Fig.1

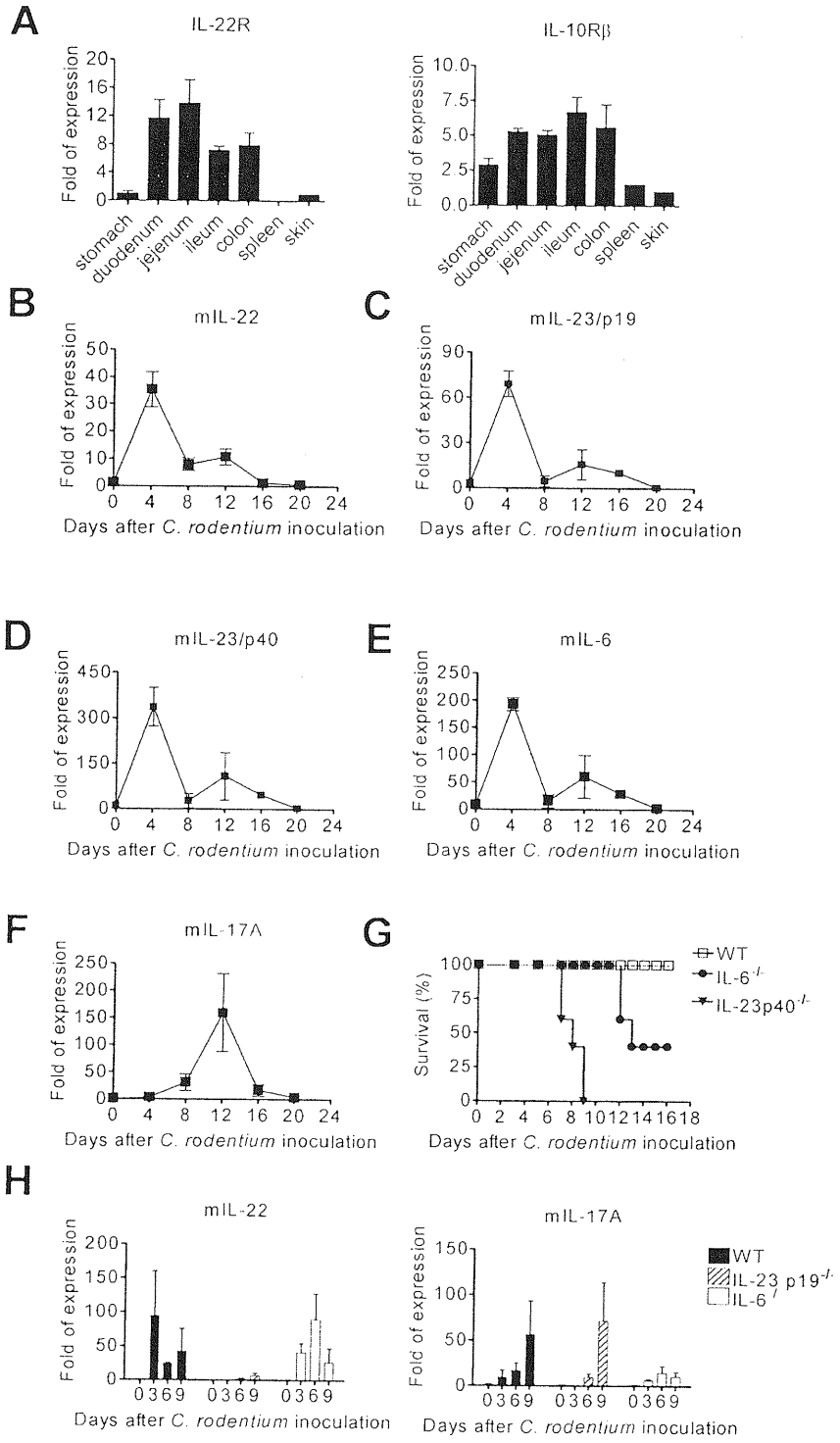

A
IL-22R
Fold of expression
stomach
duodenum
jejenum
ileum
colon
spleen
skin
IL-10Rβ
B
mIL-22
Days after C. rodentium inoculation
C
mIL-23/p19
D
mIL-23/p40
E
mIL-6
F
mIL-17A
G
Survival (%)
WT
IL-6-/-
IL-23p40-/-
H
IL-23 p19-/-
IL-6-/-

Fig.2

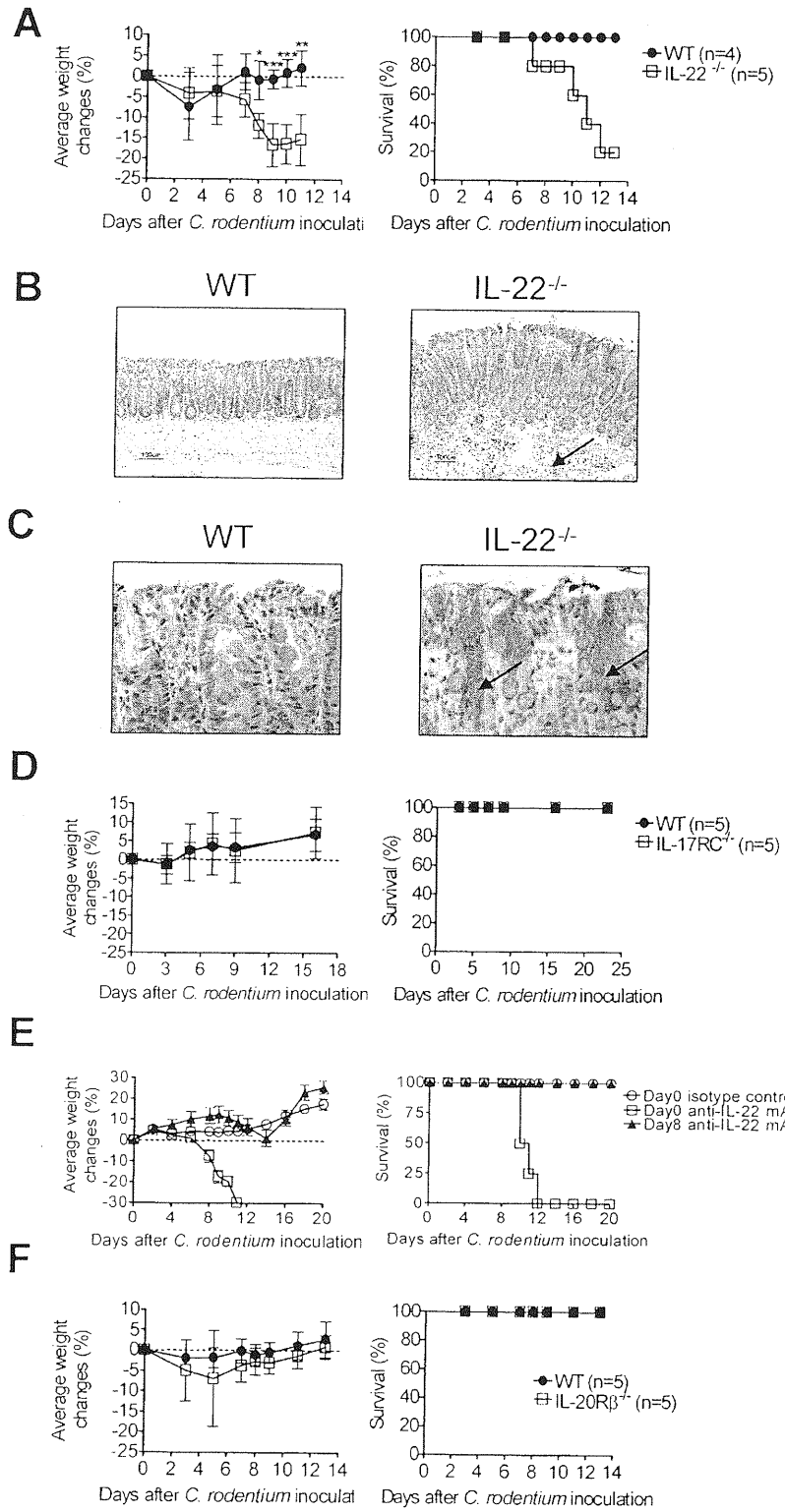

A
Average weight changes (%)
Days after C. rodentium inoculati
Survival (%)
Days after C. rodentium inoculation
WT (n=4)
IL-22 -/- (n=5)
B
WT
IL-22-/-
C
WT
IL-22-/-
D
Average weight changes (%)
Days after C. rodentium inoculation
Survival (%)
Days after C. rodentium inoculation
WT (n=5)
IL-17RC-/- (n=5)
E
Average weight changes (%)
Days after C. rodentium inoculation
Survival (%)
Days after C. rodentium inoculation
Day0 isotype control mAb
Day0 anti-IL-22 mAb
Day8 anti-IL-22 mAb
F
Average weight changes (%)
Days after C. rodentium inoculat
Survival (%)
Days after C. rodentium inoculation
WT (n=5)
IL-20Rβ-/- (n=5)

