Figure S1
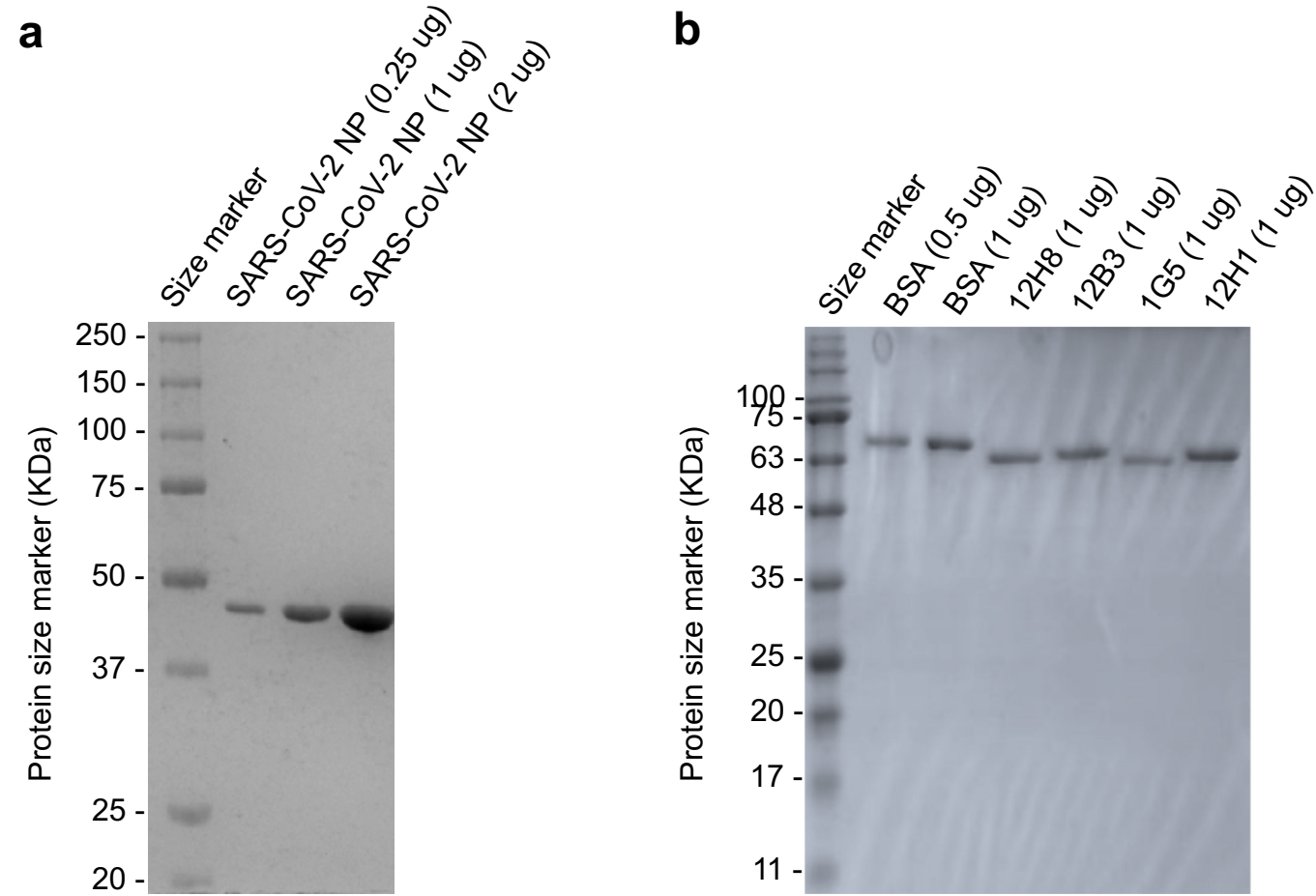

Figure S1. SDS-PAGE analysis of purified recombinant SARS-CoV-2 NP (A) and scFv-Fc antibodies (B).

Figure S2

Variable light chain fragment

```
        FR1                    CDR1 FR2              CDR2 FR3                                    CDR3        FR4
12H8    LTQPSSVSANPGETVKITCSGGGSWYGWFQQKSPGSAPVTVINANTNRPSDIPSRFSGSKSGSTGTLTITGVQADDEAVYFCGSYDSSTDSGIFGAGTTLTVLGQ
12B3    LTQPSSVSANLGETVKITCSGDSNYYGWYQQKSPGSAPVTVIYDNAKRPSNIPSRFSGSKSGSTNTLTITGVQAEDEAVYFCGGWDSDT GTFGAGTTLTVLGQ
1G5     LTQPSSVSANLGGTVKITCSGGGNDYGWYQQKAPGSAPVTVINTNDKRPSDIPSRFSGSKSGSTATLTITGVQAEDEAVYFCGAYDSSTSADIFGAGTTLTVLGQ
12H1    LTQPSSVSANLGGTVKMTCSGGSSGYGWYQQKSPGSAPVTLIYYNDKRPSGIPSRFSGSKSDSTGTLTITGVQAEDEAVYYCGNTDSSYV GMFGAGTTLTVLGQ
```

