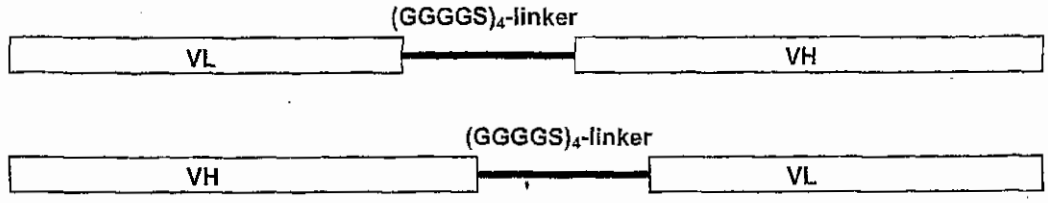
Figure 1

ScFv antibody



VL

```
TB-A    DIVMTQSPSS LSASVGDRVT LTCTASQSVS NDVVWYQQRP GKAPKLLIYS
TB-B    DIVLTQSPSS LSASVGDRVT LTCTASQSVS NDVVWYQQRP GKAPKRLIYS
           *                      R   GIR  ELA          *   A

TB-A    AFNRYTGVPS RFSGRGYGTD FTLTISSLQP EDVAVYYCQQ DYNSPRTFGQ
TB-B    AFNRYTGVPS RFSGSGSGTE FTLTISSLQP EDVAVYYCQQ DYNSPRTFGQ
        GSILQS          * *  *              *         Y SL YM

TB-A    GTKLEVKR
TB-B    GTKLEVKR
```

VH

```
TB-A    QVQLVQSGAE VKKPGASVKV SCTASGYTFT HYGMNWVRQA PGKGLEWMGW
TB-B    QVQLVQSGAE VKKPGASVKV SCTASGYSFT HYGMNWVRQA PGQGLEWMGW
                   *    *           *    G FLH        *    * R

TB-A    INTYTGEPTY ADKFKDRFTF SLETSASTVY MELTSLTSDD TAVYYCARE-
TB-B    INTYTGEPTY ADKFKDRVTL TRDTSIGTVY MELTSLTSDD TAVYYCARE-
          PDS DTI   Q  QG * * ***  ** *                *     VP

TB-A    RG-----DA MDYWGQG TLVTVSS
TB-B    RG-----DA MDYWGQG TLVTVSS
          TYLDPW Y F        *
```

Figure 2

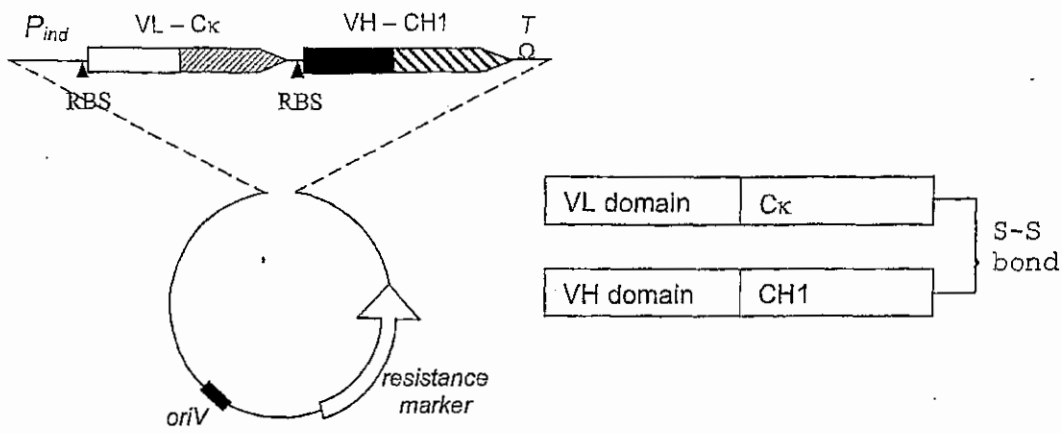
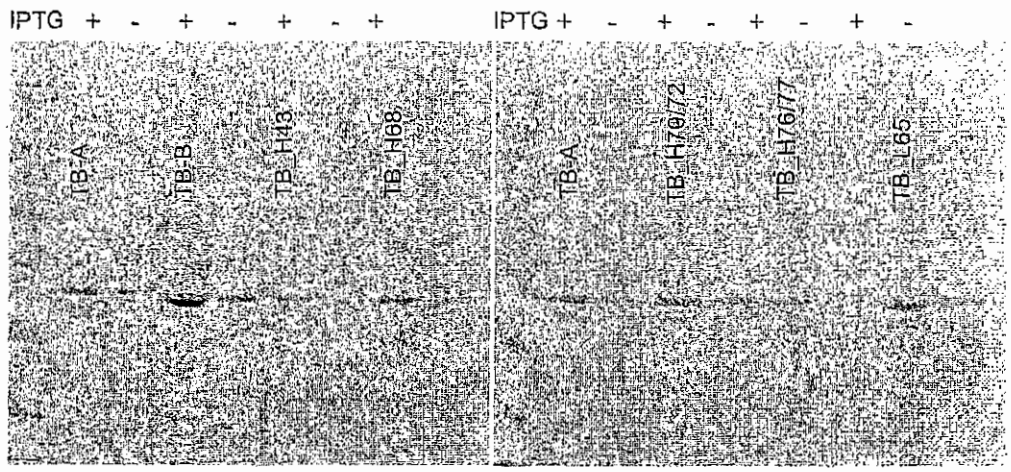

P_{ind}
VL – Cκ
VH – CH1
T
RBS
RBS
oriV
resistance marker
VL domain
Cκ
VH domain
CH1
S-S bond

Figure 3

Production yield of scFv by expression in *E. coli*

A.