Fig.3

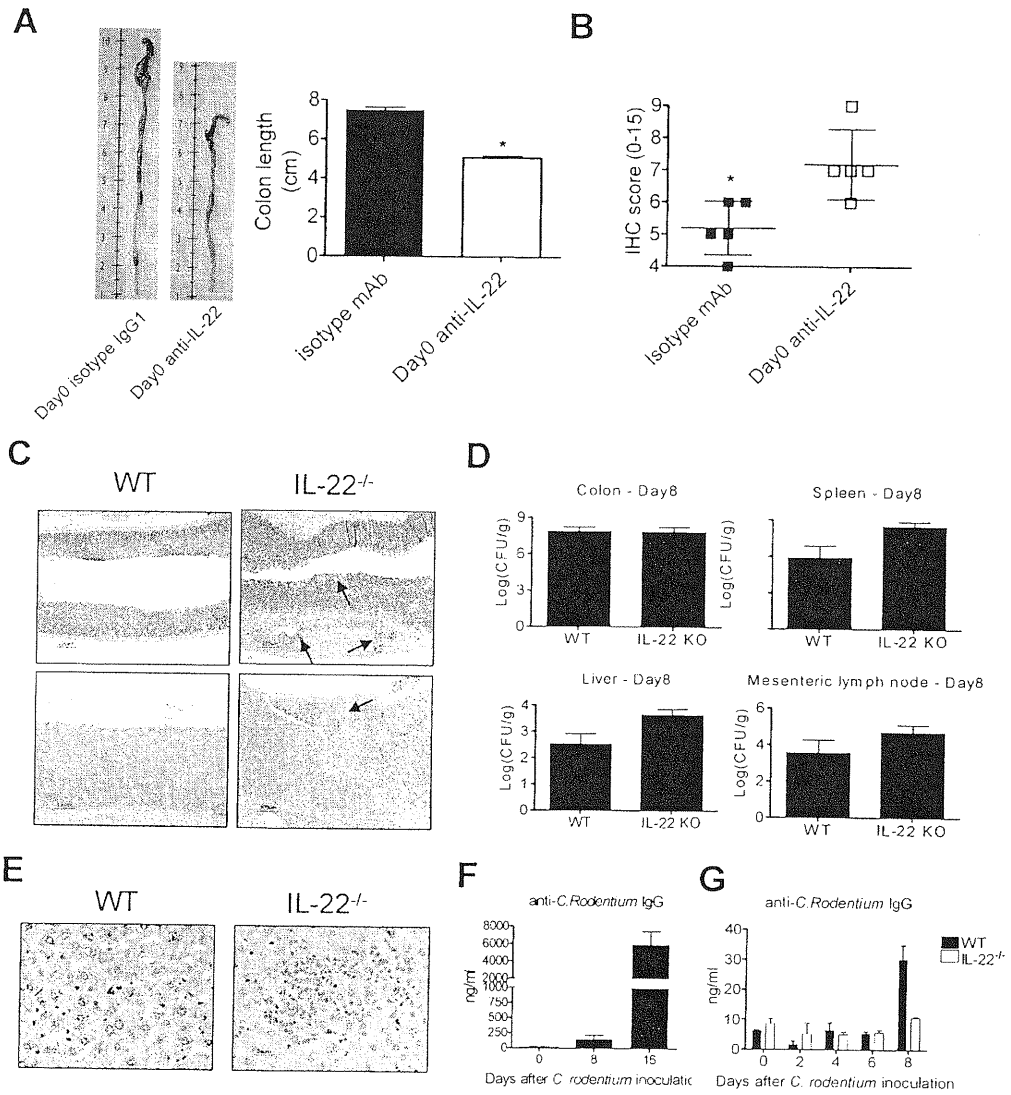

A
Day0 isotype IgG1
Day0 anti-IL-22
Colon length (cm)
isotype mAb
Day0 anti-IL-22
B
IHC score (0-15)
Isotype mAb
Day0 anti-IL-22
C
WT
IL-22-/-
D
Colon - Day8
Spleen - Day8
Liver - Day8
Mesenteric lymph node - Day8
Log(CFU/g)
WT
IL-22 KO
E
WT
IL-22-/-
F
anti-C.Rodentium IgG
ng/ml
Days after C. rodentium inoculatic
G
anti-C.Rodentium IgG
WT
IL-22-/-
ng/ml
Days after C. rodentium inoculation

Fig.4

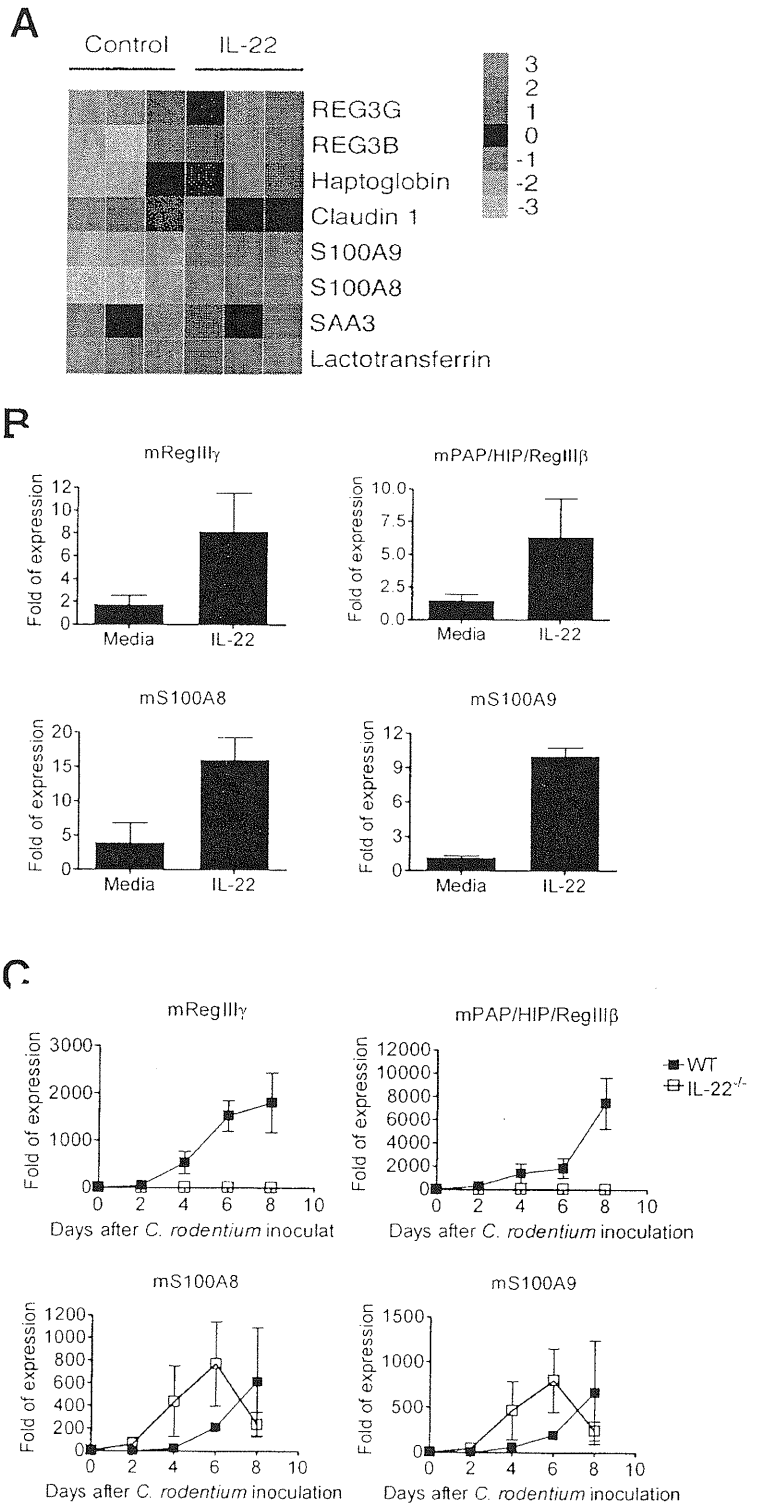

A
Control
IL-22
REG3G
REG3B
Haptoglobin
Claudin 1
S100A9
S100A8
SAA3
Lactotransferrin
3
2
1
0
-1
-2
-3
B
mRegIIIγ
mPAP/HIP/RegIIIβ
mS100A8
mS100A9
Fold of expression
Media
IL-22
C
mRegIIIγ
mPAP/HIP/RegIIIβ
mS100A8
mS100A9
Fold of expression
WT
IL-22-/-
Days after C. rodentium inoculat
Days after C. rodentium inoculation

Fig. 5

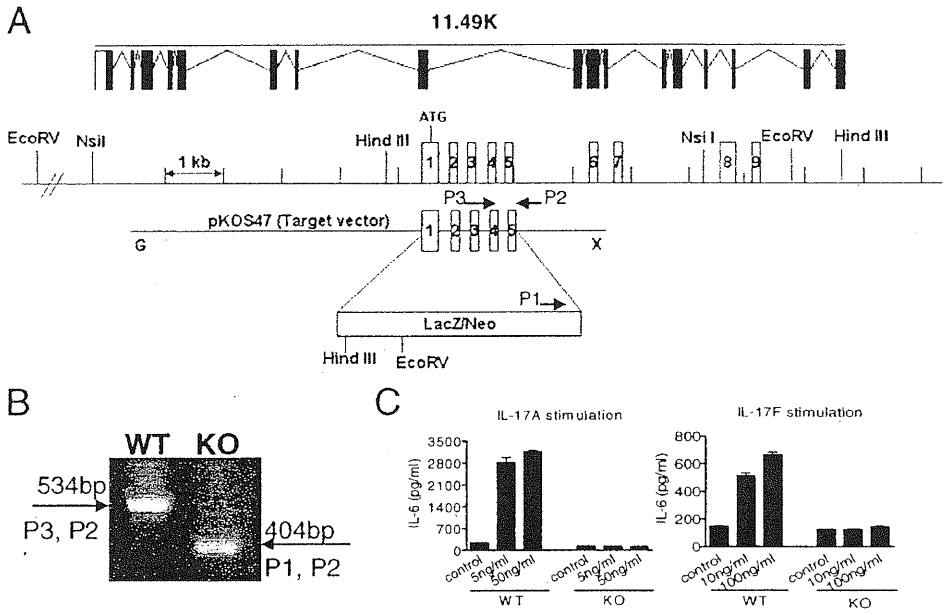

A
11.49K
EcoRV
NsiI
1 kb
Hind III
ATG
1
2
3
4
5
6
7
NsiI
8
9
EcoRV
Hind III
P3
P2
pKOS47 (Target vector)
G
X
P1
LacZ/Neo
Hind III
EcoRV
B
WT
KO
534bp
P3, P2
404bp
P1, P2
C
IL-17A stimulation
IL-6 (pg/ml)
3500
2800
2100
1400
700
0
control
5ng/ml
50ng/ml
control
5ng/ml
50ng/ml
WT
KO
IL-17F stimulation
IL-6 (pg/ml)
800
600
400
200
0
control
10ng/ml
100ng/ml
control
10ng/ml
100ng/ml
WT
KO

Fig. 6

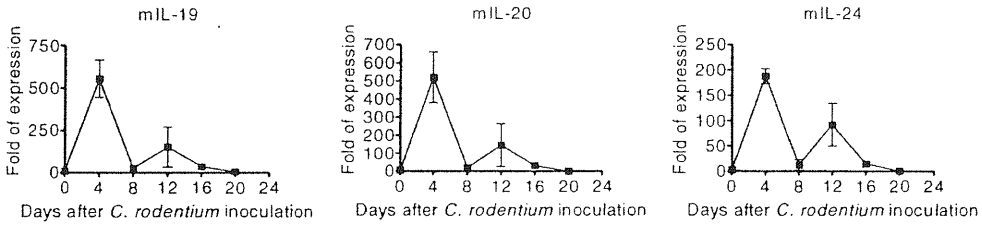

mIL-19
Fold of expression
750
500
250
0
0 4 8 12 16 20 24
Days after C. rodentium inoculation
mIL-20
Fold of expression
700
600
500
400
300
200
100
0
0 4 8 12 16 20 24
Days after C. rodentium inoculation
mIL-24
Fold of expression
250
200
150
100
50
0
0 4 8 12 16 20 24
Days after C. rodentium inoculation

Fig. 7

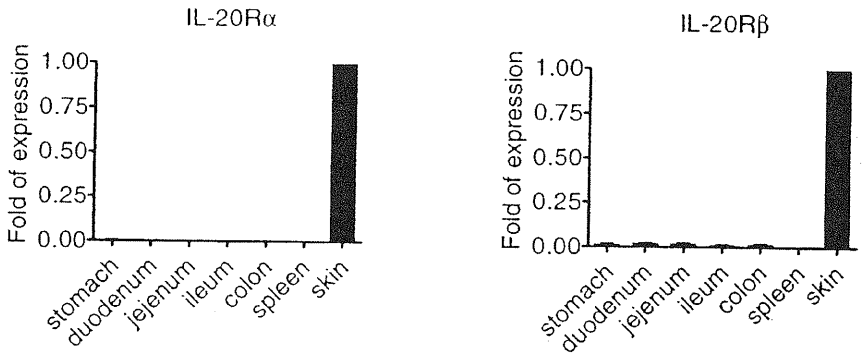

IL-20Rα
Fold of expression
1.00
0.75
0.50
0.25
0.00
stomach
duodenum
jejenum
ileum
colon
spleen
skin
IL-20Rβ
Fold of expression
1.00
0.75
0.50
0.25
0.00
stomach
duodenum
jejenum
ileum
colon
spleen
skin

