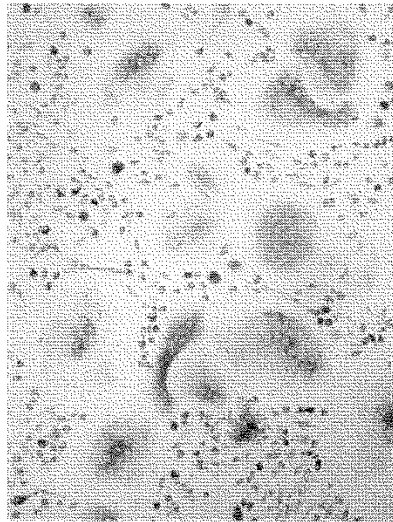
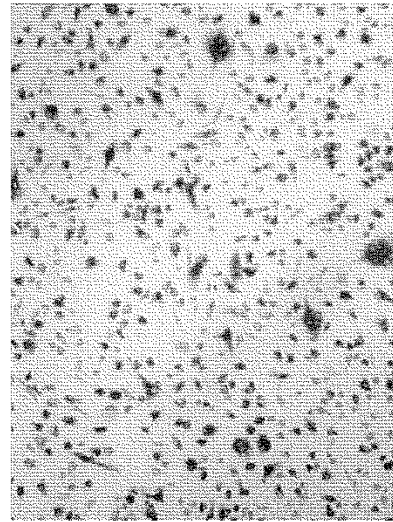


Figure 34

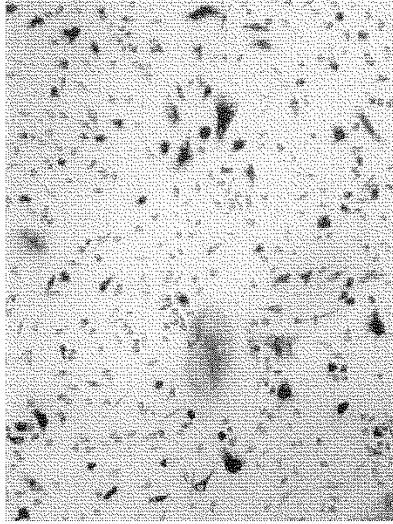
(A) Control



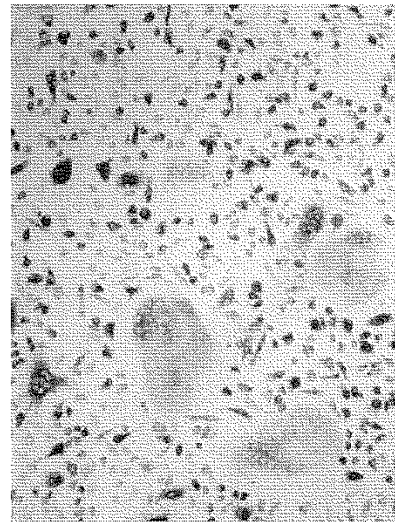
(B) #32A1 Antibody 30 μ g/ml



(C) #41B1 Antibody 30 μ g/ml



(D) #1A1 Antibody 30 μ g/ml



(E) Control IgG 30 μ g/ml

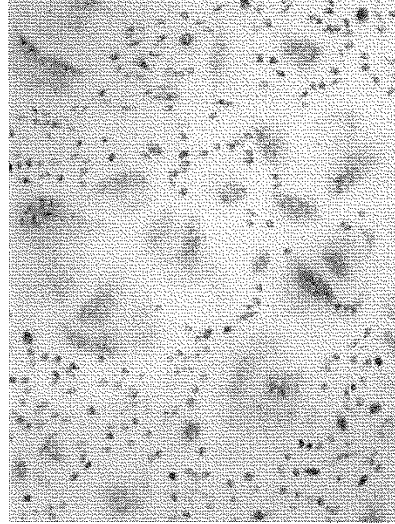
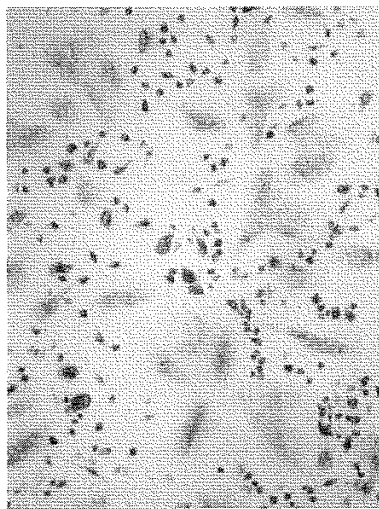
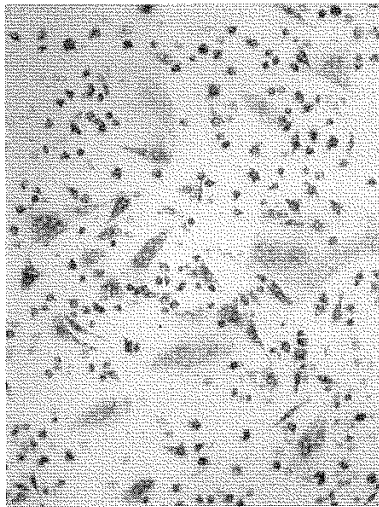