B.

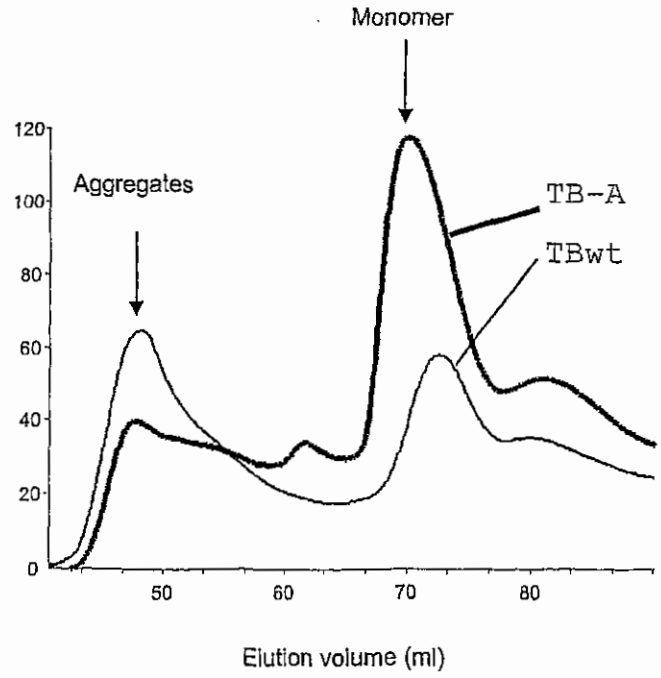
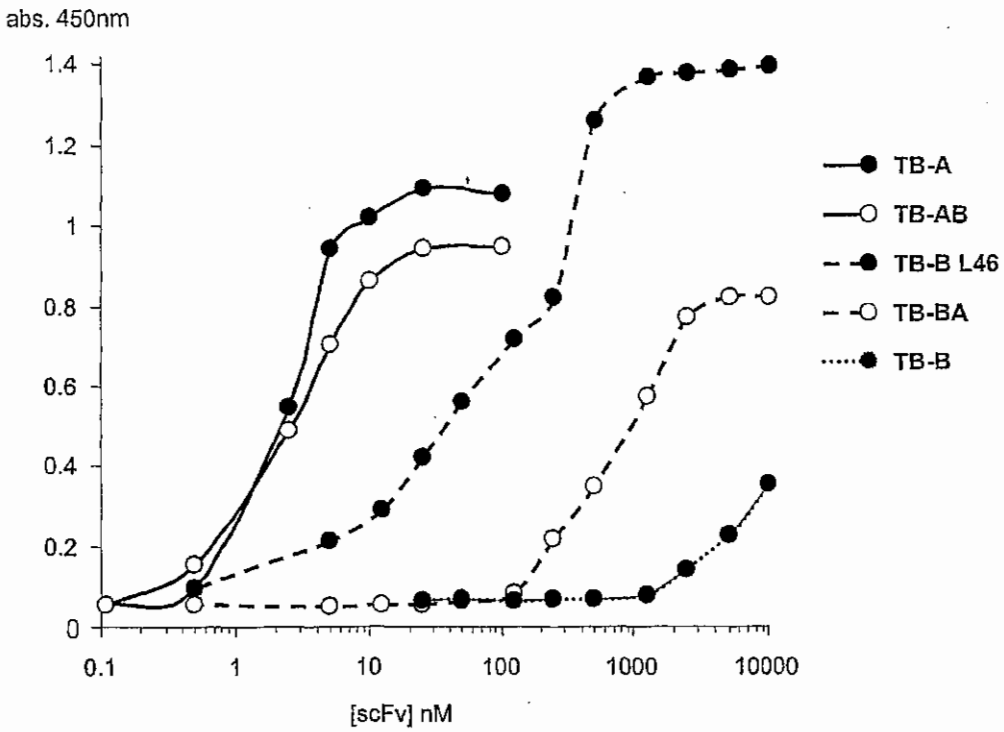


Figure 4

Affinity comparison by ELISA

A.



B.

