eISSN: 09748369 www.bioImedonline.com

A Report on the National Conference on "Biomarkers for Diseases - Prospects &

Challenges" 24th & 25th February 2012

Organized

By

Centre for Biotechnology and Bioinformatics (CBB) School of Life Sciences (SLS) Jawaharlal Nehru Institute of Advanced Studies (JNIAS)

Venue

Auditorium, Jawaharlal Nehru Architecture and Fine Arts University, Hyderabad, Andhra Pradesh, India.

Sponsors

Department of Science and Technology, Govt. of India GVK Biosciences, Hyderabad Computational and Structural Biology Journal

Preamble

From time immemorial, doctors have been using a panel of parameters to identify various diseases, except that the terminology used was not biomarkers but diagnosis. Later, the parameters became a set of biological indicators for pathological process which was subsequently redefined by NIH as "A biomarker is objectively measured and evaluated as an indicator of normal biologic processes, pathogenic processes, or pharmacologic responses to a therapeutic intervention". A biomarker has to be reliable, measurable, specific, and predictive".

Scientists have studied the fundamental mechanisms of human diseases *in vitro* or in animal models. These are only substitutes for understanding human physiology and disease. Proving that a mechanism responsible for disease progression in a model system is also relevant to human diseases, then translating it into new therapeutics is a major bottleneck in biomedicine. In the end, only clinical interventions on humans will bridge models and human disease. In recent times, interest in biomarkers has exploded, and thousands of articles are published each year that mention biomarkers.

Disciplines such as personalized medicine and drug discovery are evaluating gene expression profiling as a method for developing toxicity biomarker panels. Compounds having similar toxic modes of action are thought to induce specific changes in gene expression. Therefore, we hypothesized that the toxicity of unknown compounds can be predicted and managed during drug development by comparing their molecular fingerprints with those obtained with compounds of known toxicity. A major benefit gained by the development of limited content gene panels is the ability to switch from a relatively rudimentary hybridization microarray detection platform that surveys the entire genome to the more sensitive and faster technology of reverse-transcription real-time PCR arrays.

Biomarkers can be valuable tools in clinical diagnostics as well as in therapeutic discovery and development. They can be used to predict response to therapy or risk of side effects for personalized medicine applications. Additional types include predisposition, screening, diagnostic, prognostic, toxicity, pharmacodynamic, and other biomarkers. Importantly, we question prognostic signatures as specific research tools, not as clinical guides: smoke does not drive fire, yet it is powerful indicator of when and where a fire is burning.

Kaiser Jamil Convener & Dean School of Life Sciences, JNIAS

Theme of the National Conference on "Biomarkers for Diseases -Prospects & Challenges"

In view of the importance of the projected disease status of the country, it is important to diagnose the disease condition at an early stage. Therefore, there is an immediate need to develop Biomarkers for early detection of the diseases and to identify the issues in biomarker identification and discuss the various possibilities of addressing them.

- The goals of this Conference were to assess the existing biomarkers available and explore the kinds of biomarkers needed to provide improvements to the human condition by alleviating disease and extending healthy lifespan.
- The National Conference provided a forum for an interactive transfer of current ideas and information.
- The two day Conference aimed to bring together researchers, professionals and students.
- This Conference was designed to update Scientists and Clinicians on recent research related to the integration of biomarkers in the clinical treatment of diseases, thereby enhancing patient outcome.

With the above objectives, the two day National Conference was organized by Jawaharlal Nehru Institute of Advanced Studies (JNIAS) on 24th & 25th February, 2012 at Hyderabad, Andhra Pradesh, India.

Sub themes of the Conference:

- > Integrated biomarkers of various diseases.
- > Biomarkers for diseases prediction and model biomarkers.
- > Biomarkers in clinical practice and disease progression.
- > Biomarkers in newer areas like Metabolomics and Genomics.
- > Future trends in biomarkers for Research and Development.

Of about 150 papers received from across India, 100 papers were selected for oral and poster presentations in the conference. The papers were presented in the conference on the 5 subthemes, the details of which are given under "Schedule" section (Annexure -I).

Saturday, 24th February, 2012

Inaugural Session of National Conference on "Biomarkers for Diseases - Prospects & Challenges" by Dr. D. Swaminathan, President, JNIAS

The inaugural session of the two-day National Conference was conducted on February 24th, 2012. The Conference started with the welcome note and presidential address by Dr. D. Swaminathan, who laid special emphasis on the role of academicians and researchers in providing solutions to the present day health problems and discussed the need for biomarkers discovery in the treatment of diseases.



Presidential Address: Dr. D. Swaminathan, President, JNIAS, Hyderabad at the conference

This was followed by an address by Smt. Ch. Sujatha Gangadhar, Registrar, JNIAS, who gave a brief report on various academic and research activities at JNIAS.



Smt. Ch. Sujatha Gangadhar, Registrar, JNIAS

Dr. Kaiser Jamil, Dean, School of Life Sciences, in her speech about the theme and subthemes of the conference, gave a detailed view of the need for conducting this conference called upon the audience and paper presenters to contribute towards the success by participating actively in the conference.



Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS

The Conference was inaugurated by the Chief Guest Prof. R.V. Raja Kumar, Vice-Chancellor, Rajiv Gandhi University of Knowledge Technologies, Gachibowli, Hyderabad. Prof. Raghunadha Rao, Medical Oncologist from Nizam's Institute of Medical Sciences, was the Guest of Honor. The Conference Volume was released by Chief Guest Dr. R.V. Raja Kumar. While delivering his inaugural address, he emphasized the need for research in the field of biomarkers as it has direct impact on disease diagnosis, prognosis, treatment and health of individuals. 'Vote of Thanks' was presented by Mr. Asimuddin, Faculty, CBB, JNIAS.



Inaugural Session: From Left – Dr. Kaiser Jamil, Dean of Life Sciences, JNIAS, Hyderabad; Prof. R.V. Raja Kumar, Vice-Chancellor, Rajiv Gandhi University of Knowledge Technologies; Dr. D. Swaminathan, President, JNIAS, Hyderabad; Dr. D. Raghunadha Rao, Prof. & Head, Dept. of Medical Oncology, NIMS, Hyderabad; Mrs. Ch. Sujatha Gangadhar, Registrar, JNIAS, Hyderabad.

Key Note Presentation: Dr. Michael Aruldhas

Title: "Is androgen receptor a factor to reckon with thyroid cancer tissues?"

Co-chairpersons:

Dr. Y.S.N. Murthy, Director, Andhra Mahila Sabha. Prof. D. Raghunadha Rao, Medical Oncologist, Nizam's Institute of Medical Sciences.

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Prof. and Head, Dr. Michael Aruldhas, University of Madras.

Dr. Michael Aruldhas, Prof. and Head, Department of Endocrinology, Dr. A.L.M. Post Graduate Institute of Sciences, University of Madras, Taramani Campus, Chennai, Tamil Nadu, gave the keynote presentation. He spoke on the topic "Is androgen receptor a factor to reckon with thyroid cancer tissues?" His talk focused on Papillary Thyroid Carcinoma and he reported that the prevalence is higher in females in the reproductive age group. His presented his studies which established that AR expression pattern is important factor in determining incidence of Thyroid Tumor.

Technical Session I: Integrated Biomarker of Various Diseases

Co-chairpersons

Dr. Y.S.N. Murthy, Director, Andhra Mahila Sabha. Dr. Michael Aruldhas, Prof. and Head, Department of Endocrinology, University of Madras, Chennai, Tamil Nadu.

