

Note on DNA Microarrays in Medicine

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INTRODUCTION

DNA microarrays will be wont to live the steady state RNA level of most or all genes of a cell and deliver a quantification of the transcriptional profile on a genome-wide scale. The guarantees that return in conjunction with this new technology are a speedy access to molecular pathways in biology, an additional precise identification and prognosis of diseases, a much better understanding of drug action, the flexibility to higher outline therapeutic strategies, and plenty of additional. DNA microarrays may build a replacement bridge on those biologists and clinicians will meet and convey to fruition what has been termed “translational medicine” for the advantage of patients. DNA microarrays are designed with snippets of DNA representing virtually the complete genetic data of associate degree organism on some sq. centimetres. They commercially out there or will promptly be created in laboratories with the proper equipment. regardless of whether or not oligonucleotides are synthesized on glass by a complicated technology 1st developed for the semiconductor trade or whether or not longer PCR merchandise are merely dotted onto solid surfaces, the scientific community incorporates a new and powerful tool to live cistron activity. To un- cowl correlations between biological phenomena or medical conditions and genetic restrictive mechanisms, researchers not ought to think about single cistron analysis. However, the provision of DNA microarrays not solely opens the door to new forms of experiments however conjointly delivers a replacement form of information. Comparison the expression level of thousands of genes at a similar time can't be disbursed with similar skills needed to properly interpret autoradiograms. Pc power, the proper software system, and also the recommendation of consultants within the bioinformatics field are necessary. The chances and guarantees of DNA microarrays are over various. Cancer analysis was the primary prominent field that used the new technology. Over twenty years of ba- assault analysis have arranged the bottom

for a molecular idea of cancer as a “genetic unwellness.” however it conjointly incontestible the immense quality of every of the over a hundred totally different diseases that may be classified below the final term “cancer.” Now, expression identification of growths with DNA microarrays can facilitate to higher outline a specific tumor kind and distinguish it from others. The primary experiments have already pointed the way: organic phenomenon profiles of growth samples are related to with clinical parameters. The goal is clear: with the assistance of cluster algorithms, each growth ought to be labelled with a molecular signature drawn from various expression profiles. By a similar token, DNA microarrays are wont to as- locoweed the results of medicine on the transcriptional activity of tar- get cells or tissues. For basic researchers this could be of immense facilitate to know processes like drug induced necrobiosis, drug induced DNA harm and repair, or alternative additional cistronal side of gene regulation by tiny molecules. For the pharmaceutical trade, a correlation between cistron activity and effects of candidate compounds might facilitate to eliminate those with severe aspect effects before they enter clinical trials. Also, it'll facilitate to outline the results of these medicines already in clinical use. This application of DNA microarray technology falls below the roof of a replacement discipline that the label “pharmacogenomics” has already been coined. Alternative DNA microarrays are, or have already got been, engineered that enable to check for the presence of specific germs in tissues or body fluids. It'll be potential to spot the microorganism or viruses accountable for communicable disease abundant quicker and with higher exactness than before. Conjointly the traces that genetically changed organisms might leave in industrial food merchandise are also testable on an oversized scale. Specifically designed DNA microarrays that use “on-chip” PCR reactions for all better-known genes used for the biotechnology of plant and animals within the food trade are already on the drawing boards.

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