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## Mandate

- ❖ To undertake, aid, promote, guide and coordinate research of high caliber in basic and applied plant molecular biology;
- ❖ To provide and promote effective linkages on a continuing basis between various scientific and research agencies/laboratories and other organizations working in the country on plant genes, development and related areas;
- ❖ To utilize molecular biology approaches along with tissue culture and genetic engineering technology to identify important genes and manipulate these for generating transgenic plants with improved agronomic characters and pathogen/stress resistance;
- ❖ To take up any fundamental work related to gene regulation and mapping that would aid in achieving the above mandate;
- ❖ Development of molecular markers for monitoring important traits;
- ❖ Production and testing of transgenic plants;
- ❖ Identification of genes that are vital for the survival of the pathogens, and to target them for pathogen combatment;
- ❖ To impart advance training modules in plant genetic engineering and genome analysis;
- ❖ To undertake collaborative programmes and develop close linkages with international institutes engaged in plant genome research.



## Preamble

The National Institute of Plant Genome Research (NIPGR) is merely 13 years old. It was established to carry on and promote research of high caliber in basic and applied plant biology. The quality of research papers published by the scientific groups, and several awards and honours won by researchers suggest that the research work done at NIPGR has been recognized and appreciated in India and abroad. Since its establishment in 1998, in a very short span of time, NIPGR has become one of the very well respected and recognized institutions for plant biology. The institute runs research programmes in Computational Biology, Genome Analysis and Molecular Mapping, Molecular Mechanisms of Abiotic Stress Response, Nutritional Genomics, Plant Development and Architecture, Plant Immunity, and other Emerging Areas. It is my privilege to provide a bird's-eye-view of some of the scientific achievements of the Institute for the period from April 2010 to March 2011.

Bioinformatics permeates all areas of investigation at the Institute and has been duly strengthened. In particular, an automated procedure was developed for identification of terpene synthase (TPS) or prenyl transferase (PT) proteins in plants using Profile Hidden Markov Model. Efforts are underway to predict the product specificity of the newly identified TPSs through modeling and structure analyses. In the genome analysis programme, the institute is focusing on comprehensive understanding of gene content and gene organization within the chickpea genome. For this, deep sequencing is being done using various next generation sequencing platforms. The 454 pyrosequencing platform generated 8.53 Gb (27 million reads, 11.5X) of sequence data. Sequencing of 3 kb and 20 kb paired-end libraries generated 1.34 Gb and 199 Mb sequences, respectively. Assembly of this data along with other data generated 492 Mb (66% of the genome) assembled sequence. The *de novo* assembly and characterization of the chickpea transcriptome revealed a total of 34,760 transcripts. The information on genome and transcriptome is helpful in the identification of genetic markers. In chickpea, interspecific linkage map has been constructed for ICCV-2 x JG-62 using 522 STMS markers, and for ICC4958 x PI489777 using 735 EST based markers along with 278 genomic STMS markers. In the Indo-Canadian Pulse Genomics Initiative, a total of 536 SSR primers were designed from lentil, of which 196 were validated. In another legume *Trifolium alexandrinum*, a microsatellite enriched library was constructed which led to the development of 692 SSR markers. In the case of foxtail millet, 98 novel ILP markers were developed using sequence information of rice. For periwinkle, a map of 8 linkage groups spanning 1790.4 cM and mean distance between 172 markers of 10.34 cM has been prepared. In order to gain functional and biological insights from the vastly growing plant genomic data, efforts were made to identify microsatellites (or SSR sequences) in available plant genomes using the Mreps algorithm combined with customized perl scripts.