Figure 35

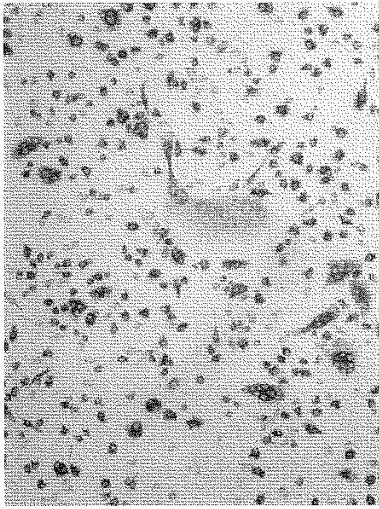
(A) Control



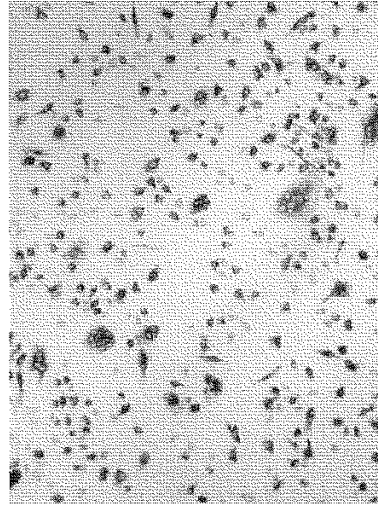
(B) #32A1 Antibody 0.1 μ g/ml



(C) #32A1 Antibody 0.3 μ g/ml



(D) #32A1 Antibody 1 μ g/ml



(E) #32A1 Antibody 3 μ g/ml

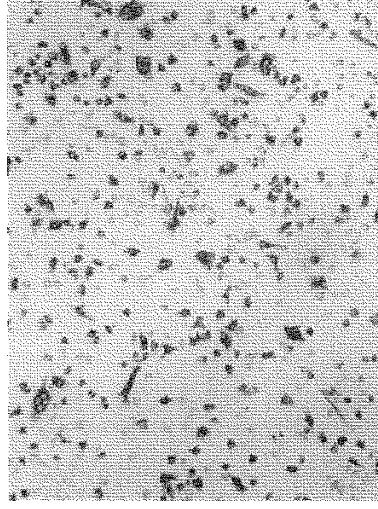
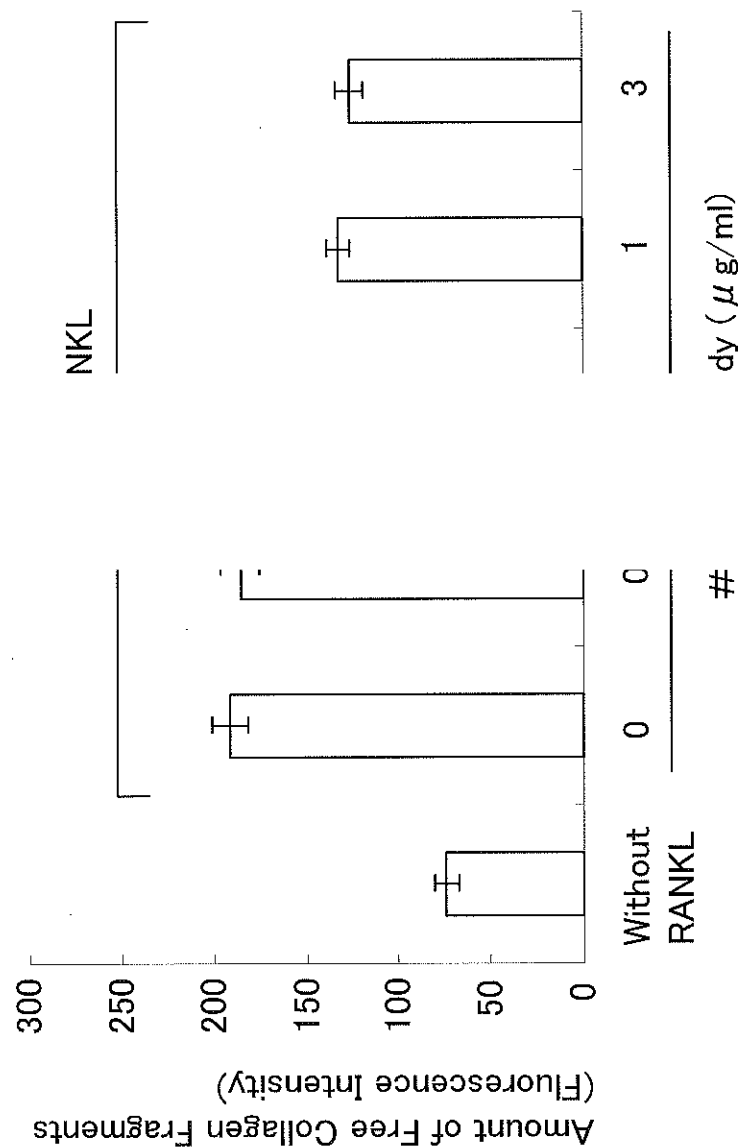


Figure 36



SEQUENCE LISTING

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Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val	
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Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys	
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 Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
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 Arg Leu Arg Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175
 ccg ggc ccc gcg cac gcc ttc cgc gcg ctc tgc acc gcc gag ggg gag 576
 Pro Gly Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190
 ccc ccg ccc gcc ctc gcc tgg tcg ggt ccc gcc cca ggc aac agc tcc 624
 Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Pro Gly Asn Ser Ser
 195 200 205
 gct gcc ctg cag ggc cag ggt cac ggc tac cag gtg acc gcc gag ttg 672
 Ala Ala Leu Gln Gly Gln Gly His Gly Tyr Gln Val Thr Ala Glu Leu
 210 215 220
 ccc gcg ctg acc cgc gac ggc cgc tac acg tgc acg gcg gcc aat agc 720
 Pro Ala Leu Thr Arg Asp Gly Arg Tyr Thr Cys Thr Ala Ala Asn Ser
 225 230 235 240
 ctg ggc cgc gcc gag gcc agc gtc tac ctg ttc cgc ttc cac ggc gcc 768
 Leu Gly Arg Ala Glu Ala Ser Val Tyr Leu Phe Arg Phe His Gly Ala
 245 250 255
 ccc gga acc tcg acc cta gcg ctc ctg ctg ggc gcg ctg ggc ctc aag 816
 Pro Gly Thr Ser Thr Leu Ala Leu Leu Leu Gly Ala Leu Gly Leu Lys
 260 265 270
 gcc ttg ctg ctg ctt ggc att ctg gga gcg cgt gcc acc cga cgc cga 864
 Ala Leu Leu Leu Leu Gly Ile Leu Gly Ala Arg Ala Thr Arg Arg Arg
 275 280 285
 cta gat cac ctg gtc ccc cag gac acc cct cca cgg tct cag gct cag 912
 Leu Asp His Leu Val Pro Gln Asp Thr Pro Pro Arg Ser Gln Ala Gln
 290 295 300
 gag tcc aat tat gaa aat ttg agc cag atg agt cct cca ggc cac cag 960
 Glu Ser Asn Tyr Glu Asn Leu Ser Gln Met Ser Pro Pro Gly His Gln
 305 310 315 320
 ctg cca cgt gtt tgc tgt gag gaa ctc ctc agc cat cac cat cta gtc 1008
 Leu Pro Arg Val Cys Cys Glu Glu Leu Leu Ser His His His Leu Val
 325 330 335
 att cac cat gag aaa taa 1026
 Ile His His Glu Lys
 340

<210> 4
 <211> 341
 <212> PRT
 <213> Mus musculus

<400> 4

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 20 25 30

Asn Thr Glu Ala His Ser Ala Pro Ala Gln Arg Trp Ser Met Gln Val
 35 40 45

Pro Ala Glu Val Asn Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
 50 55 60

Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
 65 70 75 80

Trp Arg Ser Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Thr
 85 90 95

Ala Ala Pro Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
 100 105 110

Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125

Val Glu Arg Leu Ala Leu Ala Asp Ser Gly Arg Tyr Phe Cys Arg Val
 130 135 140

Glu Phe Thr Gly Asp Ala His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160

Arg Leu Arg Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175

Pro Gly Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190

Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Pro Gly Asn Ser Ser
 195 200 205

Ala Ala Leu Gln Gly Gln Gly His Gly Tyr Gln Val Thr Ala Glu Leu
 210 215 220

Pro Ala Leu Thr Arg Asp Gly Arg Tyr Thr Cys Thr Ala Ala Asn Ser
 225 230 235 240

Leu Gly Arg Ala Glu Ala Ser Val Tyr Leu Phe Arg Phe His Gly Ala
 245 250 255

Pro Gly Thr Ser Thr Leu Ala Leu Leu Leu Gly Ala Leu Gly Leu Lys
 260 265 270

Ala Leu Leu Leu Leu Gly Ile Leu Gly Ala Arg Ala Thr Arg Arg Arg

275 280 285
 Leu Asp His Leu Val Pro Gln Asp Thr Pro Pro Arg Ser Gln Ala Gln
 290 295 300
 Glu Ser Asn Tyr Glu Asn Leu Ser Gln Met Ser Pro Pro Gly His Gln
 305 310 315 320
 Leu Pro Arg Val Cys Cys Glu Glu Leu Leu Ser His His His Leu Val
 325 330 335
 Ile His His Glu Lys
 340

