

Quantum-dot Linked Immuno-diagnostic Assay for Detection of Cardiac Biomarkers

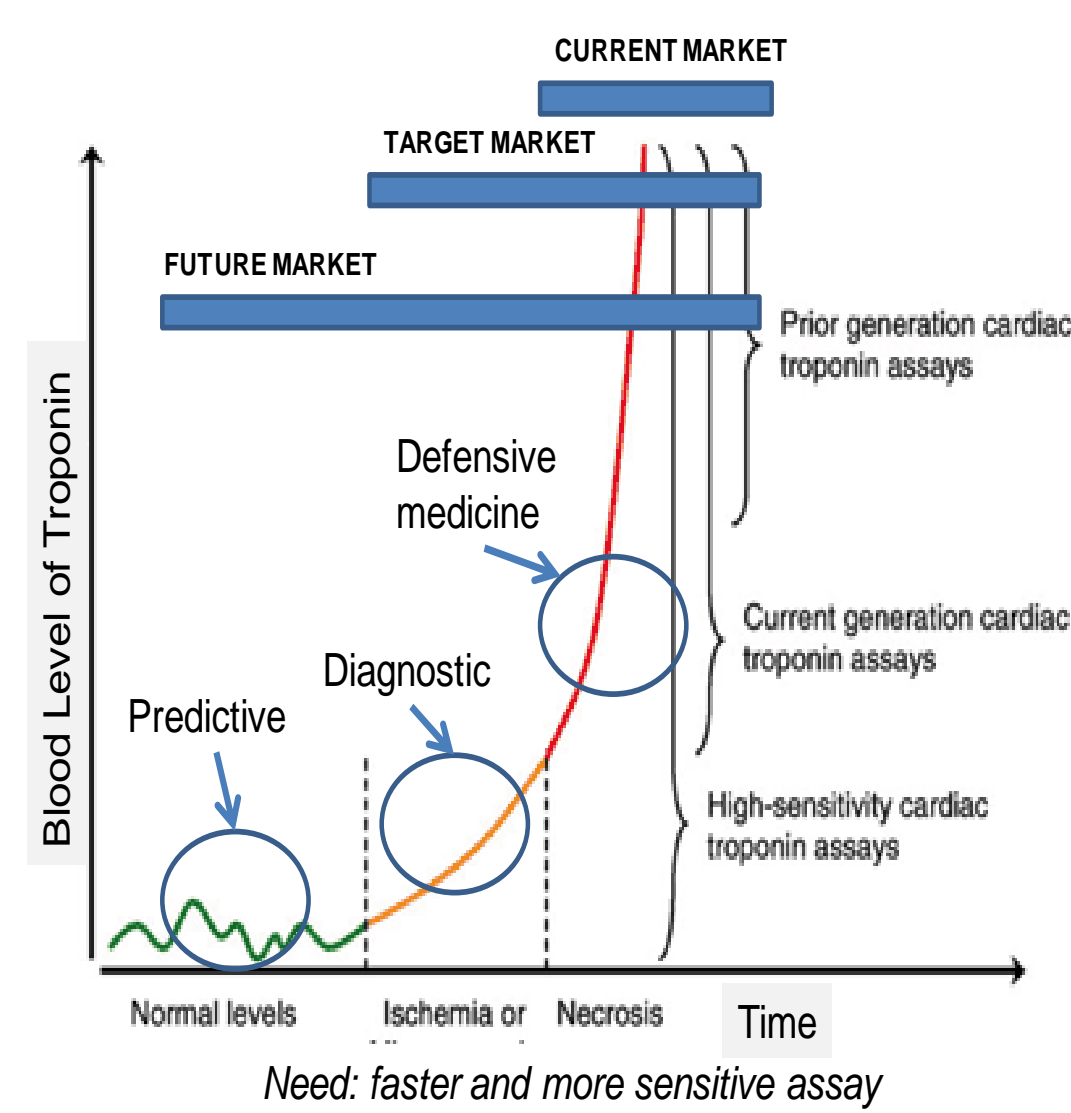
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Medical/Market Need