The understanding of the molecular mechanisms of abiotic stress responses has improved. In rice, different experiments revealed interactions of stress associated protein, OsSAP1, with OsRLCK253 and OsSAP11 in the plasma membrane and nucleus, respectively, and interaction of OsSAP11 with OsRLCK253 at the nuclear and plasma membranes. Also, transcripts of several transcription factors were found to be up-regulated during water-deficit and high salinity stress conditions. Few of them,

including two belonging to homeobox family, are being investigated for their function. An interactome map between OsMPKs (MAP kinases) and OsMKKs (MAP kinase kinase) was generated. It was observed that in rice, induction of phytoalexin biosynthesis genes by UV-B rays was linked with the activation of MAP kinase. Study with a core set of foxtail millet cultivars suggested that drought tolerant cultivars possess a wider array of antioxidant machinery with an efficient ascorbate-glutathione pathway. cDNAs coding for putative dehydration responsive element binding protein, *SiDREB2*, and a salt-stress related NAC protein, *SiNAC*, were characterized from foxtail millet. Using heterologous systems, it was shown that CaZF, a C2H2 zinc finger protein from chickpea, improved salt stress tolerance in yeast and tobacco. The transgenic tobacco lines overexpressing CaZF produced phenotypes like improved root and shoot growth along with stress tolerance. Two stress-inducible promoters were also evaluated for their activity and raising transgenics with selected target genes.

With the objective to increase the shelf life of fruits and vegetables, the N-glycan processing enzymes  $\alpha$ -D-mannosidase and  $\beta$ -hexosaminidase were silenced to decrease and delay the fruit softening in tomato and capsicum. In an effort to increase the nutritional value of crops, stable lines of AmA1 potato developed were grown and evaluated. The transgenic potatoes have increased protein content and are safe for consumption. Oxalate is a major factor in urinary tract calculi, hyperoxaluria, hypocalcemia, and nephrolithiasis. The *OXDC* gene encoding oxalate decarboxylase from wood-rotting fungus *Flammulina velutipes* was introduced into tomato, spinach, and soybean to reduce their oxalate content. The transgenic grasspea over-expressing *OXDC* gene, to make it edible by reducing the associated neurotoxin risk factor, has been raised. Few important glucosinolate biosynthesis genes like *MYB28*, *CYP83A1*, and *GSL-ELONG* were isolated and characterized from *Brassica juncea* with the ultimate objective of reducing glucosinolate content.

In the field of plant development and architecture, NIPGR has contributed significantly. Investigation of Z-box specific transcription factors in light signaling pathways revealed that ZBF2/GBF1 is a negative regulator in light mediated inhibition of hypocotyl elongation, whereas HY5 positively regulates photomorphogenic growth in various wavelengths of light. Experiments designed to study crosstalk between different plant hormone responses suggested that brassinosteroid induced randomized growth of dark-grown seedling hypocotyls was facilitated by auxin and antagonized by ethylene. Glucose was found to affect most of the important genes involved in cytokinin biosynthesis, perception and signaling. In rice, functional analyses of seed-specific genes and anther-specific gene promoters are going on with a view to understand the crucial controls of reproductive development connected to the yield. For the first time, in *Pisum sativum*, details of the structure and function of stipules were explored and it was found that the stipules share anatomical features of leaves but have better hydraulics. In *Arabidopsis*, it was found that tasiRNAs might be regulating root architecture by modulating different ARFs and some miRNAs.

Good understanding of plant immunity will always be helpful to protect our crops from their dangerous pathogens. Microarray analysis on differential transcriptome of chickpea-*Fusarium* interaction was performed, and a gene regulatory network specific to disease vs. immune pathway was constructed. To understand the early responses elicited by chickpea blight fungus *Ascochyta rabiei*, PCR based suppression subtractive hybridization (SSH) strategy was used to isolate early responsive genes of chickpea. In *A. rabiei*, analyses of differential expression of several genes after oxidative stress

treatment led to the cloning and characterization of *OYE*, *AOX* and *YAP1* genes. In soybean, it was demonstrated that the resistance against MYMIV was due to an enhanced viral origin of replication-specific siRNA accumulation and DNA methylation.