Fig. 8

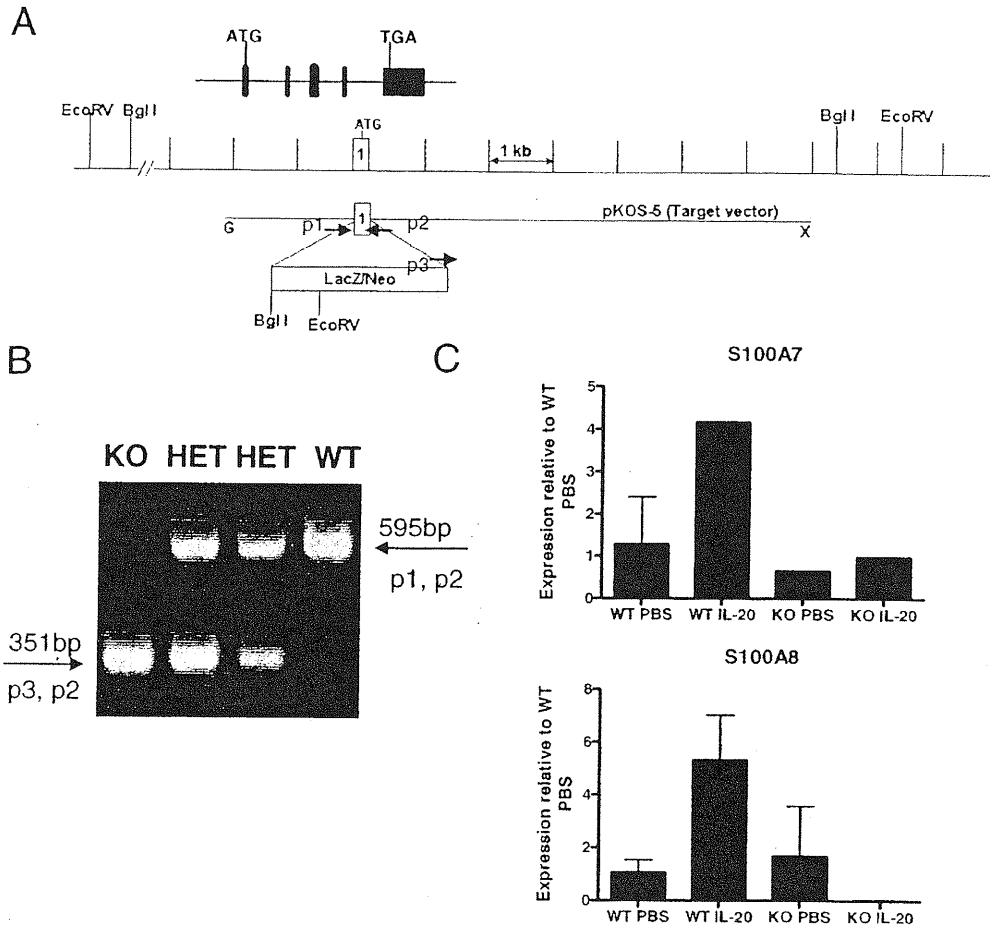

A
ATG
TGA
EcoRV BglI
ATG
1 kb
BglI EcoRV
G
p1
p2
pKOS-5 (Target vector)
X
p3
LacZ/Neo
BglI EcoRV
B
KO HET HET WT
595bp
p1, p2
351bp
p3, p2
C
S100A7
Expression relative to WT PBS
WT PBS WT IL-20 KO PBS KO IL-20
S100A8
Expression relative to WT PBS
WT PBS WT IL-20 KO PBS KO IL-20

Fig. 9

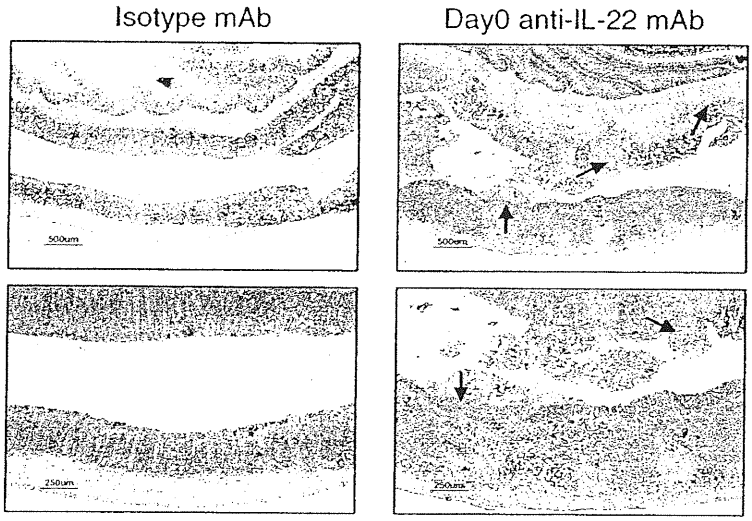


Fig. 10

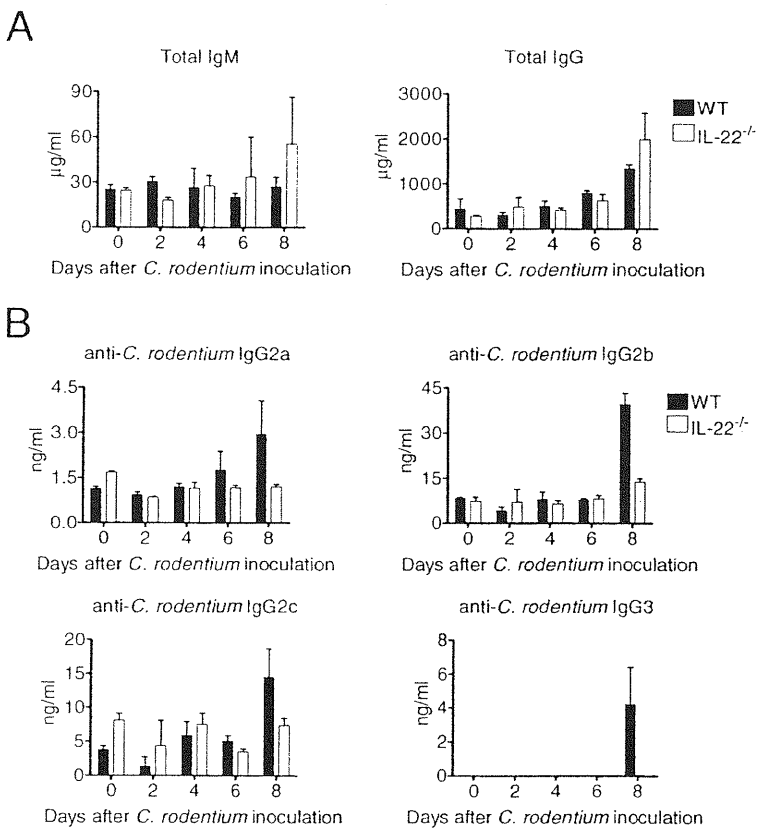

A
Total IgM
μg/ml
90
60
30
0
0 2 4 6 8
Days after C. rodentium inoculation
Total IgG
μg/ml
3000
2000
1000
0
0 2 4 6 8
Days after C. rodentium inoculation
WT
IL-22-/-
B
anti-C. rodentium IgG2a
ng/ml
4.5
3.0
1.5
0.0
0 2 4 6 8
Days after C. rodentium inoculation
anti-C. rodentium IgG2b
ng/ml
45
30
15
0
0 2 4 6 8
Days after C. rodentium inoculation
WT
IL-22-/-
anti-C. rodentium IgG2c
ng/ml
20
15
10
5
0
0 2 4 6 8
Days after C. rodentium inoculation
anti-C. rodentium IgG3
ng/ml
8
6
4
2
0
0 2 4 6 8
Days after C. rodentium inoculation

Fig. 11

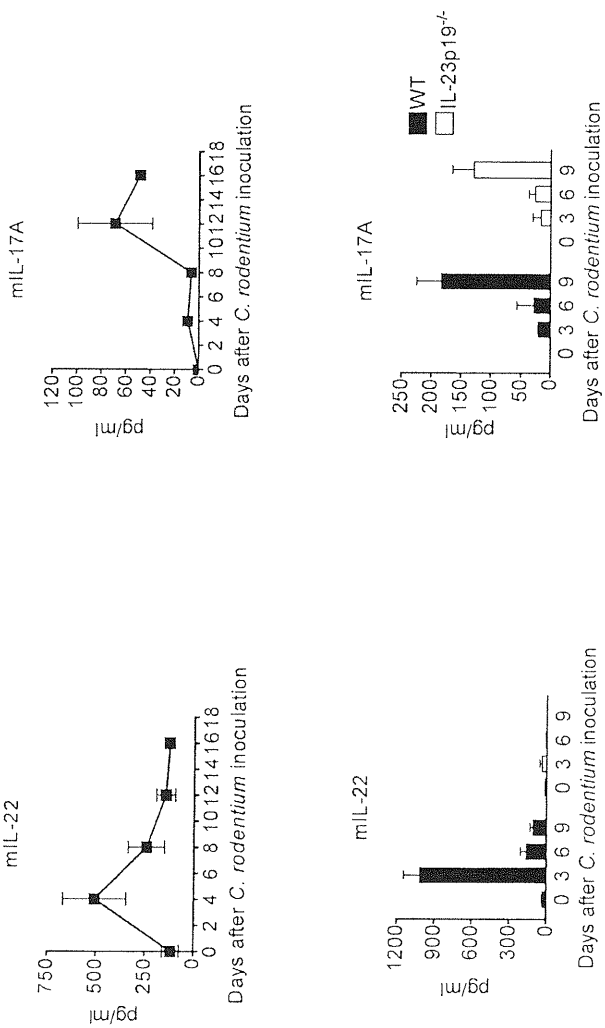

mIL-17A
pg/ml
120
100
80
60
40
20
0
0 2 4 6 8 10 12 14 16 18
Days after C. rodentium inoculation
mIL-22
pg/ml
750
500
250
0
0 2 4 6 8 10 12 14 16 18
Days after C. rodentium inoculation
mIL-17A
WT
IL-23p19-/-
pg/ml
250
200
150
100
50
0
0 3 6 9 0 3 6 9
Days after C. rodentium inoculation
mIL-22
pg/ml
1200
900
600
300
0
0 3 6 9 0 3 6 9
Days after C. rodentium inoculation

