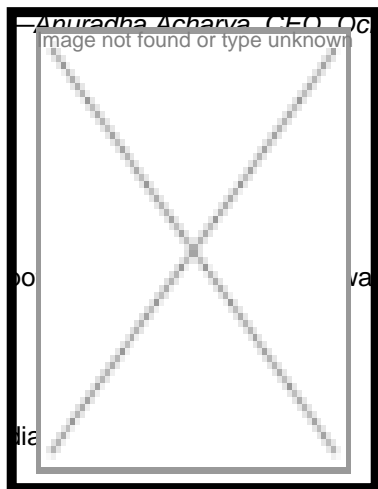


## Key Technology for Studying Genomic Data

10 March 2009 | News



### Key Technology for Studying Genomic Data



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The advent of microarrays and their ability to measure several thousands of gene expression have brought a massive change to the traditional methods that assayed a few genes at a time. Microarray technology has been a key technology for studying genomic data and gene expression. It offers several opportunities to make predictions and validations on key pathways, biomarkers and other biological observations of clinical interest. The current applications of microarray technology in diagnosis of cancer and other diseases show its true value for further developments in this exciting field of genomics.

DNA microarrays can be used to measure changes in expression levels, to detect single nucleotide polymorphisms (SNPs) and in genotyping or in resequencing mutant genomes. Conventional methods of research on diseases and comprehensive molecular level screening using microarrays are revolutionizing therapeutic medicine and the field of

#### Evolution

It all started with photolithographic printing in 1991 and it went through several technological iterations. In 1997, the genome-wide expression monitoring in yeast paved the way to key application areas. Today, the science of microarrays has evolved to open up new areas for development, which include agriculture, chemicals, cosmetics, food and nutraceuticals are of much

interest in the past few years besides drug discovery, development and diagnostics. Manufacturers will continue to see newer applications in other areas as well.

### **Market potential**

Affymetrix, Agilent, Illumina, Ocichips and other cDNA and spotted array platforms are key platform innovators in the Microarray space. Numbers are deceptive, but global market for microarrays can grow at an annual average of 6.5 percent and might touch \$2.5 billion in 2010. The commercial DNA microarray segment, which currently accounts for approximately 57 percent of the market revenues, is projected to grow faster.

### **The future prospects**

- Array, bead or massive parallel sequencing-based platforms
- Deep sequencing and epigenetic-profiling
- SNP Gentyping using next-gen sequencing
- Digital quantificatio using Solexa
- Copy number variations using 454