

# Ummini Corporation *(Disaster Management Company)*

(spin off from Space Engine Systems )



## Advanced Medical Therapeutics

- ▶ **World's first Implantable lungs (patent pending)**
- ▶ **Emergency Medical support systems in space and in space transportation vehicles.**

### *Space*

- ▶ **EMU (Extra Vehicular Mobility Unit)- Space Suit for Lunar Mission. Lightest and the most flexible for extreme work on Lunar/Mars surface**
- ▶ **Wireless Battery Technology- *medical & space***
- ▶ **Additive Manufacturing using Magnesium & Titanium in space environment**
- ▶ **Sustainable water and oxygen generation in difficult environments using Sabatier Reaction & Membrane Technologies. Proven designs.**

Environment	Pressures	Oxygen levels	Temperatures
Space	1.45 x 10 <sup>-4</sup> psi	0 %	(-123) to +232 deg C
EMU (UC Overall)	3.4 to 4.45 psi	100 %	11.5 to 26 deg C

# Chief Medical Officer

- Jayan Nagendran MD, PhD, FRCSC
  - Surgical Director of Lung Transplantation
  - Director of Research, Division of Cardiac Surgery
  - Associate Professor, Department of Surgery
- *University of Alberta and Mazankowski Alberta Heart Institute*

*"I am privileged that I have been appointed as the Chief Medical Officer and partner of Ummi Corporation by Pradeep Dass, President & CTO. I will be engaging a team of renowned international physicians composed of opinion leaders and innovators in our areas of product development.*

*I am committed and eager to work with Mr. Dass in achieving his vision of creating a company that provides the most effective and reliable products. A revolutionary approach that can help meet the advancing needs in healthcare and disaster management through superior technological design.*

*We are excited to develop the first implantable artificial lung device that will help bridge patients with end-stage lung disease to successful lung transplantation."*



# End-stage Lung Disease

3

- ▶ End-stage lung disease is the **4<sup>th</sup>** leading cause of death and is the primary diagnosis for **>6 million** people in North America.
- ▶ The definitive therapy for end-stage lung disease is lung transplantation, yet most patients with end-stage lung disease die without the chance of transplantation.
- ▶ There are currently ***no long-term mechanical artificial lung devices*** that can be placed to bridge patients for lung transplantation.
- ▶ At **Ummini Corporation**, our goal is to ***develop the first implantable artificial lung*** device that will bridge patients long-term to survive long enough to eventually receive a lung transplant by **2024**.

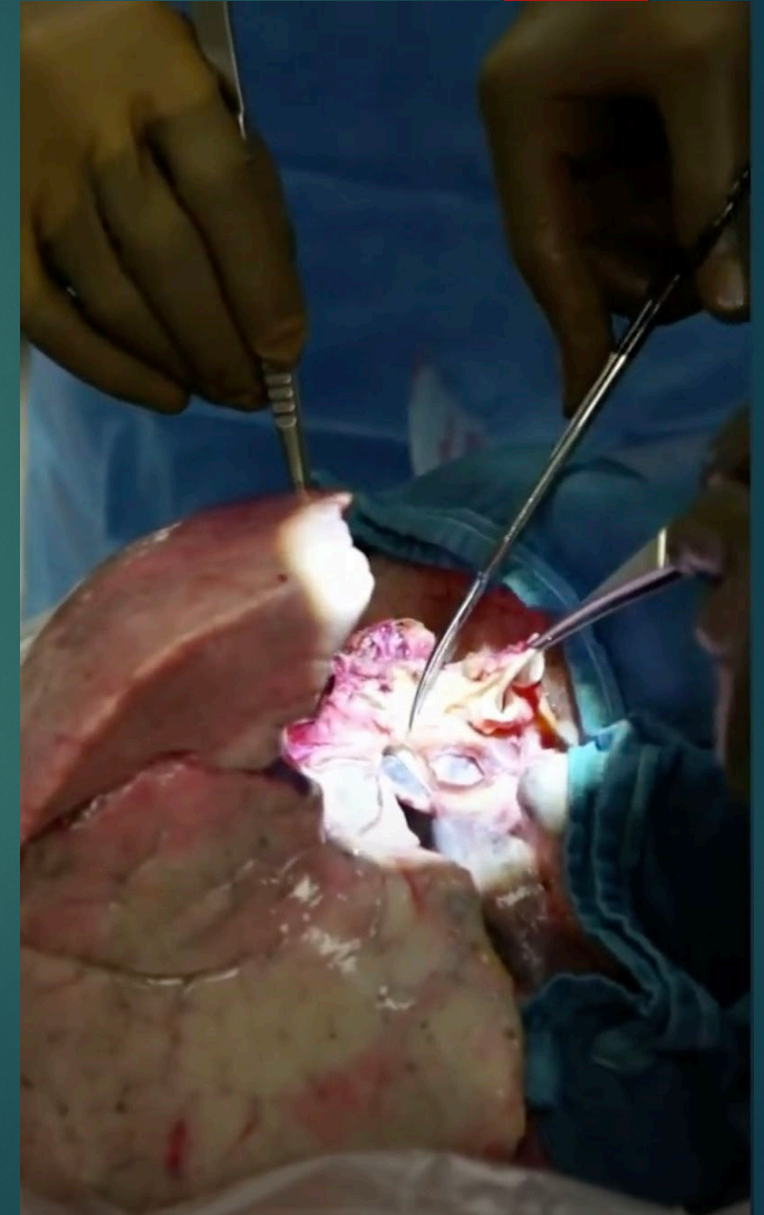


# Jayan Nagendran MD, PhD, FRCSC



4

- A cardiac surgeon clinician-scientist, who is the Surgical Director of Lung Transplantation at the University of Alberta (U of A), and the Director of Research for the Division of Cardiac Surgery at the Mazankowski Alberta Heart Institute.
- Sub-specialty training in heart and lung transplantation at Stanford University.
- Dr. Nagendran leads with his colleagues the second largest Lung Transplant program in Canada, and the U of A program performs >70 double-lung transplants annually, placing it in the top 10% in the world for lung transplant programs by transplants per year.
- Dr. Nagendran has been a pioneer in Ex-Vivo Lung Perfusion to improve the quality and quantity of viable donor organs for transplantation. He has performed the first clinical Ex-Vivo Lung Perfusion with subsequent transplantation in Western Canada and the sole Canadian investigator to perform portable Ex-Vivo Lung Perfusion.



# Jayan Nagendran MD, PhD, FRCSC



- Dr. Nagendran studies Ex-Vivo Organ Perfusion, developing Western Canada's first Ex-Vivo Multi-Organ Perfusion Research Laboratory with colleague Dr. Darren Freed.
- The lab of Nagendran and Freed has gone on to produce their own Ex-Vivo Organ Perfusion equipment through incorporation and co-founding of Tevosol, which has led to patents and development of a clinical trial (NCT03293043), published in Nature Communications (<https://www.nature.com/articles/s41467-020-19581-4>).
- In February 2020, Dr. Nagendran and Tevosol won the NASA iTech Ignite the Night award at Tampa (<https://www.youtube.com/watch?v=YjtHFutaSGY>). Also, in October 2020, Dr. Nagendran and Tevosol were also chosen as Cycle I Forum Finalists at NASA iTech (<https://youtu.be/Ng59LGiCRW0>).

