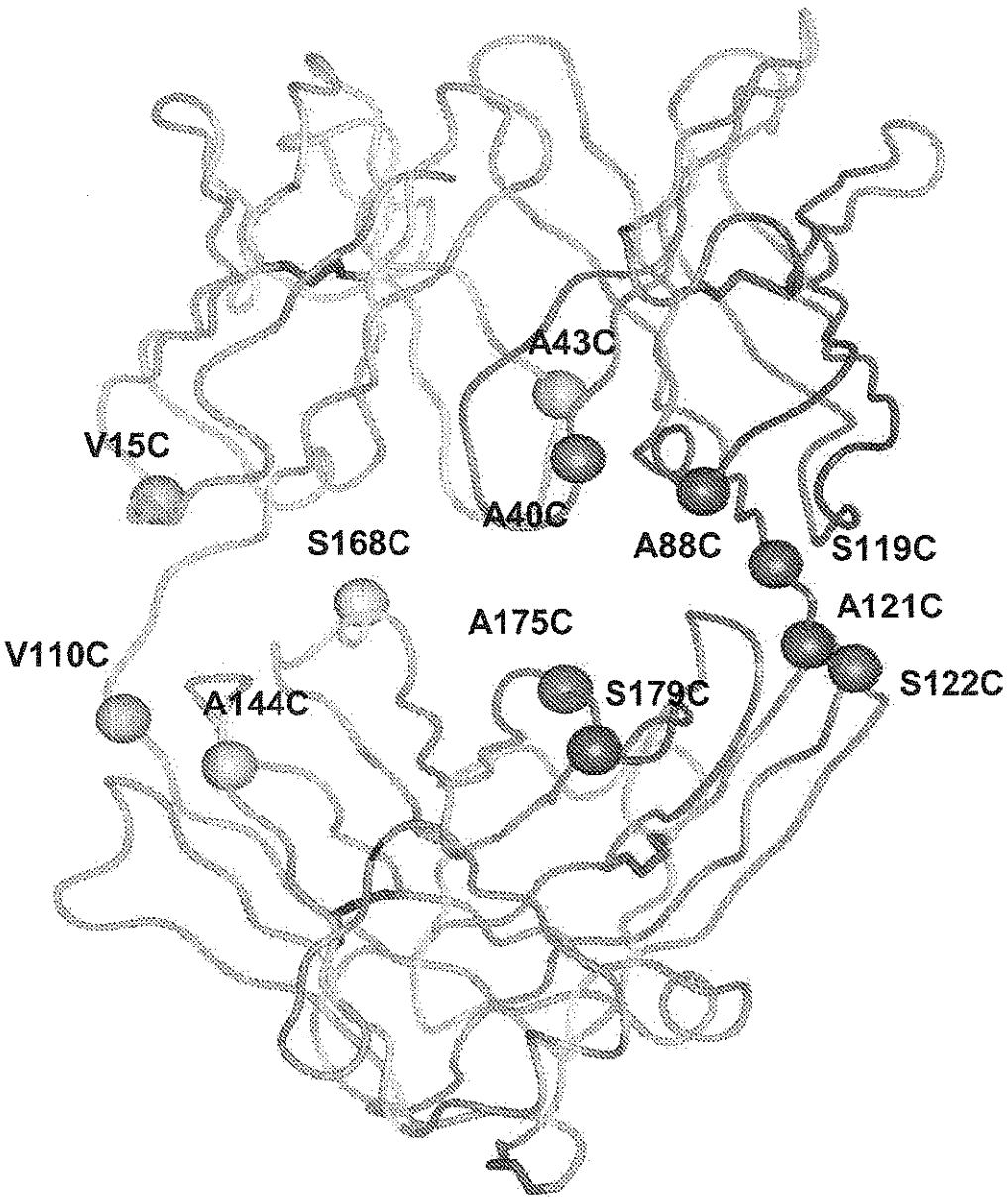

A43C
V15C
A40C
S168C
A88C
S119C
A121C
A175C
V110C
S179C
S122C
A144C

Figure 1A

Sequential Numbering

```
                    10        20        30
4d5v7fabH  EVQLVESGGGLVQPGGSLRLSCAASGFNIKDTYIHW
           **********************************
4d5v7fabH  EVQLVESGGGLVQPGGSLRLSCAASGFNIKDTYIHW
                    10        20        30
```