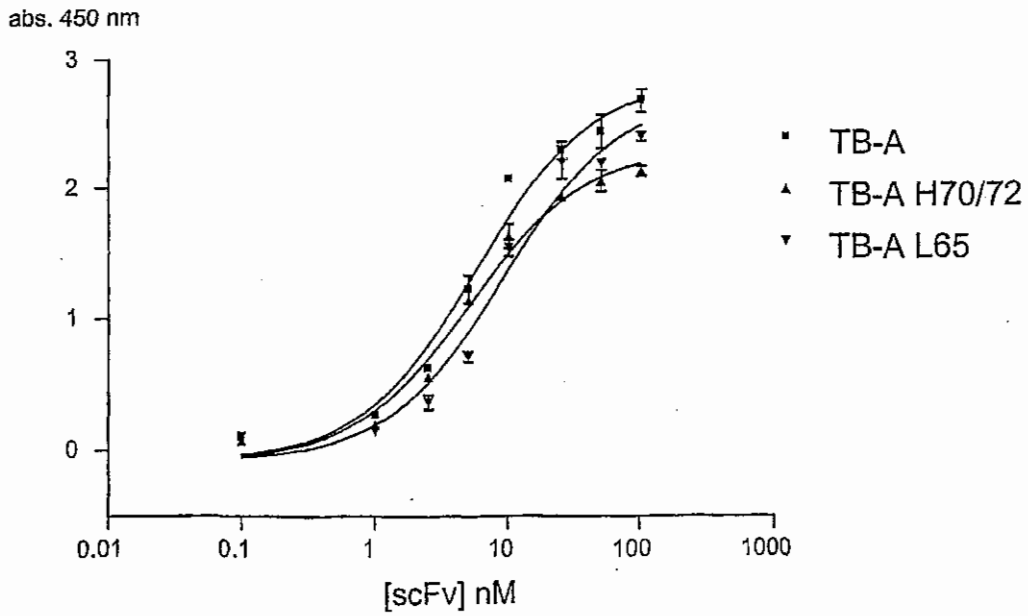
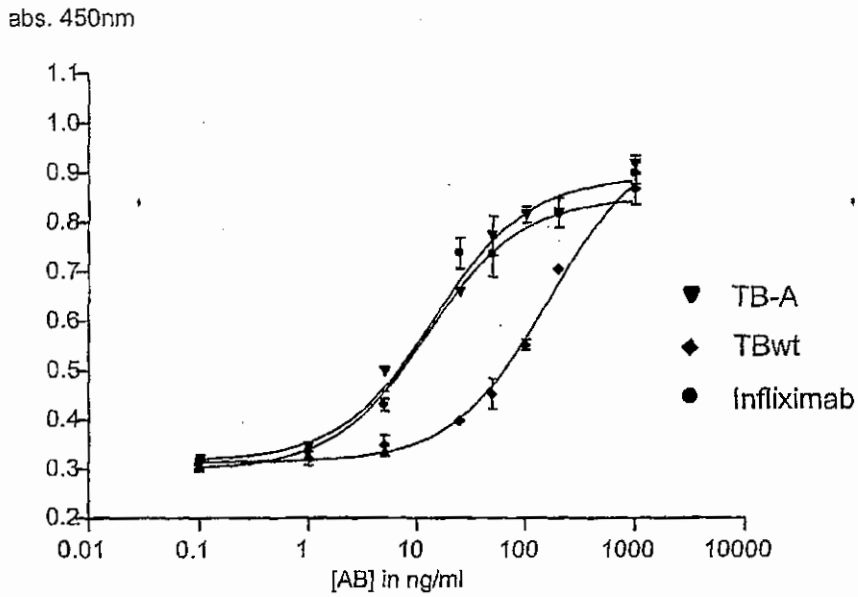


Figure 5

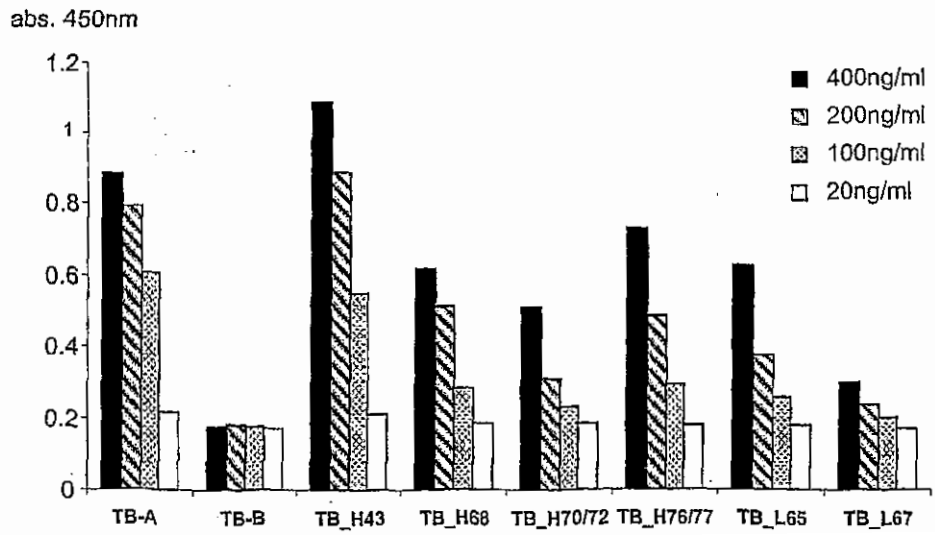
Inhibition of TNF-induced cytotoxicity in L929 cells

A.

