Tethered Enzyme Technology (TET™)
POINT-OF-CARE TESTING FOR BRAIN INJURIES

Inventors: Alex Travis & Roy Cohen
CTL Officer: Phillip Owh
Point-of-Care Testing (PoCT)

Technology requirements:
1. Portability
2. Rapid results
3. Sensitivity & accuracy
4. Multiplexing

Market size:
2011: $13.8B >> 2016: $16.5B

(healthcareitnews.com)

Time-critical pathologies: Brain Injuries/Stroke
There is no available PoCT technology!

The Problem
Stroke

Millions of people are affected every year!

- 3rd leading cause of death in the US (>140,000/year).
- #1 cause of serious, long-term disability.
- 800,000 people/year (US), 15,000,000 worldwide.
- 1 of 4 strokes occurs in people under the age of 65.
Stroke: Diagnosis and Treatment

Very short time window for successful treatment:

3-4 hours

- tPA - Dissolves clots and restores blood flow
  - 33% chance to full recovery

But, only 4% of ischemic stroke patients get tPA!!!

The Problem – Market Need

Need for rapid stroke diagnostics!

Recognize Symptoms

Hospital/Stroke Center

Neurological Examinations

Brain Imaging (CT/MRI)

Stroke

Ischemic

Hemorrhagic (17%)

Stroke mimic

tPA

1/7 counties US

AVG time (US) > 60min
Detection of NSE in Rat Stroke Model

Comparable sensitivities for TET and ELISA assays

The Problem - Market Need - Technology
Detection of S100β in Serum from Human Patients

TET enables a very short assay time

Correlating ELISA with TET

Time to results

\[ r = 0.796 \]
TET™ - Summary

Advantages

- speed
- sensitivity
- small sample volume
- low cost
- highly multiplexed

Support

- NIH Pioneer Award ($3.9M, 2009)
- Clinical and Translational Science Center Award: “DEVELOPING A MULTIPLEXED POINT-OF-CARE PLATFORM TO DETECT MULTIPLE STROKE BIOMARKERS”

Patents Pending

- PCT/US2008/080150: System for Production of Adenosine Triphosphate
- PCT/US12/41886: In Vitro Diagnostic Assays Based on Tethered Metabolic Enzymes
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http://cornell.flintbox.com/public/project/19964/