<210> 5
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse Siglec-15 cDNA

<400> 5
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<210> 6
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse Siglec-15 cDNA

<400> 6
 cgccgctcga gttatttctc atggatgaatg ac 32

<210> 7
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse Siglec-15 cDNA

<400> 7
 tcaggctcag gattccaatt at 22

<210> 8
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse Siglec-15 cDNA

<400> 8
 ggtctagcct ggtactgtcc ttt 23

<210> 9
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Detection probe of mouse Siglec-15 cDNA

<400> 9
 atttgagcca gatgagtcct ccaggcca 28

<210> 10
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse L32 ribosomal protien cDNA

<400> 10
 aagaagtcca tcaggcacca gt 22

<210> 11
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse L32 ribosomal protein cDNA

<400> 11
 cttgacattg tggaccagga ac 22

<210> 12
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Detection probe of mouse L32 ribosomal protein cDNA

<400> 12
 aaacccagag gcattgacaa cagggtgc 28

<210> 13
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of mouse cathepsin K cDNA

<400> 13
 ggcatctttc cagttttaca gc 22

<210> 14
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of mouse cathepsin K cDNA

 <400> 14
 gttgttctta ttccgagcca ag 22

 <210> 15
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Detection probe of mouse cathepsin K cDNA

 <400> 15
 atgtgaacca tgcagtgttg gtggtggg 28

 <210> 16
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of mouse TRAP cDNA

 <400> 16
 gaacttcccc agcccttact ac 22

 <210> 17
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of mouse TRAP cDNA

 <400> 17
 aactgctttt tgagccagga c 21

 <210> 18
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Detection probe of mouse TRAP cDNA

 <400> 18
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 <210> 19
 <211> 774

<212> DNA
<213> Mus musculus

$\langle 220 \rangle$
 $\langle 221 \rangle$ CDS
 $\langle 222 \rangle$ (1) . . (774)

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Met	Glu	Gly	Ser	Leu	Gln	Leu	Leu	Ala	Cys	Leu	Ala	Cys	Val	Leu	Gln	
1				5					10					15		
atg	gga	tcc	ctt	gtg	aaa	act	aga	aga	gac	gct	tcg	ggg	gat	ctg	ctc	96
Met	Gly	Ser	Leu	Val	Lys	Thr	Arg	Arg	Asp	Ala	Ser	Gly	Asp	Leu	Leu	
			20					25					30			
aac	aca	gag	gcg	cac	agt	gcc	ccg	gcg	cag	cgc	tgg	tcc	atg	cag	gtg	144
Asn	Thr	Glu	Ala	His	Ser	Ala	Pro	Ala	Gln	Arg	Trp	Ser	Met	Gln	Val	
		35					40					45				
ccc	gcg	gag	gtg	aac	gcg	gag	gct	ggc	gac	gcg	gcg	gtg	ctg	ccc	tgc	192
Pro	Ala	Glu	Val	Asn	Ala	Glu	Ala	Gly	Asp	Ala	Ala	Val	Leu	Pro	Cys	
	50					55					60					
acc	ttc	acg	cac	ccg	cac	cgc	cac	tac	gac	ggg	ccg	ctg	acg	gcc	atc	240
Thr	Phe	Thr	His	Pro	His	Arg	His	Tyr	Asp	Gly	Pro	Leu	Thr	Ala	Ile	
65					70					75					80	
tgg	cgc	tgc	ggc	gag	ccg	tac	gcg	ggc	ccg	cag	gtg	ttc	cgc	tgc	acc	288
Trp	Arg	Ser	Gly	Glu	Pro	Tyr	Ala	Gly	Pro	Gln	Val	Phe	Arg	Cys	Thr	
				85					90					95		
gcg	gcg	ccg	ggc	agc	gag	ctg	tgc	cag	acg	gcg	ctg	agc	ctg	cac	ggc	336
Ala	Ala	Pro	Gly	Ser	Glu	Leu	Cys	Gln	Thr	Ala	Leu	Ser	Leu	His	Gly	
			100					105					110			
cgc	ttc	cgc	ctg	ctg	ggc	aac	ccg	cgc	cgc	aac	gac	ctg	tcc	ctg	cgc	384
Arg	Phe	Arg	Leu	Leu	Gly	Asn	Pro	Arg	Arg	Asn	Asp	Leu	Ser	Leu	Arg	
		115					120					125				
gtc	gag	cgc	ctc	gcc	ctg	gcg	gac	agc	ggc	cgc	tac	ttc	tgc	cgc	gtg	432
Val	Glu	Arg	Leu	Ala	Leu	Ala	Asp	Ser	Gly	Arg	Tyr	Phe	Cys	Arg	Val	
	130					135					140					
gag	ttc	acc	ggc	gac	gcc	cac	gat	cgc	tat	gag	agt	cgc	cat	ggg	gtc	480
Glu	Phe	Thr	Gly	Asp	Ala	His	Asp	Arg	Tyr	Glu	Ser	Arg	His	Gly	Val	
145					150					155					160	
cgt	ctg	cgc	gtg	act	gct	gcg	ccg	cgg	atc	gtc	aac	atc	tgc	gtg	ctg	528
Arg	Leu	Arg	Val	Thr	Ala	Ala	Pro	Arg	Ile	Val	Asn	Ile	Ser	Val	Leu	
				165					170					175		
ccg	ggc	ccc	gcg	cac	gcc	ttc	cgc	gcg	ctc	tgc	acc	gcc	gag	ggg	gag	576
Pro	Gly	Pro	Ala	His	Ala	Phe	Arg	Ala	Leu	Cys	Thr	Ala	Glu	Gly	Glu	
			180					185					190			
ccc	ccg	ccc	gcc	ctc	gcc	tgg	tgc	ggt	ccc	gcc	cca	ggc	aac	agc	tcc	624
Pro	Pro	Pro	Ala	Leu	Ala	Trp	Ser									

210	215	220	
ccc gcg ctg acc cgc gac ggc cgc tac acg tgc acg gcg gcc aat agc			720
Pro Ala Leu Thr Arg Asp Gly Arg Tyr Thr Cys Thr Ala Ala Asn Ser			
225	230	235	240
ctg ggc cgc gcc gag gcc agc gtc tac ctg ttc cgc ttc cac ggc gcc			768
Leu Gly Arg Ala Glu Ala Ser Val Tyr Leu Phe Arg Phe His Gly Ala			
	245	250	255
ccc gga			774
Pro Gly			

<210> 20
 <211> 258
 <212> PRT
 <213> Mus musculus

<400> 20

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1 5 10 15

Met Gly Ser Leu Val Lys Thr Arg Arg Asp Ala Ser Gly Asp Leu Leu
20 25 30

Asn Thr Glu Ala His Ser Ala Pro Ala Gln Arg Trp Ser Met Gln Val
35 40 45

Pro Ala Glu Val Asn Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
50 55 60

Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
65 70 75 80

Trp Arg Ser Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Thr
85 90 95

Ala Ala Pro Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
100 105 110

Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
115 120 125

Val Glu Arg Leu Ala Leu Ala Asp Ser Gly Arg Tyr Phe Cys Arg Val
130 135 140

Glu Phe Thr Gly Asp Ala His Asp Arg Tyr Glu Ser Arg His Gly Val
145 150 155 160

Arg Leu Arg Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu

165	170	175
Pro Gly Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu		
180	185	190
Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Pro Gly Asn Ser Ser		
195	200	205
Ala Ala Leu Gln Gly Gln Gly His Gly Tyr Gln Val Thr Ala Glu Leu		
210	215	220
Pro Ala Leu Thr Arg Asp Gly Arg Tyr Thr Cys Thr Ala Ala Asn Ser		
225	230	235
Leu Gly Arg Ala Glu Ala Ser Val Tyr Leu Phe Arg Phe His Gly Ala		
245	250	255

Pro Gly

<210> 21
 <211> 55
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of soluble mouse Siglec-15 cDNA

<400> 21
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<210> 22
 <211> 55
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of soluble mouse Siglec-15 cDNA

<400> 22
 ggggaccact ttgtacaaga aagctgggtc tccgggggcg ccgtggaagc ggaac 55

<210> 23
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequencing primer of soluble mouse Siglec-15 cDNA

<400> 23
 tgcgtgaagg tgcagggcag 20

<210> 24
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequencing primer of soluble mouse Siglec-15 cDNA

<400> 24
 cctcgccctgg tcgggtc 17

<210> 25
 <211> 891
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> His-tagged mouse Siglec-15 cDNA

<220>
 <221> CDS
 <222> (1).. (891)

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 Met Glu Gly Ser Leu Gln Leu Leu Ala Cys Val Leu Gln
 1 5 10 15

atg gga tcc ctt gtg aaa act aga aga gac gct tcg ggg gat ctg ctc 96
 Met Gly Ser Leu Val Lys Thr Arg Arg Asp Ala Ser Gly Asp Leu Leu
 20 25 30

aac aca gag gcg cac agt gcc ccg gcg cag cgc tgg tcc atg cag gtg 144
 Asn Thr Glu Ala His Ser Ala Pro Ala Gln Arg Trp Ser Met Gln Val
 35 40 45

ccc gcg gag gtg aac gcg gag gct ggc gac gcg gcg gtg ctg ccc tgc 192
 Pro Ala Glu Val Asn Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
 50 55 60

acc ttc acg cac ccg cac cgc cac tac gac ggg ccg ctg acg gcc atc 240
 Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
 65 70 75 80

tgg cgc tcg ggc gag ccg tac gcg ggc ccg cag gtg ttc cgc tgc acc 288
 Trp Arg Ser Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Thr
 85 90 95

gcg gcg ccg ggc agc gag ctg tgc cag acg gcg ctg agc ctg cac ggc 336
 Ala Ala Pro Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
 100 105 110

cgc ttc cgc ctg ctg ggc aac ccg cgc cgc aac gac ctg tcc ctg cgc 384
 Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125

gtc gag cgc ctc gcc ctg gcg gac agc ggc cgc tac ttc tgc cgc gtg 432
 Val Glu Arg Leu Ala Leu Ala Asp Ser Gly Arg Tyr Phe Cys Arg Val
 130 135 140

gag ttc acc ggc gac gcc cac gat cgc tat gag agt cgc cat ggg gtc 480

Glu 145	Phe	Thr	Gly	Asp	Ala 150	His	Asp	Arg	Tyr	Glu 155	Ser	Arg	His	Gly	Val 160	
cgt Arg	ctg Leu	cgc Arg	gtg Val	act Thr 165	gct Ala	gcg Ala	ccg Pro	cgg Arg	atc Ile 170	gtc Val	aac Asn	atc Ile	tcg Ser	gtg Val 175	ctg Leu	528
ccg Pro	ggc Gly	ccc Pro	gcg Ala 180	cac His	gcc Ala	ttc Phe	cgc Arg	gcg Ala 185	ctc Leu	tgc Cys	acc Thr	gcc Ala	gag Glu 190	ggg Gly	gag Glu	576
ccc Pro	ccg Pro	ccc Pro 195	gcc Ala	ctc Leu	gcc Ala	tgg Trp	tcg Ser 200	ggt Gly	ccc Pro	gcc Ala	cca Pro	ggc Gly 205	aac Asn	agc Ser	tcc Ser	624
gct Ala 210	gcc Ala	ctg Leu	cag Gln	ggc Gly	cag Gln	ggt Gly 215	cac His	ggc Gly	tac Tyr	cag Gln	gtg Val 220	acc Thr	gcc Ala	gag Glu	ttg Leu	672
ccc Pro 225	gcg Ala	ctg Leu	acc Thr	cgc Arg	gac Asp 230	ggc Gly	cgc Arg	tac Tyr	acg Thr	tgc Cys 235	acg Thr	gcg Ala	gcc Ala	aat Asn	agc Ser 240	720
ctg Leu	ggc Gly	cgc Arg	gcc Ala	gag Glu 245	gcc Ala	agc Ser	gtc Val	tac Tyr	ctg Leu 250	ttc Phe	cgc Arg	ttc Phe	cac His	ggc Gly 255	gcc Ala	768
ccc Pro	gga Gly	gac Asp	cca Pro 260	gct Ala	ttc Phe	ttg Leu	tac Tyr	aaa Lys 265	gtg Val	gtt Val	gat Asp	atc Ile	gaa Glu 270	ggt Gly	cgt Arg	816
ggg Gly	ggt Gly	aag Lys 275	cct Pro	atc Ile	cct Pro	aac Asn	cct Pro 280	ctc Leu	ctc Leu	ggt Gly	ctc Leu	gat Asp 285	tct Ser	acg Thr	cgt Arg	864
acc Thr 290	ggt Gly	cat His	cat His	cac His	cat His	cac His 295	cat His	tga								891

<210> 26
 <211> 296
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> His-tagged mouse Siglec-15 peptide

<400> 26

Met 1	Glu	Gly	Ser	Leu 5	Gln	Leu	Leu	Ala	Cys 10	Leu	Ala	Cys	Val	Leu	Gln 15
----------	-----	-----	-----	----------	-----	-----	-----	-----	-----------	-----	-----	-----	-----	-----	-----------

Met	Gly	Ser	Leu	Val	Lys	Thr	Arg	Arg	Asp	Ala	Ser	Gly	Asp	Leu	Leu
			20					25					30		

Asn	Thr	Glu	Ala	His	Ser	Ala	Pro	Ala	Gln	Arg	Trp	Ser	Met	Gln	Val
		35					40					45			

Pro	Ala	Glu	Val	Asn	Ala	Glu	Ala	Gly	Asp	Ala	Ala	Val	Leu	Pro	Cys
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