In the academic year 2010-11, NIPGR researchers published 59 high impact papers. In the same period, three patents were filed. The research programmes in NIPGR are aimed to improve the yield and quality along with protection of loss due to stress. We believe that the ongoing activities at NIPGR will contribute significantly to achieve these objectives. Our research efforts on plant nutrition and seed development have been strengthened by newly appointed scientists, Dr. Jitender Giri, Dr. Swarup K. Parida and Dr. Pinky Agarwal. A Plant Growth Facility has also been activated. It is a pleasure to acknowledge contributions of fellow scientists and my colleagues in the administrative and technical services of NIPGR. Dr. Jitendra K. Thakur provided much needed help in preparation of this report and the same is highly appreciated.

**Akhilesh Kumar Tyagi**  
**Professor and Director**





# **Highlights of the Scientific Achievements**



## Highlights of the Scientific Achievements

The highlights of the scientific achievements of the institute in 2010-2011 are given below:

### A. COMPUTATIONAL BIOLOGY

#### Computational analysis of plant stress responses

In a computational effort to understand key molecular features responsible for the diversity of isoprenoid based stress responses, available information on intermediates and interactors of the mevalonate (MVA) and methyl-erythritol (MEP) pathways was compiled. An automated procedure was developed for identification of terpene synthase (TPS) or prenyl transferase (PT) proteins in plants using Profile Hidden Markov Model. These two datasets were combined and superimposed with emission profiles of isoprenoid pathway products for various plant organs across several taxonomic groups, in order to enable a comprehensive systems analysis. The work has provided important insights into the stress related roles of plant specific transcription factors, particularly in *Arabidopsis*. For this plant, data from 269 microarray experiments involving abiotic stress and 188 experiments related to biotic stress was downloaded, normalized and analysed revealing that during abiotic stresses such as extreme temperatures and under radiation, the isoprenoid pathways get induced at a statistically greater frequency. Efforts are also underway to predict the product specificity of the newly identified TPSs through modeling and structural analyses. We have previously developed a highly accurate search algorithm, PLecDom, for identification of novel lectin domains from unannotated sequence data and their classification into one of the known families. PLecDom was used on newly sequenced plant genomes with the objective of tracing the evolution of the plant lectinome, by comparing the lectin signatures of plant species across major taxonomic groups. For 15 genomes, lectin signatures identified using our algorithm were found to be distinct between major plant taxa. In order to associate the identified lectin domains with functions, particularly for stress-related roles, the analysis was expanded for comparative analysis of lectin profiles across five major taxonomic groups in the plant kingdom in terms of duplication or elimination of lectin domains and/or families, size polymorphisms leading to loss or acquisition of modularity. These results have been supplemented by stress-related expression data, and superimposition of information from observed intronic patterns, domain architectures, sub-cellular localizations and trans-membrane propensities. Taken together, our results will be vital for understanding the heterogeneity in the physiological properties of plant lectins.

### B. GENOME ANALYSIS AND MOLECULAR MAPPING

#### Chickpea genome sequence analysis and its alignment to genetic map

This is a flagship programme of the institute in which whole genome sequencing leading to a comprehensive understanding of gene content and gene organization within the chickpea genome is the major objective. To achieve this, deep sequencing of the chickpea (cv. ICC4958) nuclear genome is being done. Six whole genome shotgun libraries were sequenced which resulted in

about 98Gb (132X throughput) sequence data. Assembly of this data generated 492 Mb (66% of the genome) assembled sequence in 241,981 fragments. In addition, a wild variety i.e. *C. reticulatum* PI 489777 is also being sequenced using the SOLiD platform. The reads of the wild PI 489777 were mapped on the corrected ICC4958 contigs to identify single nucleotide polymorphisms (SNPs). About 4000 SNPs, one from each sequence fragment, were selected for linkage mapping. Of these 768 SNPs alongwith 108 STMS markers were used for high throughput genotyping and finally 823 loci were mapped forming 8 linkage groups that spanned 1226.3 cM with an average inter-marker distance of 1.49 cM.