Dr. D. Raghunadha Rao, Medical Oncologist from NIMS, Hyderabad, spoke about "Cancer Biomarkers". He gave a very interesting lecture focusing on Leukemia Biomarkers and how these Biomarkers are helpful in predicting prognosis of disease, determining the outcome of the disease and choice of the therapy. Dr. D. Raghunadha Rao stressed the need to develop Biomarkers for ALL Pediatric cancer, as this cancer

affects children and hence there is a greater need. He also said that in AP, cervical cancer followed by breast cancer among women and head and neck cancers among men top the list. Stomach and lung cancers are reported in high numbers.

The next speaker was **Dr. Rajeshwari**, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi, and her talk was about Biomarkers for the Neurodegenerative Disorder, Friedreich's Ataxia. Friedreich's Ataxia (FA) is a progressive, multisystem, degenerative disorder caused by a reduction in frataxin. FA is primarily associated with DNA Triplet Repeat Expansion (TRE) in gene.



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Dr. D. Raghunadha Rao, Medical Oncologist from NIMS, Hyderabad

It is a neurological disorder which focused on the GAA triplets in Frataxin. This abnormality in the gene causes loss of its protein product, which results in mitochondrial

dysfunction and oxidative damage in patients. She proposed the use of circulating plasma proteins as prognostic makers for diagnosis of the diseases. It is autosomal recessive and predisposition is estimated to be 1-2 in 40,000.

Participation from industry enhances the outcome and creates opportunity for academia-industry interaction, leading to focused efforts from researchers. **Dr. Ramadevi Sanam**, Principal Scientist, GVK Biosciences, Hyderabad spoke on the

challenges involved in biomarker discovery and development and discussed the applications of GVK biomarker database, as a resource for screening of Biomarkers. She spoke about Phase I/II/III/IV trials and hurdles faced by industry in the development of biomarkers. She cautioned the researchers regarding the interference of High false positive result leading



to misinterpretation. As diagnosis and treatment of neurodegenerative diseases is a major challenge for neurosurgeons.

Ramadevi Sanam, Principal Scientist, GVK Biosciences

Dr. Vijay Kumar Roy, Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester discussed about Protein Biomarkers for Neurodegeneration: Facts and Future Implications. He discussed about neurodegenerative diseases specially Alzheimer's and Parkinson's and stressed on the importance of collaboration towards development of protein Biomarkers for neurodegenerative disorders. He said that for many years, neurological diseases could not be described in clinical or neuropathological terms. However, over the last 10 years, the interest and research into neurodegeneration-related biomarkers has greatly accelerated. During the past decade, a number of potential protein biomarkers have been proposed for neurodegeneration. He discussed about the scarcity of biomarkers and gave examples of biomarkers that have been recently identified: SOD and TDP-43 for amyotrophic lateral sclerosis (ALS), the tau protein and β -amyloid peptide for Alzheimer's disease (AD), and α -synuclein for Parkinson's disease (PD). This was followed by lecture on "Analysis of structure, function and evolutionary relationship of the long form of leptin receptor (OB – Rb)" by **Dr. Ruskin Erusan,** Guest Faculty, Department of Genetics, University of Madras. He described that this protein in humans, monkeys, cattle etc is evolutionarily conserved, while elephant is distinctly separate.

Technical Session II: Technologies in Biomarker Research

Co-chairpersons

Dr. M. Michael Aruldhas, Prof. and Head, Department of Endocrinology, University



Chairpersons of Session-II: Dr. M. Michael Aruldhas, University of Madras, Chennai, and Dr. A. Jyothy, Director, Institute of Genetics and Hospital for Genetic Diseases,

Osmania University, Hyderabad.

Prof. C.K. Mitra from University of Hyderabad was the first speaker for the technical session–II. He spoke on miRNA binding sites are targets: the new scenario. He said that instead of blocking the selected protein, blocking the gene is safer. He said that

MicroRNAs endogenously are formed short noncoding **RNA** molecules (usually 2023 nucleotides) encoded in the chromosomal DNA and they regulate cell differentiation, cell proliferation, and apoptosis post-transcriptional through suppression of gene expression by binding the complementary to the 3'untranslated sequence in region (3'UTR) of target messenger



RNAs (mRNAs). He discussed the role of mRNA in the regulation of Toll like receptors. *Prof. C.K. Mitra from University of Hyderabad*

Technical Session III: Biomarker for Diseases Prediction and Model Biomarker

Co-chairpersons

Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS, and Dr. Sirisha D., Head,

Dr Kanser-Jamil

Centre for Environment & Climate Change, School of Environmental Sciences, JNIAS.

Co-chairs of session-III: Dr. Kaiser Jamil and Dr. Sirisha D. The next speaker **Mr. Hanuma Kumar**, Scientist from Gland Pharma, spoke on Claudin-1 as prognostic marker for glioblastoma. He described his work on Claudin-1 expression and its role in signaling mechanism and demonstrated that protein could be a therapeutic target for glioblastoma. Glioma is a type of tumor that starts in brain. The Claudin-1 family proteins are essential in the formation of tight junctions in epithelial and endothelial cells. Claudin-1 expression was observed in glioblastoma. Next, **Mr. Musthaq Ahmed** spoke on "Biomarkers of toxicity in Cervical Cancer". Based on his experimental studies on cervical cancer cell lines, he suggested that COX-2 and BCL-2 can be used as prognostic biomarkers for cervical cancer as COX-2 mediated anti-apoptosis may occur via BCL-2 in cervical cancer development.

Dr. Nilanjana Das, Senior Lecturer, Centre for Biotechnology, Visva-Bharati Siksha Bhavana, Santiniketan, spoke on "Potential protein markers of age-associated diseases". Her presentation focused on the role of oxidative damage in age related diseases. This protein has been identified by N-terminal amino acid sequencing along with peptide-mass analysis of the Lys C digests as mitochondrial aconitase. She suggested that aconitase may be a potential biomarker for age related diseases.

Ms. Vandana Sharma spoke on role of COX2-gene (rs20417) variant with Aspirin resistance in stroke patients. Her studied showed that carriers of C-allele variant of COX-2 are more prone to Aspirin resistance and this variant may be an important risk factor in ischemic stroke. This was followed by an interesting talk by **Ms. Dipti M. Kapoor**, a young research scholar from University of Delhi, spoke on oxidative and nitrosative stress status in suicidal behavior. Her study showed the association of oxidative stress with the severity of depression along with development of suicidal behavior. According to her, she will work on the use of lipid peroxidation as a potential marker for suicidal behavior.

Saturday, 25th February, 2012

Key Note Presentation: Prof. Alok Dhawan

Title: "Multipronged approach in unraveling the mechanism of genotoxicity of benzene in humans"

Co-chairpersons

Dr. Lokeswara Rao Sajja, MS, MCh, FACS, Consultant Cardiothoracic Surgeon,



Prof. Alok Dhawan, Director, Institute of Life Sciences, Ahmedabad University.

The second day of the conference started with an insightful and inspiring talk by **Prof. Alok Dhawan,** Director, Institute of Life Sciences, Ahmedabad University. He spoke about the occupational hazard faced by people working in the petrol bunks and has identified Topoisomerase-II as a biomarker for benzene toxicity. He described *in silico* studies using different endpoints of genotoxicity and molecular docking studies with human Topoisomerase-II alpha, a major DNA repair enzyme. According to him, the results obtained from the *in vitro* data, pointed to a direct relationship of the observed genotoxicity with the structural properties and various interactions of metabolites with the enzyme.

<u>Technical Session IV: Biomarkers in Clinical Practice and Disease</u> <u>Progression</u>

Co-chairpersons

Dr. D. Swaminathan, President, JNIAS; **Dr. Lokeswara Rao Sajja,** Consultant Cardiothoracic Surgeon, STAR Hospitals, Hyderabad; **Prof. Alok Dhawan,** Director, Institute of Life Sciences, Ahmedabad University, Ahmedabad.



