

TaqMan® assays for comprehensive characterization of pluripotent stem cells

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Rapid progress in technologies for the generation of footprint-free induced pluripotent stem cells (iPSC) has led to creation of patient derived stem cells that are valuable tools in drug discovery and translation into cell therapy. However, current challenge lies in rapid characterization of iPSC generated from diverse sources using different methods and conditions. Traditional characterization methods of iPSC and embryonic stem cells (ESC) cells utilize a combination of *in vitro* and *in vivo* cellular analysis to confirm pluripotency and trilineage differentiation potential. These methods are laborious with subjective measures and not amenable to high throughput analysis.

TaqMan assay is a comprehensive gene expression real-time PCR assay that can be utilized for rapid generation of quantitative transcriptome, epigenome and genome data.

Resulting data can be utilized not only to derive similarities between the iPSC clones and control ESC lines but also dissect subtle differences further evaluate their impact on functionality and long term stability. We have utilized medium-density and low-density gene expression assays to dissect iPSC during derivation and characterized established clones for their pluripotency and differentiation potential. Additionally, combination of gene and miRNA expression pattern provides a useful and reliable tool for rapid confirmation of pluripotency.

Biography

Uma Lakshmiopathy has a Ph.D. in Life Sciences and currently an Associate Director at Life Technologies. She has been involved in the field of stem cells for over a decade. She has published over 50 papers in reputed journals. Her research interests are regulation of stem cell maintenance, development of technologies for generation, identification, characterization, and differentiation of pluripotent stem cells.

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