



Silicon BioKit

Revolutionizing Diagnostics





The Problem

In the United States,
someone has a heart attack
every 40 seconds.

695,000 deaths (2021, CDC)



The Problem



How do you know if you're
having a heart attack ?



The Problem

Telltale Symptoms:

Chest pain

Shooting pain in the arms





The Problem

Subtle Symptoms:

Heaviness, or discomfort in the chest

Trouble breathing when resting

Nausea and vomiting

Feeling unusually tired

Dizziness and lightheadedness

Sweating



The Problem

Which set of symptoms would make you go to the ER?



The Problem

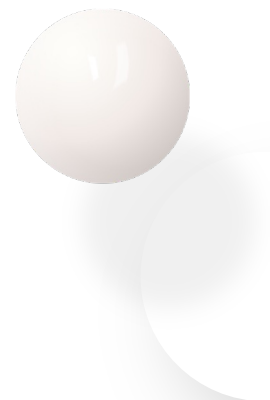
300,000 Americans die every year
because they made the wrong decision





The Problem

There is no cheap, fast, sensitive, portable way to determine if you're having a heart attack





Solution

Silicon BioKit's paper based porous silicon wafer technology will be the portable at-home diagnostic we need.

Solution

01

Versatile and easy to use

As easy as a COVID test and can be use at home, ambulance and hospital

03

High sensitivity

Will be able to detect a heart attack early

02

Time effective

No special training required
Results in 15 mins

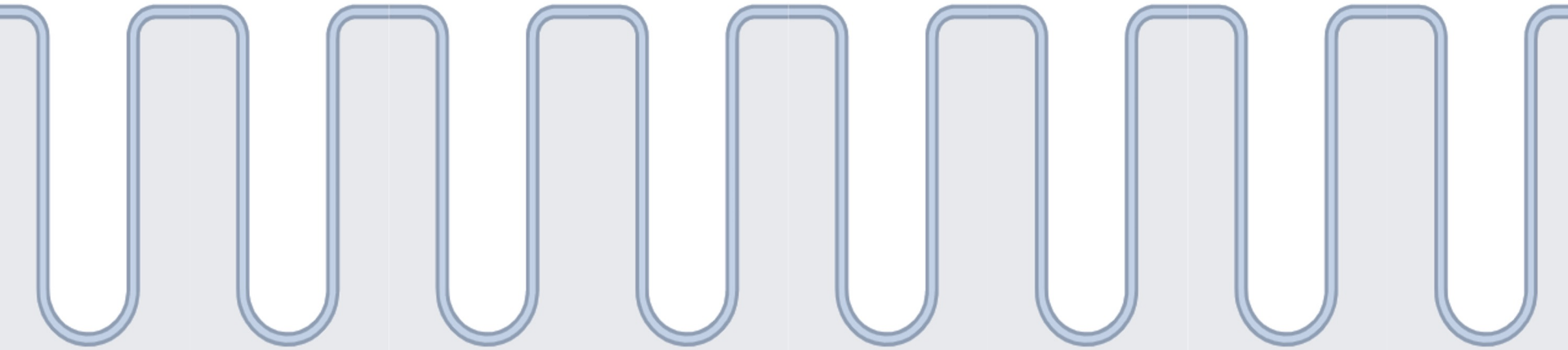
04

Cost effective

No need for specific reader, your smartphone is enough
Can buy from over-the-counter



