Twist Bioscience Selected as DNA Synthesis Provider for DNA Data Storage Project Under Intelligence Advanced Research Projects Activity (IARPA) Molecular Information Storage (MIST) Program

January 15, 2020

-- Contract Focused on Making DNA Data Storage Commercially Accessible --

SAN FRANCISCO--(BUSINESS WIRE)--Jan. 15, 2020-- Twist Bioscience Corporation (NASDAQ: TWST), a company enabling customers to succeed through its offering of high-quality synthetic DNA using its silicon platform, today announced that it has been selected as a subcontractor to Georgia Tech Research Institute (GTRI) to undertake the DNA synthesis portion of the Molecular Information Storage (MIST) program through a contract with the Intelligence Advanced Research Projects Activity (IARPA). DNA has the ability to store large amounts of data over long periods of time in a very dense format, however today this storage technology is not cost efficient, nor widely available. The aim of the project, termed Scalable Molecular Archival Software & Hardware (SMASH), is to make long-term DNA data storage accessible and commercially viable within the next three to five years.

“With digital data growing at an exponential rate, there is increasing interest and excitement about using nature’s storage medium, DNA, to store digital data,” said Emily M. Leproust, Ph.D., CEO and co-founder of Twist Bioscience. “With the government’s commitment to fund this exciting new area of storage, we believe that as part of this consortium of specialists, we can truly revolutionize the DNA synthesis process, and reduce the cost of synthesis for DNA data storage by many orders of magnitude.”

Twist Bioscience may receive up to $9.15 million in fees under the multi-phase contract awarded to GTRI, which is worth up to $25 million. The deliverables under the contract for Twist Bioscience consist of creating a DNA synthesis platform on silicon that “writes,” or synthesizes, enough DNA per day to allow the cost of storing digital data to be as low as $1 per gigabyte. This is a reduction in the cost of approximately six to seven orders of magnitude from the cost of DNA data storage today, by Twist internal estimates.

In addition to the $9.15 million earmarked for Twist, there is an additional $5.5 million slated to bolster DNA synthesis through new chip design with standard CMOS electronics that are able to write DNA using the efficiencies of current semiconductor technologies. This research will be conducted at GTRI, and will then come to Twist for commercial implementation.

The primary contract is held by the GTRI, with subcontractors Twist Bioscience to conduct DNA synthesis, University of Washington/Microsoft teams bringing system architecture, data analysis and coding expertise and Roswell Biotechnologies to provide a high throughout DNA data reader chip and platform.

“Fifty years ago, DNA data storage was considered science fiction – today, it is science with a path toward broad implementation,” said Dr. Leproust. “We expect in the next three to five years, with the proper amount of government and industry investment, it will become a reality for long-term storage.”

Dr. Leproust continued, “We see the first applications of commercial DNA data storage being long-term markets where current storage is not meeting the needs of the industry. This includes enterprise, where governing bodies require that the retention of large volumes of data for a particular project like a clinical trial or airplane design be kept for decades, government bodies, which retain vast amounts of historical information, and the consumer market for large archives of photos and videos.”

Today, Twist manufactures more than one million oligonucleotides on a single silicon chip using semiconductor technology. The company is now working toward the next generation of silicon chips that will allow the company to synthesize or write 10 gigabytes of DNA on each silicon chip. While the DNA Twist makes today is of exceptional quality, DNA used for digital storage can be imperfect, with computer algorithms correcting the errors efficiently.

How to Store Digital Data in DNA

To encode digital data into DNA, first, digital files are converted from the binary code using 0s and 1s of digital data into sequences of A, C, T and G. Twist Bioscience then synthesizes short segments of DNA (approximately 200 to 300 bases or positions) in the sequence order provided and a coding efficiency of approximately 1 bit per base. Each short DNA segment contains a sort of barcode to indicate their place within the overall sequence. Specific segments of DNA can be found using this barcode to be copied or recalled as needed, eliminating the need to decode and sequence the entire file when only a small portion is needed for a particular task. The files can be recovered perfectly by an ordinary DNA sequencer due to error-correcting encoding schemes used when writing the data.

About Twist Bioscience Corporation

Twist Bioscience is a leading and rapidly growing synthetic biology company that has developed a disruptive DNA synthesis platform to industrialize the engineering of biology. The core of the platform is a proprietary technology that pioneers a new method of manufacturing synthetic DNA by “writing” DNA on a silicon chip. Twist is leveraging its unique technology to manufacture a broad range of synthetic DNA-based products, including synthetic genes, tools for next-generation sequencing (NGS) preparation, and antibody libraries for drug discovery and development. Twist is also

pursuing longer-term opportunities in digital data storage in DNA and biologics drug discovery. Twist makes products for use across many industries including healthcare, industrial chemicals, agriculture and academic research.

Follow us on Twitter | Facebook | LinkedIn | YouTube

Legal Notice Regarding Forward-Looking Statements

This press release contains forward-looking statements. All statements other than statements of historical facts contained herein are forward-looking statements reflecting the current beliefs and expectations of management made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements involve known and unknown risks, uncertainties, and other important factors that may cause Twist Bioscience's actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the risks and uncertainties of the ability to attract new customers and retain and grow sales from existing customers; risks and uncertainties of rapidly changing technologies and extensive competition in synthetic biology could make the products Twist Bioscience is developing obsolete or non-competitive; uncertainties of the retention of a significant customer; risks of third party claims alleging infringement of patents and proprietary rights or seeking to invalidate Twist Bioscience's patents or proprietary rights; and the risk that Twist Bioscience's proprietary rights may be insufficient to protect its technologies. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to Twist Bioscience's business in general, see Twist Bioscience's risk factors set forth in Twist Bioscience's Annual Report on Form 10-K filed with the Securities and Exchange Commission on December 13, 2019. Any forward-looking statements contained in this press release speak only as of the date hereof, and Twist Bioscience specifically disclaims any obligation to update any forward-looking statement, whether as a result of new information, future events or otherwise.

View source version on businesswire.com: https://www.businesswire.com/news/home/20200115005551/en/

Source: Twist Bioscience Corporation

Investor Contact:
Argot Partners
Maeve Conneighton
212-600-1902
maeve@argotpartners.com

Media Contact:
Angela Bitting
925- 202-6211
media@twistbioscience.com