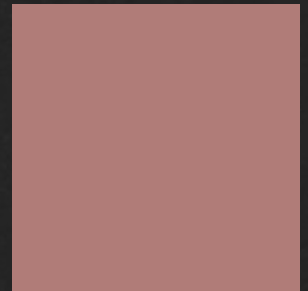


ZOR! LLC :

portable, non-invasive
device that predicts
epileptic seizures

Mukki Gill, Founder of ZOR!

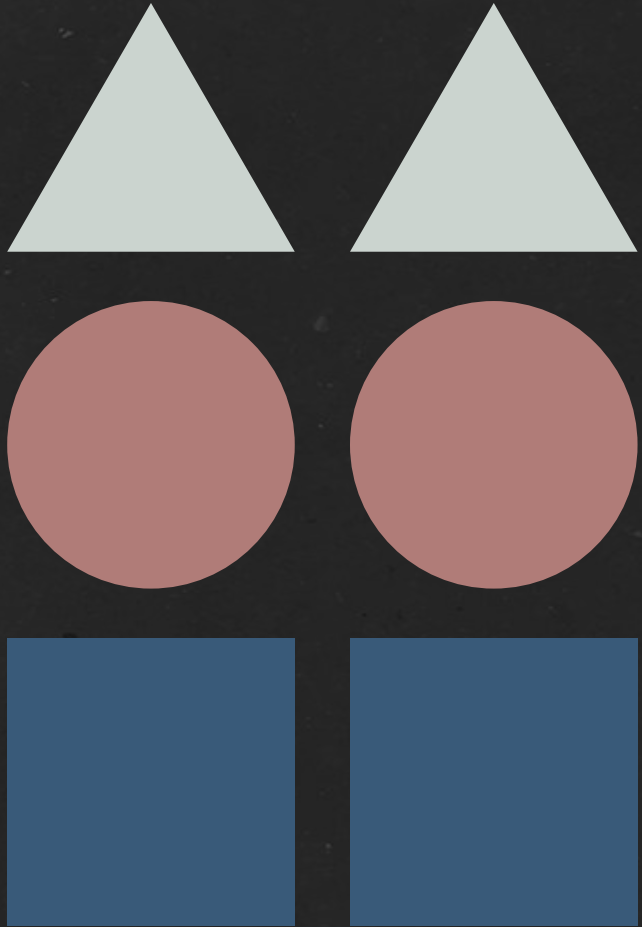
gill.mu@northeastern.edu 650-464-5152



Who is Zor?

- This is Mukki's brother, Zor, who is our inspiration and has Dravets syndrome
- Zor has seizures every few weeks which put him in potentially life threatening situations every time

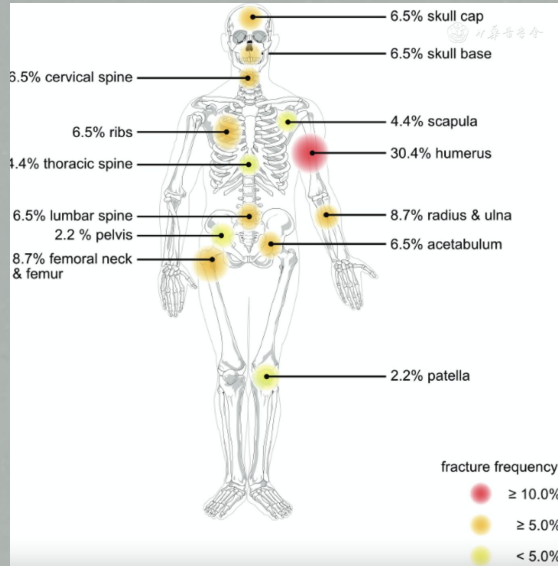




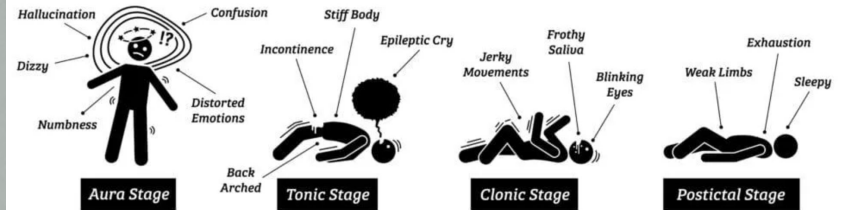
**“All we need is a
at least a 2
second warning”
— Our Mom**

3.4 million

People in the US have active epilepsy



Stages of a Seizure



~65 million

People worldwide have active epilepsy

CDC epilepsy data,

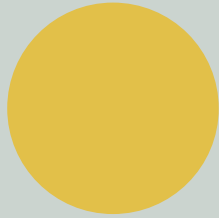
<https://premierneurologycenter.com/blog/what-to-do-if-someone-is-having-a-seizure/>

<https://mednexus.org/doi/full/10.1016/j.cjtee.2021.10.003>

Target Market and Current Stage of Care:

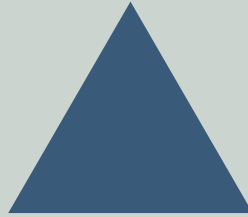
healthcare cost of epilepsy treatment in the US alone per year is