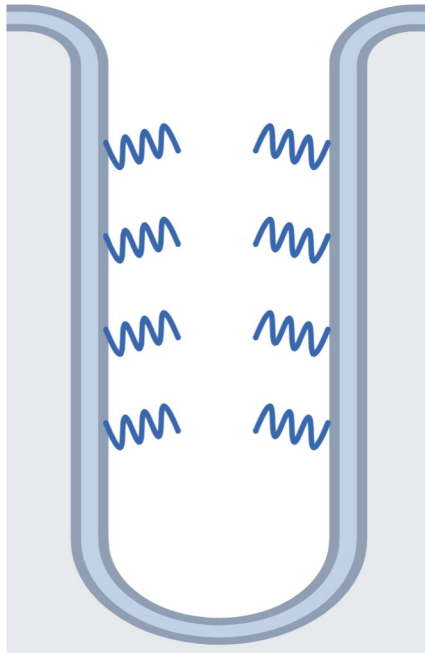
Solution



Porous Silicon Wafer attached to a paper membrane

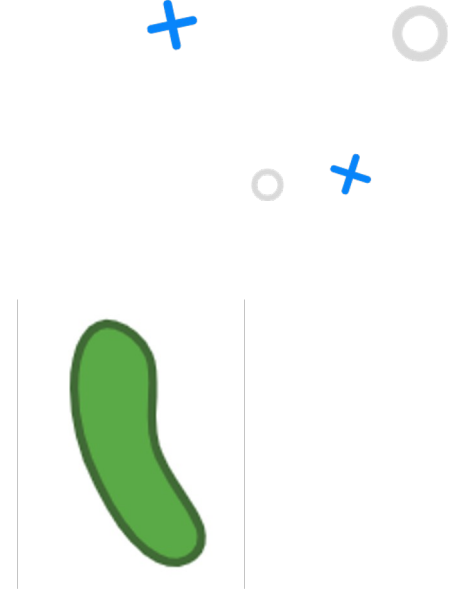
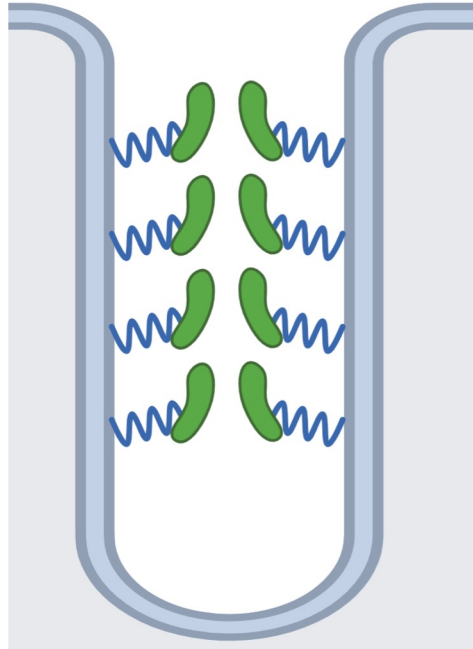


Solution



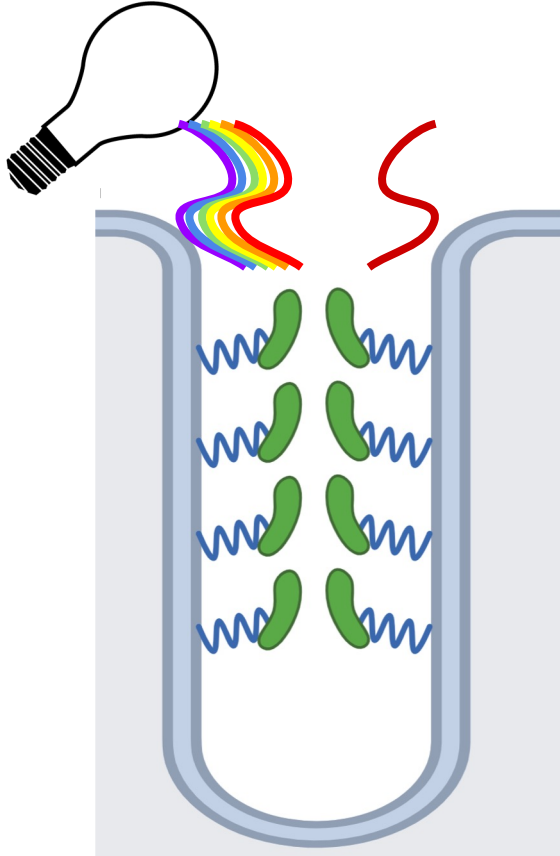
A peptide specific to Troponin (released into the blood during a heart attack) will coat the silicon

Solution



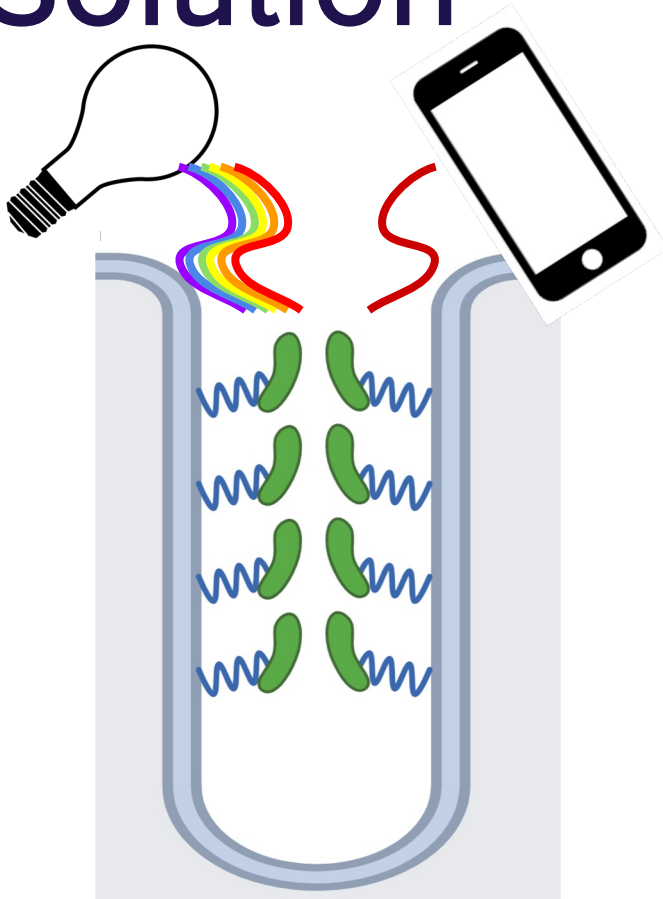
When a patient's blood is run over the wafer, Troponin will bind to the peptide