Deep analysis of the chickpea transcriptome was carried out using NGS technologies. Transcript assemblies were generated to get the overview of the gene content, identification of new genes, analysis of gene families and genome annotation in chickpea. After optimization of the *de novo* assembly of short-read Illumina and long-read 454 sequence data, a total of 34,760 tentative consensus (TC) transcripts in chickpea representing 35.5 Mb of the sequence, were obtained. More than 4,000 simple sequence repeats were identified, which can be developed as functional molecular markers. Putative function and gene ontology terms were assigned to at least 73.2% and 71.0% of chickpea transcripts, respectively. Several chickpea transcripts showing tissue-specific expression were also identified. A public data resource, Chickpea Transcriptome Database, has been developed, which provides a searchable interface to the chickpea transcriptome data.

The construction and development a Genome Browser for chickpea has been undertaken to enable users to search information about genes and view functional aspects of genomic units as well as gene structures within the underlying DNA sequence. Its construction has been initiated using data from the available chloroplast genome. Three major aspects of browser development are now complete, namely (a) Data Creation pipeline (b) Data Loading pipeline and (c) Browser configuration and customization through CGI, JAVASCRIPT and HTML.

### **Generation of genomic resources for molecular mapping**

Genomic resources such as molecular markers, ESTs and linkage maps have been limiting in chickpea (*Cicer arietinum* L.), the third most important grain legume crop of the world. Therefore, 278 novel STMS markers were developed using microsatellite enrichment techniques. Large scale generation of ESTs from developing seed and nodule tissues was undertaken. cDNA libraries prepared from *Cicer arietinum* var. ICCV-2 seeds (10 and 20) DAA (days after anthesis) and embryo (6 DAA) yielded about 8700 good quality ESTs which were assembled into a set of approx. 3000 unigenes. Some of the seed specific ESTs were utilized for development of functional molecular markers such as EST-SSRs, PIPs, ESTPs and SNPs. A total of 1092 EST based functional markers were developed, of which 735 were validated. Functional annotation and expression profiling of ESTs is in progress. High-throughput transcriptome analysis of chickpea seeds at various stages of development was done using the next generation sequencing platform (Roche/454). A total of 704277 reads comprising of 1,61,932,786 bases with an average read length of 240 were obtained. These are being assembled and functionally annotated.

An intraspecific linkage map of *C. arietinum* (ICCV-2 x JG-62) was constructed using 522 STMS markers of which 138 were mapped onto 8 linkage groups that spanned 630.9 cM with an average

marker density of 4.57 cM. Furthermore, for the construction of an interspecific linkage map of *C. arietinum* (ICC4958 x *C. reticulatum* PI489777), 735 EST based functional markers have been screened along with 278 genomic STMS markers.

Based on the functional annotation of seed ESTs, 6 members of the Myb transcription factor family have been studied for expression using real-time PCR in different tissues as well as at various stages of seed development. The full length sequence of one of the clones (CaR2R3-Myb) was deduced using 5' and 3' RACE and subsequently confirmed by BLASTX search. Further molecular characterization is in progress.

In the Indo-Canadian Pulse Genomics Initiative collaborative project, a total of 536 SSR primers were designed from lentil (*Lens culinaris*) of which 196 were validated. Deep sequencing and de novo assembly of the lentil transcriptome using the next generation short read sequencing technologies was carried out for gene discovery and marker development. Paired-end short read sequencing on the Illumina Genome analyzer resulted in a total number of ~ 120 million high quality reads which were assembled using Velvet and Oases assembly tools. Mining the dataset for the presence of SSRs resulted in a total of 8421 loci with a frequency of occurrence of one SSR per 3.98 kb.

In *Trifolium alexandrinum* (another legume), a microsatellite enriched library was constructed which led to the development of 692 SSR markers. Of these, 45 SSR primers were used for genetic diversity analysis among 86 *Trifolium* accessions, based on which an UPGMA dendrogram was generated that clustered the accessions into four clusters.