Acute Myocardial Infarction (AMI, heart attack)

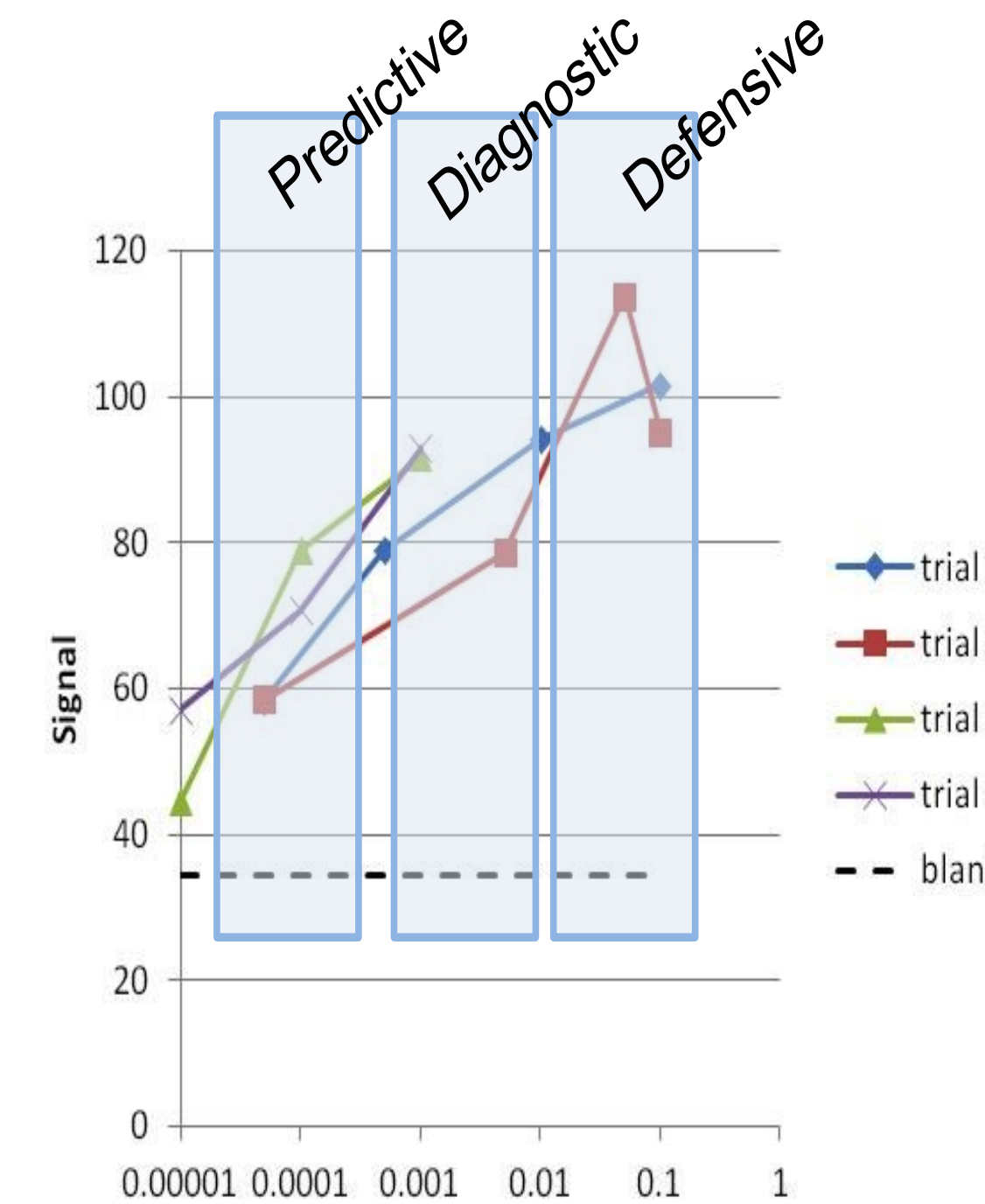
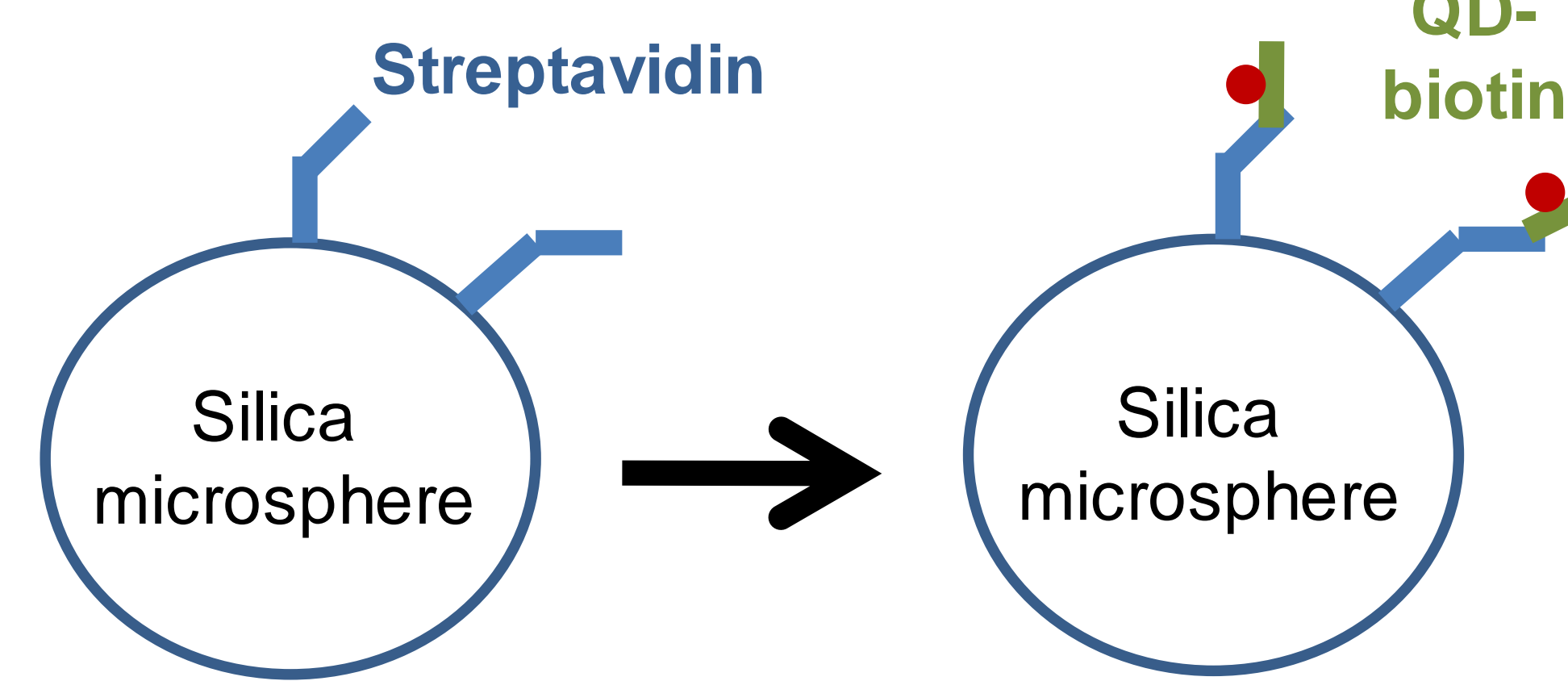
- Cardiac muscle damage biomarkers (troponin etc) increase over 4-6 hours after event and peak within 24-48 hours (depending on marker)
- 6 million Emergency Dep. visits per year for chest pain
- Second most common reason to visit ED
- Equivocal ECG/Troponin (biomarker) results on admission most common
- 90 minutes to first test, up to 9 hours to clinical decision
- About 1/2 patients admitted to ICU for AMI don't need to be
- #1 cause of medical malpractice lawsuits

