

# Development of Minicare Point-of-Care Cardiac Troponin-I Test

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## Introduction

Cardiac troponin I (cTnI) testing with a recommended turnaround time (TAT, time from blood draw to reporting of result) of  $\leq 1$  hour is a key element in the evaluation of patients with chest pain and suspected acute coronary syndrome. We aim to develop a Point-of-care (POC) test for cTnI that works from a single droplet of whole blood or plasma with a TAT of less than 10 minutes.



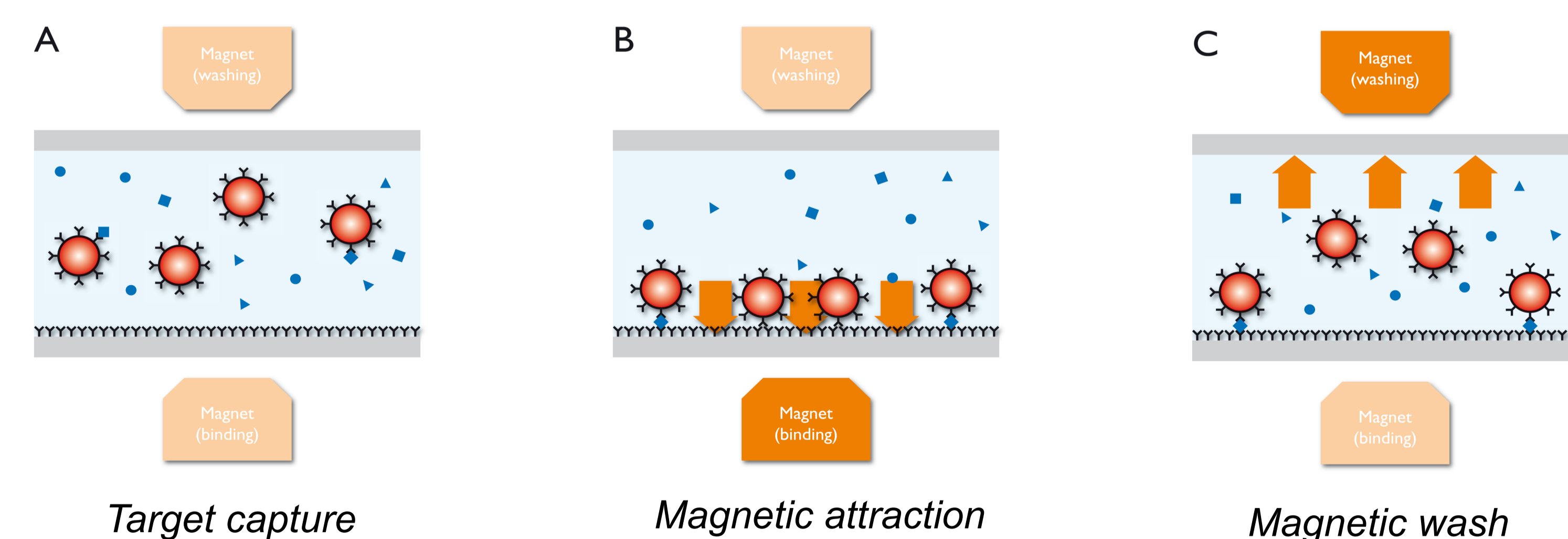
The Minicare touch screen analyzer



A two-chamber, microfluidic, plastic disposable

## Methods

The Minicare cTnI POC test will be a one-step sandwich immunoassay that takes place in a compact plastic disposable cartridge with on-board dry reagents. The assay is based on the Magnotech technology [1] which uses actuated magnetic nanoparticles as labels; detection is based on frustrated total internal reflection. The disposable cartridge was shown to be suitable for both whole blood and plasma samples [2].

