

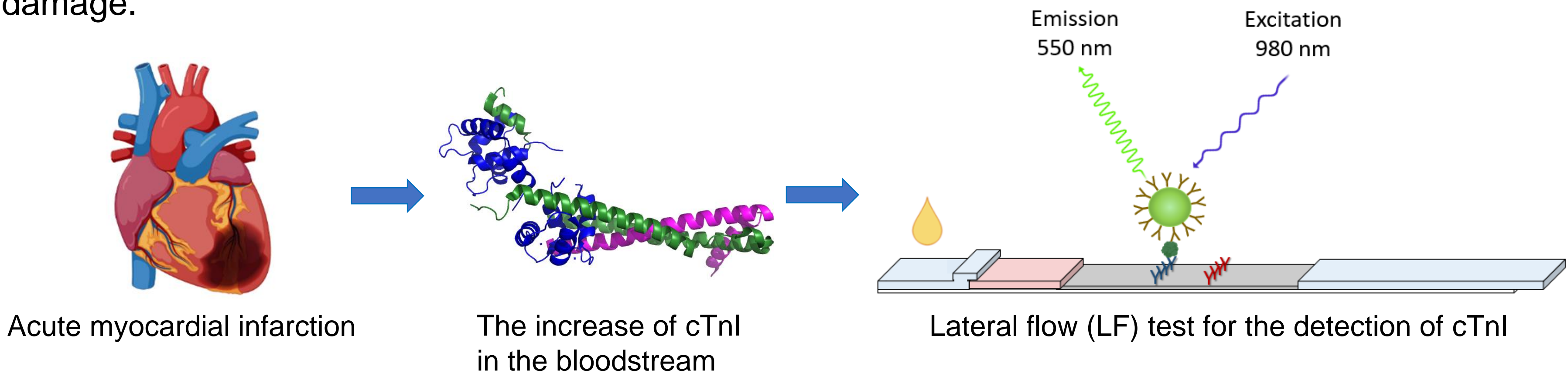
ULTRASENSITIVE LATERAL FLOW ASSAYS FOR QUANTITATIVE ANALYSIS

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INTRODUCTION

Troponin is a protein complex that regulates the contractile cycles of striated muscles (cardiac and skeletal muscles). The cardiac protein complex consists of three subunits: cardiac troponin I, cardiac troponin T and cardiac troponin C. Cardiac troponin I (cTnI) is a highly specific biomarker for cardiac damage.

