



## **PureTech Health Exclusively Licenses Novel Milk-Derived Exosome Technology for Oral Administration of Biologics, Nucleic Acids, and Complex Small Molecules**

September 19, 2017

PureTech Health plc ("PureTech Health" or the "Company", LSE: PRTC), an advanced, clinical-stage biopharmaceutical company, today announced an exclusive licensing agreement with 3P Biotechnologies, Inc., via University of Louisville, for an exosome-based technology (Calix) for the oral administration of biologics, nucleic acids, and complex small molecules.

The Calix technology is based on the pioneering research of Ramesh Gupta, PhD, Founder of 3P Biotechnologies, Agnes Brown Duggan Chair in Oncological Research at the James Graham Brown Cancer Center, and Professor in the Department of Pharmacology and Toxicology at University of Louisville. This license, together with additional PureTech Health-generated intellectual property, establishes the company as a leader in the application of milk exosomes for the oral administration of therapeutic molecules.

Exosomes, which contain mixtures of lipids, proteins and nucleic acids, play a critical physiologic role in intercellular communication and the transport of macromolecules between cells and tissues. Mammalian-derived exosomes have attractive potential as vehicles for the administration of a variety of drug payloads, especially nucleic acids, since their natural composition will likely provide superior tolerability over the variety of synthetic polymers currently in use. Previously, exosomes had not been considered viable as vehicles for oral administration of drugs due to their lack of stability under the harsh physiologic conditions associated with transit through the stomach and small intestine. However, the milk-derived exosomes that form the basis for the Calix technology have evolved specifically to accomplish the task of oral transport of complex biological molecules.

"Milk exosomes represent a significant opportunity to potentially resolve the long-standing challenge of oral bioavailability of macromolecules and complex small molecules. Given the natural biology of milk exosomes, the Calix technology may be uniquely positioned to permit oral administration of oligonucleotide-based therapeutics and other nucleic acid-based therapeutics such as mRNA," said Dr Joseph Bolen, Chief Scientific Officer of PureTech Health.

Milk exosomes are a unique class of evolutionarily-conserved microvesicles that maintain the integrity of packaged nucleic acids and proteins during transit through the stomach and into the GI tract, where they can act locally or be transported into the circulatory system. Further, milk exosomes appear to be even more robust than other naturally occurring exosomes, having demonstrated stability under acidic conditions as well as other severe conditions in which other exosome types are typically labile. Inspired by the unique attributes of milk exosomes, PureTech Health is harnessing the underlying biology to achieve oral administration of proteins, peptides and nucleic acids therapeutics as well as small molecule drugs that are currently classified as non-orally bioavailable.

"The pre-clinical research conducted in my laboratory at the University of Louisville and 3P Biotechnologies has demonstrated significant oral bioavailability of milk exosome-delivered therapeutic compounds that are intrinsically not orally bioavailable," said Dr Gupta. "I am excited to work with PureTech Health to rapidly advance this potentially disruptive technology platform toward the development of novel therapeutics."

"This programme builds on PureTech's proven leadership in identifying creative solutions for significant biomedical problems," said David Steinberg, Chief Innovation Officer and a Co-founder of PureTech Health. "Building on Dr Gupta's pioneering work, we plan to advance our industry-leading exosome platform and develop a robust therapeutic pipeline for the oral administration of macromolecules."

### **About PureTech Health**

PureTech Health (PureTech Health plc, PRTC.L) is an advanced, clinical-stage biopharmaceutical company developing novel medicines targeting serious diseases that result from dysfunctions in the nervous, immune, and gastrointestinal systems (brain-immune-gut or the "BIG" axis), which together represent the adaptive human systems. PureTech Health is at the forefront of understanding and addressing the biological processes and crosstalk associated with the BIG axis. By harnessing this emerging field of human biology, the Company is pioneering new categories of medicine with the potential to have great impact on people with serious diseases. PureTech Health is advancing a rich pipeline of innovative therapies that includes two pivotal or registration studies expected to read out in 2017, multiple human proof-of-concept studies and a number of early clinical and pre-clinical programmes. PureTech's rich research and development pipeline has been advanced in collaboration with some of the world's leading scientific experts, who along with PureTech's team of biopharma pioneers, entrepreneurs and seasoned Board, identify, invent, and clinically de-risk new medicines. With this experienced team pursuing cutting edge science, PureTech Health is building the biopharma company of the future focused on improving and extending the lives of people with serious disease. For more information, visit [www.puretechhealth.com](http://www.puretechhealth.com) or connect with us on Twitter [@puretechh](https://twitter.com/puretechh).

### **Forward Looking Statement**

This press release contains statements that are or may be forward-looking statements, including statements that relate to the company's future prospects, developments and strategies. The forward-looking statements are based on current expectations and are subject to known and unknown risks and uncertainties that could cause actual results, performance and achievements to differ materially from current expectations, including, but not limited to, those risks and uncertainties described in the risk factors included in the regulatory filings for PureTech Health plc. These forward-looking statements are based on assumptions regarding the present and future business strategies of the company and the environment in which it will operate in the future. Each forward-looking statement speaks only as at the date of this press release. Except as required by law and regulatory requirements, neither the company nor any other party intends to update or revise these forward-looking statements, whether as a result of new information, future events or otherwise.