Co-chairs of session-IV: Dr. D. Swaminathan, President, JNIAS; Dr. Lokeswara Rao Sajja, Consultant Cardiothoracic Surgeon, STAR Hospitals, Hyderabad; Prof. Alok Dhawan, Director, Institute of Life Sciences, Ahmedabad University, Ahmedabad. **Dr. K. Thangaraj,** Scientist, CCMB, Hyderabad spoke about population and genetic variations in health and disease. He described that the role of Biomarkers in Western countries is different from India because of India's large population and population diversity as Indian population is stratified with cast, tribes, religious groups and linguistic family, etc.



Dr. K. Thangaraj, Scientist, CCMB, Hyderabad

He described his findings where he says that anatomically modern humans originated from Africa. He identified two main ancestral groups in India: an "Ancestral North Indian (ANI)", which is distantly related to those in the Middle East, Central Asia, and Europe, and an "Ancestral South Indian (ASI)", not related to groups outside India. According to Dr. Thangaraj, the Vaishya community in Andhra Pradesh lacks an enzyme that metabolizes anesthesia and hence people end up with complications. This was followed by an interesting talk by **Dr. Suman Jain**, President, Thalassemia & Sickle Cell Society, on Thalassemia biomarkers and their diagnostic applications. Her talk highlighted the importance of public awareness in helping prevent Thalassemia.

This was followed by interesting update by **Dr. Mahboob M.,** Toxicology Unit, Biology Division, Indian Institute of Chemical Technology (IICT), Hyderabad.

He discussed in detail on the oxidative stress biomarkers estimation in aluminium oxide nanomaterial treated rats. He presented his work related to understanding the size, dose and time dependent acute toxic effect of Al₂O₃ 30, 40 nm and their bulk.



Dr. Mahboob M., Toxicology Unit, Biology Division, IICT, Hyderabad

The results described by him showed increased lipid peroxidation, depleted glutathione content, enhanced catalase and glutathione -S- transferase activities, decreased superoxide dismutase and glutathione reductase activities in a dose dependent manner and no change in glutathione peroxidase activity was observed as a result of oxidative stress and thus can be used as biomarkers in estimating aluminium oxide in nanomaterial treated rats. This session ended by presentation on "Cytoprotective effect of low molecular weight glycosaminoglycans from marine mollusk Amussium pleuronectus (Linn) on isoproterenol induced cardiotoxicity in male Wister rats" by Dr. R. Saravanan from Department of Marine Pharmacology, Chettiand University, who discussed the various aspects of his study which indicated that these molecules may possess significant cardioprotective effect and may thus serve as Biomarkers in cardiovascular diseases. The next speaker Ms. Shree Divya from NIMS spoke briefly on H475Y variant of Glutamate Carboxypeptidase II and its role in disease susceptibility and progression, in diseases such as prostate cancers and autism. Her results indicated a positive correlation between plasma folate levels and GCPII expression. Her study suggested that H475Y variant may have an inhibitory role on folyl poly-8-glutamate

carboxypeptidase (FGCP) and NAALA Dase and may inhibit prostate specific membrane antigen. This was followed by a brief description on the "Role of Interleukin-10 Promoter Polymorphism (-1082 G/A) in Breast Cancer" by **C. Vinod** from Institute of Genetics & Hospital for Genetic Diseases, Osmania University.

Technical Session V: Biomarkers in Newer Areas like Metabolomics and Genomics

Co-chairpersons

Prof. Niyaz Ahmed, School of Life Sciences, Hyderabad Central University. **Dr. Vijay Kumar,** Associate Prof., Department of Clinical Pharmacology and Therapeutic, NIMS, Hyderabad.



Co-chairs of session-V: Prof. Niyaz Ahmed, School of Life Sciences, HCU. Dr. Vijay Kumar, Associate Prof., Department of Clinical Pharmacology and Therapeutic, NIMS, Hyderabad.

Dr. Kaiser Jamil, Dean, School of Life Sciences, and Director for the Centre of Biotechnology and Bioinformatics, JNIAS, spoke on epidermal growth factor receptors which are targets for therapeutics in several cancers. She presented her work on: **Analysis of EGFR gene mutations which have a response to quinazolin inhibitors.** These quinizolin inhibitors are in various stages of clinical trials for lung cancer and also

head and neck cancers. She explained about the application of Bioinformatics techniques to model the EGFR using homology modeling. Procheck, and continued docking studies of the ligands in the binding domains of EGFR. Inhibitors of EGFR were docked in mutated structures of EGFR by constructing the mutated EGFR structures and checking the 3D model for its properties before docking of the ligands. Most of this work was done by her student Dr. Sabitha Kotra in collaboration with GVK. The inhibitors, mostly analogues of quinazolin from SISI databases, were also analogues of gefitinib and erlotinib. About 10 of these analogues were docked in the two mutated structures of EGFR and the comparative studies gave her the information of the suitability of these drugs in lung cancer cases. Prof. Niyaz Ahmed, School of Life Sciences, Hyderabad Central University, Co-chairperson of this session appreciated Dr. Kaiser Jamil as a woman scientist who has updated herself with the current scientific and technological research methodology which can be taken as source of inspiration by young researchers and called upon them to be as versatile as she is in scientific contribution in the field of life sciences spanning from basic research to computer applications in biology.



Prof. Niyaz Ahmed, School of Life Sciences, HCU, presented memento to Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS.

This was followed by an interesting update on "Genetic variation of multidrug resistance gene-1 (C3435T) in stroke patients and Aspirin resistance" by **Dr. Anjana Munshi**, Institute of Genetics. Dr. Anjana Munshi's talk focused on ischemic stroke and the importance of Aspirin resistance. She also highlighted the importance of pharmacogenomics and pharmacogenetics in early detection of stroke.

Technical Session VI: Future Trends in Biomarkers for Research and Development

Co-chairpersons



Co-chairs of session-VI: Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS and Dr. M.A. Waheed, Deputy Director, Central Research Institute of Unani Medicine, Hyderabad

Conference Report

Dr. Rukmini Mridula, NIMS, Hyderabad, spoke on "Biomarkers for neurodegenerative disorders". She gave an in-depth analysis of both Parkinson's and Alzheimer's diseases. She explained about the importance of Biomarkers such as APOE 4 and

TOMM-40 in Parkinson's disease. In Alzheimer's disease, a person starts losing memory, she said, accompanied by dementia with cognitive impairment and with an onset between 40-90 years of age. Alzheimer's disease happens to be the late stage of dementia. She said that treatment options are very few.



Dr. Rukmini Mridula, NIMS, Hyderabad

This was followed by **Dr. Mala Ranjan's** talk, who suggested that gama-gly crystalline can be used as an antibody based biomarker for the early detection of Cataract in diabetic group from week two onwards. **Mr. Kaushlendra Tripathi**, Department of Biochemistry and Molecular Biology, Division of Infectious Diseases, spoke briefly on the role of Hydroxyurea, which inhibits the growth of *Cryptococcus neoformans* in mice. He also suggested that Hydroxyurea may have potential therapeutic application.

The next speaker **Dr. J. Parvathi** spoke about "Biomarkers in Hymenolepiasis". She discussed the importance of eosinophils and succinate dehydrogenase biomarkers in these diseases. Her study showed that a qualitative increase in succinate dehydrogenase activity is associated with quantitative increase in eosinophites and any deviations in energy cycle could be used for interpretation for detecting parasite attack. Her study suggests the uses of eosinophile and succinate dehydrogenase levels as Biomarkers for Hymenolepiasis. The next presentation was on "In-silico evidence for the association of Catechol-O-Methyl transferase V158M polymorphism with increased

susceptibility to Parkinson's disease and breast cancer" by **N. Kumudini**, Dept. of Biotechnology, Jawaharlal Nehru Technological University, Hyderabad. N. Kumudini's talk focused on the role of COMT (Catechol-O-Methyl transferase) polymorphism in breast cancer. She said that the differences in COMT activity can be attributed to increase in oxidative stress mediated by catechol estrogens in breast cancer. She highlighted the risk of L-allele with breast cancer and Parkinson's diseases.