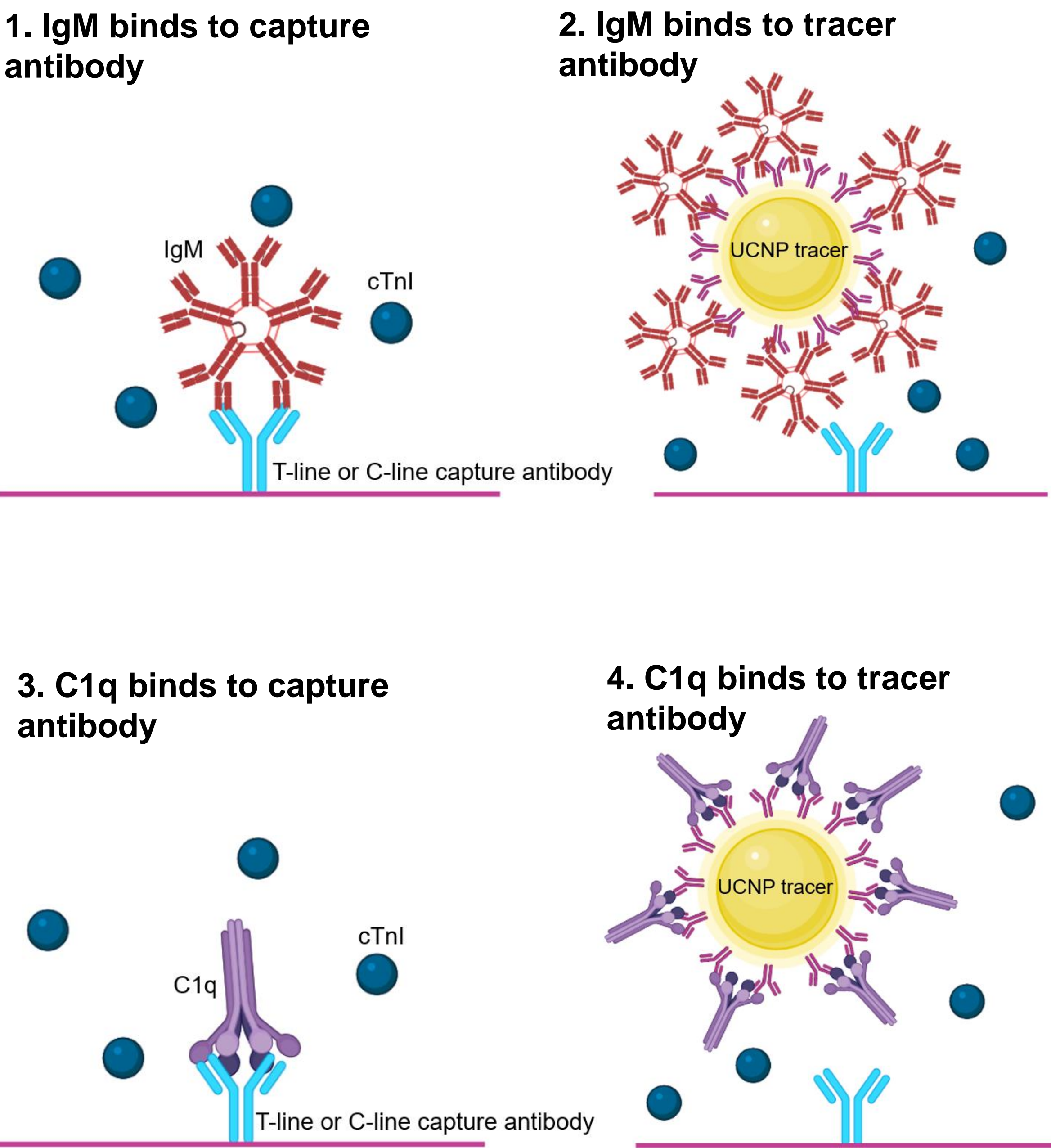
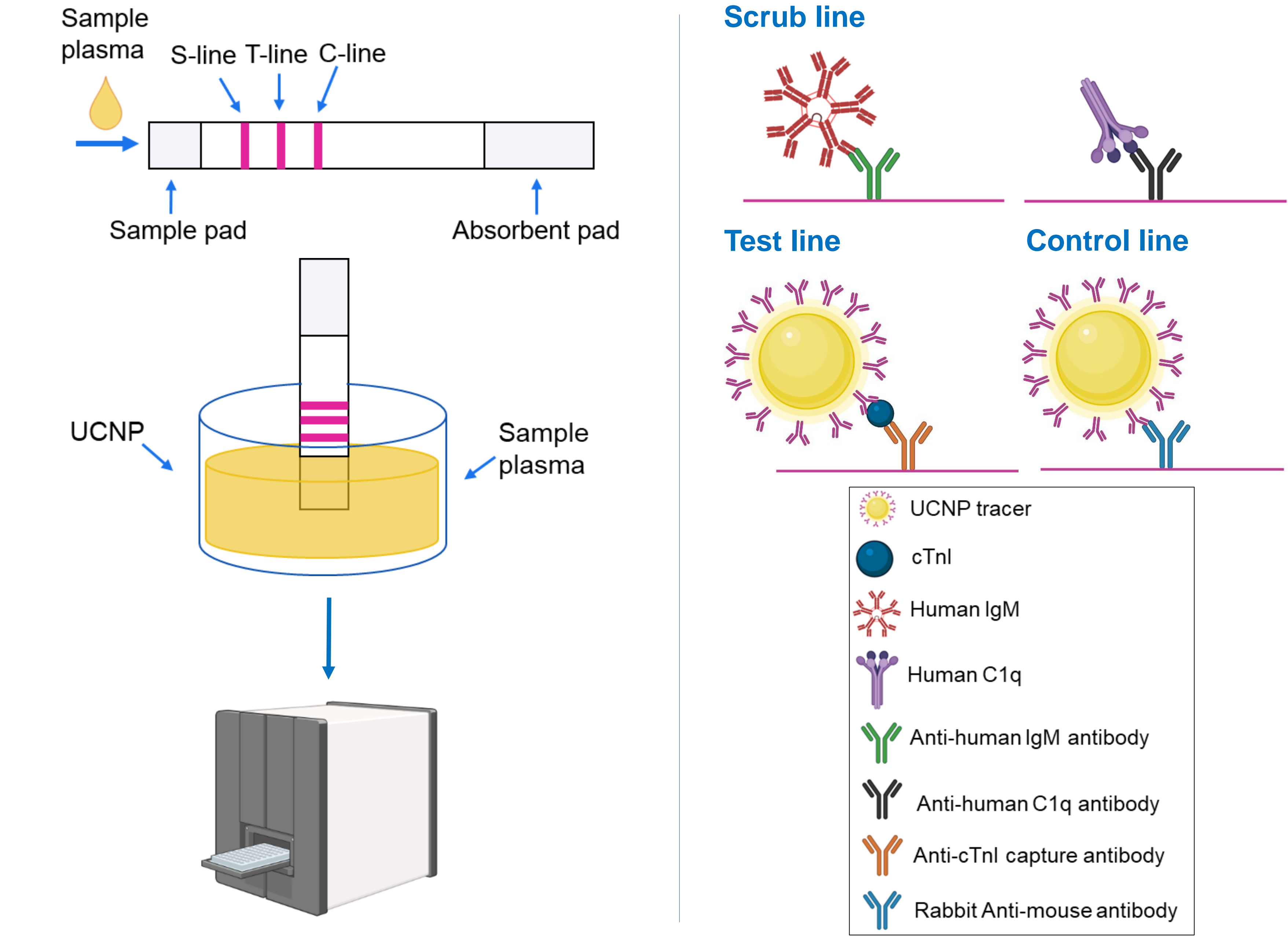