Kabat Numbering

```
             40        50        60        70        80
4d5v7fabH  VRQAPGKGLEWVARIYPTNGYTRYADSVKGRFTISADTSKNTAYLQMNSL
           ************************************************
4d5v7fabH  VRQAPGKGLEWVARIYPTNGYTRYADSVKGRFTISADTSKNTAYLQMNSL
             40        50  a      60        70        80  abc

             90       100       110       120       130
4d5v7fabH  RAEDTAVYYCSRWGGDGFYAMDYWGQGTLVTVSSASTKGPSVFPLAPSSK
           ************************************************
4d5v7fabH  RAEDTAVYYCSRWGGDGFYAMDYWGQGTLVTVSSASTKGPSVFPLAPSSK
                  90       100abc       110       120

            140       150       160       170       180
4d5v7fabH  STSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLS
           ************************************************
4d5v7fabH  STSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLS
         130       140       150       160       170

            190       200       210       220
4d5v7fabH  SVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSC
           **********************************
4d5v7fabH  SVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSC
         180       190       200       210
```

Figure 1B

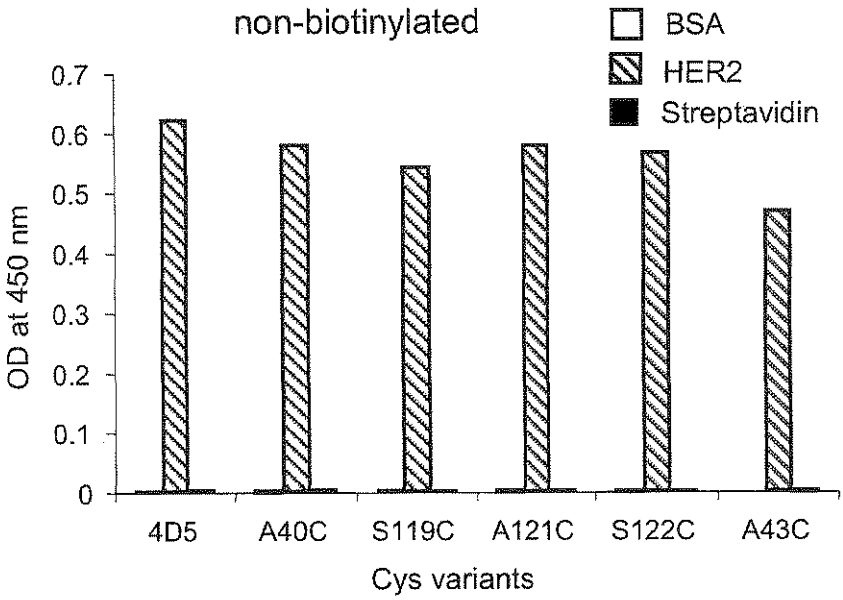


Figure 2A

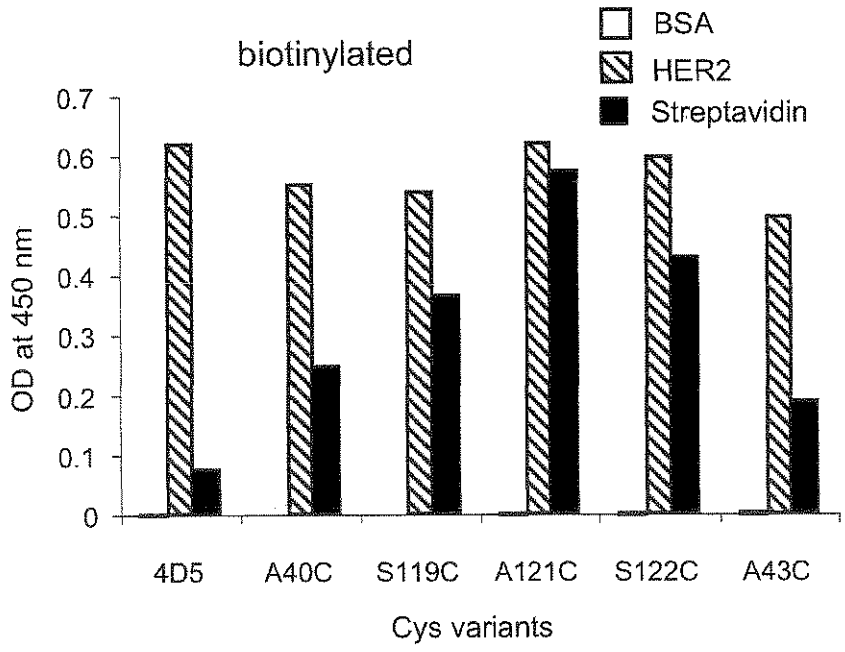


Figure 2B

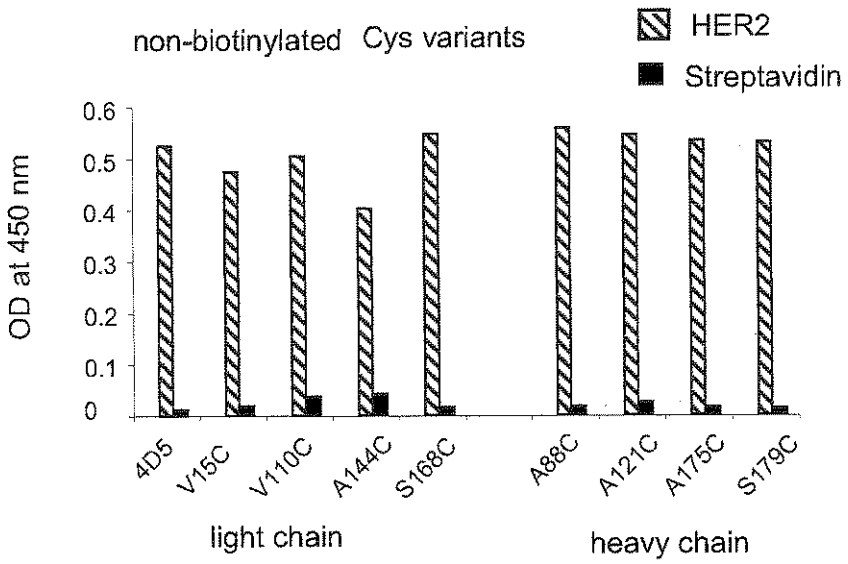


Figure 3A

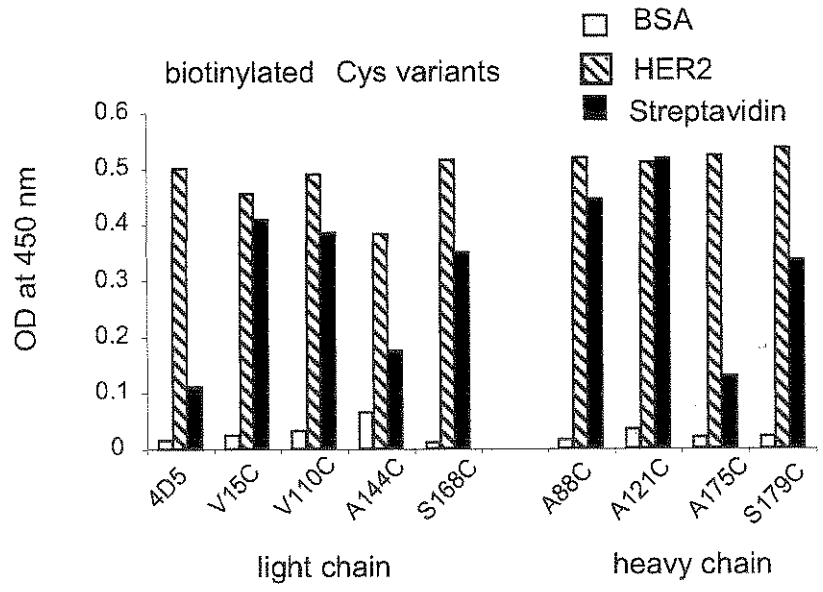


Figure 3B

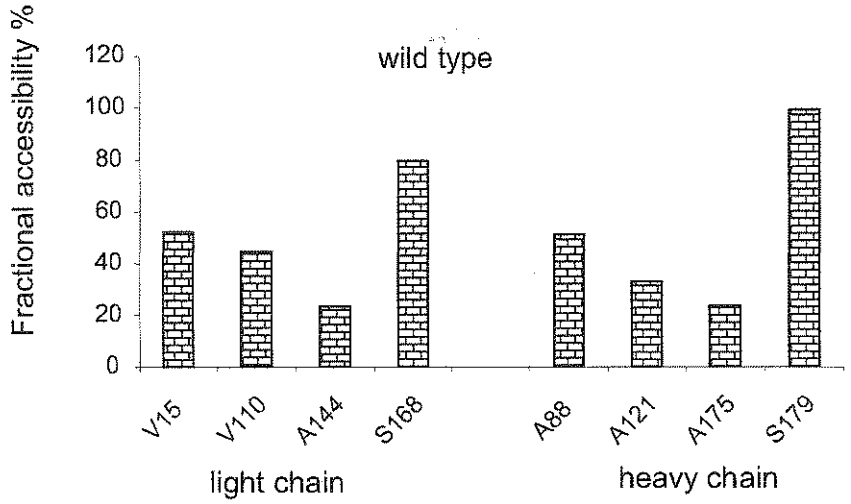


Figure 4A

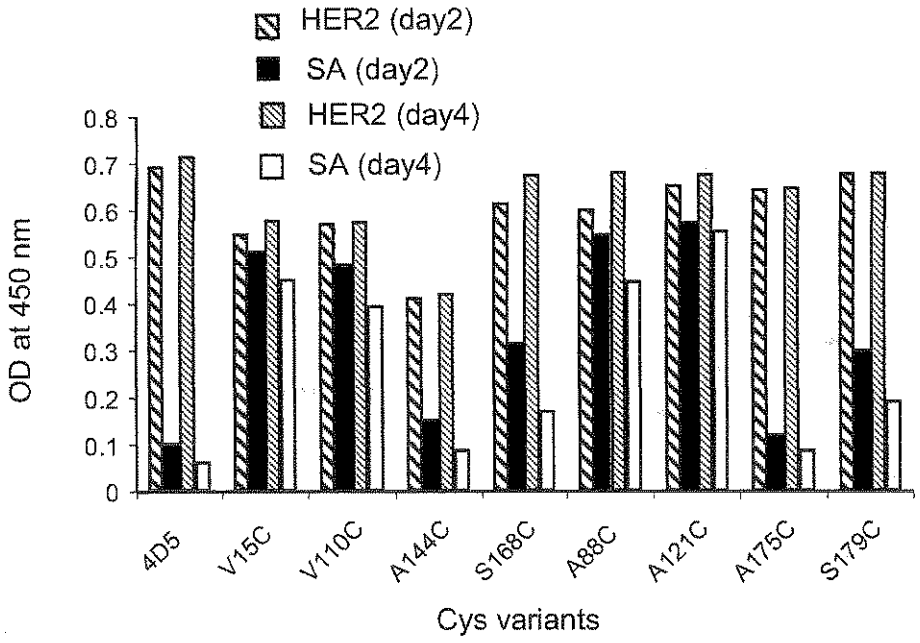


