

Nano Sensing



JOSEPH PB&T
PRIVATE

What is **killing** us?

The World Health Organization (WHO) estimates that Cardiovascular diseases (CVDs) are the number 1 cause of death globally, taking an estimated 17.9 million lives each year.¹

An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. Of these deaths, 85% are due to heart attack and stroke.¹

A heart attack happens when the blood supply to the heart is cut off. Cells in the heart muscle that do not receive enough oxygen-carrying blood begin to die.²

The more time that passes without treatment to restore blood flow, the greater the damage to the heart. ²

Every year, about 750,000 Americans have a heart attack. Of these, 550,000 are a first heart attack, and 200,000 happen in people who have already had a heart attack.²



¹[https://www.who.int/en/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/en/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds))

²<https://www.uab.edu/news/youcanuse/item/8129-why-heart-attacks-can-happen-to-anyone>

We need to be **accurate and fast.**

Worldwide heart infarct has been the major cause of death for people of distinct age ranges and social classes.

Together with clinical examination, a fast and precise diagnostic test, **can represent the difference between life and death.**

Due to the low precision of Creatin-Kinase (CK-MB) and or Myoglobin (MB) tests, which were commonly used for heart injuries diagnosis, in 2000 the biomarkers Cardiac Troponines I and T (cTnI and cTnT) were introduced to myocardial infarction diagnostic, jointly by the American College of Cardiology (ACC) and the European Society of Cardiology (ESC). Due to their specificity (in comparison with CK-MB and/or MB), nowadays cardiac cTnI and cTnT are the standard chemical biomarkers for myocardial injuries diagnosis. Currently there are about 20 tests that measure cTnI and one test cTnT that measures concentration in blood plasma, this last one was patented by Roche Corporation. All these 21 tests, present a response time of approximately **1.5 to 2 hours.**³

³ Lang K, Börner A, Figulla HR. Comparison of biochemical markers for the detection of minimal myocardial injury: superior sensitivity of cardiac troponin--T ELISA. J Intern Med. 2000 Jan;247(1):119-23. doi: 10.1046/j.1365-2796.2000.00594.x. PMID: 10672139.

Many cardiac and even healthy patients who come to a clinic or hospital, not always present typical heart injuries symptoms. **The time taken for the correct diagnostic is a crucial feature.**

Clinically Proven and Ready to use Diagnostic Device

NanoSensing developed a simple, fast, precise and low cost methodology that quantifies the cTnI concentration in blood plasma, into less than **4 minutes**.

**This time can mean the
difference between life and death**

Based on the use of nanoparticulated material and absorption spectroscopy, a nanostructured point of care (POC) device for heart infarct diagnostic have been developed which allows for every general practitioner to be a potential client.



NANOSENSING Technology




the POC device can be used for evaluating the risk of heart attack in any Point of care places/situation such as:

- Hospitals
- Clinics
- Ambulances in case of transit accidents
- Athletic meets during the sports
- activities

Dialysis clinics for renal patients etc.

- Aids in the diagnosis of myocardial infarction (injury)
- Aids in the diagnosis and assessment of severity of Chronic Heart Failure.
- Aids in the risk stratification of patients with Heart Failure.
- Aids in risk stratification of patients with Acute Cardiac Syndrome.
- Has the potential to decrease death in Cardiac Emergency.
- Can improve clinical, economic and operational outcomes.

By simply changing the microcuvette the same POC device can be used to quantify Myoglobin (MB), Creatin-Kinase (CK), B-Type Natriuretic Peptide (BNP) and **any other biomarker**.



Potential applications of NANOSENSING TECHNOLOGY

Besides the use in Fast, Cost effective and precise diagnostic of myocardial injuries the test platforms of Nanoplasmonic POC and Spectroscopic Method for Troponine I detection and quantification may be adopted for the use in the diagnostic of a wide range of pathologies, enabling early management and improved outcomes. These platforms may be adopted for detecting DNA, RNA, Biomarkers, Bacteria and other pathogens in water, blood, urine and other samples. Some of the potential applications of these in-vitro platforms are:

- Dengue Fever
- Chagas Disease
- Hepatitis
- Septicemia
- Leishmaniosis
- HPV detection and typing

Detection of pathogens in healthcare settings (MRSA, UTI Bacteria etc.), in food chain (E. Coli, Samonella, and Listeria monocytogenes) and some pathogens and biomolecules used in bioterrorism (like Bacilus anthracis [Anthrax], poisonous protein ricin, etc.).





