



## SaluTech

### Executive Summary

Over 33 million people globally suffer from Atrial Fibrillation (AF), increasing by over 5% annually due to an aging population. Current management of AF in the US costs US\$26 billion a year, yet there lacks effective treatment. SaluTech has developed a **conductive biomaterial (CBM)** to resynchronize misfired electrical signals to treat the underlying cause of AF, and restore a normal heartbeat.

### Clinical Need

AF is an irregular heartbeat caused by erratic electrical activity in the upper heart chambers, leading to uncoordinated upper and lower chambers and ineffective pumping of blood to the body. AF patients have a 5x risk of stroke and 3x risk of heart failure. There are over 6 million people in the US suffering from AF, with over 200,000 additionally diagnosed every year--impacting 9% of the US population over 65 years old. Current therapeutic approaches to AF work by further damaging the heart tissue using catheter ablation or surgical scarring. SaluTech's CBM treats the underlying conduction issues to resynchronize the electrical propagation without further damage.

### Product

SaluTech has developed a safe conductive biomaterial which covers the atria to reduce AF duration by resynchronizing the misfired electrical signals. CBM is a non-toxic, long-lasting, and biocompatible nano-membrane that is able to mimic the conductive velocity of healthy heart tissue. Research data supports that CBM can reduce AF duration by >60%, and prevent persistent AF in the long-term.

### Market

Future growth opportunities using CBM:

- Heart Failure: Injectable CBM Hydrogel applied to myocardial scar tissue may lower tissue resistance to synchronize heart contractions. In testing, CBM reduced the possibility of Ventricular Arrhythmia by ~50%, and improved heart function by 15%.
- Lead Wire Quality: CBM Gel may reduce tissue-probe interface resistance in pacing devices, diminishing tissue damage and prolonging battery life. In testing, CBM reduced tissue interface resistance by 3-5x using 1/3 of the normal pacing voltage, with improved heart function.
- Cardiac Surgery Complications: CBM Grafts can create 3-dimensional tissue for cardiac defect repair. In testing, CBM remained at the implant site for four weeks.

### Competitive Environment

There are three main treatment approaches for AF: catheter ablation, the maze procedure, and AV node ablation. However, CBM is the only technology utilizing next generation conductive polymers to resynchronize the heart's electrical propagation.

- Catheter ablation: minimally invasive procedure with quick patient recovery but reoccurrence rate of >20-40% with 3.5% chance of adverse events
- Maze procedure: requires open-heart surgery; reoccurrence rate of >20% with in-hospital mortality of 1.6%
- AV node ablation: requires the permanent use of a pacemaker to artificially regulate the heartbeat.

### Intellectual Property

Two pending patents for composition of matter and application of use.

- First patent is allowed for issuance by US patent office, to be granted July 2019.
- Second patent returned PCT search report stating that all 45 claims are novel and have industrial applicability.

### Publications

- Theranostics: *Polypyrrole-chitosan conductive biomaterial synchronizes cardiomyocyte contraction and improves myocardial electrical impulse propagation* (2018)
- Journal of Heart and Lung Transplant: *Preservation of conductive propagation after surgical repair of cardiac defects with a bio-engineered conductive patch* (2017)
- Circulation: *A conductive polymer hydrogel supports cell electrical signaling and improves cardiac function after implantation into myocardial infarct* (2015)

### Company Profile

**Industry:** Atrial Fibrillation Therapeutic

**Status:** Large animal studies completed

#### Team:

- Ren-Ke Li MD, PhD, Senior Scientist with University Health Network (UHN), and Professor of Medicine, Division of Cardiac Surgery with University of Toronto (*Science Co-Founder and IP Inventor*)
- Shuhe Li, JD, MBA, previously Investment Banking Associate with BMO Capital Markets (*Business Co-Founder and CEO*)

#### Start-Up Programs:

- Dose of the Valley Program – hosted by the Canadian Consulate in San Francisco (*attended February 2019*)
- Creative Destruction Lab – Health Stream (*graduated June 2019*)
- Entrepreneurship for Cardiovascular Health Opportunities – partnership between Ted Rogers Centre for Heart Research and H2i (*ongoing*)
- University of Toronto Early-Stage Technology Incubator (*ongoing*)

#### Financial Information:

Invented and progressing using C\$4.6M non-dilutive research grants. Seeking CAD\$2M in Seed Investment to start clinical trials

**Contact:** Shuhe Li  
shuhe.li@salutechlimited.com  
+1 (647) 992-9410