DNA Micro Array

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Introduction

From many years there been a dramatic progress in technologies for assessing the clinical and research samples. Through institutional laboratories there's been transcript profiling which is considered as powerful research tool, it ranges from identification of novel therapeutic goal to complex patterns of gene expression.

It provides a brief about types and limitation present in DNA micro array.

Keywords

Visual Representation, Phylogenetic Analysis, DNA microarray

Description

DNA microarray (also known as biochip) is a form of collection of microscopic DNA spots attached to solid surface, each DNA contain specific DNA sequence which is known as probes. It contain hybridize cDNA or cRNA. Probes are microarray with 6o-mer oligonucleotide with genomes of 3 bacterial and 2 viral pathogens.

These microarray are used for mRNA expression, single nucleotide polymorphism determination, most of them contain a solid support like nylon membrane or glass slide in which DNA is attached and using PCR or photolithography DNA is synthesized, firstly RNA is extracted then by using fluorescence or radioactivity RNA, complementary DNA, amplifies RNA is labelled, probes are hybridized to microarray bound are remained and un bound are washed off genes are seen by their position on bound probes in array. Microarray is also used for generate hypotheses of phenotype.

Data analysis is critical microarray project is two thousand data points per array, condition, replicate available in bioinformatics programs.

The major component is normalization, filtering and computational analysis, step wise procedure include normalization of data processing, Global normalization is majorly used different expression pattern, approaches is used in sequential analysis. Combination of signal confidence, fold change, minimum acceptance signal intensity and filtering data maximize the statistical significance.

Final step is analysis and divided into clustering algorithm and hierarchical clustering. Alternating techniques like parametric and non-parametric ANOVA and significance analysis of microarray (SAM) is used.

Clinical application of DNA microarray

It provides insight of disease classification like detection of breast tumours, renal cell carcinoma and human melanoma. It also detects tested bacterial pathogens in plants hosts in rice and sorghum and many other virus diseases which are majorly water borne diseases.

Antibiotic treatment, early detection of oral precancerous lesions blood stream infections, fungal and bacterial infection detection, gene expression analysis, transcription factor binding analysis, genotyping, data standard and data exchange.

Future of DNA analysis

This array unbiased method for directly measure of all DNA and RNA samples, advent of next generation sequencing technologies are rapid with less cost, sequencing is direct measurement for the nucleic acid present and directly related to gene sequence cross hybridization on DNA microarray and many other procedures with replaced with sequencing methods it will be replaced in coming years providing effortless methods.

Conclusion

The DNA microarray technology has recently emerged with high methods for screening pathogens in single assay, its highly specific and sensitive DNA detection.

The surveillance of transmitted by other creatures present, sequencing is relatively measuring approach to nucleic acid solution, but few limitation of DNA microarray cannot limit the important applications of gene expression measuring level genotyping in various field and researchers have developed certain application in which few differences and adjustment in given protocol have advantage and less time consuming and less expensive.

This technology is worth developing as it as important in many different scientific fields.