Fig. 12

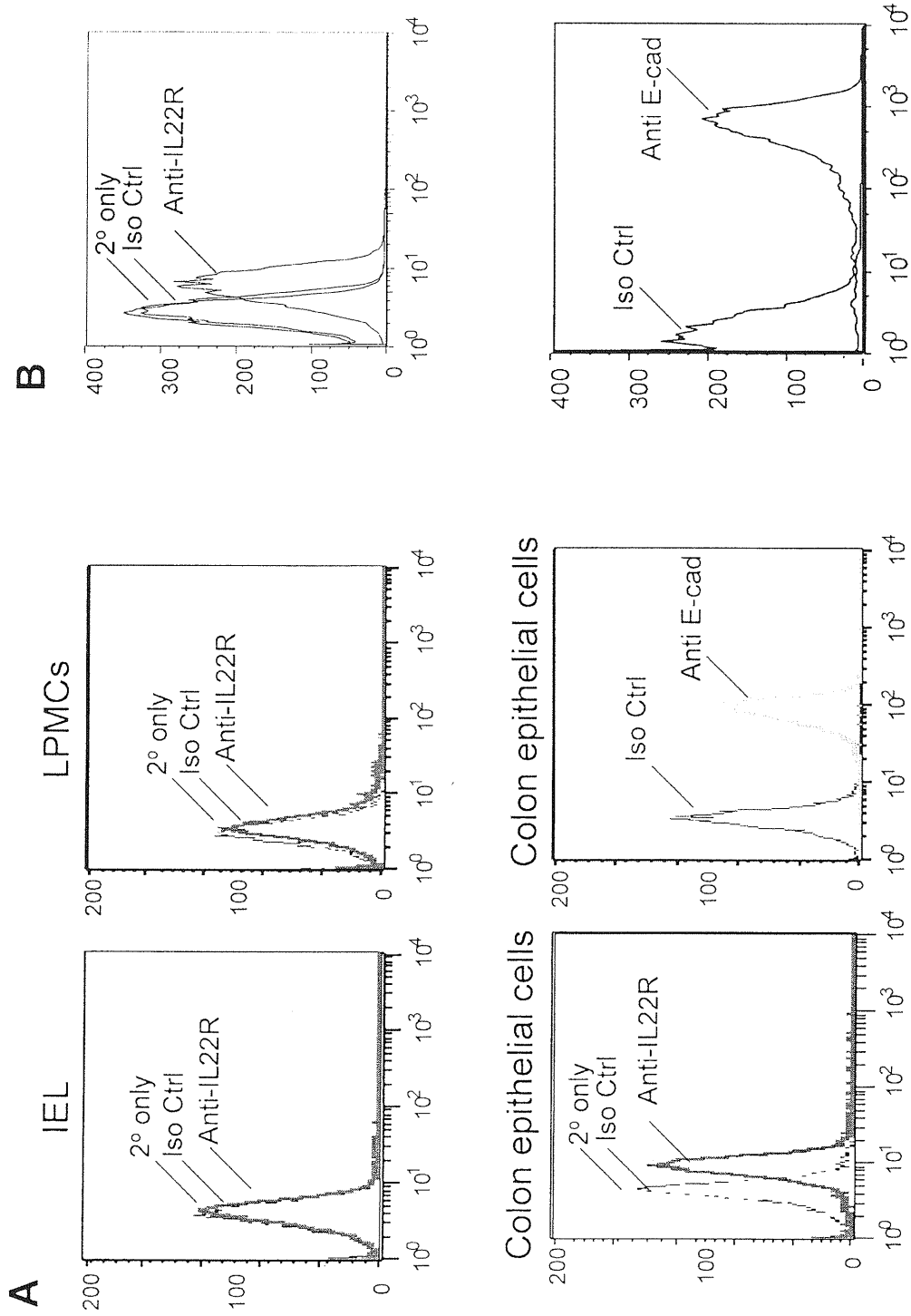

A
IEL
LPMCs
Colon epithelial cells
Colon epithelial cells
2° only
Iso Ctrl
Anti-IL22R
B
2° only
Iso Ctrl
Anti-IL22R
Iso Ctrl
Anti E-cad
Iso Ctrl
Anti E-cad
0
100
200
300
400
10^0
10^1
10^2
10^3
10^4

Fig. 13

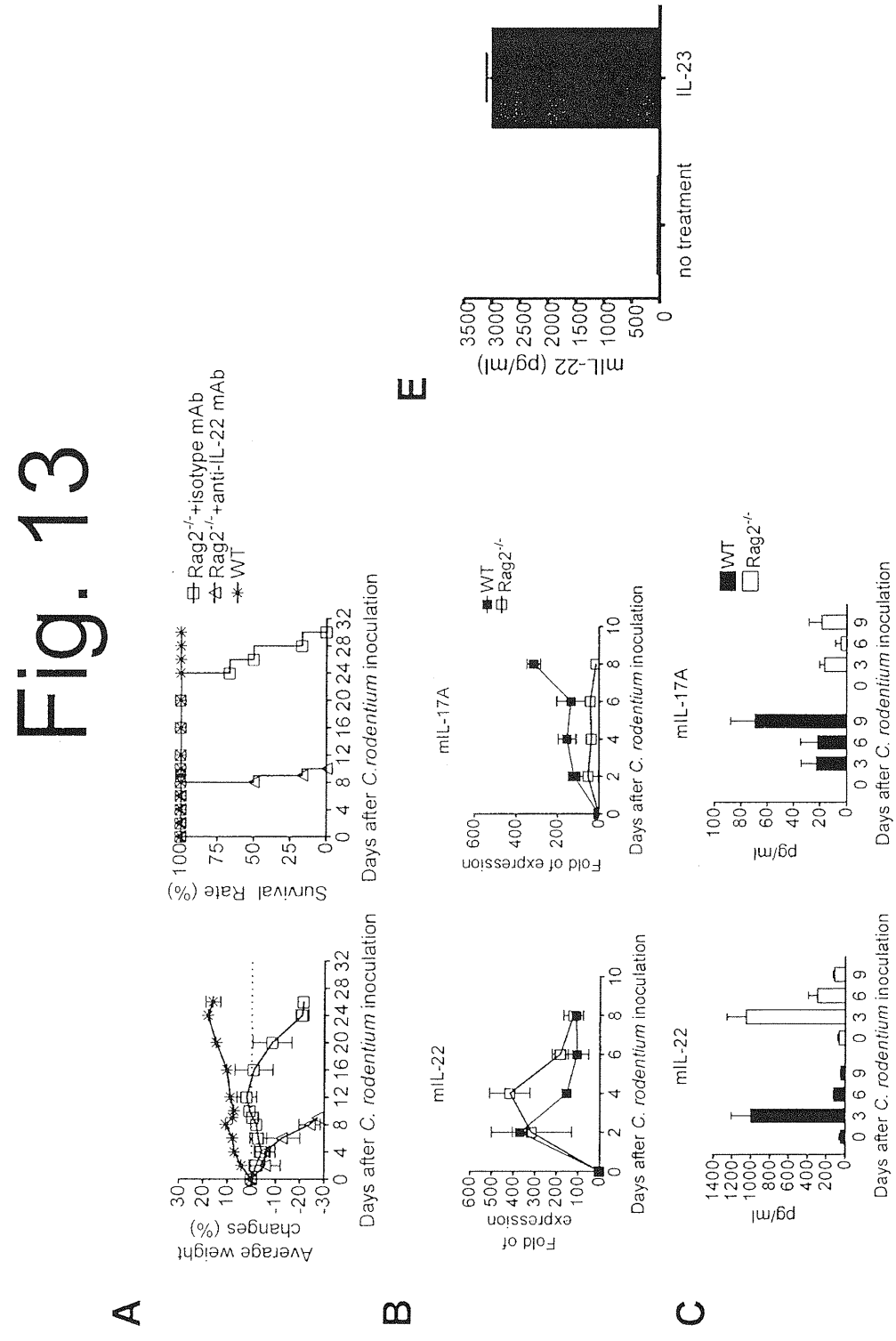

A
Average weight changes (%)
Days after C. rodentium inoculation
Survival Rate (%)
Rag2-/-+isotype mAb
Rag2-/-+anti-IL-22 mAb
WT
Days after C.rodentium inoculation
B
mIL-22
Fold of expression
Days after C. rodentium inoculation
mIL-17A
WT
Rag2-/-
Fold of expression
Days after C. rodentium inoculation
C
mIL-22
pg/ml
Days after C. rodentium inoculation
mIL-17A
WT
Rag2-/-
pg/ml
Days after C. rodentium inoculation
E
mIL-22 (pg/ml)
no treatment
IL-23