Figure 4B

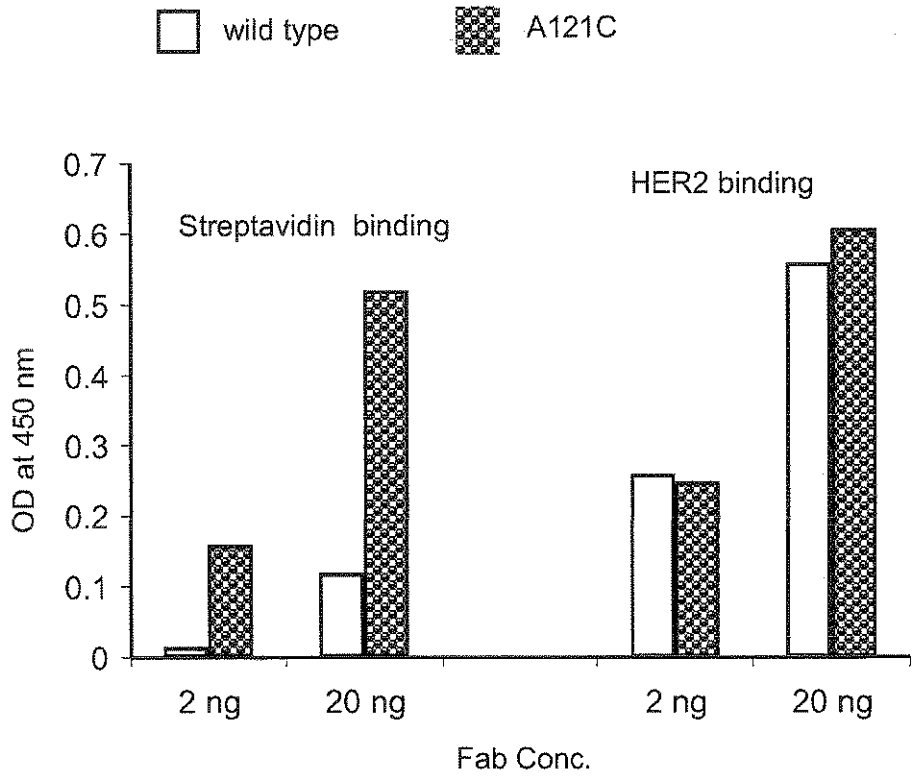

wild type
A121C
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
OD at 450 nm
Streptavidin binding
HER2 binding
2 ng
20 ng
2 ng
20 ng
Fab Conc.

Figure 5

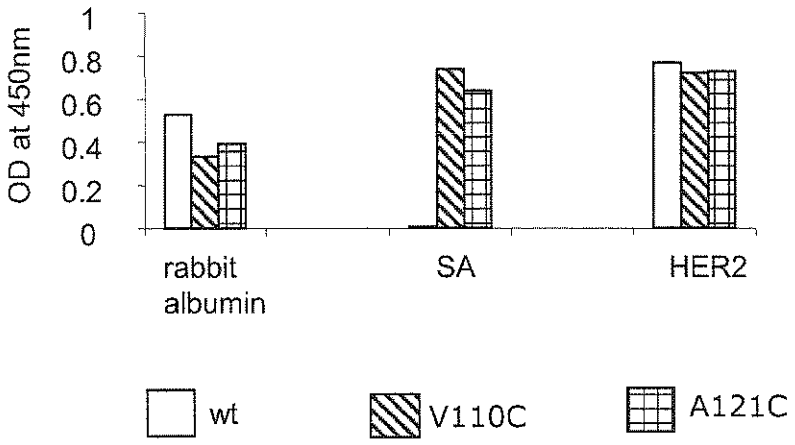

OD at 450nm
1
0.8
0.6
0.4
0.2
0
rabbit albumin
SA
HER2
wt
V110C
A121C

Figure 6

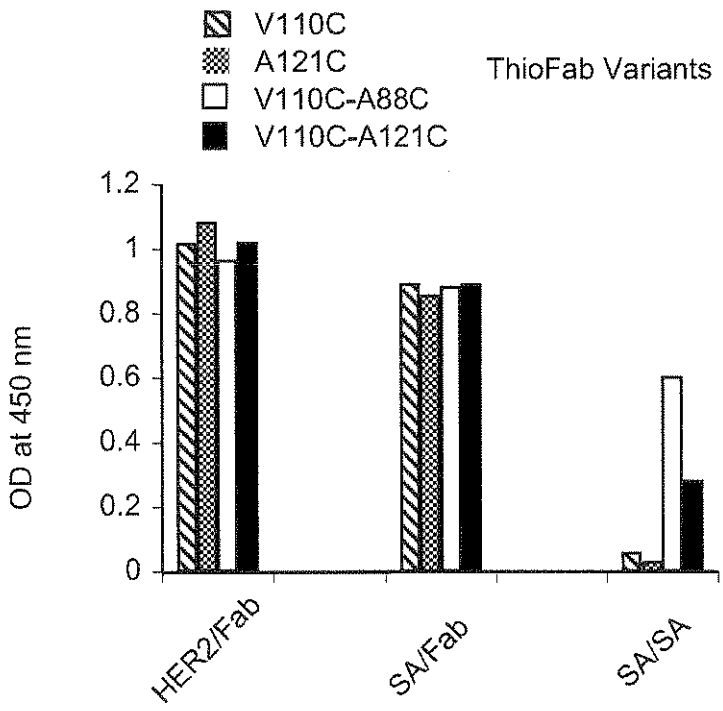

V110C
A121C
V110C-A88C
V110C-A121C
ThioFab Variants
OD at 450 nm
1.2
1
0.8
0.6
0.4
0.2
0
HER2/Fab
SA/Fab
SA/SA

