



Twist Bioscience Launches Industry-Leading NGS Methylation Detection System for Liquid Biopsy Cancer Analysis and Epigenetic Studies

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-- Studying Methylation Patterns Provides Unique Insight into Disease Pathology --

-- System Improves Accuracy of Results, Allows Capture of Customized Genes of Interest, Operational Efficiency --

SOUTH SAN FRANCISCO, Calif.--(BUSINESS WIRE)--Feb. 24, 2021-- 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 the launch of the [Twist NGS Methylation Detection System](#), a robust, end-to-end sample preparation and target enrichment solution for identifying methylated regions in the human genome.

DNA methylation plays a key role in many biological processes including cancer. When present on a single nucleotide, a methyl group can alter genetic behavior without changing the DNA sequence. Analyzing these methylation patterns provides unique understanding of disease pathology, including the ability to screen for cancer earlier using blood samples known as “liquid biopsies.”

“Methylation is one of the most interesting and informative epigenetic modifications due to its wide-reaching effects, but historically it has been difficult to study efficiently,” said Emily M. Leproust, Ph.D., CEO and co-founder of Twist Bioscience. “In partnership with New England Biolabs, we’ve developed a state-of-the-art system, to identify and accurately evaluate methylation patterns that enable our customers to create better tests and/or conduct research more efficiently. In addition, the superior results produced through this system provide incentive for our customers using SNP microarray technology to switch to using Twist products plus sequencing.”

DNA methylation appears in consistent patterns across the genome, making it possible to assess multiple loci for a more specific and sensitive test. In cancer methylation, patterns appear early, providing an attractive approach for screening through revolutionary liquid biopsy tests, which are designed to detect a wide range of tumors from a single blood sample.

HelioHealth, an early access customer, is currently developing simple, accurate liquid biopsy tests for the detection of early-stage liver, colon, breast and lung cancers.

“The complex, very large panels needed to detect circulating tumor DNA early in the disease require expertise in design, robust coverage from minimal sample material, and exceptional sensitivity in detecting the change between differentially methylated regions,” said Kenneth Chahine, Ph.D., J.D., CEO of HelioHealth. “After some trial and error with other systems, we found that the Twist NGS Methylation Detection System improved the efficiency and accuracy of all of our tests, providing the best data possible for rapid and early cancer detection.”

Despite the promise of methylation detection, the approach presents many challenges, including the preparation of the blood sample and the need for multiple probes for each sequence of interest. For many years, bisulfite sequencing was considered the gold standard in methylation detection. While this method provides a quantitative readout with high throughput and single-base pair resolution, bisulfite treatment can degrade DNA samples substantially and result in specific areas not being detected, particularly for tests with a small relative volume of target DNA for study, as in liquid biopsies. In addition, effective methylation detection requires four different DNA probes for every target sequence of DNA, a substantial undertaking for complex diagnostic tests. In order to overcome these challenges, Twist has partnered with New England Biolabs® (NEB®), who have developed a novel, enzyme-based alternative to sodium bisulfite treatment, EM-seq™, for preparation of samples for methylation analysis.

“We developed Enzymatic Methyl-seq, or EM-seq, using a combination of enzymes to achieve highly efficient and gentle conversion of 5mC and 5hmC for downstream identification using next generation sequencing,” said Theodore Davis, executive director of Applications and Product Development at NEB. “Application of EM-seq to target enrichment workflows enables efficient analysis of methylation status in defined regions of the genome, with utility across a broad spectrum of areas that can impact human health. We are delighted to partner with Twist to expand the utility of EM-seq.”

The [Twist NGS Methylation Detection System](#) begins with NEB’s EM-seq for preparation of enzymatically converted libraries, and includes the Twist Methylation Enhancer, Universal Blocker and FastHyb as well as the Twist NGS Custom Methylation Panels. The Custom Panels, a key component of the product, include DNA probes to capture all four potential sequences at a given site: methylated, unmethylated, sense and antisense, and offer the same fidelity, uniformity, and flexibility as [Twist Custom Panels](#). Twist works with customers to create custom content unique to a particular area of focus, allowing flexibility not found using static array designs. This unique feature of the Twist System facilitates exploration of dynamic and cell-specific methylation targets or poorly understood targets found in more elusive noncoding regions at single base pair resolution.

About the Twist NGS Methylation Detection System

The Twist NGS Methylation Detection System offers state-of-the-art end-to-end methylation sequencing workflow for the improved detection of genomic methylation patterns. DNA methylation occurs when DNA methyltransferases add a methyl group to the cytosine residue of cytosine-phosphoguanine (CpG) dinucleotides. This modification contributes to a wide variety of biological processes by promoting genomic instability or transcriptional silencing. Affected processes include normal processes, like cellular differentiation, as well as abnormal ones, like carcinogenesis. Methylation levels vary substantially across the human genome, and differentially methylated regions (DMRs) can be used to identify certain cancers

and other diseases.

About New England Biolabs

Established in the mid 1970's, New England Biolabs, Inc. (NEB) is the industry leader in the discovery and production of enzymes for molecular biology applications and now offers the largest selection of recombinant and native enzymes for genomic research. NEB continues to expand its product offerings into areas related to PCR, gene expression, sample preparation for next generation sequencing, synthetic biology, glycobiology, epigenetics and RNA analysis. Additionally, NEB is focused on strengthening alliances that enable new technologies to reach key market sectors, including molecular diagnostics development. New England Biolabs is a privately held company, headquartered in Ipswich, MA, and has extensive worldwide distribution through a network of exclusive distributors, agents and eight subsidiaries located in Australia, Canada, China, France, Germany, Japan, Singapore and the UK. For more information about New England Biolabs, visit www.neb.com.

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About Twist Bioscience Corporation

Twist Bioscience is a leading and rapidly growing synthetic biology and genomics 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.

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This press release contains forward-looking statements. All statements other than statements of historical facts contained herein, including without limitation, the ability of the Twist NGS Methylation Detection System to enable Twist customers to create better tests and/or conduct research more efficiently, 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 Quarterly Report Form 10-Q filed with the Securities and Exchange Commission on February 9, 2021 and subsequent filings with the SEC. 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 because of new information, future events or otherwise.

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Twist Bioscience:

Angela Bitting

SVP, Corporate Affairs

925-202-6211

abitting@twistbioscience.com

New England Biolabs:

Deana D. Martin, Ph.D.

Associate Director, Marketing Communications

978-380-7464

martin@neb.com

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