AIMS

- To develop a highly sensitive and quantitative lateral flow test with the sensitivity of < 10 ng/L by using up-converting nanoparticle (UCNP) labels.
- To investigate the cause of the matrix effect and to reduce the interference.

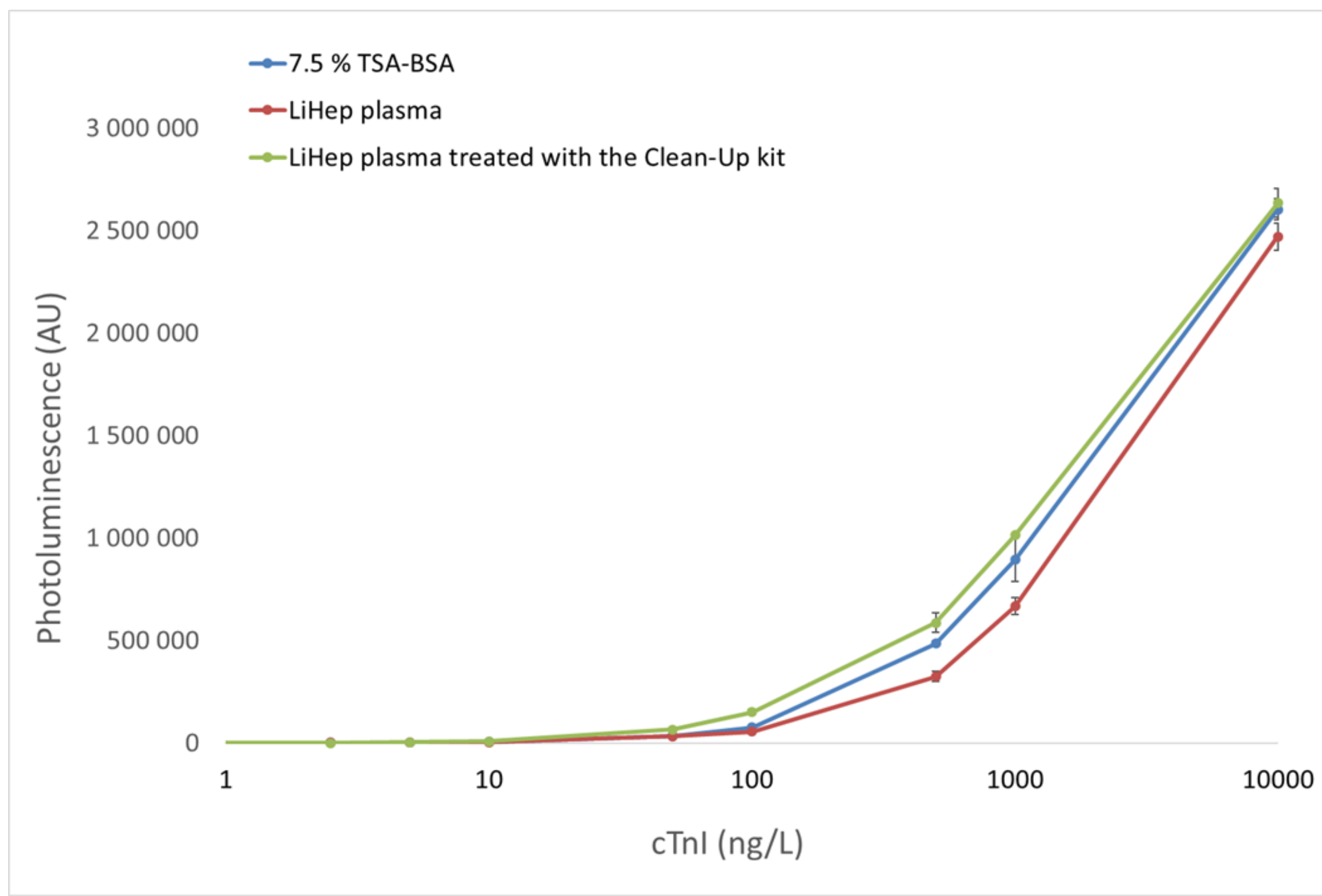
Hypothesis: IgM and a complement protein C1q could cause interference in the cTnI lateral flow assay by binding to the assay antibodies

