MultiCode® products from Luminex offer a flexible platform for real-time and multiplex real-time PCR-based assays. MultiCode products are based upon the unique MultiCode bases, isoC and isoG. The synthetic isoC:isoG DNA base pair differs from the naturally occurring base pair in its hydrogen bonding pattern. As a result, the MultiCode bases, isoC and isoG, can only base pair with each other. This property enables site-specific incorporation of the isobases during amplification.

**MultiCode®-RTx Technology**

The superior molecular recognition between MultiCode bases is utilized in MultiCode-RTx technology, a probe-free, real-time PCR system that enables detection and/or quantification of nucleic acid-based targets.

MultiCode-RTx technology can support single tube multiplex reactions and utilize controls to monitor the reactions. MultiCode-RTx primers are designed to include a fluorescent reporter in close proximity to an isoC base on the 5’ end. isoG covalently attached to a quencher is present in the reaction mix and is incorporated opposite the isoC during the amplification reaction. Site-specific interaction of the reporter-labeled isoC with the quencher-labeled isoG during amplification results in reduced fluorescent signal. Reporter quenching is reversible and can therefore be used to confirm the presence of the target through melting curves.

**Unique Features:**

- **Rapid Results:** Our novel chemistry can streamline an assay workflow—reducing turnaround time in the laboratory
- **Easy to Implement:** Standardized reagents simplify implementation
- **Versatile Reagents:** Compatible with most real-time PCR instrumentation
- **Confidence in Results:** Melting curves allow confirmation of target amplification and identification of multiple analytes
- **Reliable Detection:** Amplification and sample processing controls enable monitoring of samples from extraction through amplification
The MultiCode® RTx Method

Step 1: Primer Annealing & Extension
The reporter-labeled forward primer containing a single isoC on the 5’ end and unlabeled reverse primer hybridize to the target nucleic acid. During the amplification process, the labeled primer is incorporated into the newly synthesized strand and serves as a template for the reverse primer in the next cycle.

Step 2: Site Specific isoG Incorporation
Synthesis of the opposite strand terminates with the incorporation of an isoG with a covalently attached quencher molecule. The resulting proximity of the quencher to the reporter produces a decrease in fluorescence. The decrease in fluorescence is directly proportional to the quantity of amplicon.

Step 3: Thermal Melt
Following the completion of amplification, a thermal melt is performed and fluorescence is restored after the strands separate.

Fluorescence is monitored on commonly available real-time thermal cyclers. Process controls may be utilized to monitor extraction and amplification. The Luminex MultiCode-RTx Analysis Software® allows the user to import raw data generated from different real-time instruments. The software also features the ability to automatically graph standard curves, perform quantitative calculations and generate custom reports.