50	55	60
Thr Phe Thr His Pro	His Arg His Tyr Asp	Gly Pro Leu Thr Ala Ile
65	70	75 80
Trp Arg Ser Gly	Glu Pro Tyr Ala Gly	Pro Gln Val Phe Arg Cys Thr
	85	90 95
Ala Ala Pro Gly	Ser Glu Leu Cys	Gln Thr Ala Leu Ser Leu His Gly
	100	105 110
Arg Phe Arg	Leu Leu Gly Asn Pro	Arg Arg Asn Asp Leu Ser Leu Arg
	115	120 125
Val Glu Arg	Leu Ala Leu Ala Asp	Ser Gly Arg Tyr Phe Cys Arg Val
	130	135 140
Glu Phe Thr Gly	Asp Ala His Asp Arg	Tyr Glu Ser Arg His Gly Val
145	150	155 160
Arg Leu Arg Val	Thr Ala Ala Pro Arg	Ile Val Asn Ile Ser Val Leu
	165	170 175
Pro Gly Pro	Ala His Ala Phe Arg	Ala Leu Cys Thr Ala Glu Gly Glu
	180	185 190
Pro Pro Pro	Ala Leu Ala Trp Ser	Gly Pro Ala Pro Gly Asn Ser Ser
	195	200 205
Ala Ala Leu Gln Gly	Gln Gly His Gly Tyr Gln	Val Thr Ala Glu Leu
	210	215 220
Pro Ala Leu Thr Arg	Asp Gly Arg Tyr Thr	Cys Thr Ala Ala Asn Ser
225	230	235 240
Leu Gly Arg Ala	Glu Ala Ser Val Tyr	Leu Phe Arg Phe His Gly Ala
	245	250 255
Pro Gly Asp	Pro Ala Phe Leu Tyr	Lys Val Val Asp Ile Glu Gly Arg
	260	265 270
Gly Gly Lys	Pro Ile Pro Asn Pro	Leu Leu Gly Leu Asp Ser Thr Arg
	275	280 285
Thr Gly His His His	His His	
290	295	

<210> 27
 <211> 1512
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Fc-fused mouse Siglec-15 cDNA

<220>
 <221> CDS
 <222> (1).. (1512)

<400> 27		
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1 5 10 15		
atg gga tcc ctt gtg aaa act aga aga gac gct tcg ggg gat ctg ctc		96
Met Gly Ser Leu Val Lys Thr Arg Arg Asp Ala Ser Gly Asp Leu Leu		
20 25 30		
aac aca gag gcg cac agt gcc ccg gcg cag cgc tgg tcc atg cag gtg		144
Asn Thr Glu Ala His Ser Ala Pro Ala Gln Arg Trp Ser Met Gln Val		
35 40 45		
ccc gcg gag gtg aac gcg gag gct ggc gac gcg gcg gtg ctg ccc tgc		192
Pro Ala Glu Val Asn Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys		
50 55 60		
acc ttc acg cac ccg cac cgc cac tac gac ggg ccg ctg acg gcc atc		240
Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile		
65 70 75 80		
tgg cgc tcg ggc gag ccg tac gcg ggc ccg cag gtg ttc cgc tgc acc		288
Trp Arg Ser Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Thr		
85 90 95		
gcg gcg ccg ggc agc gag ctg tgc cag acg gcg ctg agc ctg cac ggc		336
Ala Ala Pro Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly		
100 105 110		
cgc ttc cgc ctg ctg ggc aac ccg cgc cgc aac gac ctg tcc ctg cgc		384
Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg		
115 120 125		
gtc gag cgc ctc gcc ctg gcg gac agc ggc cgc tac ttc tgc cgc gtg		432
Val Glu Arg Leu Ala Leu Ala Asp Ser Gly Arg Tyr Phe Cys Arg Val		
130 135 140		
gag ttc acc ggc gac gcc cac gat cgc tat gag agt cgc cat ggg gtc		480
Glu Phe Thr Gly Asp Ala His Asp Arg Tyr Glu Ser Arg His Gly Val		
145 150 155 160		
cgt ctg cgc gtg act gct gcg ccg cgg atc gtc aac atc tcg gtg ctg		528
Arg Leu Arg Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu		
165 170 175		
ccg ggc ccc gcg cac gcc ttc cgc gcg ctc tgc acc gcc gag ggg gag		576
Pro Gly Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu		
180 185 190		
ccc ccg ccc gcc ctc gcc tgg tcg ggt ccc gcc cca ggc aac agc tcc		624

Pro	Pro	Pro	Ala	Leu	Ala	Trp	Ser	Gly	Pro	Ala	Pro	Gly	Asn	Ser	Ser		
		195					200					205					
gct	gcc	ctg	cag	ggc	cag	ggt	cac	ggc	tac	cag	gtg	acc	gcc	gag	ttg		672
Ala	Ala	Leu	Gln	Gly	Gln	Gly	His	Gly	Tyr	Gln	Val	Thr	Ala	Glu	Leu		
	210					215					220						
ccc	gcg	ctg	acc	cgc	gac	ggc	cgc	tac	acg	tgc	acg	gcg	gcc	aat	agc		720
Pro	Ala	Leu	Thr	Arg	Asp	Gly	Arg	Tyr	Thr	Cys	Thr	Ala	Ala	Asn	Ser		
225					230					235					240		
ctg	ggc	cgc	gcc	gag	gcc	agc	gtc	tac	ctg	ttc	cgc	ttc	cac	ggc	gcc		768
Leu	Gly	Arg	Ala	Glu	Ala	Ser	Val	Tyr	Leu	Phe	Arg	Phe	His	Gly	Ala		
				245					250					255			
ccc	gga	gac	cca	gct	ttc	ttg	tac	aaa	gtg	ggt	gat	atc	cag	gca	gag		816
Pro	Gly	Asp	Pro	Ala	Phe	Leu	Tyr	Lys	Val	Val	Asp	Ile	Gln	Ala	Glu		
			260					265					270				
ccc	aaa	tct	tgt	gac	aaa	act	cac	aca	tgc	cca	ccg	tgc	cca	gca	cct		864
Pro	Lys	Ser	Cys	Asp	Lys	Thr	His	Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro		
		275					280					285					
gaa	ctc	ctg	ggg	gga	ccg	tca	gtc	ttc	ctc	ttc	ccc	cca	aaa	ccc	aag		912
Glu	Leu	Leu	Gly	Gly	Pro	Ser	Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys		
	290					295					300						
gac	acc	ctc	atg	atc	tcc	cgg	acc	cct	gag	gtc	aca	tgc	gtg	gtg	gtg		960
Asp	Thr	Leu	Met	Ile	Ser	Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val		
305					310					315					320		
gac	gtg	agc	cac	gaa	gac	cct	gag	gtc	aag	ttc	aac	tgg	tac	gtg	gac		1008
Asp	Val	Ser	His	Glu	Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp		
				325					330					335			
ggc	gtg	gag	gtg	cat	aat	gcc	aag	aca	aag	ccg	cgg	gag	gag	cag	tac		1056
Gly	Val	Glu	Val	His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr		
			340					345					350				
aac	agc	acg	tac	cgt	gtg	gtc	agc	gtc	ctc	acc	gtc	ctg	cac	cag	gac		1104
Asn	Ser	Thr	Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp		
		355					360					365					
tgg	ctg	aat	ggc	aag	gag	tac	aag	tgc	aag	gtc	tcc	aac	aaa	gcc	ctc		1152
Trp	Leu	Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu		
	370					375					380						
cca	gcc	ccc	atc	gag	aaa	acc	atc	tcc	aaa	gcc	aaa	ggg	cag	ccc	cga		1200
Pro	Ala	Pro	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg		
385					390					395					400		
gaa	cca	cag	gtg	tac	acc	ctg	ccc	cca	tcc	cgg	gag	gag	atg	acc	aag		1248
Glu	Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Glu	Glu	Met	Thr	Lys		
				405					410					415			
aac	cag	gtc	agc	ctg	acc	tgc	ctg	gtc	aaa	ggc	ttc	tat	ccc	agc	gac		1296
Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp		
			420				425						430				
atc	gcc	gtg	gag	tgg	gag	agc	aat	ggg	cag	ccg	gag	aac	aac	tac	aag		1344
Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys		
		435					440					445					

acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tat agc	1392
Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser	
450 455 460	
aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca	1440
Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser	
465 470 475 480	
tgc tcc gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc	1488
Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser	
485 490 495	
ctc tcc ctg tct ccg ggt aaa taa	1512
Leu Ser Leu Ser Pro Gly Lys	
500	