Variable heavy chain fragment

```
        FR1                        CDR1 FR2              CDR2        FR3                                            CDR3              FR4
12H8    AVTLDESGGGLQTPGGGLSLVCKASGFTFSNYGMDWVRQAPGKGLEWVAGIDNDGSGRGYGAAVKGRATISRDNGQSTVRLQLNNLRAEDTATYYCAKSTYGGRGCCDTTDA    WGHGTEVIVSSTS
12B3    AVTLDESGGGLRTPRGALSLVCKASGFSFSDHGMAWVRQAPGKGLEWVAGISSGGSGTEYGAAVKGRATISRDNGQSTVRLQLNNLRAEDTGTYYCAKTTSPYCGWSGSLDYDCGAEDIDAWGHGTEVIVSSTS
1G5     AVTLDESGGGLQTPGGALSLVCKASGFTFSSYGMFWVRQAPGKGLEFVASITNTGSYTTYGAAVEGRATISRDNGQSTVRLQLNNLRAEDTAIYYCAKTSCNNCGWSGPGYIDA    WGHGTEVIVSSTS
12H1    AVTLDESGGGLQTPGGTLSLVCKASGFTFSDRGMHWVRQAPGKGLEWVAGIRGDGSYTDYAPAVKGRATISRDNGQSTVRLQLNNLRAEDTATYYCAKSSYKCSTWSCRGYESDSIDA    WGHGTEVIVSSTS
```

Figure S2. Derived amino acid sequences of the four scFv clones. The upper and lower panels shows sequences of the light and heavy chain variable regions, respectively.
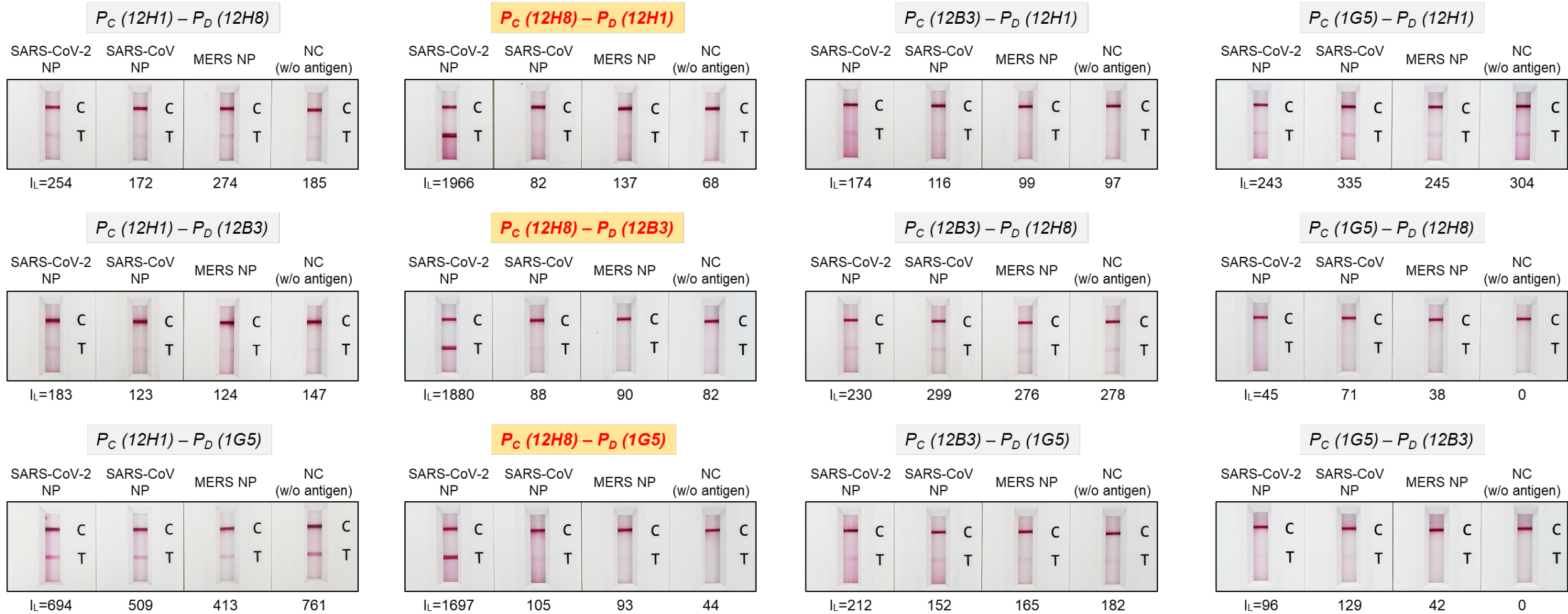
Figure S3

Figure S3. Discovery of the sandwich pair for the detection of SARS-CoV-2 NP antigen. A total of 12 pairs were tested to evaluate the diagnostic performance for sensitive and selective detection of SARS-CoV-2 NP. Each of SARS-CoV-2 NP, SARS-CoV NP, MERS-CoV NP, and running buffer were introduced into the LFIA strips. After 20 minutes of sample flow, the line intensities were measured by portable LFIA reader (I_L: line intensity), and the LFIA strips were photographed with a smartphone.