\$32 billion → our **minimum SOM** is **\$1.5 billion**



Medications

- Medications can have extreme side effects and may not be accessible to all
- Over 30% of patients have drug-resistant epilepsy



Surgical Devices

- Brain surgery is a huge risk and is not accessible to many



Alert Devices

- Are commonly used amongst people with epilepsy to alert caregivers
- They do not prevent any physical harm that can happen during a seizure



Overall Goal:

Patients living with uncontrollable and/or refractory epilepsy need a physically and fiscally accessible way to protect themselves from the primary physical risks of seizures in order to ultimately increase quality of life

Device Concept:

Portable Sensor

Device that measures changes in chemical data via *breath* in order to run the algorithm and can be taken with the patient anywhere they go in a discreet manner

Algorithm

Algorithm will use machine learning to personalize to each patient using their data and will improve after every seizure by recognizing the patterns in the data

Mobile App

An app that can be used by patients to see their data, share it with doctors, and log daily info to increase algorithm accuracy. The pre-seizure alert system will also run through the app

** if dogs can do it, why can't we?! **

Stakeholders:



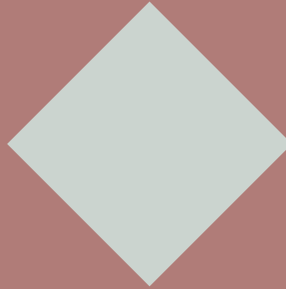
Patients

People who have uncontrollable and/or drug resistant seizures.



Caregivers

As a caregiver myself, I know first hand how much anxiety would be relieved if my brother had a warning before his seizures.



Healthcare Providers

Doctors would be interested in our device as gives them real-time data outside of clinical settings and helps their patients manage their epilepsy

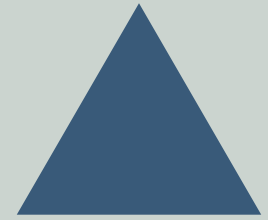


Insurers


Especially, as the device is aimed to mitigate physical harm, insurers would also fiscally benefit from less injuries due to seizures.

Competition Analysis:

	Cost	Physical Burden	Direct Patient Safety/Predictability
Zor!	~\$50 to manufacture +	Portable breathalyzer +	Seizure prediction via breath analysis +
NeuroPace RNS system	~\$50k + other surgical costs -	Yes, requires brain surgery -	Responds to prevent seizures via pulses in brain +
Know Biological	TBD	Wrist watch size of a phone -	Seizure prediction via sweat analysis +
Empatica	\$249 plus a subscription plan -	Wrist watch, standard size +	Detects seizures once they are/have happened -



IP Status:



Molecularly imprinted electrochemical sensors

NX Sun, S Emam, AK Ekenseair (Sun Lab)

US Patent 11,701,031



Devices and Methods for Detection of Viruses from Exhaled Breath

NX Sun, S Emam, M Nasrollahpour (Sun Lab)

US Patent App. 18/040,920

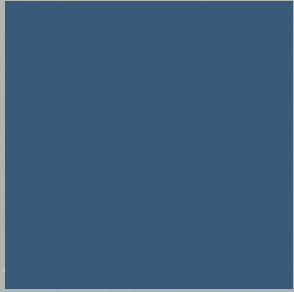


Devices and methods for detection of viruses from exhaled breath

S Emam, NX Sun (Sun Lab)

US Patent App. WO2022164863A1

* licensing from Dr. Sun and NEU*



Team and partners:

Mukki Gill

Founder and CEO of Zor!

3rd year undergraduate mechanical engineering
and history major!

Dr. Nian Sun

Technical Partner

COE Distinguished Professor of Electrical
and Computer Engin. & Chemical Engin.

Dr. Joseph Sullivan

Clinical Partner

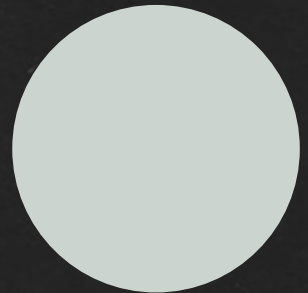
Director of Pediatric Epilepsy Center @ UCSF
Pediatric neurologist

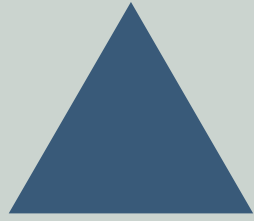
Advisors and Further Support:

- Dr. Andrew Cole, director of the MGH Epilepsy Service and a professor of Neurology at Harvard Medical School
- Dr. James Sherley, President & Chief Executive Officer at Asymmetrex®
- The Sherman Center for Engineering Entrepreneurship @ Northeastern University (Venture Co-op 2023)
- Ruth Segall, Regulatory Affairs Specialist at Arthrex

Current plans:

- In the process of grant applications and raising funds to do research with Dr. Sun's device and Dr. Sullivan's patients to validate and identify an epileptic 'breathprint'
- With the research data, we plan to develop an MVP that directly addresses patients with epilepsy





**Zor thanks you
for listening!!**



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