<210> 28
 <211> 503
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Fc-fused mouse Siglec-15 peptide

<400> 28

Met Glu Gly Ser Leu Gln Leu Leu Ala Cys Leu Ala Cys Val Leu Gln	
1 5 10 15	
Met Gly Ser Leu Val Lys Thr Arg Arg Asp Ala Ser Gly Asp Leu Leu	
20 25 30	
Asn Thr Glu Ala His Ser Ala Pro Ala Gln Arg Trp Ser Met Gln Val	
35 40 45	
Pro Ala Glu Val Asn Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys	
50 55 60	
Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile	
65 70 75 80	
Trp Arg Ser Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Thr	
85 90 95	
Ala Ala Pro Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly	
100 105 110	
Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg	
115 120 125	
Val Glu Arg Leu Ala Leu Ala Asp Ser Gly Arg Tyr Phe Cys Arg Val	
130 135 140	

Glu Phe Thr Gly Asp Ala His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160
 Arg Leu Arg Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175
 Pro Gly Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190
 Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Pro Gly Asn Ser Ser
 195 200 205
 Ala Ala Leu Gln Gly Gln Gly His Gly Tyr Gln Val Thr Ala Glu Leu
 210 215 220
 Pro Ala Leu Thr Arg Asp Gly Arg Tyr Thr Cys Thr Ala Ala Asn Ser
 225 230 235 240
 Leu Gly Arg Ala Glu Ala Ser Val Tyr Leu Phe Arg Phe His Gly Ala
 245 250 255
 Pro Gly Asp Pro Ala Phe Leu Tyr Lys Val Val Asp Ile Gln Ala Glu
 260 265 270
 Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro
 275 280 285
 Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys
 290 295 300
 Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
 305 310 315 320
 Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp
 325 330 335
 Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr
 340 345 350
 Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp
 355 360 365
 Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu
 370 375 380
 Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg
 385 390 395 400

Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys
405 410 415

Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp
420 425 430

Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys
435 440 445

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
450 455 460

Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser
465 470 475 480

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
485 490 495

Leu Ser Leu Ser Pro Gly Lys
500

<210> 29
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer of human Siglec-15 cDNA

<400> 29
attaagcttc accatggaaa agtccatctg gctgc 35

<210> 30
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer of human Siglec-15 cDNA

<400> 30
agtggatcct cacggtgagc acatggtggc 30

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer of human cathepsin K cDNA

<400> 31
ccgcagtaat gacacccttt 20

<210> 32
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human cathepsin K cDNA

 <400> 32
 aaggcattgg tcatgtagcc 20

 <210> 33
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Detection probe of human cathepsin K cDNA

 <400> 33
 tcagggtcag tgtggttcct gttgggct 28

 <210> 34
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human TRAP cDNA

 <400> 34
 ctgtcctggc tcaagaaaca 20

 <210> 35
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human TRAP cDNA

 <400> 35
 ccatagtggc agcgagata 20

 <210> 36
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Detection probe of human TRAP cDNA

 <400> 36
 tgagaatggc gtgggctacg tgctgagt 28

 <210> 37

<211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human Siglec-15 cDNA

 <400> 37
 cagccaccaa catccatttc 20

 <210> 38
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human Soglec-15 cDNA

 <400> 38
 cgctcaagct aatgcgtgta 20

 <210> 39
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Detection probe of human Siglec-15 cDNA

 <400> 39
 aagaacaaag gccagtgca ggcttggc 28

 <210> 40
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human L32 ribosomal protein cDNA

 <400> 40
 gagatcgctc acaatgtttc ct 22

 <210> 41
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR primer of human L32 ribosomal protein cDNA

 <400> 41
 gatgccagat ggcagttttt ac 22

 <210> 42
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Detection probe of human L32 ribosomal protein cDNA

<400> 42

accgcaaagc catcgtggaa agagctg

27

<210> 43

<211> 780

<212> DNA

<213> Homo sapiens

<220>

<221> CDR

<222> (1).. (780)

<220>

<221> CDS

<222> (1).. (780)

<400> 43

atg gaa aag tcc atc tgg ctg ctg gcc tgc ttg gcg tgg gtt ctc ccg
Met Glu Lys Ser Ile Trp Leu Leu Ala Cys Leu Ala Trp Val Leu Pro
1 5 10 15

48

aca ggc tca ttt gtg aga act aaa ata gat act acg gag aac ttg ctc
Thr Gly Ser Phe Val Arg Thr Lys Ile Asp Thr Thr Glu Asn Leu Leu
20 25 30

96

aac aca gag gtg cac agc tcg cca gcg cag cgc tgg tcc atg cag gtg
Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val
35 40 45

144

cca ccc gag gtg agc gcg gag gca ggc gac gcg gca gtg ctg ccc tgc
Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
50 55 60

192

acc ttc acg cac ccg cac cgc cac tac gac ggg ccg ctg acg gcc atc
Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
65 70 75 80

240

tgg cgc gcg ggc gag ccc tat gcg ggc ccg cag gtg ttc cgc tgc gct
Trp Arg Ala Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Ala
85 90 95

288

gcg gcg cgg ggc agc gag ctc tgc cag acg gcg ctg agc ctg cac ggc
Ala Ala Arg Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
100 105 110

336

cgc ttc cgg ctg ctg ggc aac ccg cgc cgc aac gac ctc tcg ctg cgc
Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
115 120 125

384

gtc gag cgc ctc gcc ctg gct gac gac cgc cgc tac ttc tgc cgc gtc
Val Glu Arg Leu Ala Leu Ala Asp Asp Arg Arg Tyr Phe Cys Arg Val
130 135 140

432

gag ttc gcc ggc gac gtc cat gac cgc tac gag agc cgc cac ggc gtc
Glu Phe Ala Gly Asp Val His Asp Arg Tyr Glu Ser Arg His Gly Val
145 150 155 160

480

cgg ctg cac gtg aca gcc gcg ccg cgg atc gtc aac atc tcg gtg ctg	528
Arg Leu His Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu	
165 170 175	
ccc agt ccg gct cac gcc ttc cgc gcg ctc tgc act gcc gaa ggg gag	576
Pro Ser Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu	
180 185 190	
ccg ccg ccc gcc ctc gcc tgg tcc ggc ccg gcc ctg ggc aac agc ttg	624
Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Leu Gly Asn Ser Leu	
195 200 205	
gca gcc gtg cgg agc ccg cgt gag ggt cac ggc cac cta gtg acc gcc	672
Ala Ala Val Arg Ser Pro Arg Glu Gly His Gly His Leu Val Thr Ala	
210 215 220	
gaa ctg ccc gca ctg acc cat gac ggc cgc tac acg tgt acg gcc gcc	720
Glu Leu Pro Ala Leu Thr His Asp Gly Arg Tyr Thr Cys Thr Ala Ala	
225 230 235 240	
aac agc ctg ggc cgc tcc gag gcc agc gtc tac ctg ttc cgc ttc cat	768
Asn Ser Leu Gly Arg Ser Glu Ala Ser Val Tyr Leu Phe Arg Phe His	
245 250 255	
ggc gcc agc ggg	780
Gly Ala Ser Gly	
260	

