

Soluble recombinant CD36 Neutralizes Anti-CD36 Antibodies

BACKGROUND

CD36 has recently been recognized as a blood group system of clinical importance. Individuals who are CD36 deficient can develop alloantibodies after transfusion or during pregnancy, which may lead to complications such as platelet transfusion refractoriness, neonatal alloimmune thrombocytopenia, or fetal anemia. Even though CD36 qualifies as a high-frequency blood group antigen, its expression on adult red blood cells is usually very low but nevertheless variable, resulting in unpredictable weak reaction patterns across test cell panels.

METHODS

We designed and produced a soluble recombinant CD36 (srCD36). To inhibit anti-CD36 antibody reactions in the indirect antiglobulin test (IAT), we added srCD36 or phosphate buffered saline (PBS) to sera prior to running the IAT (Figure 1). We determined analytical sensitivity and specificity. Finally, we added recombinant CD36 to five patient samples known to have anti-CD36 antibodies and tested them in the IAT.

RESULTS

srCD36 reacts with a high sensitivity and specificity (Figure 2). Adding srCD36 to anti-CD36 antisera from patients consistently inhibited the reactions in the IAT (Figure 3, Table 1).

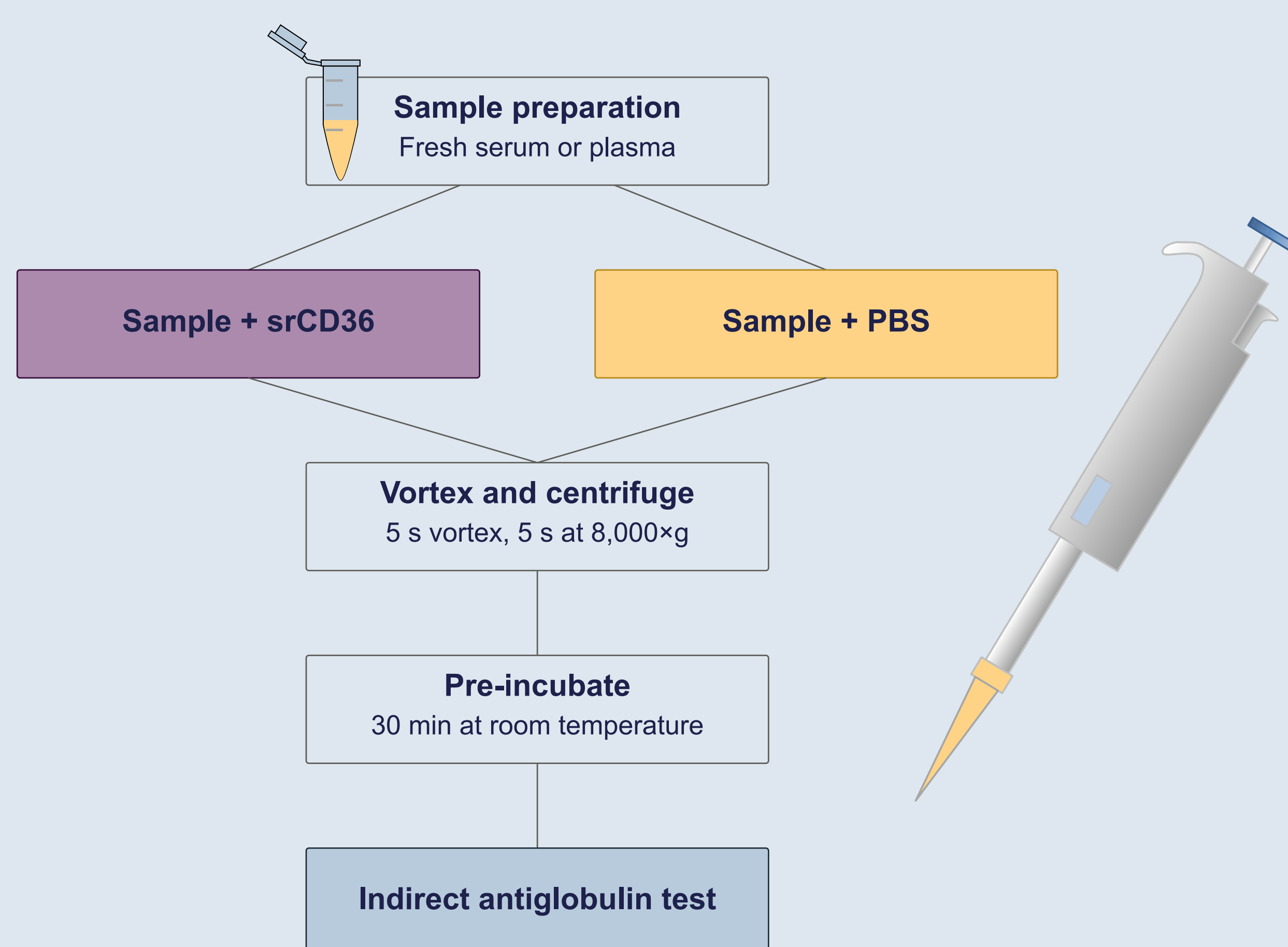
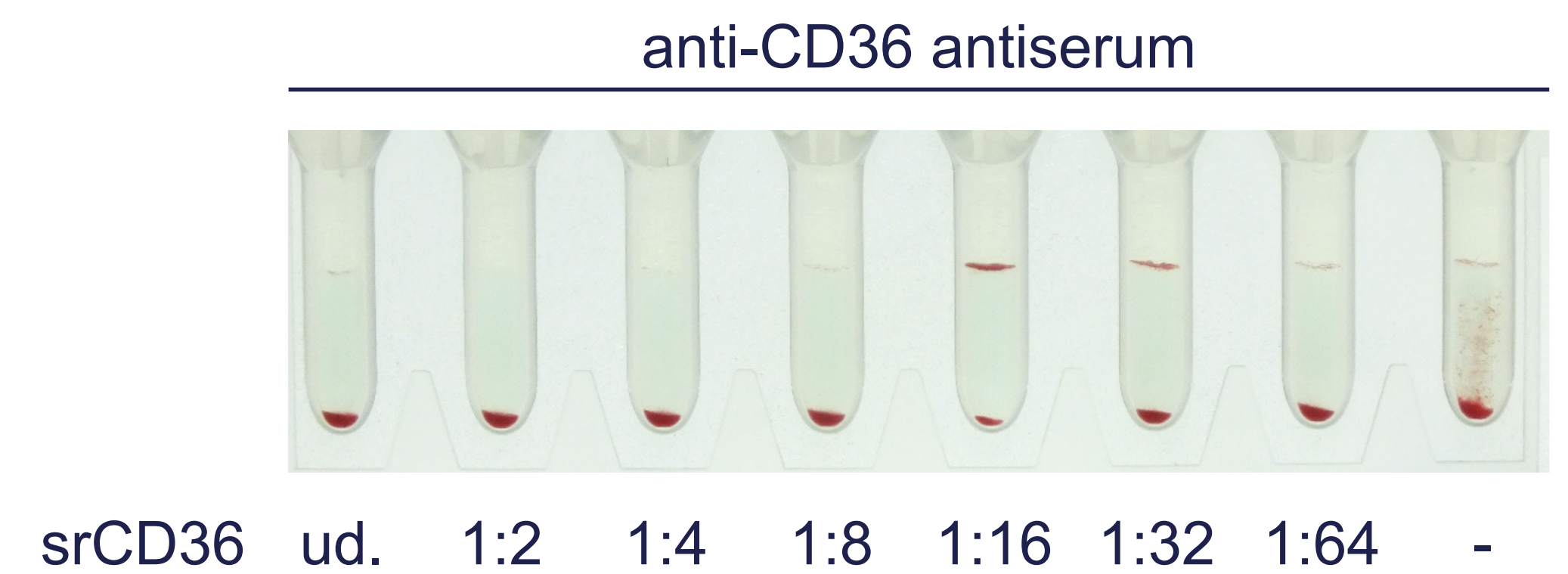