The next speaker of second day of the conference was **Dr. Shailesh Bagale**, who emphasized about the need of biomarker development in cattle. According to him, this biomarker development for cattle will save not only animals but will be beneficial to industries dependent on animals. He described his work on BoLA-DRB3.2 allele polymorphism by PCR-RFLP in cattle. His study involved detection and characterization of different allelic variants of BOLA-DRB3.2 locus in cattle, which is associated with Mastitis. He reported that this gene is found to be highly polymorphic and suggested the use of this gene as a marker for Mastitis disease. The last speaker on the second day of conference was **Addepalli Pavani**. She suggested that interactions between CYP2C9 and VKORC1 haplotypes help in optimizing warfarin doses. TCA haplotype of CYP2C9 shows association with warfarin sensitivity, while GTG haplotype of VKORC1 showed association with warfarin resistance.

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Valedictory Session

25th Feb, 2012, 04:30 - 06:00 Hrs

The Valedictory Session was conducted on 25th February, 2012. **Dr. K.V. Raghavan** was the guest of honor for the valedictory session, the welcome address was given by **Mrs. Sujatha Gangadhar** and the conference report was presented by **Dr. Kaiser Jamil**, Dean, School of Life Sciences, JNIAS.



At Valedictory session: Guest of Honor Dr. K.V. Raghavan; Mrs. Sujatha Gangadhar, Registrar, JNIAS; Dr. Swaminathan, Chairman, JNIAS; Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS.

In her conference report **Dr. Kaiser Jamil**, Convener of National Conference on "Biomarkers for Diseases - Prospects and Challenges", summarized the two day deliberations and announced **the formation of Biomarker Research Society (BRS)**. She summed up the presentations given by various speakers highlighting their findings which are documented in this report. This was followed by Presidential Address given by **Dr. Swaminathan**, Chairman, JNIAS, who expressed happiness in the successful completion of the conference and hoped that the outcome of the conference would provide valuable inputs for policy makers and for those involved in Biomarker research. The guest of honor of the Valedictory function **Dr. K.V. Raghavan**, former Director of **IICT**, addressed the gathering and emphasized on the need of developing Biomarkers for the benefit of research and early diagnosis, prognosis, and management of disease. Vote of thanks was presented by **Dr. Kavita Kumari**, Assistant Prof., School of Life Sciences, JNIAS. Finally, the two day conference came to an end with the distribution of Cash Prizes worth Rs. 3,000 for best Oral Presentation for students and Rs. 1,000 each for two best Poster Presentations for students. Participation Certificates were also given to all the participants. All the delegates, guests, chairpersons, students and participants expressed their satisfaction over the outcome of the conference.



Distribution of Prizes for Best Poster and Oral Presentations by Dr. K.V. Raghavan

Concluding Remarks by the Convener

This meeting brought together eminent scientists, scholars and entrepreneurs from across the country in which many critical issues were discussed in depth to provide upto-date information to the participants. The conference provided a brilliant information platform for researchers to communicate with international experts which resulted in great exchange of knowledge.

According to the feedback of the conference delegates, most of our participants expressed that they would like to attend the upcoming conferences organized by JNIAS. Depending on the support of sponsors and suggestions from all the participants we are quite confident in organizing an "International Conference on Biomarkers" in 2013. Organizers are looking forward to meeting delegates again and will be forming the **BRS** (Biomarkers Research Society). Draft proposal of the society is enclosed.

Dr. Kaiser Jamil

Convener & Dean, School of Life Sciences Director, Centre for Biotechnology and Bioinformatics JNIAS

Proposal for Biomarkers Research Society (BRS)

<u>Origin:</u>

The proposal for the formation of the "Biomarkers Research Society" (BRS) came from the body of highly qualified scientists, medical fraternity and dignitaries who were the delegates of the Conference on "Biomarkers for Diseases - Prospects and Challenges", organized by Jawaharlal Nehru Institute of Advanced Studies on 24th and 25th February, 2012, at Hyderabad. It will function as an independent academic society whose broad objective is to promote the conduct and communication of scientific research related to all aspects of Biomarkers in various diseases for the benefit of mankind.

The Specific Objectives of BRS are:

- To promote the conduct and dissemination of Biomarker Research at national and international level.
- To encourage and support the academic activities of Biomarker researchers in and to nurture a vibrant research community of younger as well as more experienced researchers.
- To provide a stimulus for a career in biomarker research.
- To enhance international awareness of research conducted by researchers in member countries.
- To obtain greater representation of active researchers from other countries in BRS to fulfill the Society's goals.
- To expose students to leading personalities in the field of biomarker research.
- To blossom into an International Consulting Agency in Biomarker Research related issues.
- To organize National and International Conference series, in India and member countries.
- To engage other appropriate academic and professional activities including, but not limited to, the setting up of Special Interest Group or Editorial Group for the publication of a Society newsletter and a Society journal.

<u>Mission:</u>

To be in the front to undertake and promote research, education and training in Biomarkers.

Registration:

To register the "Biomarkers Research Society", the acronym BRS-JNIAS will be used to refer the Society legally in order to receive and disburse funds for its activities. Until it is registered as a society, BRS-JNIAS will tentatively remain as a unit of JNIAS.

Location/Office:

BRS-JNIAS shall be registered in India, Hyderabad with its location at Budha Bhawan, 6th Floor, M.G. Road, Secunderabad. This will be the main head quarters of the society, and will be governed by its laws and regulations.

The affairs of the Society shall be managed by an Administrative Secretary, ---- (name) appointed by the Chairman of JNIAS.

The Administrative Secretary shall be responsible for maintaining the Society's member database, website, including online membership for the Society and legal records. He or she will liaise with the treasurer on all matters related to the collection of annual membership dues, enrolling new members. The Administrative Secretary may be paid an allowance for his or her work provided that the Society's finances are sufficient for this purpose. The amount of the allowance will be determined by the President and approved by the Executive Committee from time to time.

All Society expenses must be for bona fide Society purposes that serve the Society's interests. All payments must be approved by the President, or his or her appointed designee, and the Treasurer. The Administrative Secretary shall keep a record of the approvals (usually sent by email) as supporting documentation for payments made.

For accounting purposes, the financial year of the Society shall begin on 1st April and end on 31st March. The Society's accounts will be subject to an annual audit.

<u>Membership:</u>

- Any person with good standing in the field of basic science degree can be a member.
- All medical fraternity and scientists can be members.
- All interested students pursuing their research in Biomarkers and related areas can be members.
- Membership of the Society shall be on a calendar basis, from 1st January to 31st
 December. A new member whose membership application is approved between 1st January and 30th June will pay annual dues covering the entire 12-month

period. A new member whose membership application is approved between 1st July and 31st December will pay 50% of the annual dues to cover the period to 31st December.

• Membership in the Society is not transferable and not assignable.

Executive Committee:

- The management of BRS shall be vested in the Executive Committee (EC) which will exercise general supervision over the affairs of the Society in conformance with the Society's Constitution and all legal requirements in the country of registration.
- The EC shall consist of the President of the Society, the President-elect, the past President, and up to 20 other EC Members. Members of the EC must be Members of BRS.
- An EC Member's term will be four (4) years. The President's term will be two (2) years. The term of the President-elect and the past President will also be for two (2) years. All terms will follow the calendar year, commencing on 1st January and terminating on 31st December two or four years later, as the case may be.
- Every EC Member is required to participate in at least two out of four BRS conferences in any four-year window period.

