

Supplementary Fig. S1. The expression of five soluble scFvs in *E. coli* HB₂₁₅₁. The expression of five scFvs, MS457, MS460, MS465, MS473, and MS475, in *E. coli* HB₂₁₅₁, was evaluated by (A) SDS-PAGE and (B) western blot analysis. (A) The expression level of MS457, MS460, MS465, MS473, and MS475 (~ 27 kDa) in the periplasmic extract of *E. coli* HB₂₁₅₁ infected with the selected phagemids and the periplasmic extract of uninfected *E. coli* HB₂₁₅₁ (control) induced by 0.1 mM IPTG were assessed by an SDS-PAGE gel (12 %). (B) A single band of the expected size (~ 27 kDa), related to the scFv, was detected by probing with mouse anti-human scFv polyclonal antibody, followed by goat anti-mouse IgG-horseradish peroxidase (HRP)-conjugated antibody. Lane M: pre-stained protein marker.

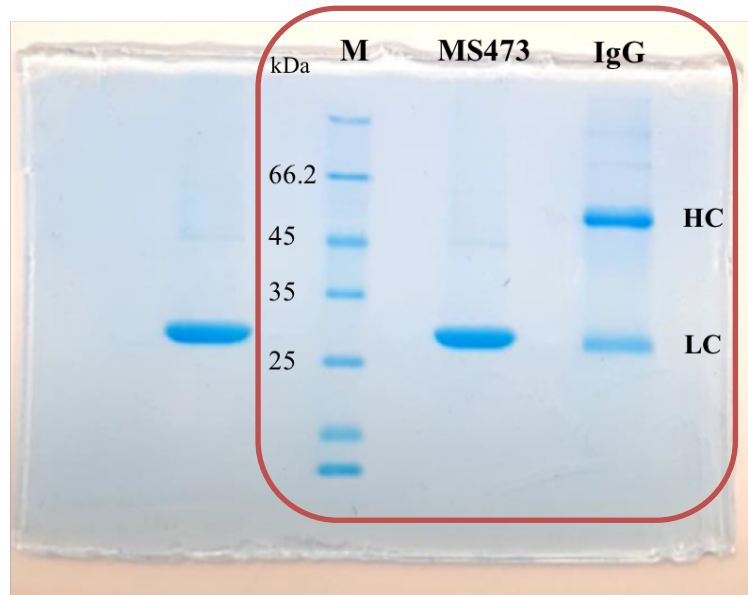
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RAVAHHHHHH

Supplementary Fig. S2. The amino acid sequence of MS473.



Supplementary Fig. S3. The purity of MS473 was evaluated by SDS-PAGE. A single protein band at approximately 27 kDa related to the purified scFv is seen on a 12% SDS-PAGE gel stained with Coomassie® blue. IgG: human immunoglobulin G, Lane M: unstained protein marker. The red box on the original SDS-PAGE denoted the region cropped for the Figure 3A shown in the manuscript.