<210> 44
 <211> 260
 <212> PRT
 <213> Homo sapiens

<400> 44

Met Glu Lys Ser Ile Trp Leu Leu Ala Cys Leu Ala Trp Val Leu Pro
1 5 10 15
Thr Gly Ser Phe Val Arg Thr Lys Ile Asp Thr Thr Glu Asn Leu Leu
20 25 30
Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val
35 40 45
Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
50 55 60
Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
65 70 75 80
Trp Arg Ala Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Ala
85 90 95
Ala Ala Arg Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
100 105 110

Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125

Val Glu Arg Leu Ala Leu Ala Asp Asp Arg Arg Tyr Phe Cys Arg Val
 130 135 140

Glu Phe Ala Gly Asp Val His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160

Arg Leu His Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175

Pro Ser Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190

Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Leu Gly Asn Ser Leu
 195 200 205

Ala Ala Val Arg Ser Pro Arg Glu Gly His Gly His Leu Val Thr Ala
 210 215 220

Glu Leu Pro Ala Leu Thr His Asp Gly Arg Tyr Thr Cys Thr Ala Ala
 225 230 235 240

Asn Ser Leu Gly Arg Ser Glu Ala Ser Val Tyr Leu Phe Arg Phe His
 245 250 255

Gly Ala Ser Gly
 260

<210> 45
 <211> 56
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of soluble human Siglec-15 cDNA

<400> 45
 ggggacaagt ttgtacaaaa aagcaggctt caccatggaa aagtccatct ggctgc 56

<210> 46
 <211> 52
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer of soluble human Siglec-15 cDNA

<400> 46
 ggggaccact ttgtacaaga aagctgggtc cccgctggcg ccatggaagc gg 52

<210> 47
 <211> 897
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> His-tagged human Siglec-15 cDNA

<220>
 <221> CDS
 <222> (1).. (897)

<400> 47
 atg gaa aag tcc atc tgg ctg ctg gcc tgc ttg gcg tgg gtt ctc ccg 48
 Met Glu Lys Ser Ile Trp Leu Leu Ala Cys Leu Ala Trp Val Leu Pro
 1 5 10 15
 aca ggc tca ttt gtg aga act aaa ata gat act acg gag aac ttg ctc 96
 Thr Gly Ser Phe Val Arg Thr Lys Ile Asp Thr Thr Glu Asn Leu Leu
 20 25 30
 aac aca gag gtg cac agc tcg cca gcg cag cgc tgg tcc atg cag gtg 144
 Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val
 35 40 45
 cca ccc gag gtg agc gcg gag gca ggc gac gcg gca gtg ctg ccc tgc 192
 Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
 50 55 60
 acc ttc acg cac ccg cac cgc cac tac gac ggg ccg ctg acg gcc atc 240
 Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
 65 70 75 80
 tgg cgc gcg ggc gag ccc tat gcg ggc ccg cag gtg ttc cgc tgc gct 288
 Trp Arg Ala Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Ala
 85 90 95
 gcg gcg cgg ggc agc gag ctc tgc cag acg gcg ctg agc ctg cac ggc 336
 Ala Ala Arg Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
 100 105 110
 cgc ttc cgg ctg ctg ggc aac ccg cgc cgc aac gac ctc tcg ctg cgc 384
 Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125
 gtc gag cgc ctc gcc ctg gct gac gac cgc cgc tac ttc tgc cgc gtc 432
 Val Glu Arg Leu Ala Leu Ala Asp Asp Arg Arg Tyr Phe Cys Arg Val
 130 135 140
 gag ttc gcc ggc gac gtc cat gac cgc tac gag agc cgc cac ggc gtc 480
 Glu Phe Ala Gly Asp Val His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160
 cgg ctg cac gtg aca gcc gcg ccg cgg atc gtc aac atc tcg gtg ctg 528
 Arg Leu His Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175
 ccc agt ccg gct cac gcc ttc cgc gcg ctc tgc act gcc gaa ggg gag 576
 Pro Ser Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190

ccg ccg ccc gcc ctc gcc tgg tcc ggc ccg gcc ctg ggc aac agc ttg	624
Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Leu Gly Asn Ser Leu	
195 200 205	
gca gcc gtg cgg agc ccg cgt gag ggt cac ggc cac cta gtg acc gcc	672
Ala Ala Val Arg Ser Pro Arg Glu Gly His Gly His Leu Val Thr Ala	
210 215 220	
gaa ctg ccc gca ctg acc cat gag ggc cgc tac acg tgt acg gcc gcc	720
Glu Leu Pro Ala Leu Thr His Asp Gly Arg Tyr Thr Cys Thr Ala Ala	
225 230 235 240	
aac agc ctg ggc cgc tcc gag gcc agc gtc tac ctg ttc cgc ttc cat	768
Asn Ser Leu Gly Arg Ser Glu Ala Ser Val Tyr Leu Phe Arg Phe His	
245 250 255	
ggc gcc agc ggg gac cca gct ttc ttg tac aaa gtg gtt gat atc gaa	816
Gly Ala Ser Gly Asp Pro Ala Phe Leu Tyr Lys Val Val Asp Ile Glu	
260 265 270	
ggt cgt ggg ggt aag cct atc cct aac cct ctc ctc ggt ctc gat tct	864
Gly Arg Gly Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly Leu Asp Ser	
275 280 285	
acg cgt acc ggt cat cat cac cat cac cat tga	897
Thr Arg Thr Gly His His His His His His	
290 295	

<210> 48
 <211> 298
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> His-tagged human Siglec-15 peptide

<400> 48

Met Glu Lys Ser Ile Trp Leu Leu Ala Cys Leu Ala Trp Val Leu Pro	
1 5 10 15	
Thr Gly Ser Phe Val Arg Thr Lys Ile Asp Thr Thr Glu Asn Leu Leu	
20 25 30	
Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val	
35 40 45	
Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys	
50 55 60	
Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile	
65 70 75 80	
Trp Arg Ala Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Ala	
85 90 95	

Ala Ala Arg Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
 100 105 110
 Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125
 Val Glu Arg Leu Ala Leu Ala Asp Asp Arg Arg Tyr Phe Cys Arg Val
 130 135 140
 Glu Phe Ala Gly Asp Val His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160
 Arg Leu His Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175
 Pro Ser Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190
 Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Leu Gly Asn Ser Leu
 195 200 205
 Ala Ala Val Arg Ser Pro Arg Glu Gly His Gly His Leu Val Thr Ala
 210 215 220
 Glu Leu Pro Ala Leu Thr His Asp Gly Arg Tyr Thr Cys Thr Ala Ala
 225 230 235 240
 Asn Ser Leu Gly Arg Ser Glu Ala Ser Val Tyr Leu Phe Arg Phe His
 245 250 255
 Gly Ala Ser Gly Asp Pro Ala Phe Leu Tyr Lys Val Val Asp Ile Glu
 260 265 270
 Gly Arg Gly Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly Leu Asp Ser
 275 280 285
 Thr Arg Thr Gly His His His His His His
 290 295