Early Detection of AMI is Essential to Survival



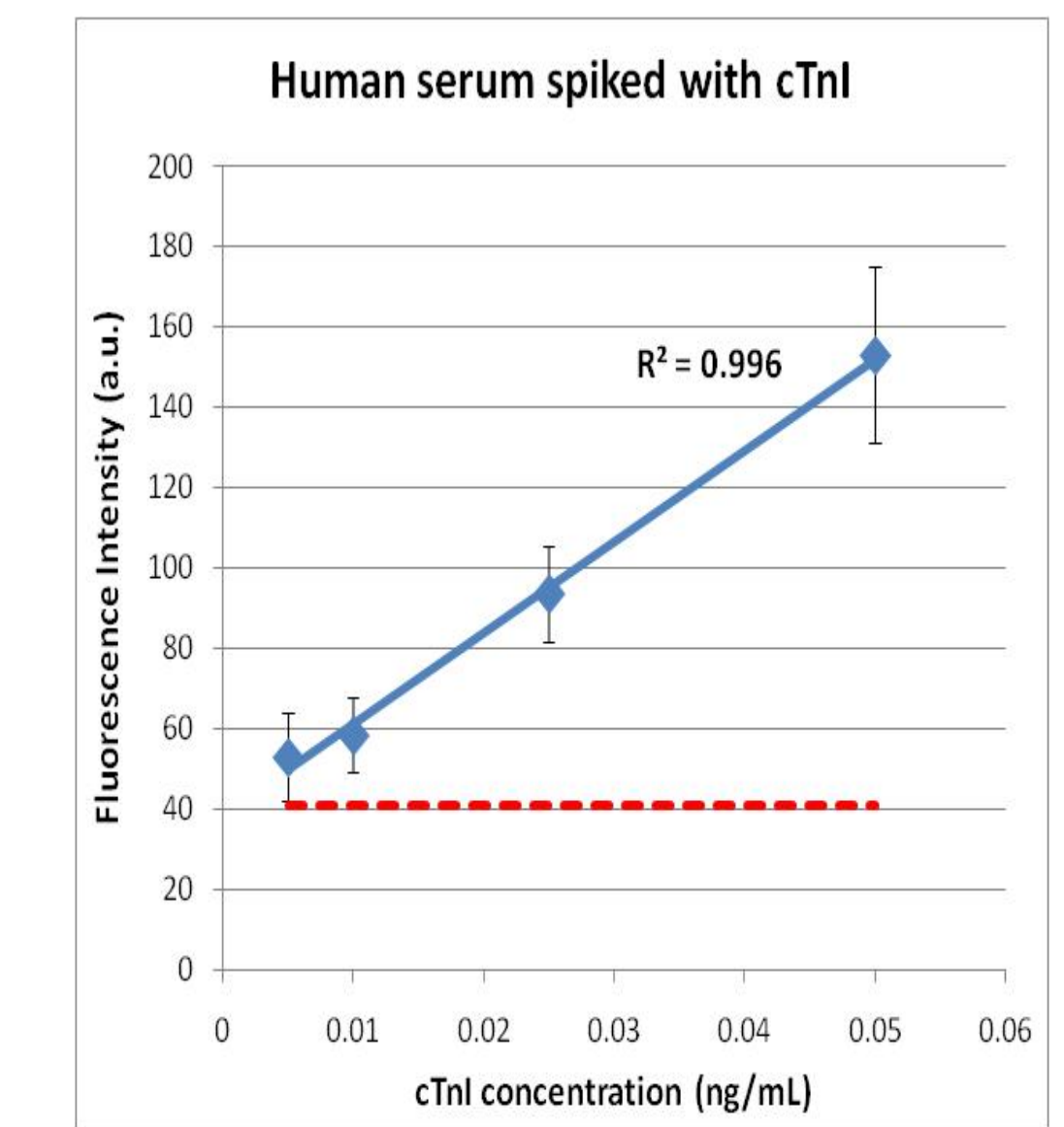