Fig. 13 D

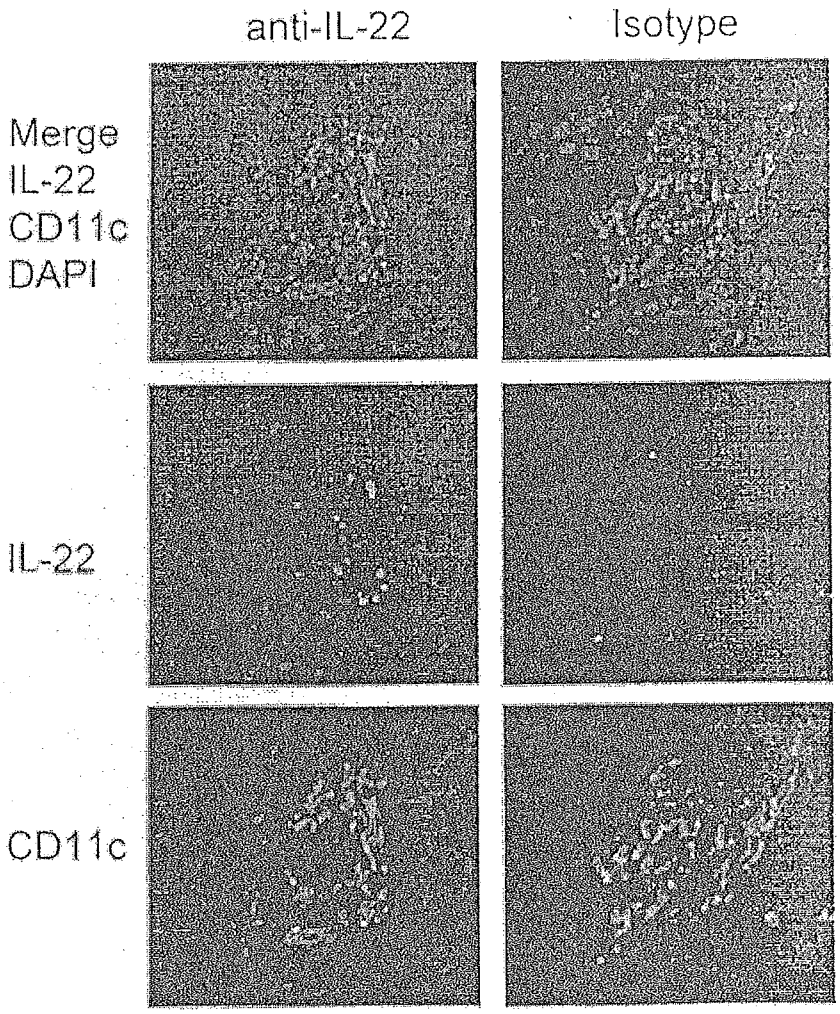


Fig. 14

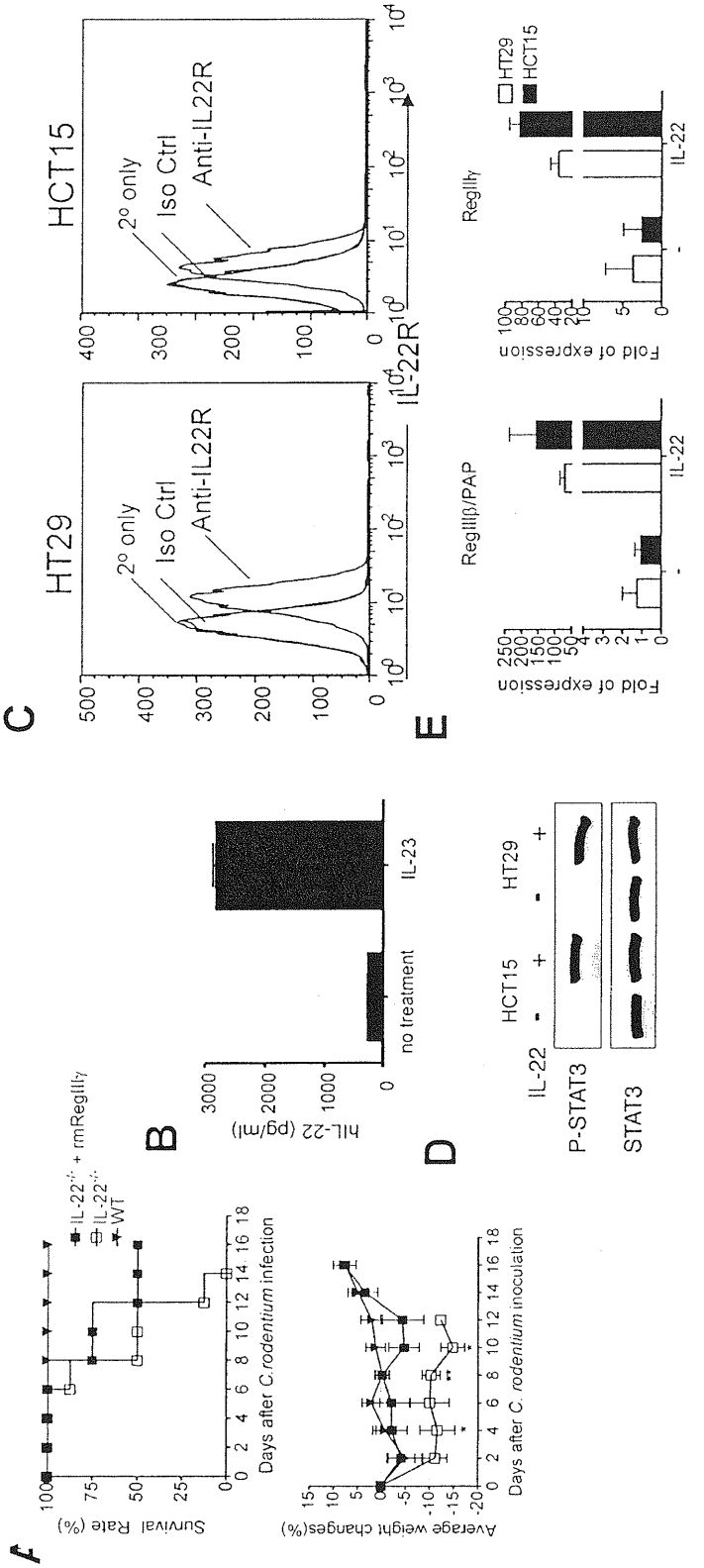

A
Survival Rate (%)
Days after C.rodentium infection
IL-22-/- + rmRegIIIγ
IL-22-/-
WT
Average weight changes(%)
Days after C. rodentium inoculation
B
hIL-22 (pg/ml)
no treatment
IL-23
C
HT29
HCT15
2° only
Iso Ctrl
Anti-IL22R
IL-22R
D
IL-22
HCT15
HT29
P-STAT3
STAT3
E
RegIIIβ/PAP
RegIIIγ
Fold of expression
HT29
HCT15
IL-22

Fig. 15 A

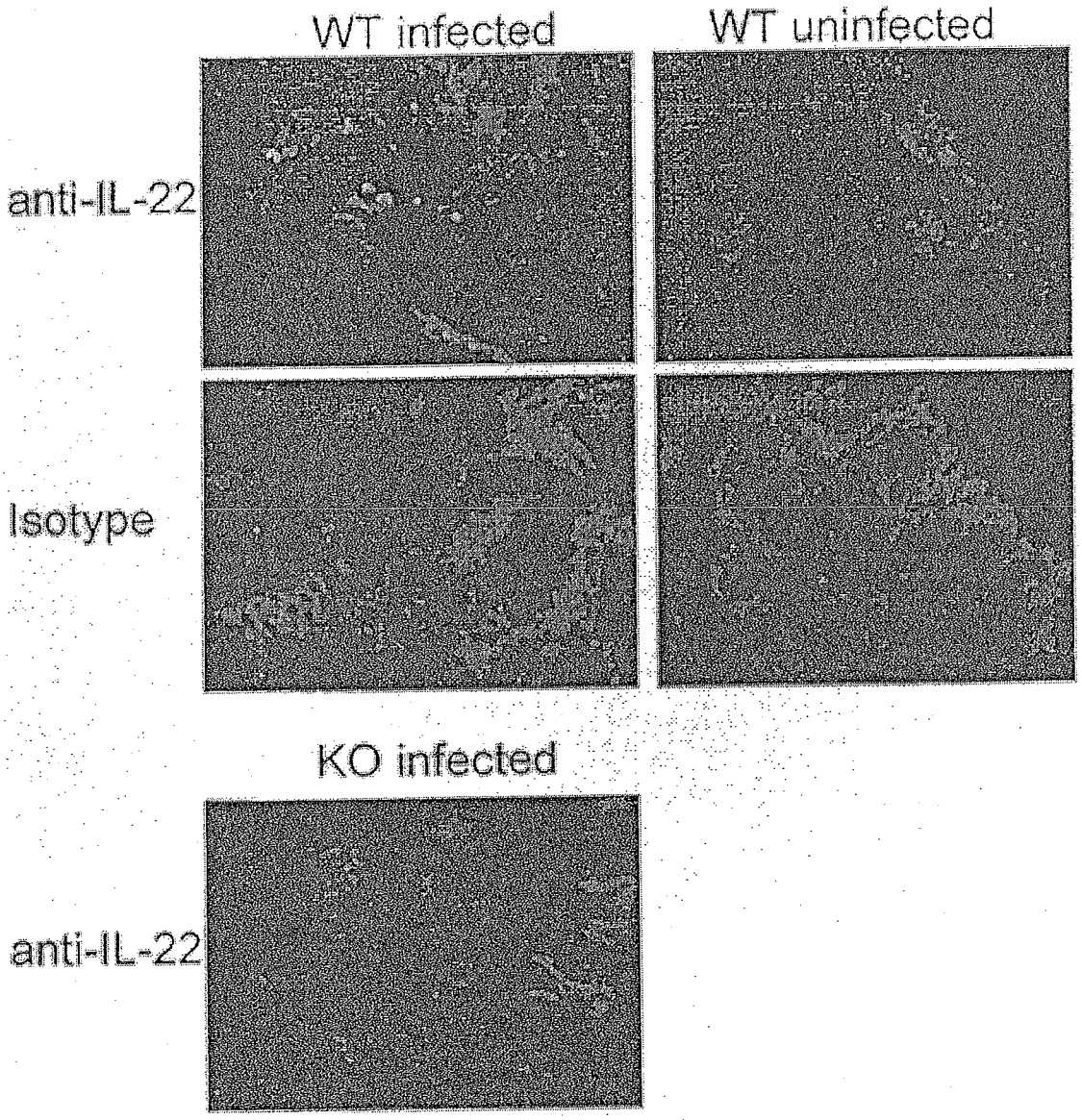

WT infected
WT uninfected
anti-IL-22
Isotype
KO infected
anti-IL-22

Fig. 15 B

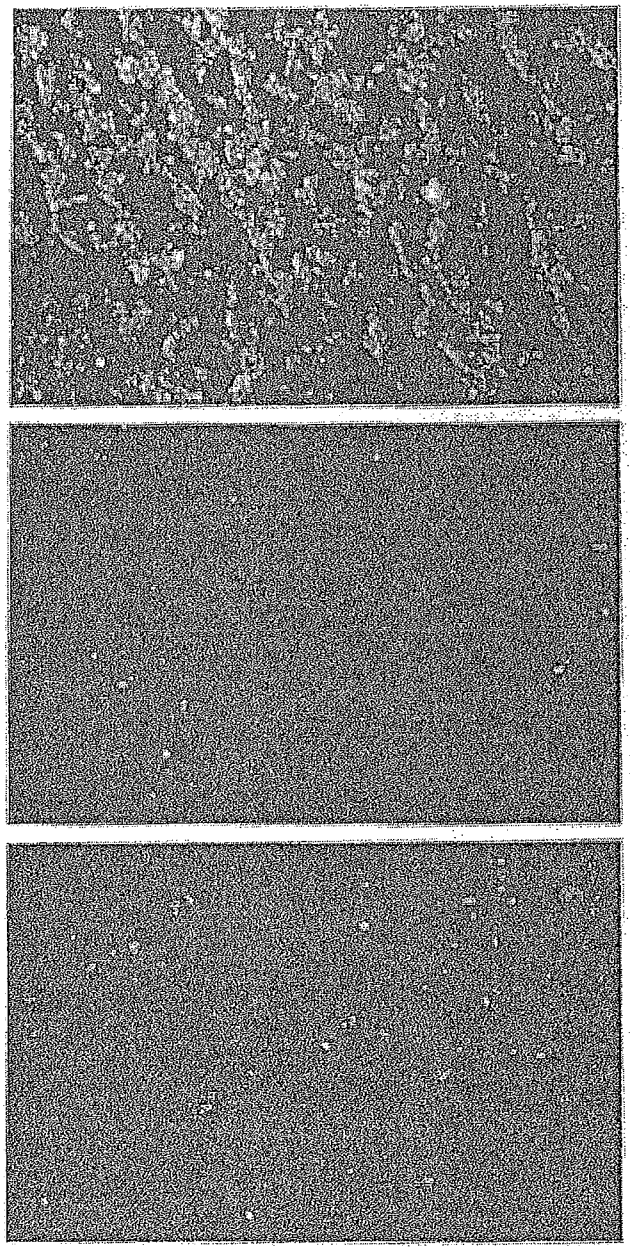


Fig. 16

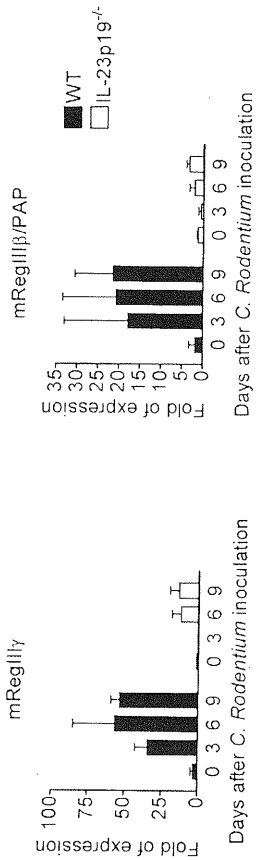

mRegIIIγ
Fold of expression
100
75
50
25
0
0 3 6 9 0 3 6 9
Days after C. Rodentium inoculation
mRegIIIβ/PAP
WT
IL-23p19-/-
Fold of expression
35
30
25
20
15
10
5
0
0 3 6 9 0 3 6 9
Days after C. Rodentium inoculation