Activities:

The activities which will be undertaken by Biomarkers Research Society are:

- Organizing National and International conferences.
- Conducting seminars and workshops.
- In house research on Biomarkers.
- Undertake National and International collaboration for research training and exchange of scientists.

Founding Members:

The following delegates who voted for the **Biomarkers Research Society** will be the founder members of the society, once they submit written agreement.

Dr. D. Swaminathan

Chairman, Dr. D. Swaminathan Research Foundation (DSRF) President: Jawaharlal Nehru Institute of Advanced Studies (JNIAS), Buddha Bhavan, 6th Floor, M.G. Road, Hyderabad

Dr. (Mrs.) Kaiser Jamil

Convener & Dean School of Life Sciences and Director, Centre for Biotechnology and Bioinformatics Jawaharlal Nehru Institute of Advanced Studies (JNIAS) Buddha Bhavan, 6th Floor, M.G. Road, Hyderabad

Mrs. Ch. Sujatha Gangadhar

Co-Convener Registrar, Jawaharlal Nehru Institute of Advanced Studies (JNIAS) Buddha Bhavan, 6th Floor, M.G. Road, Hyderabad

Dr. D. Raghunadha Rao

Oncologist, Prof. & Head, Dept. of Medical Oncology, NIMS, Hyderabad

Dr. K.V. Raghavan

Distinguished Fellow and Scientist Emeritus Former Director, Indian Institute of Chemical Technology, Hyderabad

Dr. Chanchal K. Mitra

Prof. of Biochemistry, University of Hyderabad and Honorary Prof., JNIAS, Hyderabad

Dr. Niyaz Ahmed

Honorary Prof., JNIAS, Hyderabad Group Leader and Chief, Department of Biotechnology, University of Hyderabad Prof. (Adjunct), Institute of Life Sciences, Hyderabad, India

Dr. A. Jyothi

Director, Institute of Genetics & Hospital for Genetic Diseases Osmania University, Hyderabad

Dr. M. Michael Aruldhas

Department of Endocrinology Dr. A.L.M. Post Graduate Institute of Sciences

University of Madras, Taramani Campus Chennai 600113, TN, India **Prof. Alok Dhawan** PhD, FNASc, ATS, FST, FAEB, FINS, FAScAW Director, Institute of Life Sciences Ahmedabad University, Vastrapur, Ahmedabad

Dr. K. Thangaraj Deputy Director Centre for Cellular and Molecular Biology (CCMB), Hyderabad

Dr. Lokeswara Rao Sajja Consultant Cardiothoracic Surgeon STAR Hospitals, Hyderabad

Dr. M.A. Waheed Director-in-Charge Central Research Institute of Unani Medicine, Hyderabad

Dr. Mahboob M. Toxicology Unit, Biology Division Indian Institute of Chemical Technology, Hyderabad

Dr. Ramadevi Sanam Principal Scientist GVK Biosciences, Hyderabad

Prof. R.V. Raja Kumar Vice-Chancellor Rajiv Gandhi University of Knowledge Technologies Gachibowli, Hyderabad

Dr. Y.S. Murthy Director Andhra Mahila Sabha Hospital Hyderabad

Dr. D. Sirisha Head, School of Environmental Sciences (SES) JNIAS

Dr. K. Kavita Assistant Prof. Centre for Biotechnology and Bioinformatics School of Life Sciences, JNIAS, Hyderabad

Dr. M.F. Rahman Scientist - Toxicology Division IICT, Hyderabad

Prof. I.V. Murali Krishna Additional Director-General JNIAS, Hyderabad

Dr. P. Venugopal Rao Dean, School of Environmental Sciences JNIAS, Hyderabad

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Annexure-I

Friday			
24-02-	Inauguration Program		
2012			
10.00 bro	Welcome address and presidential address of the conference by		
10.00 115	Dr. D. Swaminathan, President, JNIAS.		
/	Inauguration of the conference by lighting of lamp by the Chief Guest, Dr. R.V.		
10:15 hrs	Raja Kumar, Vice-Chancellor, Rajiv Gandhi University of Knowledge Technologies,		
/	Gachibowli, Hyderabad.		
10.20 bro	Release of the Conference Volume by the Chief Guest, Dr. R.V. Raja Kumar, Vice-		
10.20 115	Chancellor, Rajiv Gandhi University of Knowledge Technologies, Hyderabad.		
10.20 bro	About JNIAS: Mrs. Ch. Sujatha Gangadhar, Registrar, JNIAS.		
10.30 hrs	&		
10.40 nrs	About the Conference: Dr. Kaiser Jamil, Convener of the Conference		
10.55 hrs	Vote of thanks by Mr. Asimuddin, JNIAS		
11.10 hrs	Coffee / Tea Break.		

Keynote presentation

11:30– 12:10 hrs Is an	ndrogen receptor a factor
by Dr. M. Michael Aruldhas to re	eckon with thyroid cancer
Prof. and Head, Department of Endocrinology, Dr. ALM Post	tissues?
Graduate Institute of Sciences, University of Madras, Taramani	
Campus, Chennai, Tamil Nadu.	/ \ \ /

Technical Session I: Integrated Biomarker of various diseases 24th Feb, 2012, 12:10 - 01:50 Hrs

Co-chair persons

Dr. D. Raghunadha Rao, Prof. & Head, Dept. of Medical Oncology, NIMS, Hyderabad & Dr. Y.S.N. Murthy, Director, College of Physiotherapy, Andhra Mahila Sabha Hospital.

Invited speakers

Dr. (Mrs.) Rajeswari R. Moganty	Prof., Department of Biochemistry All India Institute Of Medical Sciences, New Delhi	Biomarkers for the Neurodegenerative Disorder, Friedreich's Ataxia
Dr. Ramadevi Sanam	Principal Scientist, GVK Biosciences, Hyderabad	Challenges involved in biomarker discovery and development
Dr. Vijay Kumar Roy	Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA 01605	Protein Biomarkers for Neurodegeneration: facts and future implications
Dr. R. Raskin Erusan	Guest Faculty, Dept. of Genetics, University of Madras,Chennai, Tamilnadu	Analysis of structure, function and evolutionary relationship of the long form of leptin receptor (OB – Rb)
Lunch Break	1.50-2.30	

Technical Session II: Technologies in Biomarker research 24th Feb, 2012, 02:30 – 03:30 Hrs

Co-chair persons

Dr. M. Michael Aruldhas, Prof. and Head, Department of Endocrinology, Dr. ALM Post Graduate Institute of Sciences, University of Madras, Taramani Campus, Chennai, Tamil Nadu & Dr. A. Jyothy, Director, Institute of Genetics and Hospital for Genetic Diseases, OU, Hyderabad.

Invited speaker

Dr. Chanchal. K. Mitra	Prof. School of Life Sciences, University of Hyderabad, Hyderabad	miRNA binding sites are targets: the new scenario
03:30 - 03:40		Tea Break

Technical Session III: Biomarker for diseases prediction and model Biomarker 24th Feb, 2012, 03:30 - 05:30 Hrs

Co-chair persons

Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS, Dr. Sirisha D., Head, Centre for Environment & Climate Change (CECC), School of Environmental Sciences (SES), JNIAS.