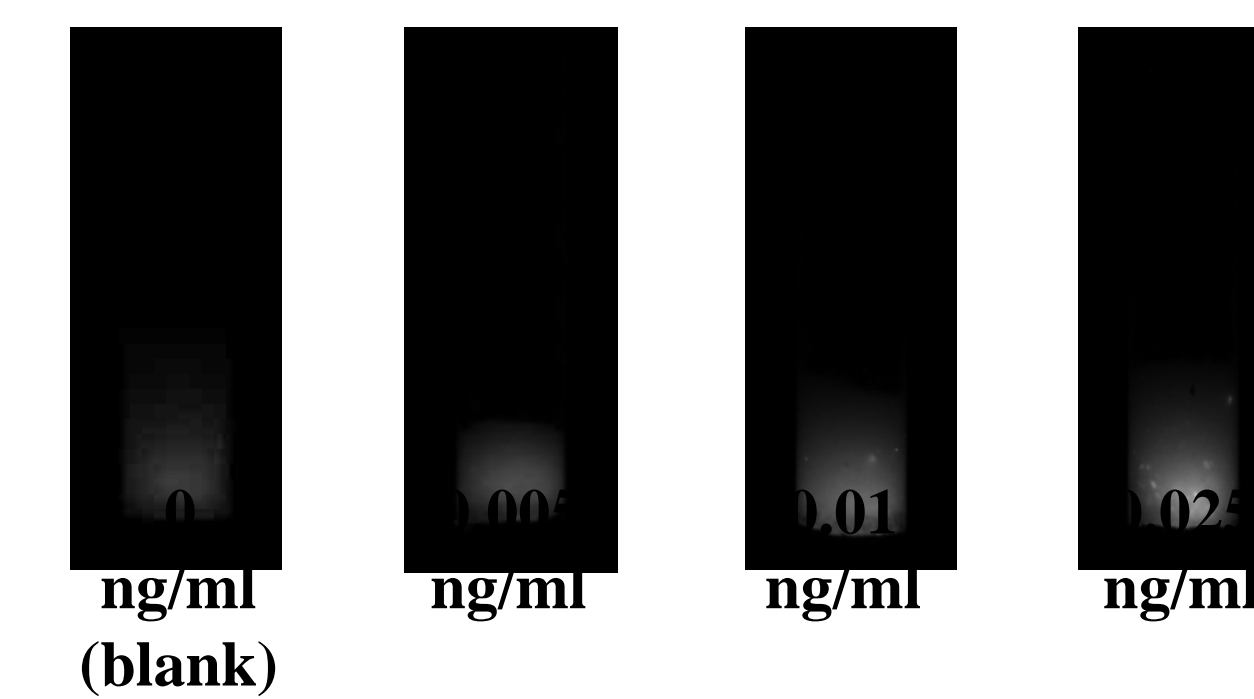
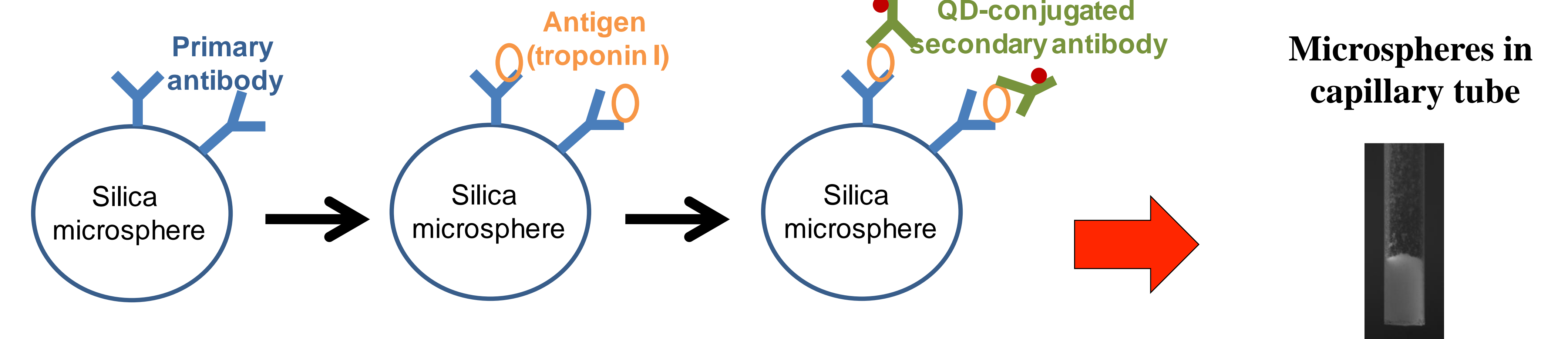
Performance of current detection system

