

MyophonX

1330 1st ave, New York, NY, 10021

Anaïs Rameau, MD MPhil, CEO

T 917-543-9172

www.myophonx.com

anr2783@med.cornell.edu



Industry:

Medical Device

Management:

- Executive Leadership
 - Anaïs Rameau, CEO, co-founder, Asst. Prof., Laryngology, Weill Cornell Medicine
 - Tal Herman-Avidan, B.A. Designer, co-founder
 - Tal Klap, M.Sc., CTO, Data and hardware scientist
- Board N/A
- Scientific Advisory Board
 - Fei Wang, PhD, Assoc. Prof. Computer Science, Weill Cornell Medicine
 - Daniel Lee, PhD, Prof. Cornell Tech, Executive VP, Samsung

Number of Employees: 3

Finance:

- National Center for Advancing Translational Sciences Grant UL1-TR-002384
- Financing Sought – \$1M

Legal:

- Corporate – Delaware C Corp
- IP – Provisional Patent, submitted via Cornell University, 08/2018

Executive Summary:

MyophonX is an individually tailored wearable device that applies machine learning to silent articulation to restore speech in patients with limited phonation capacity, such as patients with laryngectomy, tracheostomy or hemifacial palsy after stroke. Silent articulation is recorded using surface electromyography (sEMG) on the face and the neck. Machine learning is applied to sEMG data for speech recognition via cloud computing.

Market Opportunity / Unmet Need:

There has been no innovation in voice rehabilitation for this patient population since the 1980s. There are 50 000 to 60 000 patients with laryngectomy in the USA alone (SEER database). \$250 M is spent per year on the surgical insertion of the trachea-esophageal puncture (TEP) prosthetic valve and its clinical care in the USA.¹ Our device is applicable to speech rehabilitation in stroke patients with hemifacial paralysis and patients with tracheostomy, with respective US yearly incidence of 350 000 and 100 000 patients.^{2,3} An estimated 17.9 million U.S. adults have a voice disorder every year.⁴ It also represents a unique brain computer interface (BCI) for use in virtual reality (VR) or for silent communication with computers and cell phones.

Products/Services – Launched & Pipeline:

Our initial stages will comprise in depth user research, a clinical trial at New York Presbyterian, and data collection to improve our word recognition algorithm. Once a final prototype is achieved in 2020, we will manufacture the product in small batches. MyophonX will be sold as a hardware product for a cost of \$5000, with a monthly subscription charge of \$25 for software use, based on user research and the cost of other sensory assistive devices such as hearing aids.

Commercial / Technical Milestones:

Our initial market is laryngectomees, followed by stroke patients and patients with tracheostomies. Ultimately, our goal is to make the device available to the general population for keyboard free communication with electronics. Upon sufficient technological development and proof of sales, we envision to be acquired by an existing biomedical device company or a technology company investing in BCI in 5 to 7 years.

Competition:

MyophonX is noninvasive, individually designed, and has a unique word recognition approach. Our direct competitors are Altec Inc., specialized in advanced signal processing via EMG, and Alter Ego, a device allowing EMG-based subvocal speech. Other indirect competitors include TEP and electrolarynx manufacturer, e.g. Aptos Medical Inc.

Financial Projections (Unaudited):

Year	2022	2024	2026
Gross profit	0M	2M	12M

1. Brownlee B, AhmadS, GrammerT, KrempIG. Selective patient experience with the Blom-Singer Dual Valve voice prosthesis. Laryngoscope. 2017 Aug 7.

2. Schimmel M, Leemann B, Christou P, Kiliaridis S, Herrmann FR, Müller F. Quantitative assessment of facial muscle impairment in patients with hemispheric stroke. J Oral Rehabil. 2011 Nov;38(11):800-9.

3. Healthcare and Research Quality's Healthcare Cost and Utilization Project 2012

4. Bhattacharyya N. The prevalence of voice problems among adults in the United States. Laryngoscope. 2014 Oct; 124(10): 2359–2362