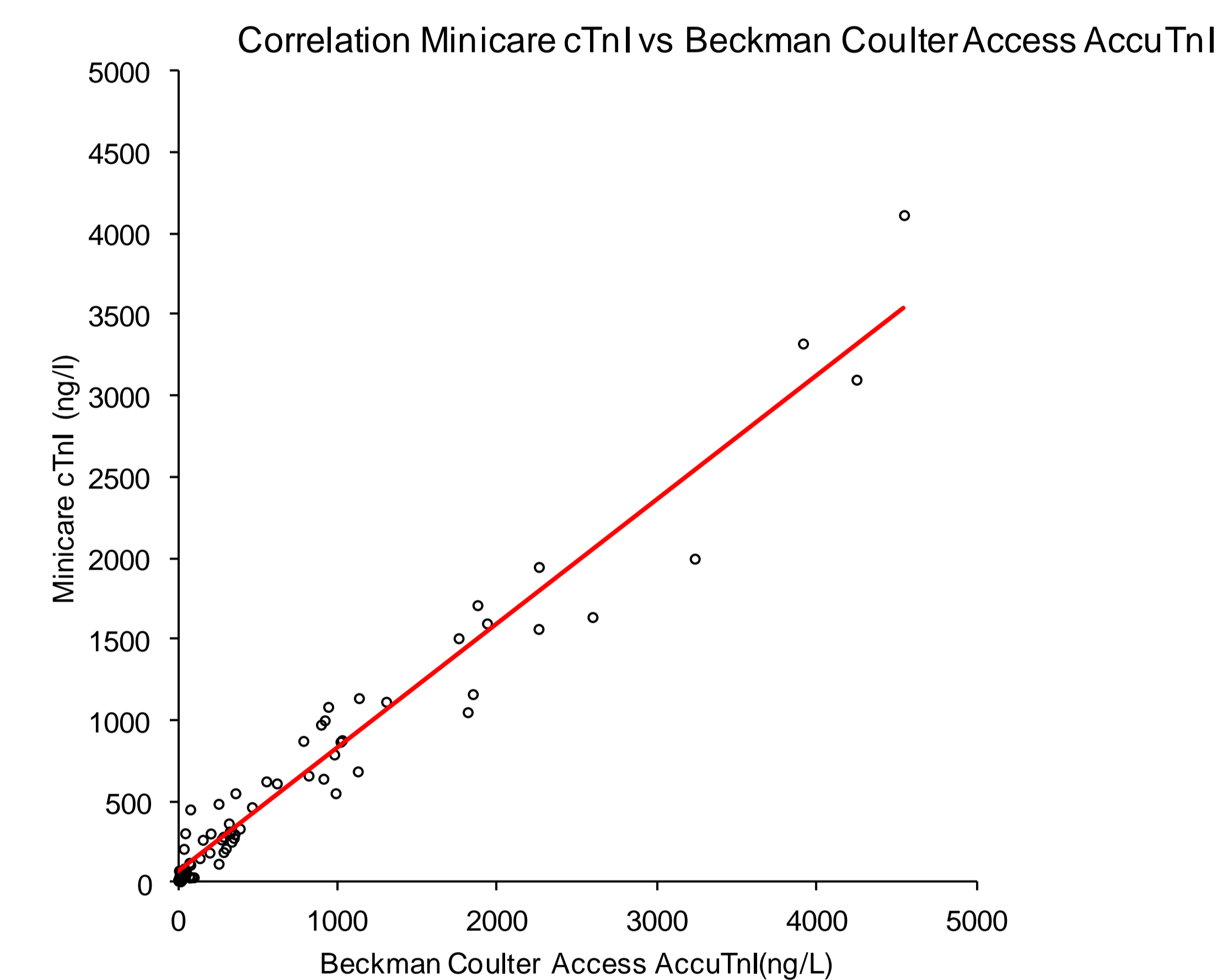


Particles capture analytes in the absence of a magnetic field. Those containing analyte bind to a surface functionalized with antibodies under the influence of magnets. Weakly and unbound particles are removed from the surface with a magnetic force.