Fig. 17

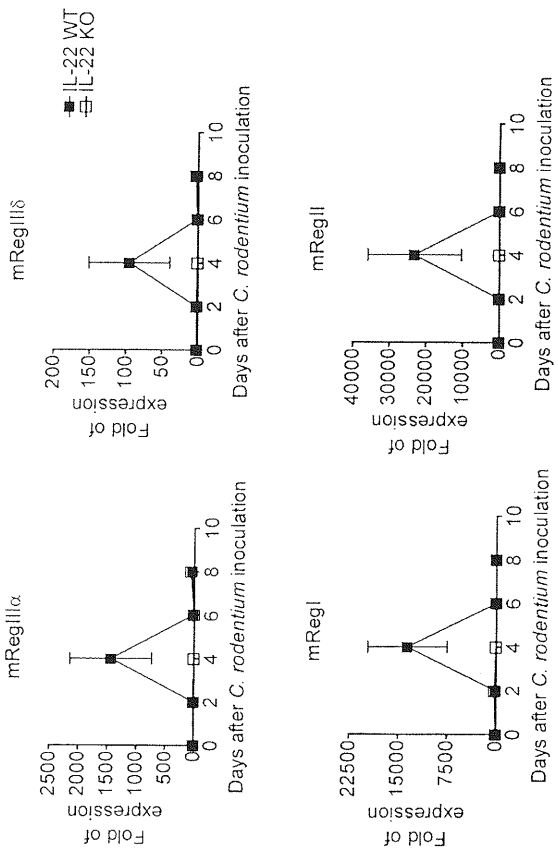

mRegIIIδ
IL-22 WT
IL-22 KO
Fold of expression
Days after C. rodentium inoculation
mRegIIIα
mRegII
mRegI

Fig. 18

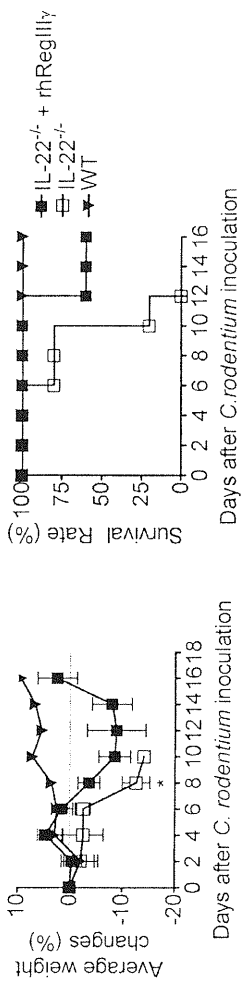

IL-22-/- + rhRegIIIγ
IL-22-/-
WT
Survival Rate (%)
100
75
50
25
0
0 2 4 6 8 10 12 14 16
Days after C.rodentium inoculation
Average weight changes (%)
10
0
-10
-20
0 2 4 6 8 10 12 14 16 18
Days after C. rodentium inoculation

Fig. 19A

Probeset	P-value	Log2 FC	ID	Symbol
A_51_P256827	0	5.674	NM_013650	S100a8
A_52_P700056	0.001	3.722	BC089618	
A_51_P402943	0.001	3.637	NM_009114	S100a9
A_51_P235945	0.007	2.668	NM_017370	Hp
A_51_P169671	0.042	2.523	NM_011036	Pap
A_52_P472324	0.012	2.351	NM_011414	Slpi
A_52_P329207	0.006	2.262	NM_007969	Expi
A_52_P295432	0.015	2.111	NM_009141	Cxcl5
A_52_P321831	0.007	2.062	XM_894811	Krtap3-1
A_51_P279437	0.013	2.032	NM_029662	Mfsd2
A_51_P246166	0.01	1.983	NM_007969	Expi
A_52_P230938	0.008	1.966	NM_010741	Ly6c
A_51_P384894	0.019	1.837	NM_001001332	Stfa1
A_51_P156955	0.045	1.837	NM_013459	Cfd
A_51_P303160	0.03	1.821	NM_007482	Arg1
A_51_P461703	0.034	1.804	NM_031188	Mup1
A_51_P374476	0.019	1.742	NM_008220	Hbb-b1
A_51_P481958	0.012	1.735	NM_016674	Cldn1
A_51_P464703	0.019	1.727	NM_021443	Ccl8
A_51_P132185	0.031	1.724	NM_001001332	Stfa1
A_51_P496795	0.019	1.669	NM_145555	A330049M08Rik
A_51_P296109	0.01	1.63	NM_028618	Dmkn
A_51_P228768	0.043	1.591	NM_011409	Slfn3
A_51_P466535	0.014	1.571	AK172918	Ttc9
A_51_P387239	0.04	1.569	NM_021792	Iigp1
A_51_P337308	0.03	1.547	NM_011315	Saa3
A_51_P346938	0.031	1.541	NM_029796	Lrg1
A_51_P504546	0.047	1.536	NM_027406	Aldh1l1
A_51_P386870	0.026	1.53	NM_011472	Sprr2f
A_51_P216456	0.024	1.522	NM_009311	Tac1
A_51_P212491	0.025	1.517	NM_133232	Pfkfb3
A_52_P48681	0.018	1.514	NM_016674	Cldn1
A_52_P424959	0.038	1.498	NM_153457	Rtn1
A_52_P232813	0.047	1.484	NM_203320	Gm1960
A_51_P181891	0.011	1.458	NM_028113	2600011E07Rik
A_51_P249989	0.014	1.455	NM_145133	T2bp
A_52_P487686	0.042	1.405	NM_001001332	Stfa1
A_52_P168962	0.023	1.387	NM_007646	Cd38
A_51_P485312	0.026	1.372	NM_013653	Ccl5
A_52_P99353	0.019	1.37	AK009488	
A_52_P252931	0.037	1.358	NM_013505	Dsc2
A_52_P278538	0.039	1.349	NM_008218	Hba-a1
A_52_P85132	0.034	1.331	NM_172440	Stxbp5l
A_52_P407198	0.023	1.322	NM_183153	A430060F13Rik
A_52_P638459	0.03	1.317	BC033508	Ccl5
A_51_P335559	0.019	1.311	AK034993	
A_51_P240801	0.018	1.308	BC046640	2610307O08Rik
A_52_P627816	0.032	1.292	NM_019984	Tgm1
A_52_P656860	0.01	1.273	NM_026232	Slc25a30
A_51_P180314	0.045	1.258	AK011413	Mup1
A_51_P328870	0.011	1.249	D86599	Oxtr
A_51_P482908	0.041	1.237	NM_025549	Arrdc4
A_51_P257951	0.041	1.235	NM_020509	Retnla
A_51_P441426	0.029	1.234	NM_019932	Cxcl4

