

A handheld, rapid, sensitive electrochemical immunoassay Point of Care system



AACC Oak Ridge Presentation
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Courtney Nicholson



Overview

Ag⁺ have developed a handheld diagnostic platform technology based on our patented electrochemical immunoassay biosensor, delivering the next generation in rapid, quantitative diagnostics.



Company

- Technology developed at National Physical Laboratory, UK
- Spun out officially in 2011
- 10 staff (6 science based)
- Compliant to ISO13845



Application sectors

- Human Clinical
- Human Non-Clinical
- Veterinary
- Sports
- Food
- Military
- Environmental



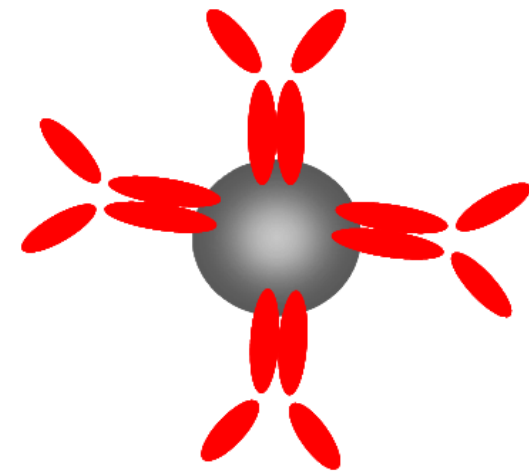
System capability

- Platform technology
- Fully quantitative
- Rapid time to result
- Single use assay on fluidic chip
- Multiplexing
- Variety of sample matrix
- Handheld reader



Assay and signalling system

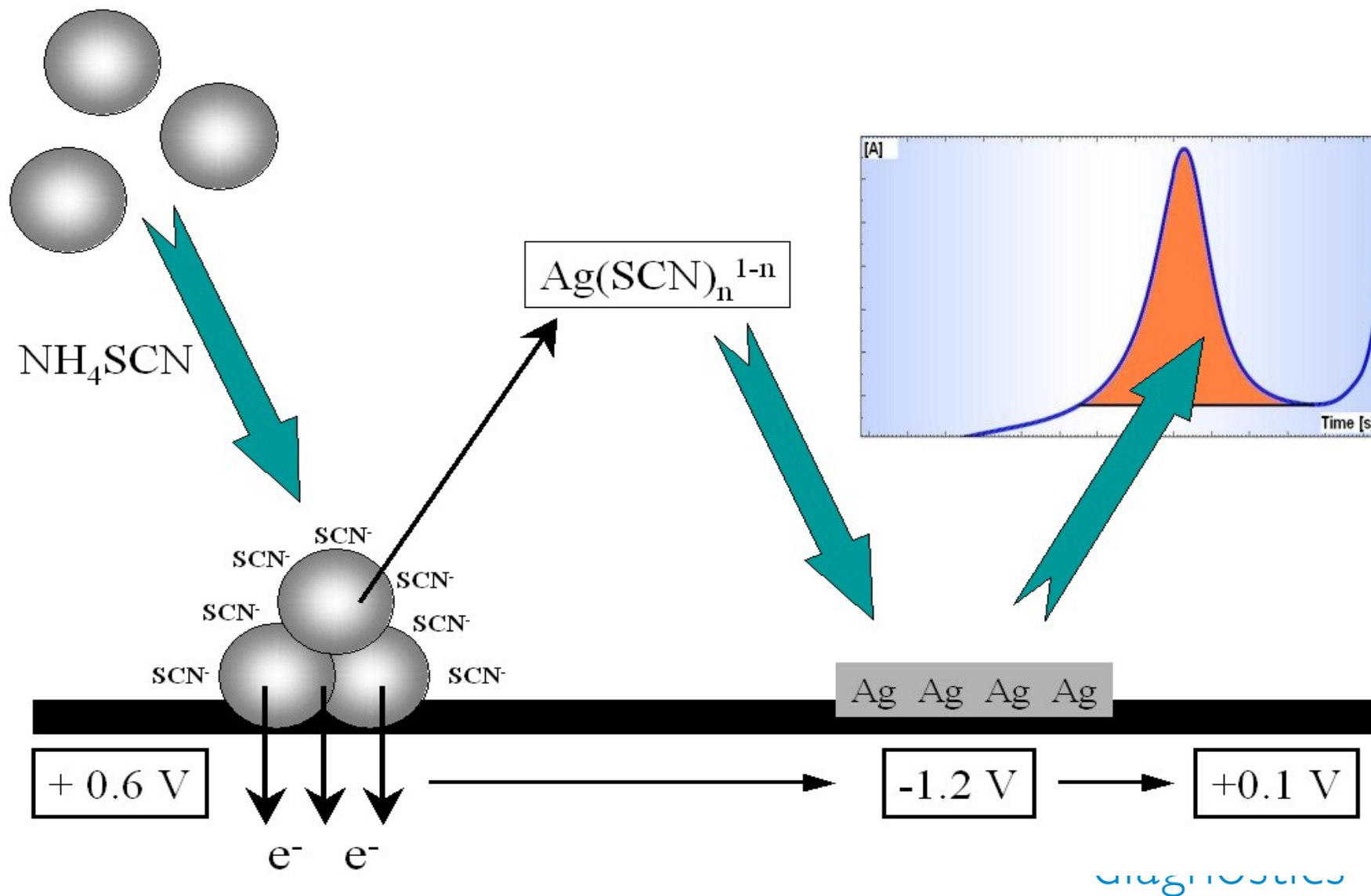
- Sandwich and competitive assays
- Electrochemical measurement
- Silver nanoparticles for signalling conjugated to antibodies/antigen¹
- Magnetic particles (antibody/antigen) for solid phase in assay