Solution



The addition of Troponin will change how light is absorbed by the silicon wafer

Solution



This change will be detected by a smartphone app indicating whether the patient is having a heart attack.



Solution

Silicon BioKit's portable technology will provide a
fast,
sensitive,
at-home diagnostic solution
for heart attack detection.



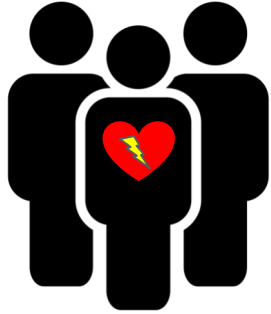
Solution

Allowing individuals, worried about their symptoms, to know whether to go to the ER



Markets

Markets



Individuals

Targeting the 121 M
Americans suffering from
cardiovascular disease



Hospitals

Current hospital
Troponin diagnostic
market is estimated to
reach 2.3 B by 2025

Forecast by Frost & Sullivan

Markets



Licensing Opportunities

We can establish licensing agreements with other parties to produce and sell our wafer product loaded with their antigen

Markets



Licensing Opportunities

We can establish licensing agreements with other parties to produce and sell our wafer product loaded with their antigen

STDs (9.32 B)

Bacteria (3 B)

Viruses (35.5 B)

Disease Markers

Why Now?

Bringing sensitive heart attack diagnostics into the home will be groundbreaking

Competitive Landscape

	At Home	Cost Effective	Sensitive	Rapid	User Friendly
Silicon BioKit	✓	✓	✓	✓	✓
Electrocardiogram	✓	✗	✗	✓	✗
Echocardiogram	✗	✗	✓	✗	✗
MRI	✗	✗	✓	✗	✗
Current Troponin Tests	✗	✗	✓	✓	✗

Heart Attack Diagnostics Market⁺

No current method for rapid at-home testing

- **\$4.8 billion** in revenue was generated by heart attack diagnostics tests in 2021 (U.S.)
- **\$1.5 billion** in revenue was generated by rapid diagnostics in hospital settings 2021 (U.S.)
- **CAGR of 8%** is expected for heart attack diagnostics market through 2033



Diagnostics Market

COVID-19 sparked a desire for rapid (and accurate) at-home diagnostic tests

- **\$20.9 billion** in revenue was generated by lateral flow diagnostic tests in 2021
- An additional **\$20.4 billion** in revenue was generated by COVID detection kits in 2020
- **CAGR of 9%** is expected for molecular diagnostics market by 2026



Business Plan

Cost of Goods Sold

< 2\$

For 1 test strips (silicon + peptide)

Over-the-counter Sale Price

\$49 / box of 2 tests



Business Plan



Cost of Goods Sold

< 2\$

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Over-the-counter Sale Price

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Current cost of hospital
Troponin Diagnostic

\$600 / average cost
for hospital test

Cheaper for insurance company

Annual troponin test in hospitals

\$3B In 2023

Forecast by Fortune Business Insight

Expectation for 1 year
after FDA approval

2% Market share

Go-to-market strategy

Seed funding
NSF, AHA, NIH
Grants

FDA
clearance
Inventor lab space

Beachhead
market
Vanderbilt Cardiac
Center

Outreach
and traction
Treatment centers
in Nashville and
greater TN area

Patient
testimonials
Provide free
samples

Silicon BioKit Team



**Dr. Ugur
Yurtsever**

Molecular Biologist

Expert in Cell and Molecular biology, working as Postdoctoral research associate at St Jude Children's Hospital



James White

Biologist, BD

Expert in Cell and Developmental Biology with experience in Project Management and Business Development



Parker Willmon

Clinical Engineer

Experience working in the hospital developing optical systems for clinical use



Dong Han

Optical Engineer

Experience developing systems for detecting physiological changes using optical changes

Support Team



Dr. Weiss
Inventor



Dr. Laibinis
Inventor



Dr. Charles Lei
Emergency Medicine at UW

And many more...



Silicon BioKit

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Partners



SCIPRENEUR
CHALLENGE

Special thank you





Traction Overview

- User friendly test kit
- High sensitivity
- Cost effective
- Technology protected by IP
- Works for nucleic acid and protein detection
- Licensing possibilities

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