Figure 7

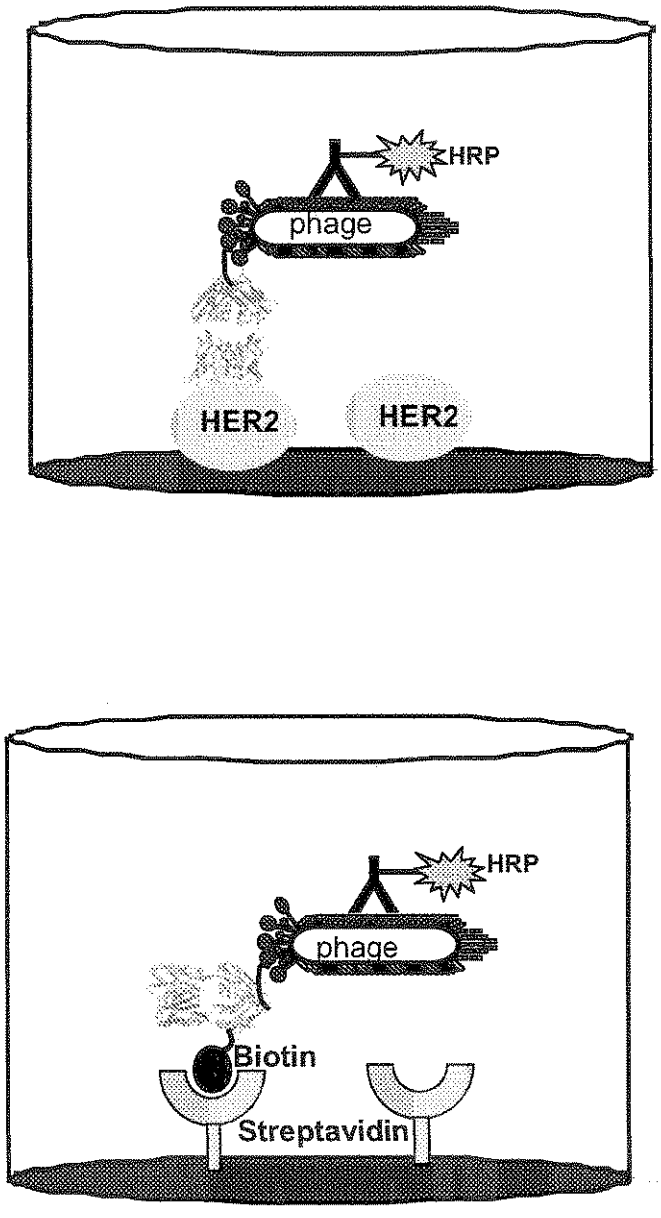


Figure 8

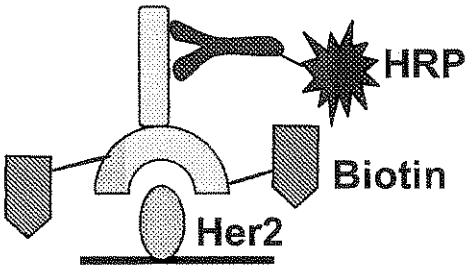


Figure 9A

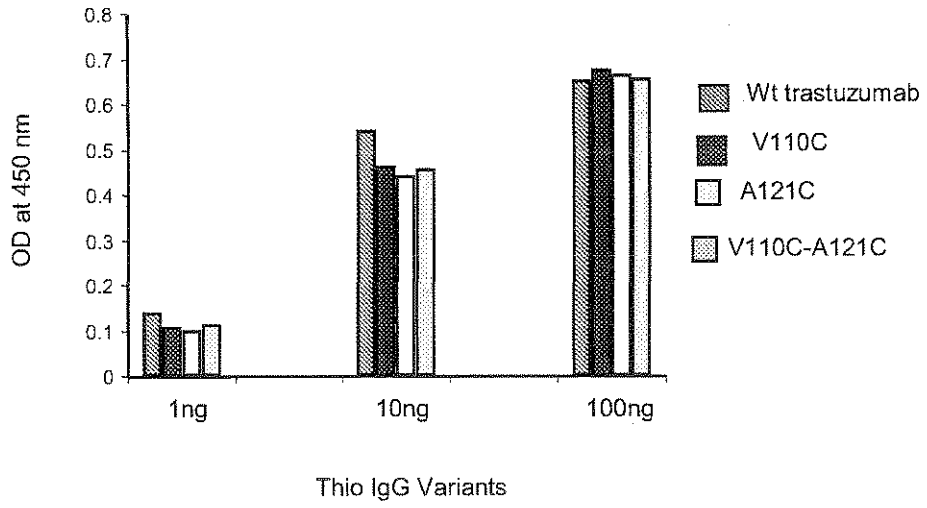


Figure 9B

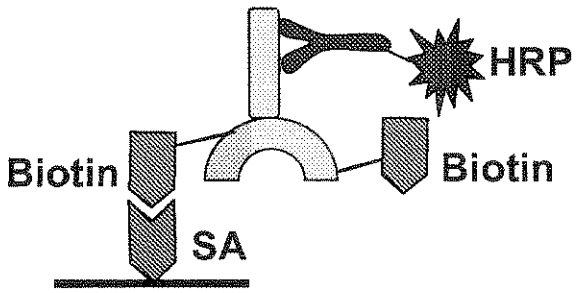


