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(54) Title: SOLID PHASE SELECTION OF DIFFERENTIALLY EXPRESSED GENES

(57) Abstract

The invention provides a method and materials for monitoring and isolating differentially expressed genes. In accordance with the method of the invention, differently labeled populations of DNAs from sources to be compared are competitively hybridized with reference DNA cloned on solid phase supports, *e.g.* microparticles, to provide a differential expression library which, in the preferred embodiment, may be manipulated by fluorescence–activated cell sorting (FACS). Monitoring the relative signal intensity of the different fluorescent labels on the microparticles permits quantitative analysis of expression levels relative to the reference DNA. The invention also provides a method for identifying and isolating rare genes. Populations of microparticles having relative signal intensities of interest can be isolated by FACS and the attached DNAs identified by sequencing, such as with massively parallel signature sequencing (MPSS), or with conventional DNA sequencing protocols.