

PRESS RELEASE

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BioArrays- Billion Dollar technique draws a Crowd to New York: Optimism abounds for Developing Diagnostics

Nearly 100 people have shown up from several countries including Taiwan, Russia, Greece, UK for this one track two-day event on “**BioArrays-2003**” conference held on October 1-2 in the Holiday Inn west side of the Midtown which was organized not by a large conference company but by a former PerkinElmer scientist Krishnarao Appasani (Figure 1). In his welcoming address to a packed room, Appasani pointed to the surge in publications related to BioArrays. Appasani has launched the company GeneExpression Systems, not only to organize meetings like this one, but also to develop diagnostics for early disease diagnosis. "People anticipate that the whole pipeline is going to be reduced in drug development" because BioArrays will speed up drug target validation so much, he emphasized in his inaugural lecture. But as with any new technology in the life sciences field, it's not always apparent whether this promise will be borne out by results. "Is it hype or is it reality?" Appasani asked.

Faster, smaller, and more is powerful. This mantra is applicable not only to microprocessors and the high tech industry, but also to the diagnostics and biotechnology industries. Scientists in biology have taken the advantage of semi-conductor industry and genetic information that deciphered through the human genome project, and spotted all possible human genes on a glass surface. These are popularly known as *'DNA arrays or DNA chips'*. The same procedure can be done for proteins called as *'protein arrays or protein chips'*. In the biotech industry these are jointly referred as *"BioArrays or Biochips."* Since the discovery of these chips few years ago this field has opened several avenues to scientists to dissect and understand the molecular pathogenesis of the biological cell. Specially, revolutions in this field will change the future diagnosis and treatment of disease in the next decade. BioArrays have potential applications in biology, medicine, agriculture and drawn the attention of investors in the Wall Street and labeled as the Billion dollar technique, that is the focus theme of the meeting organized by GeneExpression Systems, Inc. of Waltham, Massachusetts.

There were 28 speakers invited from elite schools such as Harvard, Yale, Rockefeller, Cornell, Columbia, New York University, Memorial Sloan-Kettering Cancer Center, Mount Sinai School of Medicine, University of Michigan and National Cancer Institute. Executives from bioarray developing companies including Affymetrix, Amersham, Protometrix, MetriGenix, Lynx Therapeutics, Psychiatric Genomics, Ventana Medical Systems and Schleicher and Schuell Bioscience were presented the details of recent product lines. The meeting was well balanced by bringing speakers from large pharmaceutical companies such as Pfizer, Abbott, Johnson and Johnson, AstraZeneca, and Millennium, who exploit the bioarray technology platform for the development of *'gene-based-drugs'* and *'molecular diagnostics'*.

On behalf of the scientific committee Appasani honored Professor Francis Barany of the Weill College of Medicine of Cornell University, the Keynote speaker on the first day with *"Technology Innovator Award"* for developing *'Universal Array Readout Assay'* for the accurate diagnosis of colorectal cancers. In addition, the scientific committee has also chosen best speaker presentation from government to Thomas Conrads of the National Institutes of Health for developing novel biomarkers for the detection of ovarian cancer. Industry best presentation award was given to John Burczak of Amersham Biosciences for developing 3-D Code-Link technology platform. Best poster award was give to Tae

Seok Seo of Columbia University for his work on novel imaging chip technology. Best company award was bagged by lobion Informatics of Toronto, Canada.

Democratic Senator Mrs. Hillary Rodham Clinton sends her greeting letter to GeneExpression Systems and hailed to bring together internationally reputed scientists from academia, biotech and pharmaceutical industries to explore the applications of Biochips towards the development of diagnostics in order to treat human diseases. She also pointed out that *“these efforts will enhance cutting-edge and emerging technologies that will allow early diagnosis of prostate, breast, leukemia, brain, liver, colon, ovarian cancers and psychiatric diseases.”*

The message from the meeting is *“Less is Really More.”* The future of diagnostic prognostication involves a small number of genes - a small number but one where the quality counts, said Steven Gullans, chief scientific officer of US Genomics and an associate professor at Harvard Medical School. Current bioarray platforms provide several thousands of genes to analyze their function, expression and involvement in disease. However in reality *“Looking for a few good genes”* is enough for routine clinical diagnosis.

The second day keynote speaker, Sam Hanash, a pediatric professor from the University of Michigan, Ann Arbor and president of Human Proteome Organization provides a wish list that “you need to get samples in a non-invasive manner- blood, serum, or saliva, are easy to get; low cost; and in the real world, something that is 100 percent accurate.” Barany also stressed that “100 percent accuracy of diagnosis is pivotal other wise we will be playing with the life of patients.”

While all the speakers addressed the critical issues in the development path of the bioarray technology, there are other issues at play too- intellectual property rights and funding. Appasani ended the conference as a moderator with a panel discussion on these topics by an academic technology transfer officer, a venture capitalist and two lawyers specializing in intellectual property practice (Figure 2). Joseph Lawler, an oncologist by training from the New York Venture capital firm JP Morgan Partners says “many investors are not as excited about platform technologies rather they are interested in looking for a unique technology platform that can speed a drug’s progress to the clinic.” While the hope of venture capital funding might be dim, “there are plenty of avenues with the government to get funding” argue Sam Hanash, an expert in the field of proteomics. Duncan Greenhalgh, an attorney with the Boston-based law firm of Testa, Hurwitz & Thibeault, said patents can be granted for “new uses for old compositions of matter.” Kenneth Sonnefeld, an attorney with the New York firm of Morgan & Finnegan, suggested “partnerships with bioarray content inventors leads to avoid patent infringements.”

In his greetings letter to GeneExpression Systems, New York state governor Mr. George Pataki wrote *“The Empire State is proud to host events that bring together people who represent the best in ingenuity and who are at the forefront of developments and advancements that improve our lives.”* With vision and perseverance, the inspiring scientists continue to bring positive change to the world with revolutionary breakthroughs in the early diagnosis of various diseases and man’s capacity to treat them.

Appasani answered reporters that why biotechnology is taking great momentum in India now? He laughs and proudly claims that he is one of the youngest breed of scientists those practiced gene cloning and genetic engineering techniques in the early 80’s in India, while he was a graduate student at Banarus Hindu University. He simply says the technology is not born yesterday or today in India, it is there two decades ago, now business people have realized to make their bucks on it just like in IT industry”. Appasani conducted research and taught cell and molecular biology at various universities including Boston University, Tufts Medical School, and Massachusetts Institute of Technology.

Appasani research work carried out Harvard acclaimed him to receive Ranbaxy Science Foundation's Applied Medical Sciences award in 1997.

Appasani is not new to the biotech industry. He has been through the saga of practicing biotechnology past twenty two years as a student, teacher, scientist, and businessman and now as an educator. Recently, he wrote a book on "*Perspectives in Gene Expression*" that was forwarded by Nobel laureate Dr. Phillip A. Sharp, Institute professor at MIT. Currently he is working on another book for Cambridge University, Cambridge, UK. He simply says "*instead of teaching in a small classroom in a university, he sets up the stage for large meetings such as this for educating graduate students, scientists, professors and executives in the cutting-edge and emerging technologies*". He feels that this strategy will also develop a platform to foster and nurture scientific and business collaborations.