Silver nano-particle
 10^6 Ag ions

¹Preparation and quality control of silver nanoparticle–antibody conjugate for use in electrochemical immunoassays. Mateusz S. Szymanski, Robert A. Porter

Electrochemical measurement system



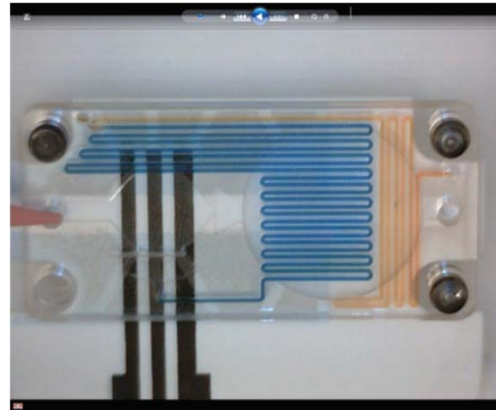
Fluidic chip



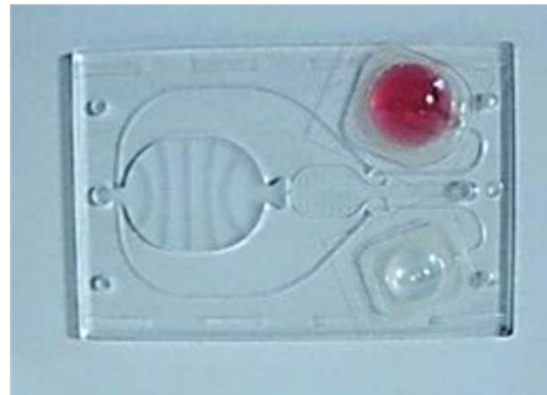
Working Electrode

Reference Electrode

Counter Electrode



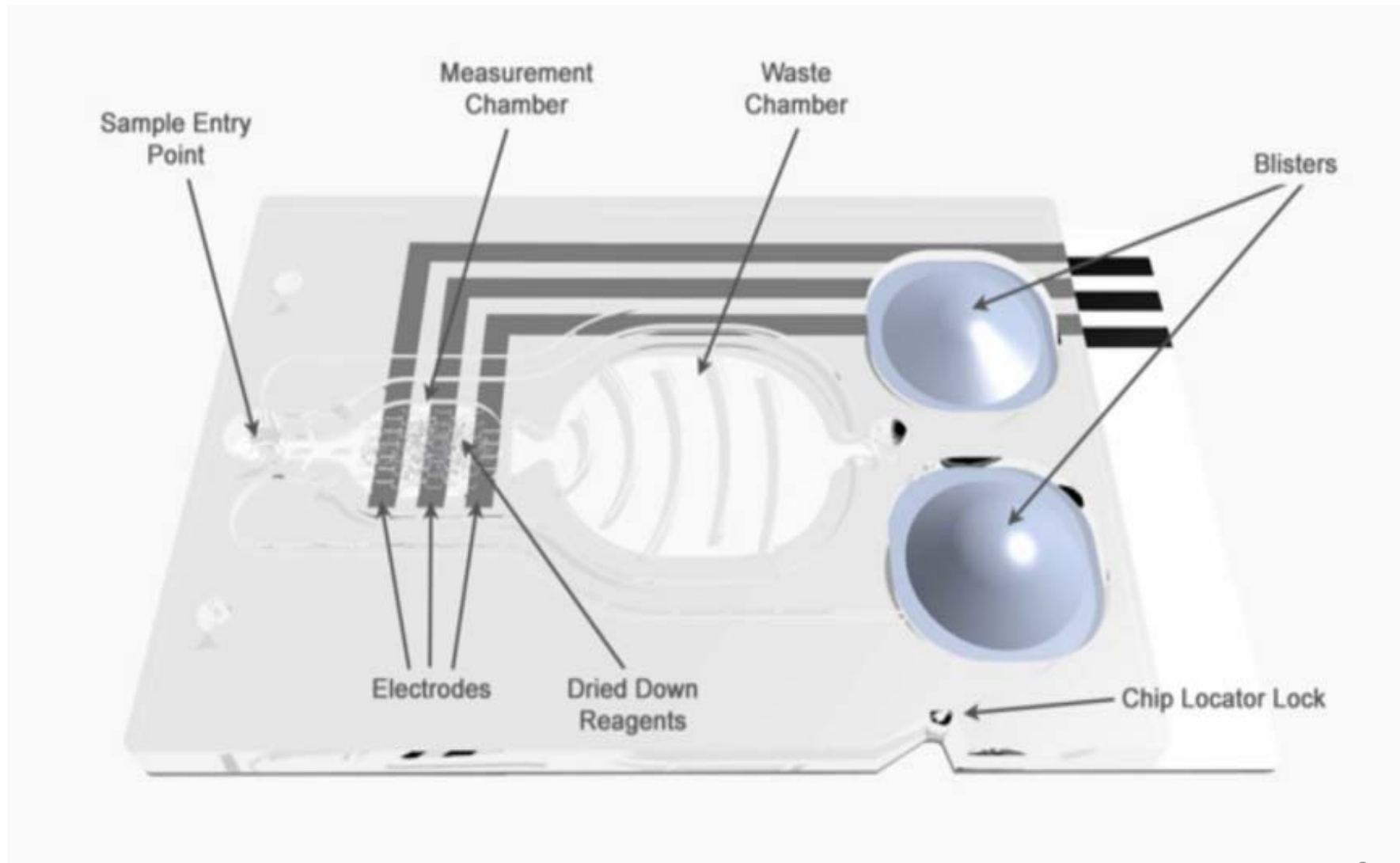
Version 1 –
serpentine fluidics



Version 2 –
blistered fluidics



Prototype chip



Assay system

Video goes here;
too big to publish online.

To view, please go to
<http://www.agplusdiagnostics.com/technology/>



Reading device



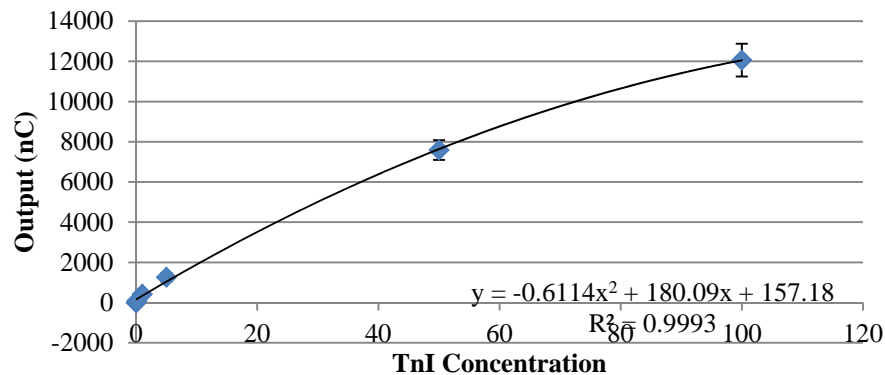
- Communication enabled
- Full assay control
- Results analysis
- On-board information storage
- Customisable interface
- Battery powered
- Portable
- Hand-held

Assay results

ng/mL	Mean (nC)	%CV
0	7	424%
0.1	109	26%
1	403	5%
5	1129	4%
50	7311	3%
100	11614	4%

- Hapten and sandwich assay formats on platform
- Sensitivities to down to 8pg/ml
- Other assays on platform
 - Progesterone
 - TSH
 - Testosterone
 - Cortisol

Standard Curve of TnI Concentration in Serum



Conclusion

- Rapid electrochemical immunoassay that achieves key needs of POC diagnostics
- Overcome previous issue of harsh oxidative processes for silver
- Improved conjugation methods
- Development of single use assay chip controlled by handheld reader
- Ability to achieve clinically relevant results

Thank you

Courtney Nicholson

courtney.nicholson@agplusdiagnostics.com

www.agplusdiagnostics.com