Model system: silica microspheres + qdots (no sandwich immunochemistry)



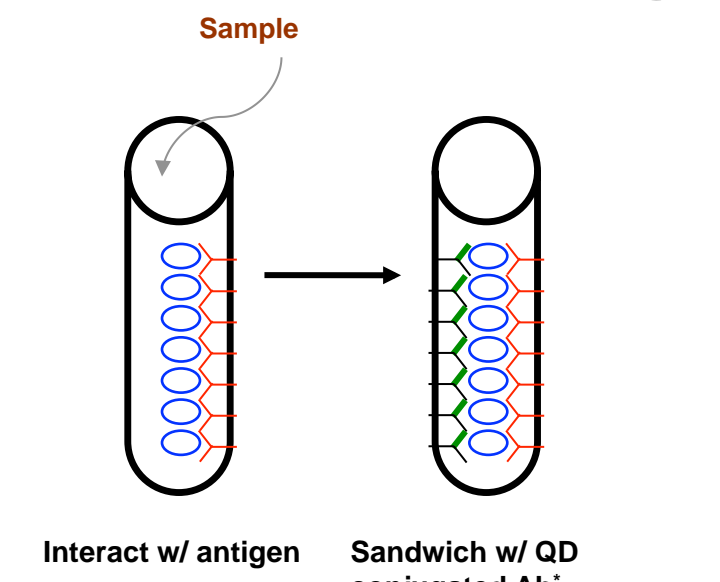
Immunoassay Performance

Full system (sandwich immunochemistry)