Figure 10A

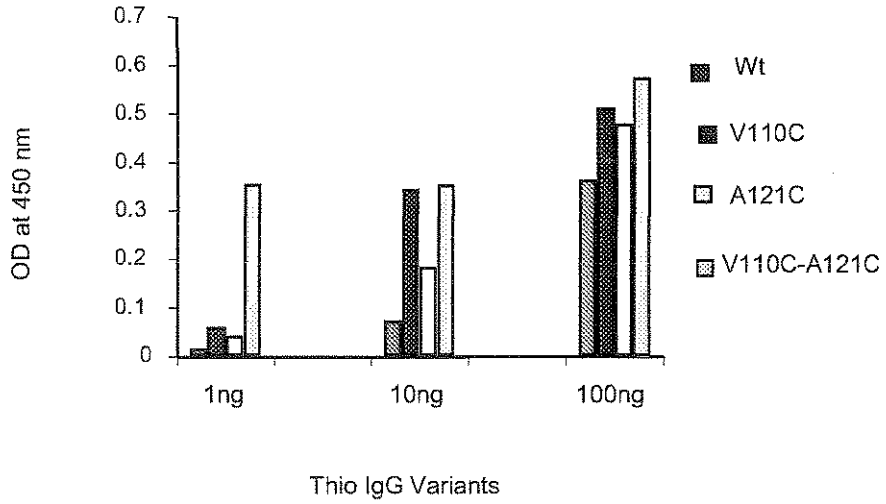


Figure 10B

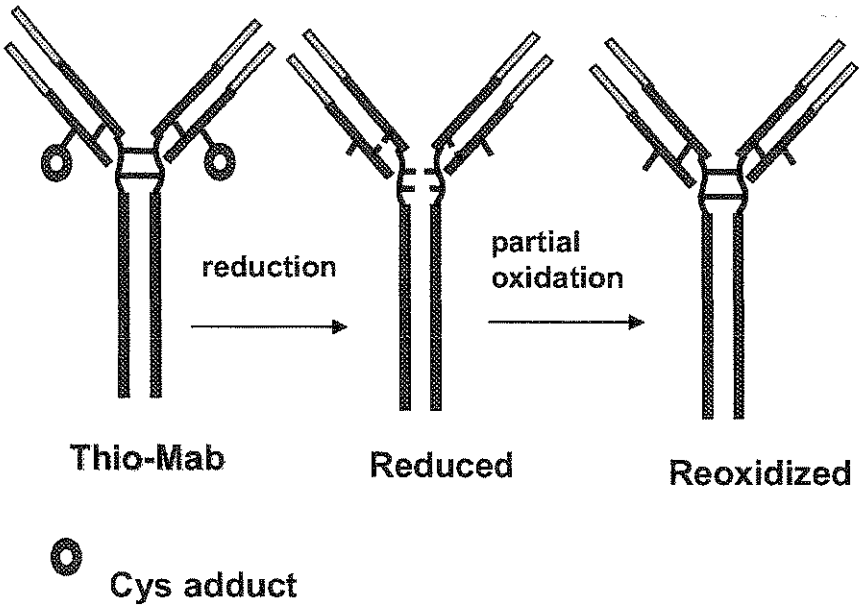

reduction
partial
oxidation
Thio-Mab
Reduced
Reoxidized
Cys adduct

Figure 11