Invited Speaker			
Dr. Rama Devi	Principal Scientist, GVK	Challenges involved in biomarker	
Sanam	Biosciences, Hyderabad	discovery and development	
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Paper presentations

Paper presentations			
Mr. Hanuma Kumar	GP Limited, Hyderabad, Institute of Pathology (ICMR), Safdarjung hospital Campus, New Delhi.	Claudin 1 is prognostic marker for glioblastoma	
Musthaq Ahmed	Mahaveer Hospitals, A C Guards, Hyderabad, Andhra Pradesh	Biomarkers of toxicity in Cervical Cancer	
Dr. Nilanjana Das	Senior Lecturer, Centre for Biotechnology, Visva-Bharati Siksha Bhavana, Santiniketan,West Bengal	Potential protein markers of age and age-associated diseases	
Vandana Sharma	Institute of Genetics and Hospital for Genetic Diseases, Osmania University, Begumpet, Hyderabad, Andhra Pradesh	Genetic variation of Multi drug resistance gene-1 (C3435T) in stroke patients and Aspirin resistance	
Dipti M Kapoor	Department of Biochemistry University College of Medical Sciences and Guru Teg Bahadur Hospital, Dilshad Garden	Oxidative and Nitrosative stress status in suicidal behavior	

Second Day: Saturday, 25th February, 2012

Keynote Presentation

Prof. Alok Dhawan PhD, FNASc, ATS, FST, FAEB, FINS, FAScAW Director, Institute of Life Sciences Ahmedabad University, Vastrapur, Ahmedabad

Multipronged approach in unraveling the mechanism of genotoxicity of benzene in humans

Technical Session IV: Biomarkers in clinical practice and disease progression 25th Feb, 2012, 11:30 – 12:30 Hrs

Co-chair persons

Dr. D. Swaminathan, President, JNIAS , **Prof. Alok Dhawan**, Director, Institute of Life Sciences, Ahmedabad University & **Dr. Lokeswara Rao Sajja**, Consultant Cardiothoracic Surgeon, STAR Hospitals, Banjara Hills, Hyderabad.

Invited Speakers

Dr. K. Thangaraj	Scientist, Centre for Cellular and Molecular Biology (CCMB), Hyderabad	Population and genetic variations in health and disease
Dr. Suman Jain	President, Thalassemia & Sickle Cell Society, Flat No. 180, AWHO Colony, Gautham Enclave, Secunderabad	Prevention of Thalassemia

Paper presentations

C. Vinod	Institute of Genetics & Hospital for Genetic Diseases, Begumpet, Hyderabad	Role of Interleukin-10 Promoter Polymorphism (-1082 G/A) in Breast Cancer
Shree Divya	Department of Clinical Pharmacology Therapeutics, Nizam's Institute of Medical Sciences, Hyderabad	& H475Y variant of Glutamate Carboxypeptidase II and its role in disease susceptibility and progression
Tea Break	11:30-11:50	

Technical Session V: Biomarkers in newer areas like Metabolomics and Genomics

25th Feb, 2012, 12:30 - 01:30 Hrs

Co-chair persons

Niyaz Ahmed, Prof., School of Life Sciences, Hyderabad Central University. **Dr. Vijay Kumar,** Associate Prof., Department of Clinical Pharmacology and Therapeutic, NIMS, Hyderabad.

Dr. Anjana Munshi	Institute of Genetics, OU,	Genetic variation of multidrug resistance gene-1 (C3435T) in stroke patients and
	Ameerpet, Hyderabad	Aspirin resistance

<u>Technical Session VI: Future trends in Biomarkers for Research and Development</u> <u>25th Feb, 2012, 02:30 – 03:45 Hrs</u>

Co-chair person

Dr. Kaiser Jamil, Dean, School of Life Sciences, JNIAS and Dr. M.A. Waheed, Deputy Director, Central Research Institute of Unani Medicine, Hyderabad.

Invited speakers

Dr. Mahboob M.	Toxicology Unit, Biology Division, Indian Institute of Chemical Technology, Hyderabad	Oxidative Stress Biomarkers Estimation in Aluminium Oxide Nanomaterial Treated Rats
Dr. R. Saravanan	Department of Marine Pharmacology, Chettiand University, Kelambakkam- Chennai, India	Cytoprotective effect of low molecular weight glycosaminoglycans from marine mollusk <i>Amussium</i> <i>pleuronectus</i> (Linne) on isoproterenol induced cardiotoxicity in male Wister rats
	7/	

Dr. J. Parvathi	P.G. Dept. of Zoology, Vivek Vardhini College, Hyderabad	Eosinophils and Succinate Dehydrogenase as Biomarkers of Hymenolepiasis
Dr. Mala Ranjan	Lecturer, Department of Biochemistry, University College of Science, Osmania University, Hyderabad	Immunochemical Detection of Circulating Auto- antibody (IgG) to gamma-glycated (γ-Gly) Crystallins in Streptozotocin (STZ) induced diabetic rat and in Human serum during Aging: Comparative Study
Dr. Rukmini Mridula	NIMS, Hyderabad	Biomarkers for neurogenerative disorders.
Paper pres	entations	

Paper presentations

Mr. Kaushlendra Tripathi	Department of Biochemistry and Molecular Biology Division of Infectious Diseases, Medical University of South Carolina, Charleston, SC, USA	Hydroxyurea (HU) treatment inhibits the proliferation of <i>Cryptococcus</i> <i>neoformans</i> in mice
N. Kumudini	Dept. of Biotechnology, Jawaharlal Nehru Technological University, Hyderabad	Insilico evidence for the association of Catechol-O-Methyl transferase V158M polymorphism with increased susceptibility to Parkinson's disease and breast cancer
Shailesh Bagale	College of Veterinary and Animal Sciences, Parbhani,Maharashtra Animal and Fishery Sciences University, Nagpur, Maharashtra	Study of BoLA-DRB3.2 allele polymorphism by PCR-RFLP in cattle

		Haplotypes of CYP2C9 and VKORC1
Addepalli	Department of Clinical Pharmacology	as pharmacogenomic determinants of
Pavani	and Therapeutics	warfarin dose in patients with
		thrombotic events

Annexure: II

List of Participants for the National Conference on "Biomarkers for Diseases -Prospects & Challenges"

S. No. /	Name of the Participant	Profession
1	E. Rajeshwara Reddy	Assistant Prof., MITS, Madanapalle
2	Dr. J. Parvathi	Guest Faculty (Immunology), Help Biotech Academy, Hyderabad.
3	Yeelluri Rupasree	Ph.D Scholar, Jawaharlal Nehru Technological University, Dept. of Clinical Pharmacology & Therapeutics, Nizam's Institute of Medical Sciences, Hyderabad.
4	Addepalli Pavani	Ph.D Scholar, Jawaharlal Nehru Technological University, Dept. of Clinical Pharmacology & Therapeutics, Nizam's Institute of Medical Sciences, Hyderabad.
5	Shree Divyya Parvataneni	Ph.D Scholar, Nizam's Institute of Medical Sciences, Punjagutta, Hyderabad.
6	N. Kumudini	CSIR-SRF, Jawaharlal Nehru Technological University, Kukatpally, Hyderabad.
7	Sudeshna Banerjee	Senior Research Fellow, Central Inland Fisheries Research Institute, Biochemistry & Biotechnology Laboratory, Barrackpore, Kolkata, India.
8	S. Lakshman Kumar	Lecturer in Biotechnology, The Adoni Arts & Science College, Arts & Science College Campus, Adoni, Kurnool(Dt.), A.P.
9	Ahmed Abdul Haleem Khan	Research Scholar, Dept. of Microbiology, Girraj Govt. College, Nizamabad
10	Dipti M. Kapoor	Ph.D Student, University College of Medical Sciences & GTB Hospital, Dilshad Garden, Delhi.
11	Sudheer Adluri	Scientist, Nektar Therapeutics (India) Pvt. Ltd., Genome Valley, Shameerpet, Hyderabad.
12	Arthisree S.R.	Student (Final B.Tech - Biotechnology), PSG College of Technology, Coimbatore, TN.
13	Dr. Sunita Bhargavi S.	Researcher, JNTUH, Kukatpally, Hyderabad.
14	Sarla Naglot	Ph.D Scholar, All India Institute of Medical Sciences (AIIMS),