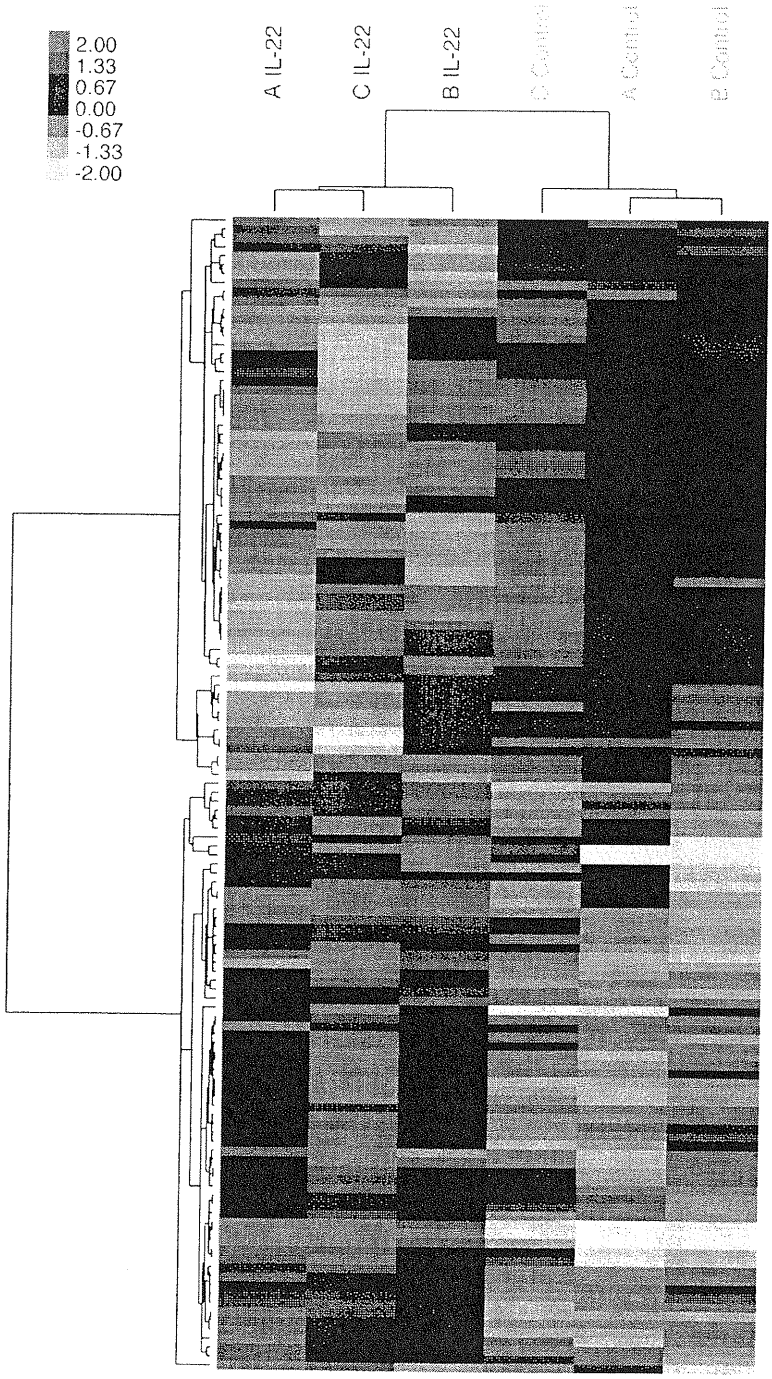
Fig. 19B

Probeset	P-value	Log2 FC	ID	Symbol
A_51_P128463	0.049	1.232	XM_485455	Grrp1
A_51_P239750	0.008	1.196	NM_008380	Inhba
A_51_P413866	0.044	1.188	NM_008198	Cfb
A_51_P462192	0.037	1.18	NM_138648	Olr1
A_51_P291417	0.026	1.172	NM_009378	Thbd
A_51_P459176	0.013	1.162	XM_899837	1700095J03Rik
A_51_P122321	0.012	1.161	NM_133775	9230117N10Rik
A_51_P110301	0.023	1.158	NM_009778	C3
A_51_P294807	0.039	1.154	NM_013515	Stom
A_51_P504991	0.027	1.151	NM_181542	Slfn10
A_51_P440743	0.041	1.148	NM_009886	Celsr1
A_51_P141012	0.019	1.137	AK173296	Slitrk1
A_51_P445726	0.043	1.128	NM_011095	Lilrb3
A_51_P397968	0.03	1.087	AK087113	
A_51_P464408	0.034	1.078	NM_177314	5330439B14Rik
A_52_P597634	0.041	1.077	NM_021457	Fzd1
A_51_P149714	0.038	1.066	NM_026835	Ms4a6d
A_52_P409833	0.027	1.04	NM_008872	Plat
A_51_P172853	0.03	1.04	NM_009841	Cd14
A_52_P26161	0.026	1.039	NM_008987	Ptx3
A_52_P164821	0.034	1.038	XM_905096	LOC631323
A_52_P987411	0.036	1.038	AK032717	
A_51_P370552	0.037	1.037	NM_030061	9230117E20Rik
A_52_P616392	0.017	1.032	NM_183426	Stno
A_51_P181899	0.027	1.021	NM_028113	2600011E07Rik
A_52_P104075	0.037	1.021	AK052629	Frem1
A_52_P621991	0.048	1.019	NM_009684	Apaf1
A_52_P616949	0.036	1.014	NM_027893	Pvrl4
A_51_P504988	0.022	1.01	NM_172796	Slfn9
A_52_P87713	0.031	1.008	NM_011593	Timp1
A_52_P1012710	0.034	1.005	AK075639	
A_52_P491718	0.049	-1.002	AK047841	Mbtps2
A_51_P191331	0.015	-1.003	NM_011379	Sipa1
A_52_P680941	0.028	-1.003	NM_010284	Ghr
A_52_P1027837	0.038	-1.003	AK034309	9330175M20Rik
A_52_P787453	0.021	-1.019	AK045835	
A_52_P484194	0.025	-1.023	NM_001025602	Il1rl1
A_52_P524426	0.03	-1.023	NM_001003815	Epb4.1l1
A_52_P828218	0.027	-1.027	NM_001030294	Olfm4
A_52_P674087	0.011	-1.028	AK036172	Prtg
A_52_P826055	0.032	-1.028	AK134458	2310020J12Rik
A_52_P563505	0.022	-1.033	AK007074	1700095A21Rik
A_52_P44454	0.015	-1.034	P052591-1	
A_51_P398037	0.018	-1.039	AK048407	Scn3a
A_52_P1132297	0.017	-1.058	AK052006	
A_52_P35598	0.034	-1.064	AK051891	D230015P20Rik
A_51_P151983	0.009	-1.066	NM_019744	Ncoa4
A_51_P130719	0.014	-1.066	NM_023047	Dpysl5
A_52_P218833	0.018	-1.066	ENSMUST000000	
A_52_P1084199	0.022	-1.078	AK036139	9630039A02Rik
A_51_P138496	0.021	-1.08	AK046037	
A_52_P1124261	0.046	-1.086	AK081465	
A_52_P158438	0.023	-1.094	AK006669	1700041C23Rik
A_52_P187046	0.022	-1.098	NM_022724	Suv39h2

Fig. 19C

Probeset	P-value	Log2 FC	ID	Symbol
A_52_P344098	0.027	-1.098	AK040876	Pde7b
A_51_P314669	0.034	-1.1	NM_011128	Pnliprp2
A_52_P475356	0.02	-1.107	NM_011445	Sox6
A_52_P177454	0.043	-1.114	AK045474	Rab34
A_52_P972196	0.015	-1.12	AK084612	
A_52_P1140731	0.024	-1.122	AK089673	
A_51_P249302	0.017	-1.125	NM_011994	Abcd2
A_52_P866925	0.031	-1.133	AK006067	1700017I07Rik
A_52_P956057	0.026	-1.17	AK081935	
A_52_P939063	0.012	-1.171	AK032576	
A_51_P243750	0.037	-1.175	NM_012025	Racgap1
A_52_P205710	0.047	-1.189	NM_021611	Mylc2pl
A_52_P1188576	0.017	-1.197	AK082439	
A_51_P282523	0.032	-1.201	NM_054044	Gpr124
A_52_P642801	0.009	-1.202	XM_618738	Lats1
A_51_P312615	0.038	-1.207	NM_010377	Hist1h1t
A_52_P214828	0.022	-1.209	NM_011253	Rbmy1a1
A_52_P158660	0.024	-1.231	XM_001002308	4833417A11Rik
A_51_P104255	0.012	-1.237	NM_001039226	LOC625026
A_52_P811599	0.035	-1.244	AK084144	
A_52_P668855	0.016	-1.246	AK042778	9330154J02Rik
A_51_P399974	0.035	-1.246	NM_146997	Olfr178
A_52_P355709	0.007	-1.247	XM_973329	LOC664837
A_52_P207356	0.048	-1.249	AK052515	Aspm
A_52_P1188835	0.034	-1.256	NM_001002780	F830005K03Rik
A_51_P407915	0.013	-1.263	AK040806	A530026G17
A_51_P352743	0.045	-1.285	NM_001013616	Trim6
A_51_P191139	0.012	-1.293	AK050699	D030005H02Rik
A_52_P1139473	0.007	-1.294	AK018751	0610037L18Rik
A_52_P69506	0.042	-1.294	NM_177566	Arhgef15
A_52_P134003	0.042	-1.327	NM_001033289	Slc9a2
A_52_P519943	0.004	-1.337	BC044804	Fads6
A_51_P366413	0.009	-1.394	AK033346	8030498J20Rik
A_52_P988314	0.029	-1.401	AK083509	
A_52_P778486	0.029	-1.404	AK016521	4932412D23Rik
A_52_P162486	0.009	-1.409	NM_007542	Bgn
A_51_P242952	0.032	-1.411	AK079868	
A_52_P267243	0.039	-1.413	NM_010200	Fgf13
A_52_P328714	0.018	-1.422	AK133758	Fbxw2
A_51_P238040	0.018	-1.424	AK030263	
A_51_P327166	0.006	-1.426	AK015801	
A_51_P201035	0.027	-1.443	NM_145924	Cenpi
A_52_P169595	0.034	-1.455	NM_177669	A630098G03Rik
A_52_P507877	0.04	-1.463	NM_007729	Col11a1
A_52_P224818	0.012	-1.468	NM_172483	Zfp180
A_51_P270050	0.041	-1.485	AK078370	6530421E24Rik
A_51_P309099	0.02	-1.489	AK050657	
A_51_P103261	0.034	-1.533	NM_009198	Slc17a1
A_52_P535430	0.021	-1.561	NM_207130	Abca16
A_52_P1083387	0.015	-1.585	AK005856	1700011B04Rik
A_51_P152873	0.014	-1.71	NM_207670	Gripap1
A_52_P569873	0.012	-1.778	XM_127913	4930455B06Rik
A_51_P396119	0.008	-2.489	AK047973	Ttll5

Fig.20


2.00
1.33
0.67
0.00
-0.67
-1.33
-2.00
A IL-22
C IL-22
B IL-22
C Control
A Control
B Control

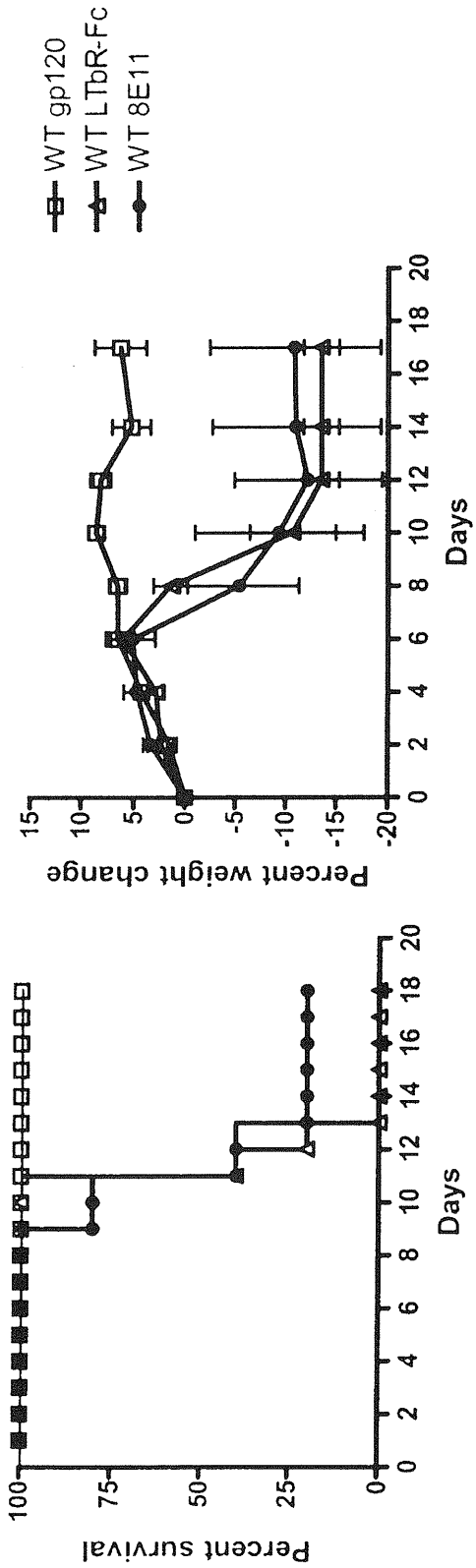
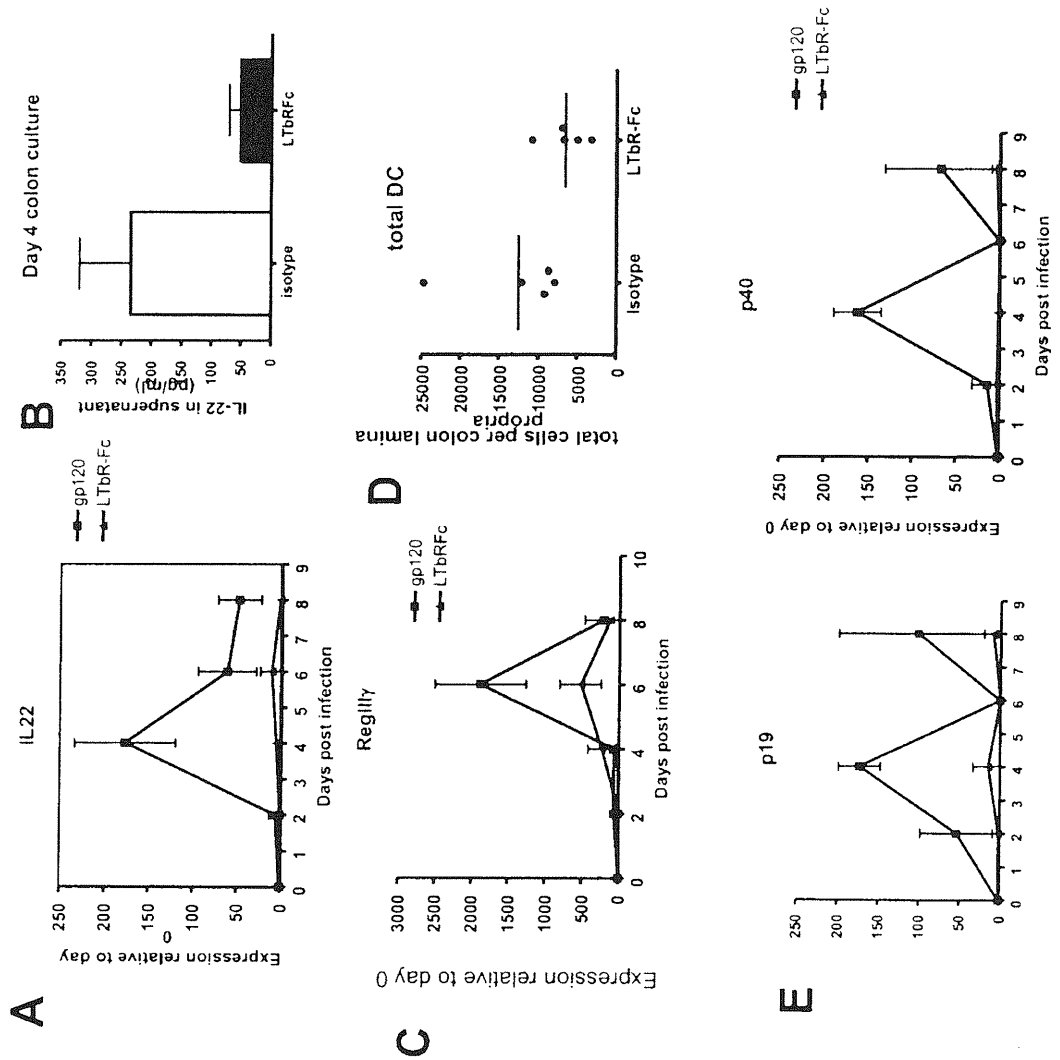
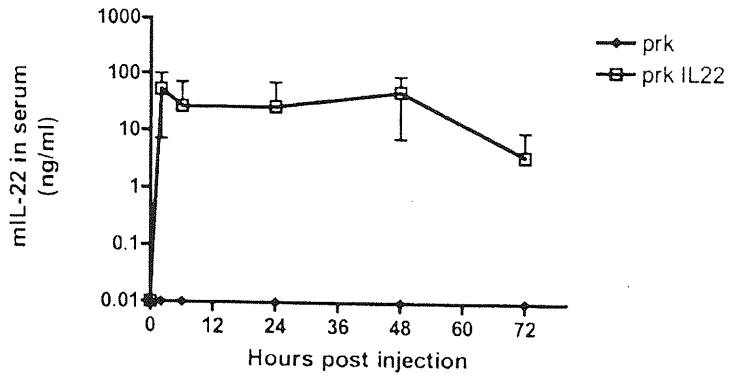