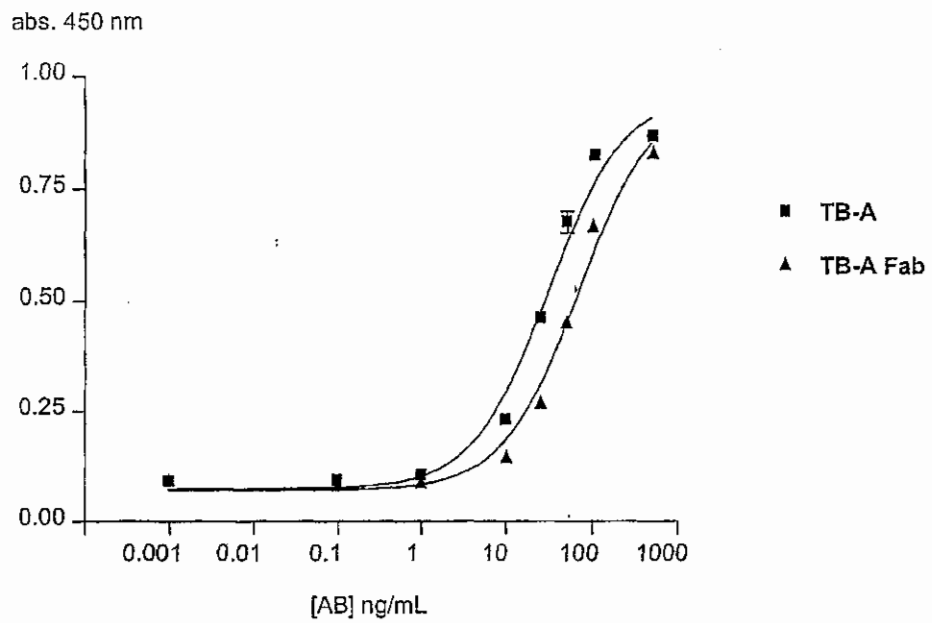


	TB-A	TBwt	Infliximab
IC_{50} [ng/ml]	14.36	161.4	12.57

B.



C.