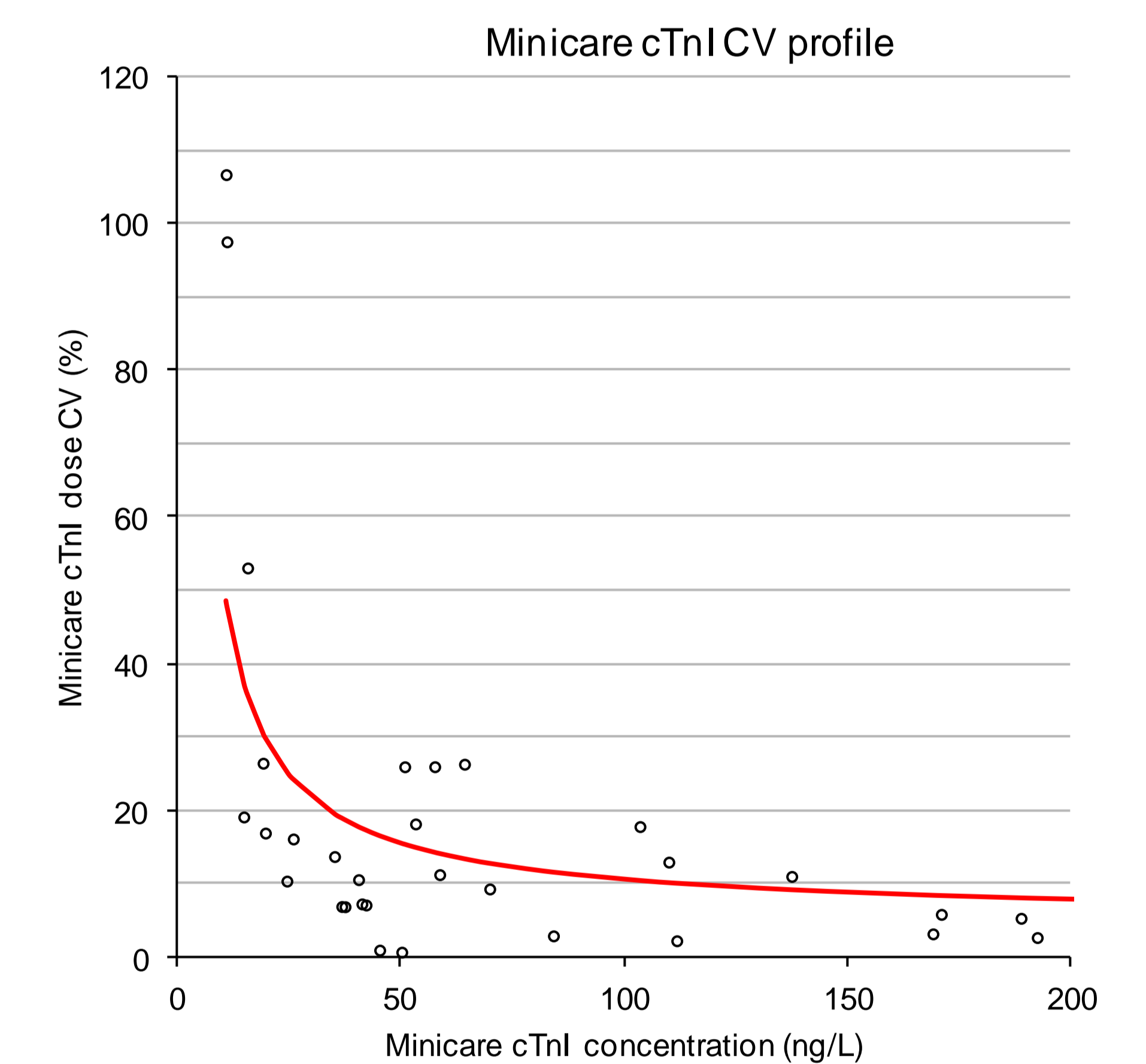
\* Investigational research use only

## Results

cTnI measurements were performed on a panel of 70 plasma samples comparing our test with the Beckman Coulter Access AccuTnI. The outcome demonstrates a good correlation ( $R=0.98$ ) between the two systems. All measurements were performed in duplicate to estimate the precision profile. From this curve the limit of quantification at 20% and 10% could be estimated at 35 ng/l and 112 ng/l respectively.



Correlation with the Beckman Coulter Access AccuTnI



CV profile for the Minicare cTnI test

## Conclusions

These preliminary results show the potential to develop a Minicare cTnI POC test with competitive specifications.

## References

- [1] Bruls et al., Lab Chip. 2009; 9: 3504-10.
- [2] Nieuwenhuis et al., 'Handheld analyzer based on Magnotech' poster presentation at 43rd AACC Oak Ridge Conference 2011.