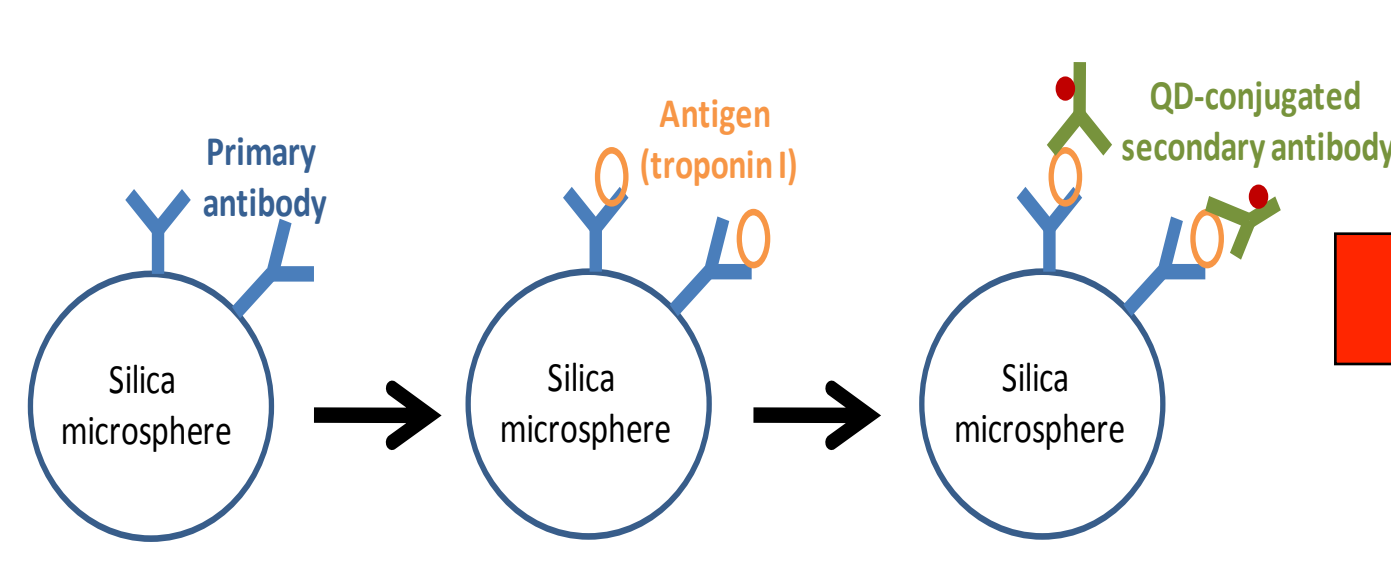


Project Evolution

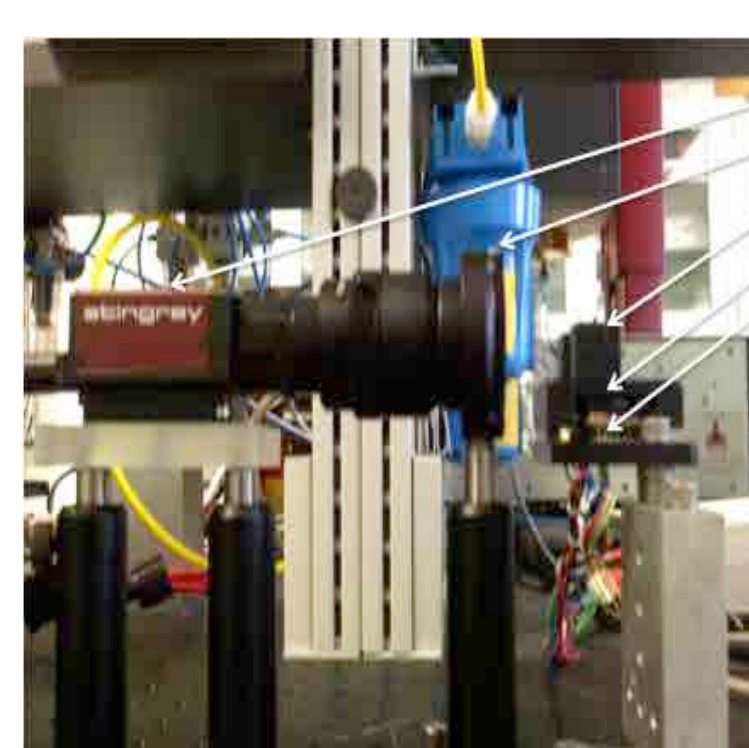
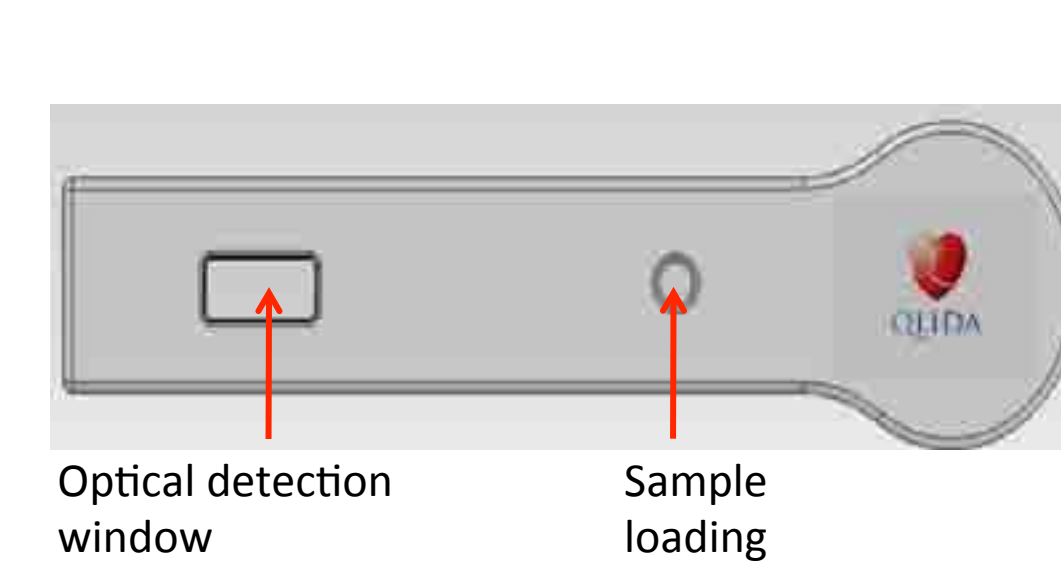
University (Coulter funding)