	TB-A	TB-A Fab
IC_{50} [ng/ml]	29.7	65.9

Figure 6

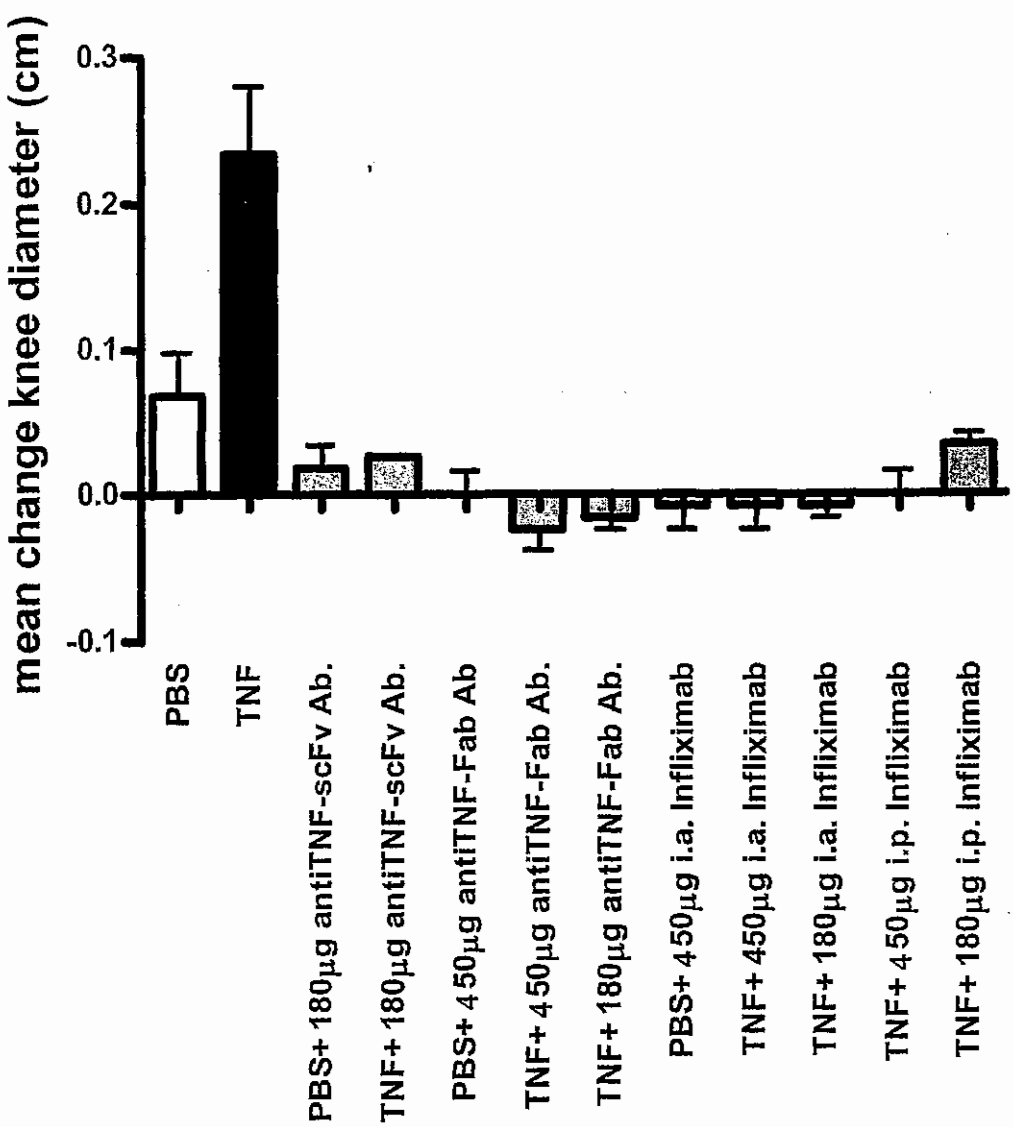

mean change knee diameter (cm)
0.3
0.2
0.1
0.0
-0.1
PBS
TNF
PBS+ 180µg antiTNF-scFv Ab.
TNF+ 180µg antiTNF-scFv Ab.
PBS+ 450µg antiTNF-Fab Ab
TNF+ 450µg antiTNF-Fab Ab.
TNF+ 180µg antiTNF-Fab Ab.
PBS+ 450µg i.a. Infliximab
TNF+ 450µg i.a. Infliximab
TNF+ 180µg i.a. Infliximab
TNF+ 450µg i.p. Infliximab
TNF+ 180µg i.p. Infliximab

