Fusion Transcripts Detection
Cancer researchers now have a set of TaqMan gene expression assays designed to detect fusion transcripts using real-time polymerase chain reaction (PCR). Certain fusion transcripts are considered rare and are not well characterized; therefore, detecting these rare events using a single technology can deliver ambiguous results. As such, researchers often employ an orthogonal method of validation to confirm results. As a complementary solution to next generation sequencing (NGS) panels, including the Oncomine Focus Assay, the TaqMan gene expression assays are designed to serve as an orthogonal validation method for confirming NGS results. Assay benefits include proven TaqMan assay chemistry, guaranteed performance for all predesignated assays, single-tube construction (containing a probe, forward primer, and reverse primer for each target used in the simple, fast PCR workflow), and the use of universal cycling conditions—making it possible to run any combination of assays in parallel on a single real-time PCR instrument.

Prevalidated Fluorinated Fragment Library
A new library of fluorinated compounds with superior drug-like characteristics has been designed to maximize the efficiency of fluorine nuclear magnetic resonance (NMR) and X-ray crystallography screening, saving both time and cost in the process. The new Maybridge fluorine labeled fragment library is a diverse fragment library of 480 fluorinated compounds. Approximately 20% of known drug compounds contain a fluorine atom. As such, fluorine NMR is a fast-growing technique used in fragment screening, an important method for rapid identification of new lead molecules in drug discovery due to higher hit probability and fewer fragments needed to be screened. This Maybridge library was derived from more than 5,000 fluorinated candidates and was optimized through a stringent biophysical selection process to increase the probability of hit generation. Each compound has been validated using fluorine and standard NMR, solubility testing, X-ray crystallography, and surface plasmon resonance techniques to provide the highest quality.

Surface Plasmon Resonance System
The Reichert 4SPR is a new, four-channel surface plasmon resonance (SPR) system for label-free, real-time investigation of biomolecular interactions. By combining four channels with improved industry-leading sensitivity and baseline stability, Reichert 4SPR enables drug discovery researchers to maximize their efficiency, flexibility, and throughput. A researcher can run three experimental channels with one reference, two experimental channels with two separate references, or test different immobilization chemistries or regeneration schemes on each channel. The Reichert 4SPR’s high sensitivity (+/- 0.05 μRIU rms noise) reduces the amount of sample required for each experiment and produces results even if a large portion of the protein sample is inactive or denatured. This makes the instrument perfect for analyzing small molecules or very low concentrations of larger biomolecules. The Reichert 4SPR is also able to determine picomolar concentrations and equilibrium dissociation constants and has a low baseline drift (0.01 μRIU min/1), which improves data fitting.

Dual-Luciferase Reporter Assay
The new Nano-Glo Dual-Luciferase Reporter (NanoDLR) Assay is a two-reporter system that incorporates NanoLuc luciferase technology, providing increased data quality and greater sensitivity for biologically complex applications. The new NanoDLR assay allows researchers to measure NanoLuc and firefly lucerases together in a convenient, easy-to-use format. The NanoDLR Assay’s improved firefly chemistry and small, ultrasensitive NanoLuc luciferase provide researchers with more sensitivity to detect small changes in expression, more flexibility in assay design, and more robust control reporter options. In the NanoDLR Assay, both firefly luciferase and NanoLuc luciferase can be used as dynamic reporters, greatly increasing versatility by allowing researchers to choose the primary reporter that best meets their experimental needs. The NanoDLR’s new assay chemistry also provides improved reagent stability over time.

Mass Spectrometry System
Combining direct-from-sample ionization with high-performance, time-of-flight (TOF) mass spectrometry and powerful, intuitive analytics, the rapid evaporative ionization mass spectrometry (REIMS) research system with the iKnife sampling system eliminates the need for sample preparation and chromatographic separation, providing food, microbiology, and tissue researchers with near-instantaneous data acquisition. Using REIMS, researchers can quickly and easily differentiate samples from one another and confidently identify the differentiating features, allowing greater insight into chemical and biological systems under investigation. With REIMS, direct, rapid heating of samples leads to the formation of vapor that is rich in sample-specific chemical information. The vapor is taken directly into the mass spectrometer (Xevo G2-XS QTof or SYNAPT G2-SI HDMS), where the molecules are analyzed by TOF mass spectrometry.

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