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		New Delhi.
45		Ph.D Student, All India Institute of Medical Sciences (AIIMS),
15	Priyanka Verma	New Delhi.
10	Dr. Nilesiene Dee	Assistant Prof., Centre for Biotechnology, Siksha Bhavan,
16	Dr. Nilanjana Das	Visva Bharathi, Santiniketan, WB.
17	Narendra Pratap Singh	Research Scholar, J.N. Medical College, AMU, Aligarh.
10	Dr. Abbilasha Cunta	Consultant Microbiologist, State T.B. Training &
18	Dr. Abnilasna Gupta	Demonstration Centre, Agra.
10	K. Hanuma Kumar	Junior Scientist, GP Limited, Gandi Maisamma Cross Roads,
19	K. Halluma Kumai	Dundgal Post, Hyderabad.
20	Moonakshi Iba	Research Scholar, Dept. of Biotechnology, Panjab University,
20	Meenaksiii Jila	Chandigarh.
21	Bagale Shailesh	MVSc Research Scholar, COVAS, Parbhani
21	Sidramappa	
22	Dr. Abhimanyu Kumar	Assistant Prof II, Dept. of Biotechnology, IMS Engineering
T	Jha	College, Ghaziabad.
23	Shikha Tyaqi	Research Scholar, Dept. of Biotechnology, IMS Engineering
	orinina i yagi	College, Ghaziabad.
24	Dr. K. Vasavi Rama	Asstt. Prof., GITAM University.
25	Dr. S. Jithender Kumar	Prof. of Zoology, O.U. College for Women, Koti, Hyderabad,
	Naik	
26	Dr. P. Nagaraja	Associate Prof., Dept. of Zoology, O.U. College for Women,
	Lakshmi	Koti, Hyderabad.
27	Dr. S. Anitha Kumari	Asstt. Prof. (C), O.U. College for Women, Koti, Hyderabad.
28	Anusha C. Pawar	Research Scholar (SRF-RGNF, New Delhi), Dept. of
		Zoology, O.U. College for Women, Koti, Hyderabad.
29	Y. Sandhva Rani	Ph.D Student, Microbiology, Vivekanandha College of Arts
		and Sciences for Women, Periyar University.
30	R. Hema Kalai Rani	Lecturer, Adhiyamaan College of Engg., Hosur,
		Tamil Nadu.
31	K. Saranya	Lecturer, Adhiyamaan College of Engg., Hosur,
- 20	Deene Cecher	
32	Deepa Sachan	Student, VII University, Vellore.
22	Dr. D. Dookin Environ	Guest Faculty, Dept. of Genetics, Dr. ALM PG IBMS,
- 33	DI. R. RASKIII ETWSAII	
		I diffinit Nadu.
34	Mona Upreti	
		Ann. SU. Dostdoc Follow, Modical University of South Carolina, Dost
35	Kauchlandra Trinathi	of Biochemistry and Molecular Piology Charlester
- 30	Nausilienula mpalli	South Carolina, USA

36	Pallab Bhattacharya	Senior Research Fellow, School of Biomedical Engineering,
		1T-BHU, Varanasi - 221005, (UP).
37	Anand Kumar Pandey	Senior Research Fellow, School of Biomedical Engineering,
		11-BHU, Varanası - 221005, (UP).
38	Minal Trivedi	Student [M.Sc Sem IV, Biotechnology], LAD College
39	A.Shalini	Student, CMR College of Engg. & Technology.
40	S.V.Vamsi Bharadwaj	Student, CMR College of Engg. & Technology.
41	N.Sai Ram	Student, Osmania University, Hostel B, Rno-47.
42	A.Sateesh Reddy	Student, Osmania University, University college of Science, O.U.B.Hostel, Room No-47.
43	K.Sandeep	Student, Indian Institute of Chemical Technology, Tarnaka, Hyderabad
44	Dr.Vivek Kumar	Assistant Prof., IMS Engineering College
45	A.Manjusha	Student, Msc Biotechnology , Sri padmavathi Mahila, Visva Vidhyalayam, SPMVV, Tirupathi-517502
46	V.Mary Priyanka	Student, M.Sc 5Y integrated Biotechnology, Sri padmavathi Mahila, Visva Vidhyalayam, SPMVV, Tirupathi-517502
47	R.Shirisha	Student, Martin's Engineering College, Dhullapally, Secunderabad - 500014, A.P.
48	MD. Shaik Abdullam	Student, Martin's Engineering College, Dhullapally, Secunderabad - 500014, A.P.
49	Akanksha Gupta	IMS Engineering college, NH-24, Adhyatmik Nagar, Near Dasna,Ghaziabad, U.P - 201009.
50	Pooja Jain	Student,M.Sc - Biochemistry First Year, Aurora's Degree & PG College, Chikkadpally
51	Afreen Sultana	Student,M.Sc - Biochemistry First Year, Aurora's Degree & PG College, Chikkadpally
52	Ranjitha Madishetti	Student,M.Sc - Biochemistry First Year, Aurora's Degree & PG College, Chikkadpally
53	M.Pavani	Student, Rayalaseema University, Kurnool
54	M.Rathna Kumari	Student, Sri Padmavathi mahila Visvavidyalayam, Department of Biotechnology, Tirupathi.
55	S.Mounica	Student, Department of Biotechnology,Rayalaseema University, Kurnool
56	N.Sabitha Rani	Student, Sri Padmavathi mahila Visvavidyalayam, Department of Biotechnology, Tirupathi.
57	Swarna Vennela	Student, Hindu College, Department of Biotechnology, Amarawathi Road, Guntur.
58	K.Surya Veenkata Sai Kumar	Student, Rayalaseema University, Kurnool
59	Tanmoy Das	Student, (B.Tech[Biotrch]), Amity University, Lucknow

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60	Neelesh Nandan	Student, Amity Institute of Biotechnology, Amity University.LKO
61	Shreva Gupta	Student, (B.Tech[Biotrch]), Amity University, Lucknow
62	Kritika Khanna	Student, (B.Tech[Biotrch]), Amity University, Lucknow
63	Neha Singh Dogra	Student, (B.Tech[Biotrch]), Amity University, Lucknow
64	D.Sharavani	Student, Genetic Department, 2nd Year Biotechnology Osmania University
65	M.Srinath	Student, University college of science. Osmania University
66	N.Saisuresh	Student, MITS, Madanapalli, Chitoor Dist.
67	Shaik Niyaz Ali	Student, MITS, Madanapalli, Chitoor Dist.
68	P.Venkata Ramana Rao	Student, B.Tech, MITS, Madanapalle, Chitor (Dist.)
69	L.Srilakshmi	Student (M.Tech), Sree Vidyaniketan Engineering College, Sri Sainath Nagar, A.Ranjampet, Tirupathi
70	V.Shiv Jyoti	Student, M.Tech Biotechnology, Sree Vidyanikethan Engineering college, Sri Sainath Nagar, A.Ranjampet, Tirupathi
71	M.K.Madhu	Student, Prathap Narender Reddy College of Pharma
72	M.Anjaneyulu	Student, Prathap Narender Reddy College of Pharmaly
73	Shashi Bala Pathak	P.G Student, Centre for Biotechnology, SOA University
74	Kuldeep Sahu	P.G. Student, Roland Institute of Pharmaceutical Science, Berhampur, Khudaringi, Orissa
75	P.Praveen Kumar	Student, Sree Vidyanekathan College of Engineering & Technology
76	B.Vamshi Vardhan	Student, Prathap Narender Reddy College or Pharmacy, Pedd sharpoor(Vill), Shamshabad, R.R.Dist.
77	D.Sahithi	Student, P.G College of Science
78	K.Prashanthi	Student, Indian Institute of Chemical Technology
79	Manjusha Dasgupta	JRF, ADP College, Nagaon - 782002
80	Mohammed Shoukathuddin	Student, Prathap Narender Reddy College or Pharmacy, Pedd sharpoor(Vill), Shamshabad, R.R.Dist., Hyd, A.P
81	Dr.Zehna Siddiqui	Associate Prof., JBREC, Moinabad, Yenkapally
82	J.Avinash Kumar	Senior Lecturer, Aurora's degree & P.G College, Chikkadpally, Hyderabad
83	S.Raghava Jagadeesh	Student, A.V. College
84	J.Annie Modestra	Student, Sree Vidyanekathan College of Engineering, Tirupathi
85	J.Chandana	Student, Sree Vidyanekathan College of Engineering, Tirupathi
86	M.Praveena	Student, Sree Vidyanekathan College of Engineering, Tirupathi