Figure 7

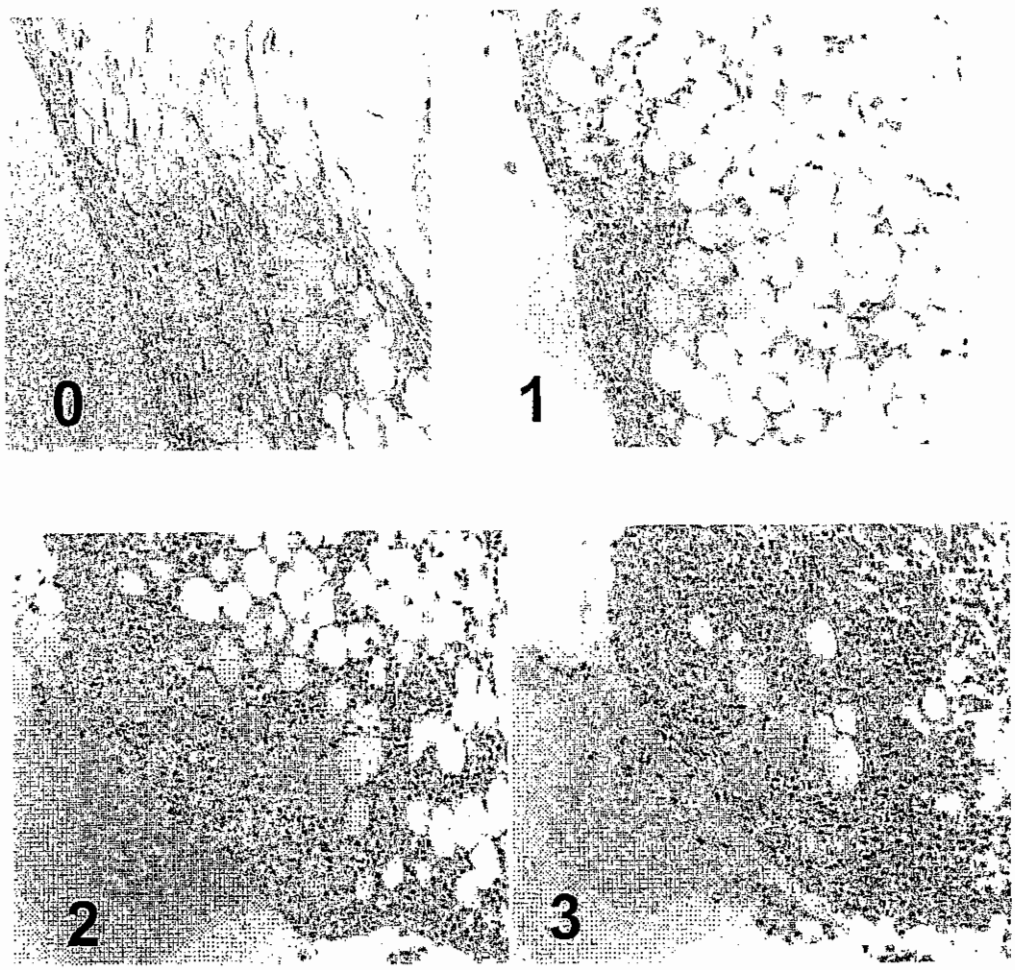


Figure 8

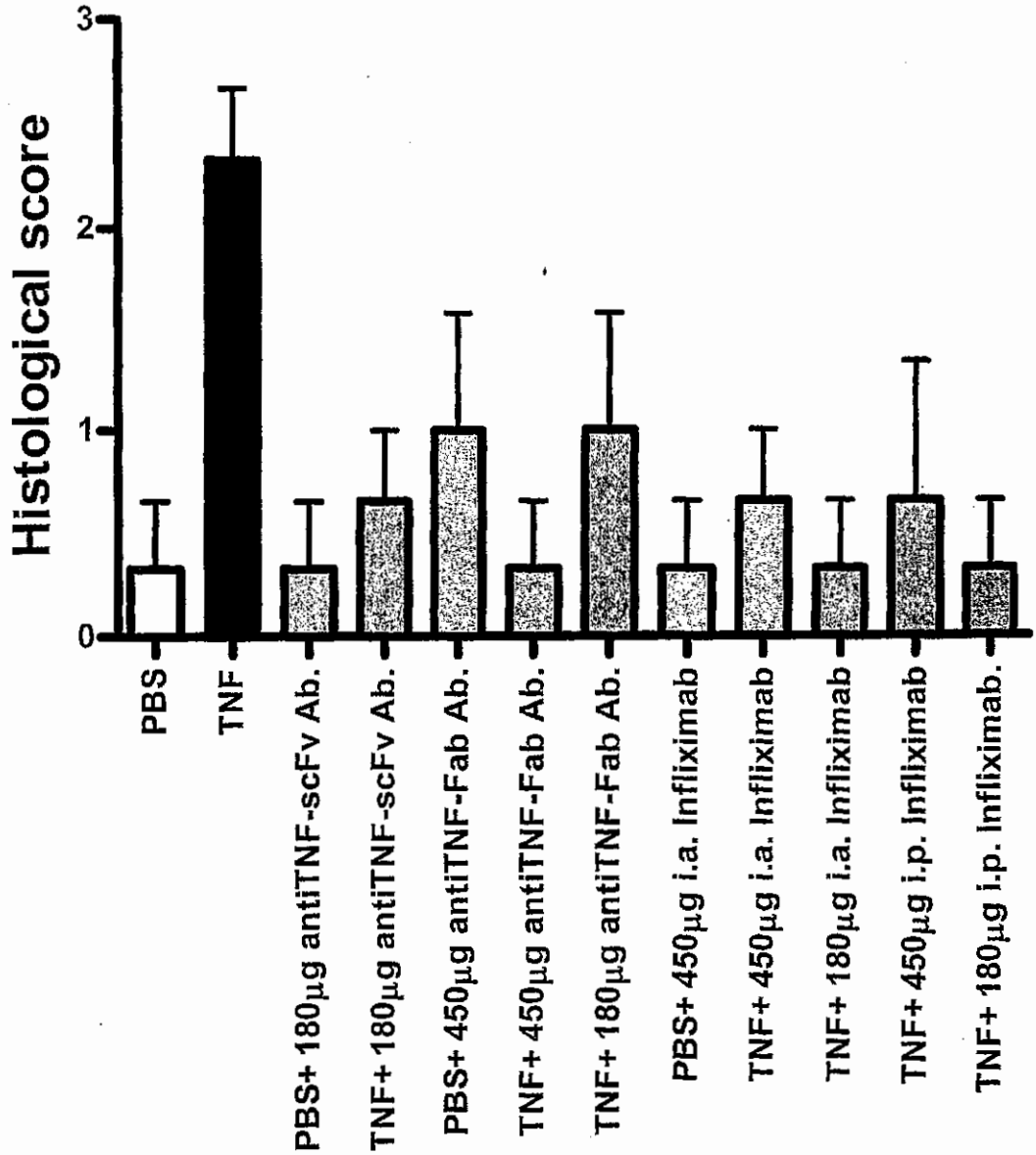

Histological score
3
2
1
0
PBS
TNF
PBS+ 180µg antiTNF-scFv Ab.
TNF+ 180µg antiTNF-scFv Ab.
PBS+ 450µg antiTNF-Fab Ab.
TNF+ 450µg antiTNF-Fab Ab.
TNF+ 180µg antiTNF-Fab Ab.
PBS+ 450µg i.a. Infliximab
TNF+ 450µg i.a. Infliximab
TNF+ 180µg i.a. Infliximab
TNF+ 450µg i.p. Infliximab
TNF+ 180µg i.p. Infliximab.

