Next-Generation Sequencing Workflow Designed for Clinical Research and Diagnostics

QIAGEN provided new insights into its next-generation sequencing (NGS) initiative, unveiling a sample-to-result NGS workflow designed to enable the routine use of this technology beyond life sciences research in areas such as clinical research and diagnostics. The adoption of NGS in fields such as clinical research and diagnostics has been hampered for a number of reasons, particularly workflow challenges that become more pronounced in clinical settings due in part to the increased number of samples being processed. Other challenges include manual sample preparation processes, delays caused by batching samples to achieve cost-efficient runs, and the speed and quality of data analysis.

QIAGEN’s automated NGS workflow addresses these challenges by offering a streamlined and automated workflow built on components that include the following:

• QIAGEN’s QIAcube for fully automated nucleic acid isolation and purification, as well as library preparation.

• New GeneRead DNAseq Target Enrichment gene panels designed for NGS applications based on the GeneGlobe collection of more than 60,000 fully annotated molecular assays.

• QIAcube NGS— a new QIAcube-based instrument for automated sequencing template preparation.

• GeneReader—a new NGS benchtop sequencer that embraces many diagnostic workflow features.

• A dedicated QIAGEN software solution for user-friendly and automated result analysis.

A key element of QIAGEN’s NGS workflow is GeneReader, a NGS benchtop sequencer that offers features essential for customers in clinical research and diagnostics to create routine laboratory processes. The GeneReader NGS sequencer has a turntable design that enables the continuous loading of up to 20 flow cells for independent and parallel sequencing. Individual patient samples also can be handled cost-efficiently without the need for indexing or bar-coding, which means processing can occur at any time, and in any order, without delay or concerns about potential regulatory issues.

QIAGEN has exclusively licensed sequencing-by-synthesis (SBS) chemistry for its

NGS workflow, which allows for very cost-efficient runs due to a unique combination of dark and fluorophore-labeled “terminator nucleotides.” This chemistry provides state-of-the-art sequencing accuracy with difficult DNA motifs such as DNA homopolymers, which are known to be problematic for competitor sequencing chemistries.

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