In the medicinally and horticulturally important species *Catharanthus roseus*, an F<sub>2</sub> mapping population was generated. Moreover, a set of 359 STMS markers and 64 gene targeted markers were developed. 114 markers were mapped to eight linkage groups spanning 632.7 cM with an average marker density of 5.55 cM.

### **Establishing transcriptome map and the unigene database of chickpea (*Cicer arietinum*)**

The ultimate phenome of any organism is modulated by regulated transcription of many genes. Characterization of genetic makeup is thus crucial for understanding the molecular basis of phenotypic diversity, evolution and response to intra- and extra-cellular stimuli. Chickpea is the world's third most important pulse crop but it is the least studied leguminous food crop. To identify the transcriptional signatures and understand their functions, we have initiated establishing the transcriptome map and unigene database in this food legume. As a first step, a total of 30,000 partial cDNA clones have been generated from pathogen challenge, dehydration response, to nutritional deficiency and from developmental stage of the crop. Several novel transcription regulators of immune-response pathway were identified. The comparative transcriptome analysis also revealed 649 non-canonical genes besides many unexpected candidates with known biochemical functions, which have never been associated with pathostress-responsive transcriptome. Next we have focused on developing nutrient associated organ specific transcriptome in chickpea. 3648 and 4600 cDNA clones were obtained from sulphur and phosphorus treated tissues, respectively. Of the 3648 sulphur responsive clones, 3000 EST sequences have been generated which would be enriched after addition of the transcriptome sequence by NGS from the new transcriptome libraries that are being synthesized. Currently, the construction and new generation sequencing of different cDNA libraries from varied

nutrient treated conditions are in progress. Our approach would essentially unravel the molecular basis of specificity at individual level that ultimately dictates the cellular physiology leading to the phenome variation.

### **Identification of functionally relevant genes and alleles for traits contributing to higher pod and seed yield in chickpea**

The pod (fruit) and seed are the defining characteristics of chickpea and most importantly have high economic value as human diet. The seed and pod characters are also major yield contributing traits of chickpea and vary widely among cultivated *desi* and *kabuli* types, landraces and wild species accessions. With the objective of identifying genes and novel alleles associated with the traits contributing to higher seed and pod yield in chickpea and to develop functional markers for major seed and pod traits, the candidate gene based genotypic information (single nucleotide polymorphisms/alleles) generated from high-throughput genotyping assay (384 SNPs scanned on 600 diverse germplasm lines) will be correlated with the phenotypic information of specific seed and pod traits of the contrasting germplasm lines. Such genes and alleles identified by genetic association analysis will be validated further in bi-parental mapping population and in different developmental stages of pod and seed of contrasting chickpea germplasm lines through expression profiling and functional analysis for identification of novel functionally relevant genes and alleles for pod and seed development in chickpea.

### **Development and utilization of novel intron length polymorphic markers in foxtail millet [Setaria italica (L.) P. Beauv]**

The project aimed towards development of intron length polymorphic (ILP) markers in foxtail millet and their application in cross species transferability and genetic diversity analysis. In this context, we developed 98 novel ILP markers in foxtail millet using sequence information of model plant rice. All the 98 ILP markers showed high level of cross-species amplification in two millets and two non-millets species ranging from 90-100% with an average of ~97%. The validation studies thus demonstrate the utility of ILP markers in assessing germplasm characterizations and genomic relationships in millets and non-millets species.

### **Towards the alkaloid QTL map of Catharanthus roseus: use of bulk segregant analyses for the placement of QTLs for accumulation of high concentrations of alkaloids in leaves and roots, on the framework map**

*Catharanthus roseus* is a dedicated resource for the production of the widely used anticancer drugs vincristine and vinblastine. To facilitate DNA markers assisted breeding, a framework map was required to place alkaloid quantitative trait loci (QTLs) among transferable markers such as microsatellite markers. Towards this end a map of 8 linkage groups spanning 1790.4 cM and mean distance between 172 markers of 10.34 cM has been prepared.