NANOSENSING TECHNOLOGY PLATFORM

Due to nanometer size the metallic particles, when conjugated with a biomarker, possess unique properties, such as:

1. Good Bio Safety
2. Facile Surface modification
3. Absence of false positive results and
4. Localized Surface Plasmon Resonance (LSPR).



Since LSPR increases the sensitivity and intensity of the measured signal the Nanosensing Platform can be adopted to detect and measure any:

1. DNA
2. RNA
3. Biomarker
4. Pathogens etc.

In any medium like:

1. Blood
2. Urine
3. Saliva
4. Water etc.



Hence the Platform Technology can be used for diagnosing:

1. Acute Myocardial Infarction
2. MRSA/UTI Bacteria
3. E. Coli, Salmonella, Listeria Monocytogenes
4. Qualitative and Quantitative detection of compounds/chemicals in:
 - DNA
 - RNA
 - Anti-Bodies
 - Other drugs

How is this problem even **more relevant today?**

“Researchers say people are more than twice as likely to die from a heart attack during the COVID-19 pandemic because many aren’t going to the hospital after experiencing symptoms of heart trouble.”

<https://www.healthline.com/health-news/why-the-heart-attack-death-rate-has-doubled-during-covid-19>

“A Heart Attack? No, It Was the Coronavirus. Cardiologists are seeing infected patients whose worst symptoms are not respiratory, but cardiac.”

<https://www.nytimes.com/2020/03/27/health/coronavirus-cardiac-heart-attacks.html>

“A growing number of studies suggest many COVID-19 survivors experience some type of heart damage, even if they didn’t have underlying heart disease and weren’t sick enough to be hospitalized. This latest twist has health care experts worried about a potential increase in heart failure.”

<https://www.healthline.com/health-news/why-the-heart-attack-death-rate-has-doubled-during-covid-19>



Of Joseph PB&T Private:

Making groundbreaking R&D solutions possible.

Who is behind Nanosensing?

Of Joseph PB&T Private is a wealth management and private equity investment company that provides financial backing and makes investments in the private equity on startups or operating companies through a variety of investment strategies. The company also performs the functions of a family office and provides advisory, financial planning, portfolio management, and other aggregated financial services to related parties and associates. The company's business operations are carried out from independently operated offices located in the Americas and Europe.

For more than 20 years Of Joseph PB&T has invested significant resources on R&D solutions for Cancer, HIV-AIDSs, respiratory and cardiovascular diseases, life extension and looks after an actively managed portfolio of companies (SPV's).

Of Joseph PB&T brings a unique opportunity for in-licensing a revolutionary US patented technology IP for detecting Biomarkers like Troponins I & T from **NanoSensing Technologies.**

The NanoSensing core is a group of scientists in Brazil who have developed the technology patented it, done initial clinical work and are in the process of getting FDA and ANVISA approvals. They are now looking for worldwide partners, who would buy the IP Rights and will roll out this revolutionary POC in the region.

A revolutionary opportunity in Cardiac Diagnostic field, that you could **license.**

- Clinically Proven and Ready to Use Diagnostic Device
- The possibilities of the NanoSensing Technology Platform
- Exclusive Licensing Available

The entire Platform Technology is available for exclusive licensing, using which commercial companies can have Heart Injuries Diagnostic device, as well as develop and commercialize other diagnostics for various pathogens and diseases mentioned before.

License the Technology, Register the products, Manufacture and sell to companies and institutions.

We believe this would be a unique and exciting opportunity using this Point Of Care technology and the possibilities of the Platform. Overall, Investing in the **Nanosensing Platform/device** would open up a potential return of hundreds of thousands of dollars.

Would you like to join us?

Investment and partnership opportunities exist to broaden accreditation and product delivery worldwide.

- Americas
- Asia Pacific
- Europe
- Middle East
- Africa

* Limited opportunity. Please contact us for additional information



Joseph Miller

Business Team Leader

International Entrepreneur, Business Director,
and Founder of Of Joseph PB&T.

✉ joseph.miller@ofjoseph.com

✉ contato@amparohealth.com