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87	Jagadish Babu.D	Student, MITS, Madanapalli, Chitoor Dist.
88	G.Nagaraju	Student, MITS, Madanapalli, Chitoor Dist.
89	N.Radhakrishan	Tutor, Dept. of Biotechnology, AIMSR, Jubileehills
90	C.H.Venkatamuni	Student, MITS, Madanapalli, Chitoor Dist.
91	Burepally Ravi	Student, Prathap Narender Reddy College of Pharmacy,
		Pedda Shapur, Shamshabad, Ranja Reddy, Hyd, A.P
02 \	Vandane Sham	Research Scholar, IGHGD, Begumpet(Institute of Genetics
52	Vandane Sham	of Hosp for Genetic Digram), Hyd
03	Dr Samiya Shreen	P.G Scholar, [MD] Unani, Govt. Nizamia Tibbi College,
	Diediniya Ohioon	Charminar
94	B Annie Jerusha	Student, M.Sc Bio-Chemistry, Aurora's PG College,
01	B., time bordona	Chikkadpally, Hyderabad.
95	Rohini Satpathy	Student, Orissa University of Agriculture & Technology
96	B Manish Goud	Student, Prathap Narender Reddy College of Pharmacy,
		Pedda Shapur, Shamshabad, Ranja Reddy, Hyd, A.P
97	J.Ravi	Student, Prathap Narender Reddy College of Pharmacy,
		Pedda Shapur, Shamshabad, Ranja Reddy, Hyd, A.P
98	Syeda Ruqia Sultana	Student, PG College of Science, Saifabad
99	T.Reena Azuba	Student, PG College of Science, Saifabad
100	Vidya Tadapatri	Student, PG College of Science, Saifabad
101	D.Krishnaveni	Student, Institute of Genetics, Hospital sor Genetics, O.U,
		Hyderabad
102	T.Jyotsna	Student, Aurora's Degree & PG College
103	K.Sri Manjari	Research Scholar, Institute of Genetics a Hospital for
	12	Genetic diseases, Osmania University, Ameerpet, Hyderabad
104	C.Vinod	Research Scholar, Institute of Genetics a Hospital for
105	3	Genetic diseases, Osmania University, Ameerpet, Hyderabad
105	Dr.Goutum Kumar	Student, COVAS, Parbhani, Maharastra
106	D.N.Rajeswari	Student, MITS College, Madanapally, Chitoor Dist., A.P
107	G.Sindhu	Student, MITS College, Madanapally, Chitoor Dist., A.P
108	C.Chandra Sekhar	Student, Dr.B.R.Ambedkar Open University
109	Akhtar Rasool	Student, IIC1, Hyderabad
110	Mrs. Meenakshi	Assistant Prof., O.U College for Women, Koti, Hyderabad
111	Kalapatapu Ravikiran	Assistant Prof., Health Communication, Indian Institute of
	Sharma	Health and Family Welfare (IIHFU)
112	G.Rama Satya Vani	Student, Indian Institute of Chemical Lechnology, Larnaka,
440		Hyderabad
113	J.Ashwini	Student, Auroro degree & PG College
114	K.Kajender	Student, Auroro degree & PG College, Chikkadpally
115	R.Santosh	Student, Aurora Post Graduate College
116	Asha Sahe	Student, Aurora Degree & PG College

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117	B.Ramesh	Student, Aurora's Degree & PG College
118	Sneha Dadheech	Research Scholar, Institute of Genetics a Hospital for
		Genetic diseases, Osmania University, Ameerpet, Hyderabad
119	P.Madhu Sudha Reddy	Student, Aurora's degree & PG College
120	Mohammed Baba	Student, Aurora's Degree & PG College
121	T.Anand	Student, Pondicherry University
100	T. Giridhar	Student INTUK Kelvinede
122	Purushottam	Student, JNTOK, Kakinada
123	M.Swathi	Student, St.Peters Institute of Pharmaceutical Sciences
124	Jyothi Kiran Mai	Student, Malla Reddy College of Pharmacy
125	P.Ujwala Rani	Student, Malcolak Knowledge Centre
126	Ramaiyan Aravind	Student, Pondicherry University
127	Gandra Jawahar	Student, Dept. of Genetics and Biotechnology
128	Amol Pandurang Jadhav	Student, Dept. of Genetics and Biotechnology, OU
129	P.Sivaranjani	Student, CMR College of Engineering & Technology
120	Kalapatapu Vishnu	Doctoral Candidate - Biochemistry, GITAM University,
130	Priya	Visakhapatnam
131	Amar Chand Bhayal	Institute of Genetics & Hospital for Genetic Diseases,
101		Ampeerpet, Hyderabad
132	Syed Akram Hussaini	Student, Sultana-UI-Uloom College of Pharmacy
133	MD. Sohab Anwar	Student, Sultana-UI-Uloom College of Pharmacy
134	Sayyad Zuberwasim Quamaruddin	Student, Osmania University
135	Dr.mala Ranjan	Lecturer, st.Francis College for Women,Begumpet, Umanagar, Hyderabad
136	S.Shabana Begum	Faculty, Aurora's PG College, Chikkadpally, Hyderabad
137	H.Shiva Jvothi	Student, Aurora PG College, Chikkadpally, Hyderabad
138	M.Sailaja	Student, Institute of Genetics , Hospital sor Genetics , O.U, Hyderabad
139	Spandana.T	Student, Andhra University, Vizag
140	Sk.Khadeer Basha	Student, Andhra University, Vizag
141	Sushma Sultana Raza	Student, Andhra University, Vizag
142	Saroj D Shinde	Student, UDCT Aurangabad
143	Shraddna Gulbase	Student, UDCT Aurangabad
144	Y.Pavani	Student, Institute of Genetics, Begumpet, Hyderabad
145	M.Ann Helez Ahija	Student, Institute of Genetics, Begumpet, Hyderabad
146	Mohammed Ashfaq Hussain	Student,Sultan-ul-uloom College of Pharmacy
147	Mohammed Ziauddin	Student, Sultan-ul-uloom College of Pharmacy
148	Mohd Abdul Quadir	Student,Sultan-ul-uloom College of Pharmacy

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149	Mohammed Sohail	Student,Sultan-ul-uloom College of Pharmacy
150	S.M.Naushad	Student, NIMS, Hyderabad
		Research Scholar, Dept. of Genetics & Biotec, Central
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