<210> 49
 <211> 1518
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Fc-fused human Siglec-15 cDNA

<220>

<221> CDS
 <222> (1).. (1518)

<400> 49
 atg gaa aag tcc atc tgg ctg ctg gcc tgc ttg gcg tgg gtt ctc ccg 48
 Met Glu Lys Ser Ile Trp Leu Leu Ala Cys Leu Ala Trp Val Leu Pro
 1 5 10 15

aca ggc tca ttt gtg aga act aaa ata gat act acg gag aac ttg ctc 96
 Thr Gly Ser Phe Val Arg Thr Lys Ile Asp Thr Thr Glu Asn Leu Leu
 20 25 30

aac aca gag gtg cac agc tcg cca gcg cag cgc tgg tcc atg cag gtg 144
 Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val
 35 40 45

cca ccc gag gtg agc gcg gag gca ggc gac gcg gca gtg ctg ccc tgc 192
 Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Val Leu Pro Cys
 50 55 60

acc ttc acg cac ccg cac cgc cac tac gac ggg ccg ctg acg gcc atc 240
 Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
 65 70 75 80

tgg cgc gcg ggc gag ccc tat gcg ggc ccg cag gtg ttc cgc tgc gct 288
 Trp Arg Ala Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Ala
 85 90 95

gcg gcg ccg ggc agc gag ctc tgc cag acg gcg ctg agc ctg cac ggc 336
 Ala Ala Arg Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
 100 105 110

cgc ttc ccg ctg ctg ggc aac ccg cgc cgc aac gac ctc tcg ctg cgc 384
 Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125

gtc gag cgc ctc gcc ctg gct gac gac cgc cgc tac ttc tgc cgc gtc 432
 Val Glu Arg Leu Ala Leu Ala Asp Asp Arg Arg Tyr Phe Cys Arg Val
 130 135 140

gag ttc gcc ggc gac gtc cat gac cgc tac gag agc cgc cac ggc gtc 480
 Glu Phe Ala Gly Asp Val His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160

cgg ctg cac gtg aca gcc gcg ccg ccg atc gtc aac atc tcg gtg ctg 528
 Arg Leu His Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175

ccc agt ccg gct cac gcc ttc cgc gcg ctc tgc act gcc gaa ggg gag 576
 Pro Ser Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190

ccg ccg ccc gcc ctc gcc tgg tcc ggc ccg gcc ctg ggc aac agc ttg 624
 Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Leu Gly Asn Ser Leu
 195 200 205

gca gcc gtg ccg agc ccg cgt gag ggt cac ggc cac cta gtg acc gcc 672
 Ala Ala Val Arg Ser Pro Arg Glu Gly His Gly His Leu Val Thr Ala
 210 215 220

gaa ctg ccc gca ctg acc cat gac ggc cgc tac acg tgt acg gcc gcc 720
 Glu Leu Pro Ala Leu Thr His Asp Gly Arg Tyr Thr Cys Thr Ala Ala
 225 230 235 240

aac agc ctg ggc cgc tcc gag gcc agc gtc tac ctg ttc cgc ttc cat	768
Asn Ser Leu Gly Arg Ser Glu Ala Ser Val Tyr Leu Phe Arg Phe His	
	245
	250
ggc gcc agc ggg gac cca gct ttc ttg tac aaa gtg gtt gat atc cag	816
Gly Ala Ser Gly Asp Pro Ala Phe Leu Tyr Lys Val Val Asp Ile Gln	
	260
	265
	270
gca gag ccc aaa tct tgt gac aaa act cac aca tgc cca ccg tgc cca	864
Ala Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro	
	275
	280
	285
gca cct gaa ctc ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa	912
Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys	
	290
	295
	300
ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg	960
Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val	
	305
	310
	315
	320
gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc aac tgg tac	1008
Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr	
	325
	330
	335
gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg cgg gag gag	1056
Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu	
	340
	345
	350
cag tac aac agc acg tac cgt gtg gtc agc gtc ctc acc gtc ctg cac	1104
Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His	
	355
	360
	365
cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc tcc aac aaa	1152
Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys	
	370
	375
	380
gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag	1200
Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln	
	385
	390
	395
	400
ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc ccg gag gag atg	1248
Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met	
	405
	410
	415
acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc	1296
Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro	
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agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg gag aac aac	1344
Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn	
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	440
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tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc	1392
Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu	
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	455
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tat agc aag ctc acc gtg gac aag agc agg tgg cag cag ggg aac gtc	1440
Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val	
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	470
	475
	480
ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac tac acg cag	1488
Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln	

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Thr Gly Ser Phe Val Arg Thr Lys Ile Asp Thr Thr Glu Asn Leu Leu
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Asn Thr Glu Val His Ser Ser Pro Ala Gln Arg Trp Ser Met Gln Val
 35 40 45

Pro Pro Glu Val Ser Ala Glu Ala Gly Asp Ala Ala Val Leu Pro Cys
 50 55 60

Thr Phe Thr His Pro His Arg His Tyr Asp Gly Pro Leu Thr Ala Ile
 65 70 75 80

Trp Arg Ala Gly Glu Pro Tyr Ala Gly Pro Gln Val Phe Arg Cys Ala
 85 90 95

Ala Ala Arg Gly Ser Glu Leu Cys Gln Thr Ala Leu Ser Leu His Gly
 100 105 110

Arg Phe Arg Leu Leu Gly Asn Pro Arg Arg Asn Asp Leu Ser Leu Arg
 115 120 125

Val Glu Arg Leu Ala Leu Ala Asp Asp Arg Arg Tyr Phe Cys Arg Val
 130 135 140

Glu Phe Ala Gly Asp Val His Asp Arg Tyr Glu Ser Arg His Gly Val
 145 150 155 160

Arg Leu His Val Thr Ala Ala Pro Arg Ile Val Asn Ile Ser Val Leu
 165 170 175

Pro Ser Pro Ala His Ala Phe Arg Ala Leu Cys Thr Ala Glu Gly Glu
 180 185 190

Pro Pro Pro Ala Leu Ala Trp Ser Gly Pro Ala Leu Gly Asn Ser Leu
 195 200 205
 Ala Ala Val Arg Ser Pro Arg Glu Gly His Gly His Leu Val Thr Ala
 210 215 220
 Glu Leu Pro Ala Leu Thr His Asp Gly Arg Tyr Thr Cys Thr Ala Ala
 225 230 235 240
 Asn Ser Leu Gly Arg Ser Glu Ala Ser Val Tyr Leu Phe Arg Phe His
 245 250 255
 Gly Ala Ser Gly Asp Pro Ala Phe Leu Tyr Lys Val Val Asp Ile Gln
 260 265 270
 Ala Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys Pro
 275 280 285
 Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys
 290 295 300
 Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
 305 310 315 320
 Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr
 325 330 335
 Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
 340 345 350
 Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His
 355 360 365
 Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys
 370 375 380
 Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln
 385 390 395 400
 Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met
 405 410 415
 Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro
 420 425 430
 Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn

435

440

445

Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu
450 455 460

Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val
465 470 475 480

Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln
485 490 495

Lys Ser Leu Ser Leu Ser Pro Gly Lys
500 505