



UNITED THERAPEUTICS PROVIDES AN UPDATE ON ITS ORGAN PRINTING PROGRAMS

Lung scaffolds developed in partnership with 3D Systems Corporation represent the most complex objects ever printed; reveal took place at the LIFE ITSELF Conference in San Diego

3D-printed, cellularized lung scaffolds are demonstrating gas exchange in animal models

United Therapeutics expects human clinical trials of 3D-printed, cellularized lungs in the next five years

SILVER SPRING, Md., RESEARCH TRIANGLE PARK, N.C., and ROCK HILL, S.C., June 6, 2022 – United Therapeutics Corporation (Nasdaq: **UTHR**), a public benefit corporation, announced today that in partnership with 3D Systems Corporation (NYSE: **DDD**) it has produced the world's most complex 3D-printed object – a human lung scaffold – and demonstrated it at the [LIFE ITSELF Conference](#) that occurred May 31 to June 3, 2022 in San Diego. The event was organized and hosted by **Dr. Sanjay Gupta** and **Marc Hodosh** and was sponsored by CNN, United Therapeutics, and other prominent corporate leaders in healthcare.

Dr. Martine Rothblatt, United Therapeutics' Founder, Chairperson, and Chief Executive Officer and **Chuck Hull**, 3D Systems' Co-Founder, Executive Vice President, and Chief Technology Officer for Regenerative Medicine, explained to conference attendees during a presentation entitled What's the Future of Organ Transplantation? that these 3D-printable lung scaffold designs consisted of a record 44 trillion voxels that lay out 4,000 kilometers of pulmonary capillaries and 200 million alveoli. Scientists at United Therapeutics plan to cellularize these 3D-printed scaffolds with a patient's own stem cells to create tolerable, transplantable human lungs that should not require immunosuppression to prevent rejection.

"Last week, it was exciting to show the public our 3D-printed human lung scaffold, but we're thrilled to share that our 3D-printed, cellularized lung scaffolds are now demonstrating gas exchange in animal models. We are regularly printing lung scaffolds as accurately as driving across the United States and not deviating from a course by more than the width of a human hair," said Dr. Rothblatt. "With the continued hard work of dedicated scientists and engineers at United Therapeutics and 3D Systems, we hope to have these personalized, manufactured lungs cleared for human trials in under five years."

Dr. Rothblatt continued, "Our goal is to create an unlimited supply of transplantable lungs in the future. Even today, we are using a process called [ex-vivo lung perfusion](#) to add to the supply of transplantable lungs by extending by several hours the period of assessment and viability for human donor lungs, resulting in over 230 lives extended to date."

According to the U.S. Health Resources and Services Administration, 2,524 patients in the U.S. received a lung transplant in 2021 and there are 1,075 patients on the U.S. lung transplant waiting list as of June 3, 2022. More than 150,000 Americans die from lung disease each year.

"The reveal at *LIFE ITSELF* represents the culmination of our efforts with United Therapeutics that includes not only 3D-printed lungs, but two additional organs under development, kidneys and livers," said Mr. Hull. "These lung designs can be printed in as little as three weeks using our latest advanced photopolymer-based bioprinting technology we call [Print to Perfusion](#)."

About 3D Systems

More than 30 years ago, 3D Systems brought the innovation of 3D printing to the manufacturing industry. Today, as the leading Additive Manufacturing solutions partner, we bring innovation, performance, and reliability to every interaction - empowering our customers to create products and business models never before possible. Thanks to our unique offering of hardware, software, materials and services, each application-specific solution is powered by the expertise of our application engineers who collaborate with customers to transform how they deliver their products and services. 3D Systems' solutions address a variety of advanced applications in Healthcare and Industrial Solutions markets such as Medical and Dental, Aerospace & Defense, Automotive and Durable Goods. More information on the company is available at www.3dsystems.com.

United Therapeutics: Enabling Inspiration

We build on the strength of our research and development expertise and a distinctive, entrepreneurial culture that encourages diversity, innovation, creativity, sustainability, and, simply, fun. Since inception, our mission has been to find a cure for pulmonary arterial hypertension and other life-threatening diseases. Toward this goal we have successfully gained FDA approval for five medicines, we are always conducting new clinical trials, and we are working to create an unlimited supply of manufactured organs for transplantation.

We are the first publicly traded biotech or pharmaceutical company to take the form of a public benefit corporation (**PBC**). Our public benefit purpose is to provide a brighter future for patients through (a) the development of novel pharmaceutical therapies; and (b) technologies that expand the availability of transplantable organs. At the same time, we seek to provide our shareholders with superior financial performance and our communities with earth-sensitive energy utilization.

You can learn more about what it means to be a PBC here: unither.com/PBC.

Forward-looking Statements

Statements included in this press release that are not historical in nature are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include, among others, our hope to have 3D-printed lungs cleared for human trials in under five years, our plan to cellularize 3D-printed scaffolds with a patient's own stem cells to create tolerable, transplantable human lungs that should not require immunosuppression to prevent rejection, our goal to create an unlimited supply of transplantable lungs, our efforts to develop 3D-printed kidneys and livers, and our goals of furthering our public benefit purpose, providing superior financial performance for shareholders, and providing our communities with earth-sensitive energy utilization. These forward-looking statements are subject to certain risks and uncertainties, such as those described in our periodic reports filed with the Securities and Exchange Commission, that could cause actual results to differ materially from anticipated results. Consequently, such forward-looking statements are qualified by the cautionary statements, cautionary language and risk factors set forth in our periodic reports and documents filed with the Securities and Exchange Commission, including our most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K. We claim the protection of the safe harbor contained in the Private Securities Litigation Reform Act of 1995 for forward-looking statements. We are providing this information as of June 6, 2022, and assume no obligation to update or revise the information contained in this press release whether as a result of new information, future events or any other reason.

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