Figure 1. Flow chart of the inhibition IAT with srCD36.

A



B

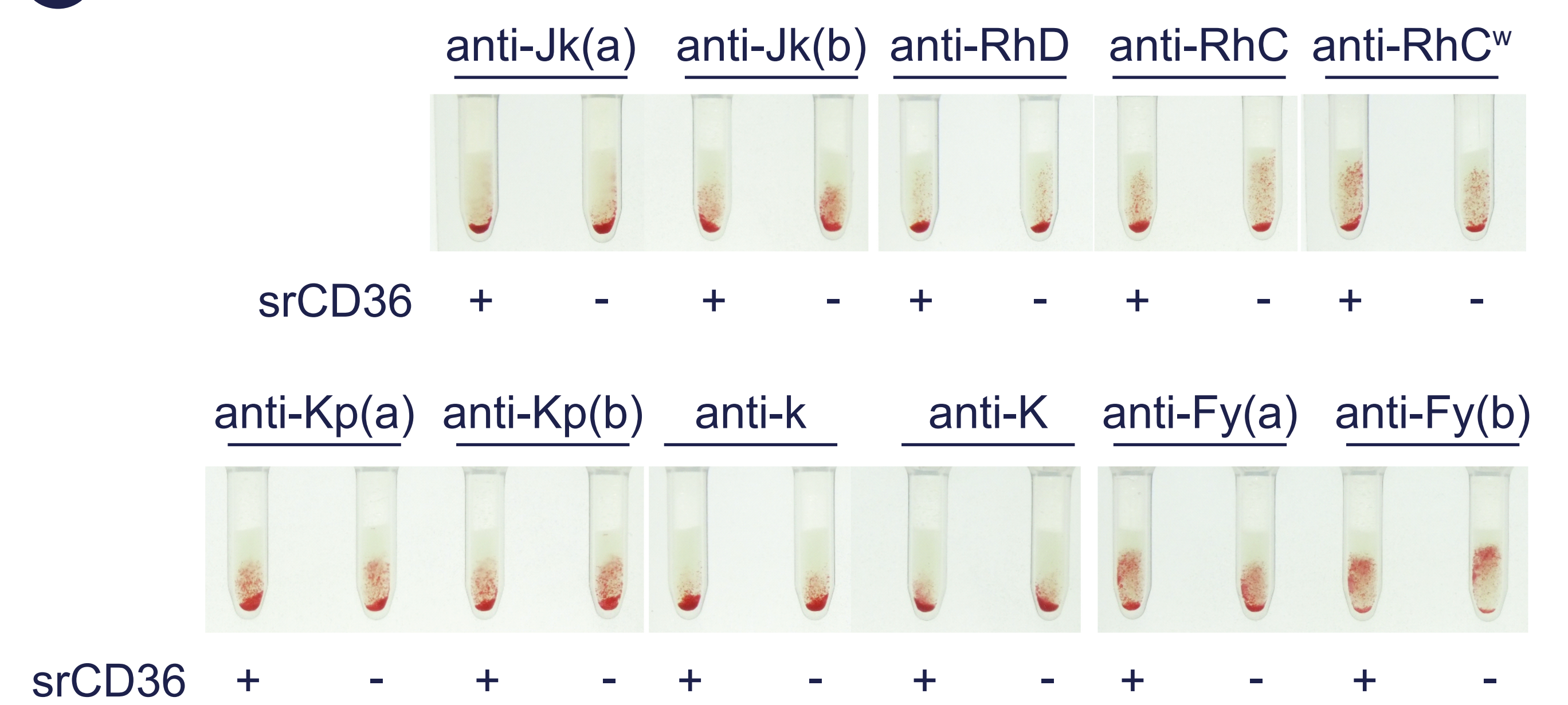


Figure 2. Analytical Sensitivity and Specificity of srCD36 in the inhibition IAT. A: IAT results of a serial dilution of srCD36 in PBS for pre-incubation. Ud.: undiluted. B: Test of cross reactivity of srCD36 with antisera as indicated.

Table 1. IAT results of patient samples pre-incubated with PBS or srCD36. All patients were confirmed anti-CD36 positive in the Luminex assay Pak Lx (Werfen). Samples 4 and 5 were tested with a 3-cell panel.

Pre-incubation	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
2 µl PBS	+/-	+/-	+	+++	+++
2 µl srCD36	-	-	-	-/-	-/-

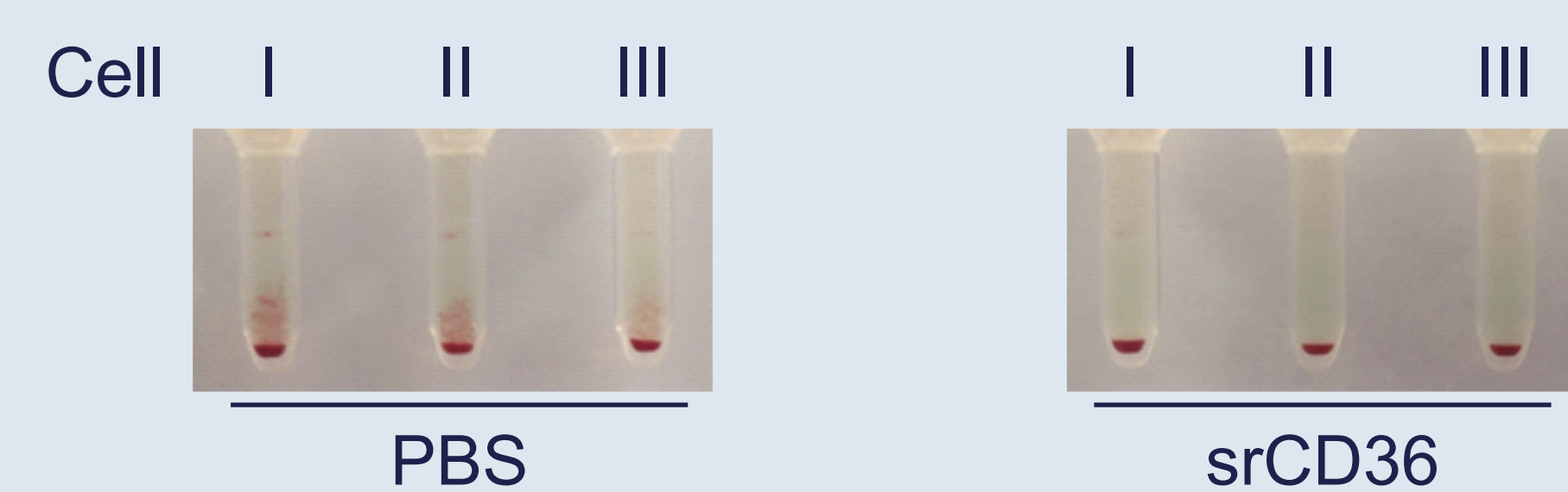


Figure 3. Exemplary result of an inhibition IAT with a patient sample (Patient 4). IAT results after pre-incubation with srCD36 or PBS.

CONCLUSION

srCD36 is a new recombinant blood group antigen (rBGA) that can be used to identify samples with anti-CD36 antibodies and to explain unexpected reaction patterns in antibody identification.