MATERIALS AND METHODS



RESULTS AND CONCLUSIONS

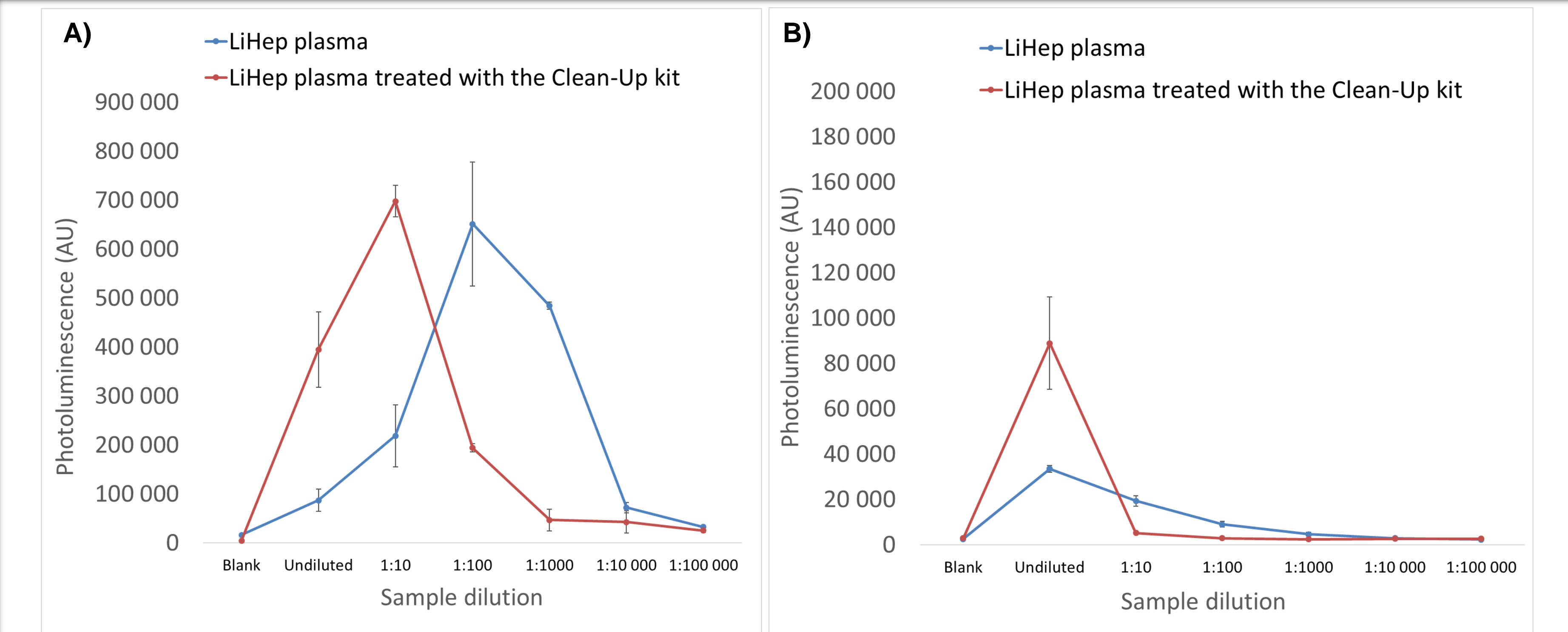
cTnI sensitivity in three different sample matrixes
The specific signals of LiHep plasma samples are lower than the signals of the other two sample matrixes which indicates the matrix effect.



