



## New Hampshire Sees Growth of Regenerative Manufacturing Ecosystem

Published: Apr 12, 2019 | By Alex Keown



The biopharma and medtech ecosystem in New Hampshire is growing thanks, in part, to state-supported tax exemptions and an increasing number of regenerative medicine manufacturing companies setting up shop in the Granite State.

One of those companies building its presence in Manchester, N.H. is Lung Biotechnology, a subsidiary of Maryland-based United Therapeutics Corporation. The company, which has a focus on lung disease and pulmonary arterial hypertension, moved its entire operation from the hotbed of Cambridge, Mass. to Manchester in the summer of 2018. Lung Biotechnology joined with Dean Kamen's Advanced Regenerative Manufacturing Institute (ARMI). The Advanced Regenerative Manufacturing Institute (ARMI), a non-profit organization that has a mission to practically develop the large-scale manufacturing of engineered tissues and tissue-related technologies that will benefit existing industries and grow new ones. The scope of the work done under the umbrella of ARMI includes tissue preservation and transport technologies, tissue maturing technologies and biomaterial selection and scale up.

Luis Alvarez, director of organ manufacturing at United Therapeutics, told BioSpace that Martine Rothblatt, the founder of United Therapeutics, expressed concern over the lack of organs available for transplant, particularly lungs.

Rothblatt, founded Lung Biotechnology to develop therapies for orphan diseases such as PAH, a disease that affected her daughter. Alvarez said Rothblatt, who also founded Sirius XM radio, used her resources to develop a therapy that would benefit her child.

“Her daughter, Genesis, is alive today and taking the medications her mother spearheaded,” Alvarez said.

While therapies benefit some patients, others are in need of transplanted organs and that is where Rothblatt is now aiming the focus of her subsidiary. Lung Biotechnology is focusing on “ending the organ shortage” by exploring new developments in areas like the use of animal lungs and bioengineering them to be acceptable to human patients. Alvarez noted that of the lungs currently available for transplant, somewhere between 60 and 75 percent of those organs are actually discarded. Because of the limited amount of time between extraction and implant, Alvarez said there are a number of concerns. Additionally, of all the organs available for transplant, lungs have the lowest rate of success due to the complexities, he said.

“Logistics are a concern and there’s a limited time window, which creates a lot of waste,” Alvarez said.

Click to sign up for newsletters

When it comes to the move to New Hampshire, Alvarez said Rothblatt has had a long-time business relationship with Kamen, who was able to secure multiple government grants that have helped create the Manchester ecosystem. He said the development of the medtech and manufacturing ecosystem seemed to resonate with the Manchester community. However, he did not that hiring has remained a challenge. But, Alvarez said he hopes that its proximity to the Boston area could entice some people to transition to roles in the state. He said New Hampshire has a high quality of life and has good school systems.

“If you’re hiring in Cambridge, there’s a lot of applicants, but there’s also a likelihood they would jump to another company,” Alvarez said.

At the time Lung Biotechnology moved to New Hampshire, Rothblatt predicted that before the next decade is out, “we will be able to manufacture hearts, lungs, kidneys and livers for the people who are today dying on the transplant list.”

The New Hampshire City is rapidly becoming the home for a growing regenerative manufacturing process. On Thursday, a New Hampshire Tech Alliance focused on the growing ecosystem of Manchester. The event highlighted the progress made by ARMI since it launched in 2017. Other companies that have joined with ARMI include Medtronic, Integra Biosciences, Viscus Biologics, Lacell and Modol Technology Corporation to name a few.

The growth of the New Hampshire ecosystem has benefited by a recent bill that put into effect a 10-year tax exemption from the two business taxes (Business Profits Tax and Business Enterprise Tax) for companies in New Hampshire that have at least 75 percent of their business from regenerative manufacturing. Additionally, the bill looked to the development of a talent pool that would provide

long-term benefit for the regenerative medicines ecosystem in the state. The bill provides student loan forgiveness for workers that are employed primarily in regenerative manufacturing business activities in New Hampshire for at least five years, regardless of their location of education.