Redox reactions lie at the heart of nearly all of the body’s responses occurring during inflammation and other immune responses. Redox is particularly critical in sepsis, an overwhelming immune response to a bacterial infection that affects more than one million people. Current methods do not detect redox potential of patients in the clinical setting, instead relying on secondary measurements that often do not reflect the current, real-time data that is so vital for optimal evaluation and treatment.

The Solution

University of Michigan’s Rodney C. Daniels, M.D., has developed a redox point of care (POC) platform, a sensory diagnostic that uses nanoporous gold electrodes to directly measure blood and fluid redox potential at the patient’s bedside, which may aid in guiding therapeutic solutions.

Sepsis affects more than one million people per year, costing more than $20 billion annually and claiming the lives of 30 percent of those affected, yet there is no current method of monitoring redox in the hospital. The redox POC platform would allow measuring redox in real time in the clinical setting, providing valuable information in early evaluation and treatment.
**Significant Need**
Determining redox balance is crucial to understanding, evaluating, and treating diseases like sepsis, but current standards for measuring derangements in sepsis rely solely on secondary measurements that may not reflect current, real-time data.

**Compelling Science**
Dr. Daniels has developed sensor technology that utilizes nanoporous gold electrodes that have been integrated into a microfluidic device which measures blood/fluid redox potential not previously available.

**Competitive Advantage**
The redox POC platform is the first to allow measurement of redox in whole blood and other fluids in the clinical setting, rapidly, in real-time and at the point of care where it is needed most to affect change.

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**MTRAC Project Key Milestones**

- Begin redox testing in swine shock model
- Finish redox testing in the swine shock model
- Analyze and report data swine shock model, comparing whole blood and plasma measures
- Continue engagement of potential interested industry partners
- Continue enrollment of adult and pediatric patients for study
- Optimization of the redox POC platform as necessary
- Filing of additional patent disclosures as appropriate

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**Overall Commercialization**

**Product Launch Strategy**
Redox POC platform.

**Commercialization Strategy**
Option to license with industry partner.

**Regulatory Pathway**
Following a 510K regulatory pathway (class 2 device) and can be used as a POC device.

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**Intellectual Property**
Patent submitted.