Figure 9

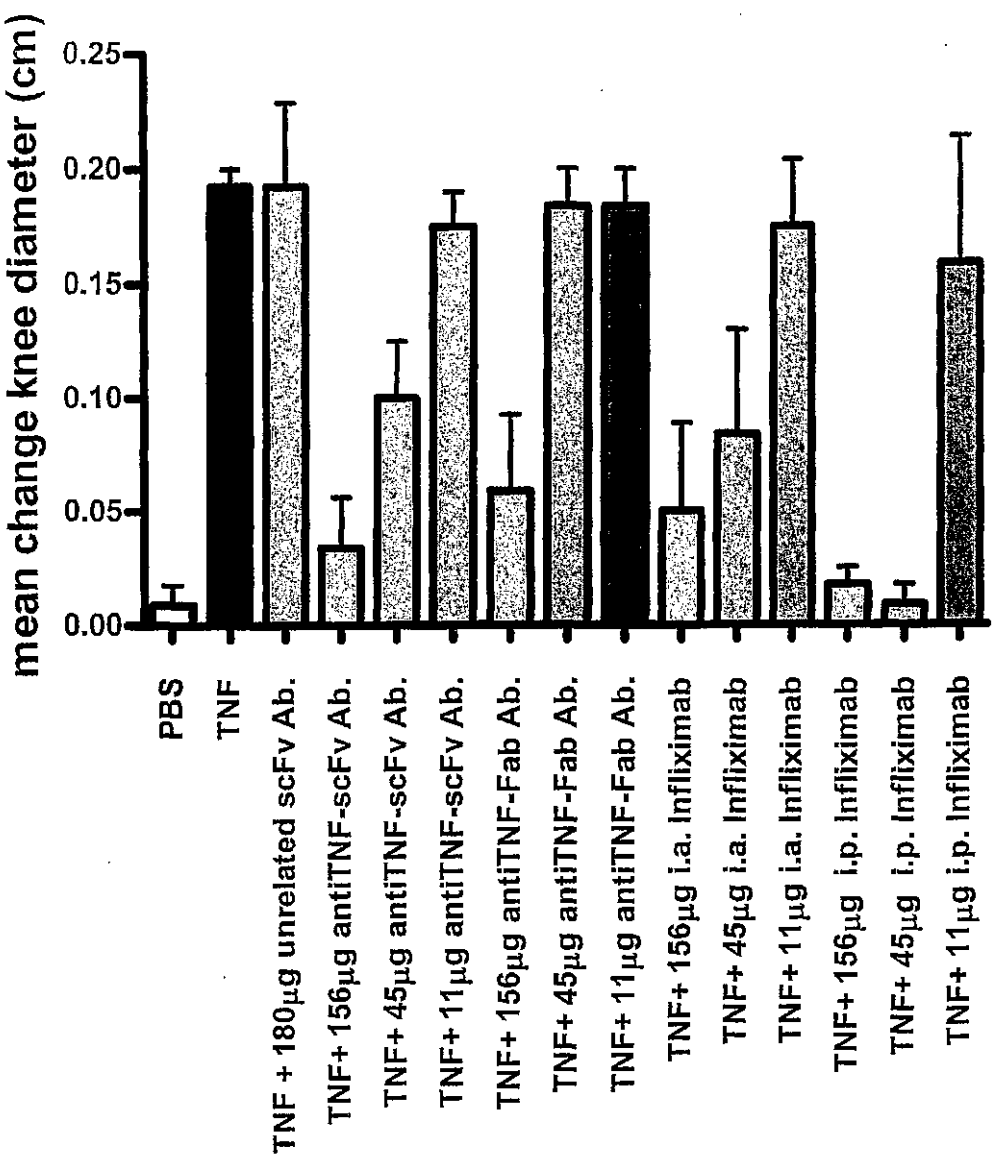

mean change knee diameter (cm)
0.25
0.20
0.15
0.10
0.05
0.00
PBS
TNF
TNF + 180µg unrelated scFv Ab.
TNF+ 156µg antiTNF-scFv Ab.
TNF+ 45µg antiTNF-scFv Ab.
TNF+ 11µg antiTNF-scFv Ab.
TNF+ 156µg antiTNF-Fab Ab.
TNF+ 45µg antiTNF-Fab Ab.
TNF+ 11µg antiTNF-Fab Ab.
TNF+ 156µg i.a. Infliximab
TNF+ 45µg i.a. Infliximab
TNF+ 11µg i.a. Infliximab
TNF+ 156µg i.p. Infliximab
TNF+ 45µg i.p. Infliximab
TNF+ 11µg i.p. Infliximab

