Genome-Wide Gene Expression Profiling, Alternative Splicing Monitoring, and Genotyping with Direct Template Annealing Oligo-Ligation

Tech ID: 20616 / UC Case 2000-095-0

BACKGROUND

Detecting specific nucleic acids is central to diagnostic medicine and molecular biology research. Gene probe assays play a variety of roles, from identifying infectious organisms—such as bacteria and viruses—to probing the expression of normal and mutant genes. Ideally, a gene probe assay should be sensitive, specific, and easily automatable. The requirement for sensitivity (i.e. low detection limits) has been greatly alleviated by the development of the polymerase chain reaction (PCR) and other amplification technologies that allow researchers to amplify exponentially a specific nucleic acid sequence before analysis. Specificity, however, is problematic for many currently available gene probe assays. The extent of molecular complementarities between probe and target defines the specificity of the interaction. A variation in the concentrations of probes, targets, and salts in the hybridization medium, reaction temperature, and length of the probe may influence the specificity of the probe/target interaction.

TECHNOLOGY DESCRIPTION

Scientists at UC San Diego have discovered sensitive and accurate assays for gene detection, genome-wide gene expression profiling, and alternative splice monitoring with minimal or no target-specific amplification. The technology relates to a novel approach of detecting and quantifying DNA and RNA rearrangement in cells. In particular, the technology is designed to analyze alternative RNA processing from common pre-mRNA precursors. The technique can also be extended to DNA research in detecting chromosome rearrangement and translocation. This invention provides a powerful assay to detect alternative splicing on a large scale and can be applied to discover disease-associated alternative splicing events. This technology could have broad applications in disease classification, diagnosis, and drug screening.

INTELLECTUAL PROPERTY INFO

See the following U.S. patents.

- 6,812,005 issued 2-November-2004, *Nucleic Acid Detection Methods Using Universal Priming.*
- 7,361,488 issued 22-April-2008, *Nucleic Acid Detection Methods Using Universal Priming*.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	6,812,005	11/02/2004	2000-095

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Gene Signature-Based Chemical Screening

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Diagnostics
  - Research Tools
- **Research Tools**
  - Screening Assays

RELATED CASES

2000-095-0

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