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44-plex target detection with use of the Modaplex™

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The Modaplex™ system is a fully automated platform that combines a real time PCR module with a capillary electrophoresis detection module. The combination of these two modules allows for a large number of targets to be detected in a single reaction. Multiplexing systems that allow such a broad range of targets to be detected are desirable in companion diagnostic assays; to reduce intrusive procedures to patients, by requiring less sample material, and to reduce laboratory processing time. To investigate how the Modaplex™ system can make use of these benefits, we have undertaken a feasibility study to combine the detection of 42 mutation targets and 2 control targets in a single reaction. Gene panels comprising of 13 KRAS mutation targets and 29 EGFR mutation targets are the focus of this multiplexing challenge. EGFR and KRAS are key molecules in the MAPK cellular signaling pathway. Since mutations in these genes alter cellular functions, determining the mutation status is a key requirement for personalised cancer therapies. The primer designs for the 44-plex assay have initially been tested using synthetic oligonucleotides and will be further challenged with the use of FFPE extracted clinical samples. This feasibility study will demonstrate the multiplexing capabilities of the Modaplex™ system to meet the growing market need for quicker, less intrusive mutation detection.

Biography

Laura Hill is a Senior Scientist in the Design and Development department at QIAGEN Manchester, UK. She has significant experience of companion diagnostic development, specialising in primer and multiplex assay design, feasibility studies and novel technologies. She previously worked at Life Technologies on the development and manufacture of primer mixes for DNA testing kits. She has a degree in Genetics from the University of Liverpool.

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