Figure 10

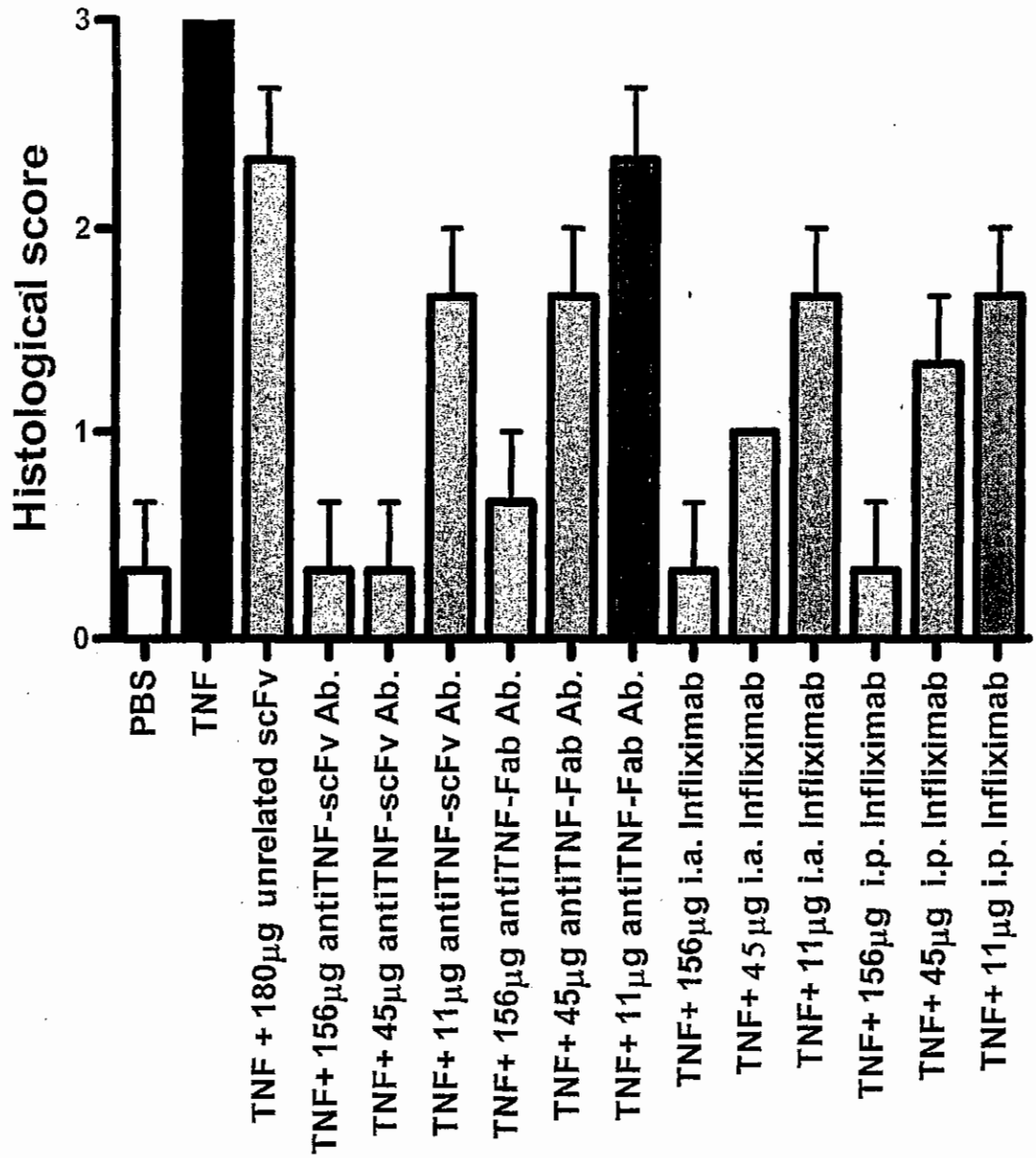
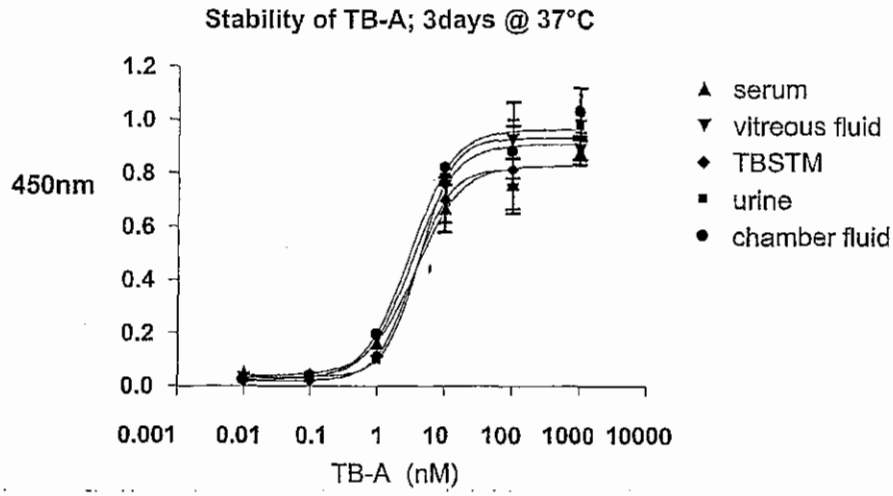

Histological score
0
1
2
3
PBS
TNF
TNF + 180µg unrelated scFv
TNF+ 156µg antiTNF-scFv Ab.
TNF+ 45µg antiTNF-scFv Ab.
TNF+ 11µg antiTNF-scFv Ab.
TNF+ 156µg antiTNF-Fab Ab.
TNF+ 45µg antiTNF-Fab Ab.
TNF+ 11µg antiTNF-Fab Ab.
TNF+ 156µg i.a. Infliximab
TNF+ 45µg i.a. Infliximab
TNF+ 11µg i.a. Infliximab
TNF+ 156µg i.p. Infliximab
TNF+ 45µg i.p. Infliximab
TNF+ 11µg i.p. Infliximab

Figure 11



	serum	vitreous body fluid	TBSTM	urine	anterior chamber fluid
K_d	3.622	3.184	3.394	4.141	2.970