WT gp120
WT LTbR-Fc
WT 8E11
Percent weight change
15
10
5
0
-5
-10
-15
-20
0
2
4
6
8
10
12
14
16
18
20
Days
Percent survival
100
75
50
25
0
0
2
4
6
8
10
12
14
16
18
20
Days

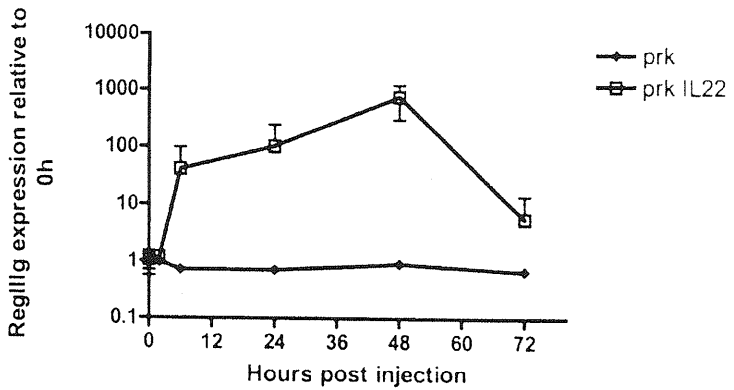
Fig. 21

Fig. 22

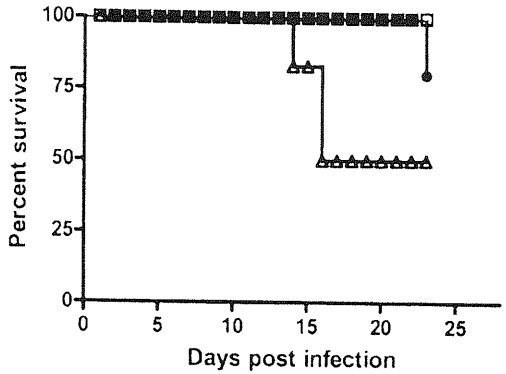

A
IL22
gp120
LTbR-Fc
Expression relative to day 0
Days post infection
B
Day 4 colon culture
IL-22 in supernatant (pg/ml)
isotype
LTbRFc
C
RegIIIγ
gp120
LTbRFc
Expression relative to day 0
Days post infection
D
total DC
total cells per colon lamina propria
Isotype
LTbR-Fc
E
p19
p40
gp120
LTbR-Fc
Expression relative to day 0
Days post infection

A.


mIL-22 in serum (ng/ml)
1000
100
10
1
0.1
0.01
0
12
24
36
48
60
72
Hours post injection
prk
prk IL22


RegIIIg expression relative to 0h
10000
1000
100
10
1
0.1
0
12
24
36
48
60
72
Hours post injection
prk
prk IL22

B.


Percent survival
100
75
50
25
0
0
5
10
15
20
25
Days post infection

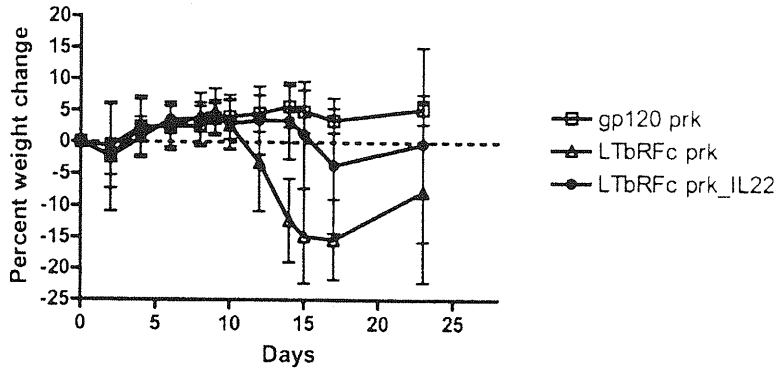
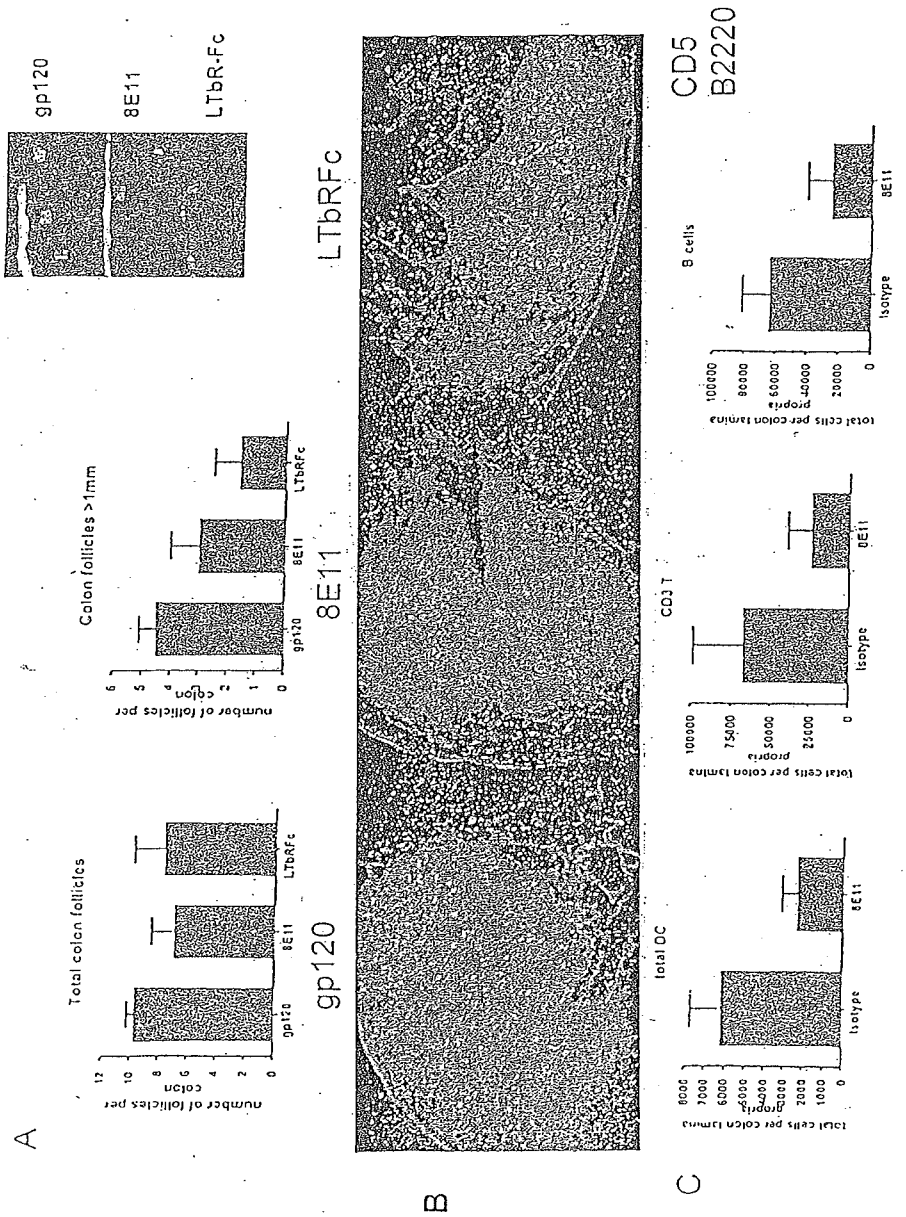

Percent weight change
20
15
10
5
0
-5
-10
-15
-20
-25
0
5
10
15
20
25
Days
gp120 prk
LTbRFc prk
LTbRFc prk_IL22

Fig. 23

Fig. 24


A
gp120
8E11
LTbR-Fc
Total colon follicles
number of follicles per colon
gp120
8E11
LTbRFc
Colon follicles >1mm
number of follicles per colon
gp120
8E11
LTbRFc
B
gp120
8E11
LTbRFc
total DC
CD3 T
B cells
CD5
B2220
total cells per colon lamina propria
Isotype
8E11
C