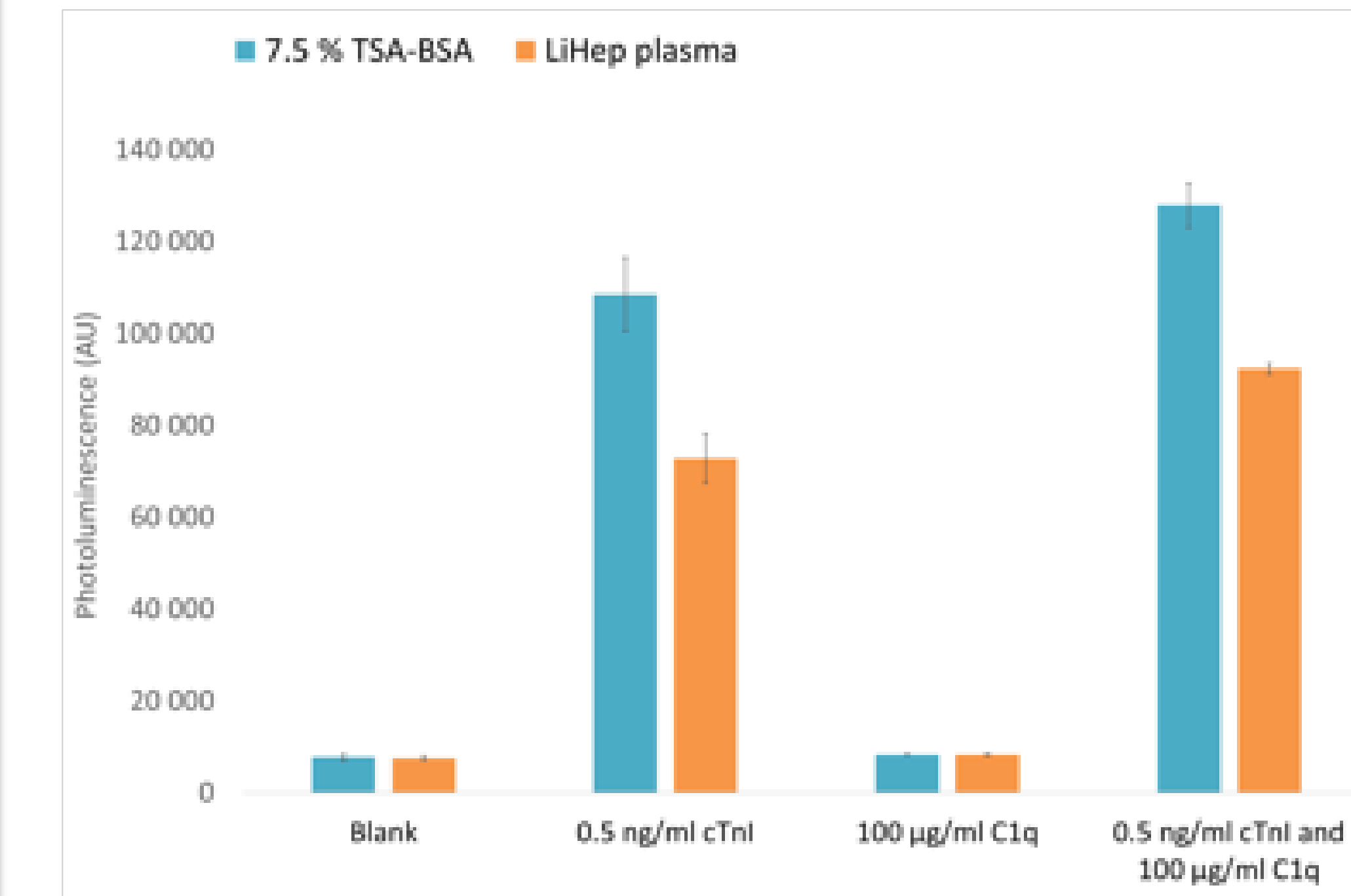
The limit of detection values of cTnI in three different sample matrixes:

- 6.11 ng/L (7.5 % TSA-BSA)
- 12.36 ng/L (LiHep plasma)
- 3.79 ng/L (LiHep plasma treated with the Clean-Up kit)

The effect of C1q
C1q does not cause interference in the cTnI LFA.



Dilution series of LiHep plasma was tested with Anti-C1q label. A) The signals of Anti-C1q scrub line B) The signals of Anti-cTnI test line



Spiking LiHep plasma with C1q in cTnI LFA. The samples were spiked with 0 and 0.5 ng/ml cTnI and/or 0 and 100 µg/ml C1q.

Conclusion:
IgM and C1q do not cause interference in the cTnI LFA.