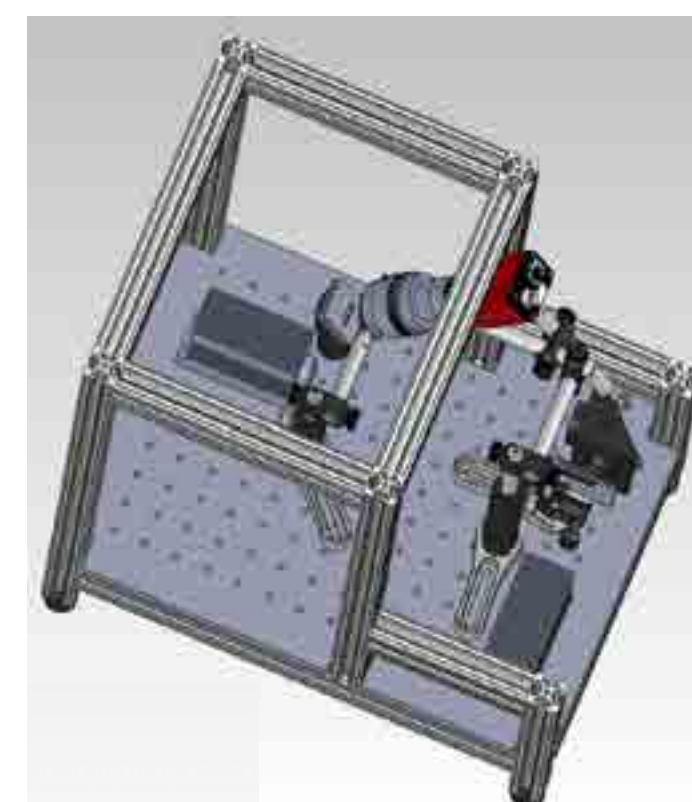
Current (Start-up Seed Funding)



Envisioned Product



Breadboard concept:
Low cost camera, robust



Benchtop prototype:
Simple, flexible design



Handheld concept:
Exploit built-in power of smart phone with simple, miniaturized reader concept

Next Steps

Optimize immunochemistry

- Maximize sensitivity
- Minimize variance
- Minimize incubation time

Convert sample holder – Capillary tube to Lateral flow

- Whole blood
- Single step procedure

Miniaturize reader →



Sensovation AG

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