The dimeric anticancer drugs vincristine and vinblastine are semi synthesized by coupling of their natural precursors catharanthine (C) and vindoline (V). The concentrations of C and V in the leaves of *Catharanthus roseus* from where these are extracted need to be increased for lowering the cost of production of these rare compounds. The screening for V and C in the segregating populations of

crosses aimed at improvement of V and C content is time consuming and costly. Therefore, marker assisted breeding needs to be deployed. Towards this end bulk segregant analysis approach was applied. The DNAs of pools of recombinant inbred lines rich in V and C were amplified with already mapped markers to identify DNA markers linked to high content of V and C. Finally three DNA markers that co-segregated with high V content and 2 DNA markers that co-segregated with high C content were identified and thus 5 QTLs got placed on the map.

### **Computational genomics**

In order to gain functional and biological insights from the vastly growing plant genomic data, efforts were made to identify microsatellites (or SSR sequences) in available plant nuclear genomes as well as chloroplast genomes. The distribution of SSRs across seven completely sequenced and annotated plant genomes including three dicots (*Vitis vinifera*, *Arabidopsis thaliana* and *Populus trichocarpa*), two monocots (*Oryza sativa* and *Sorghum bicolor*) and two green algae (*Ostreococcus lucimarinus* and *Micromonas sp. RCC299*) was carried out using the Mreps algorithm combined with customized perl scripts. Since locations of SSRs are reported to have a significant impact on the role of SSRs and their alteration at different genomic locations is known to cause phenotypic variations, the identified SSRs were mapped to specific genomic regions, i.e within exons, introns, both UTRs, their flanks as well as the intergenic regions. This comparative study revealed very interesting distribution trends of the SSRs as well as a distinct preference of di- and tri- nucleotide repeats in Monocots, Dicots and Green Algae. SSRs were found abundantly within or near genes, and significant enrichment was observed within the 5' non-coding regions of plant genes. Data from 157 chloroplast genomes representing embryophytes, rhodophytes as well as chlorophytes, was compiled and analysed in terms of sequence alignments, gene ontology, functional classification, codon biases and microsatellite distribution. Cyanobacterial and proto-bacterial comparisons are currently underway to extract unique patterns that may provide insights into the plastidial evolution. As a specific case study, the apocynaceous species *Catharanthus roseus*, also a dedicated resource for the production of terpenoid indole alkaloids (TIAs) catharanthine and vindoline, was studied. Thus far development of EST-SSR based markers has not been reported in *C. roseus*. In this work, a total of 2034 SSR sequences were detected in 19899 EST sequences comprising 10339.8 kb DNA sequence. On average, one SSR was identified in 5.08 kb DNA and among 10 EST sequences. Among the 1763 SSR containing ESTs, 227 contained more than one SSR motif and 139 SSRs were present in compound formation. Using the EST sequences, primer pairs were designed for 536 EST-SSRs and from among these, a subset was tested experimentally to determine polymorphism among the parents of the mapping population. 105 pairs of primers demonstrated polymorphism between the parents. Of these, 30 EST-SSR markers were mapped into the framework linkage map, including 7 di-, 15 tri-, 2 tetra- and 6 hexa-nucleotide repeat motif containing markers, respectively.

## **C. MOLECULAR MECHANISMS OF ABIOTIC STRESS RESPONSE**

### **Water-deficit responsive transcriptome analysis and validation of functions of target genes from rice**

Sub-cellular interactions of stress associated protein 1/11 were analyzed with self, each other and a receptor-like cytosolic kinase. OsSAP11 was found to interact with OsRLCK253 preferentially at

nuclear membrane, although, interaction was also detected at the plasma membrane. OsSAP1 also showed interaction with OsRLCK253 and OsSAP11 in the plasma membrane or nucleus, respectively. Further, analysis of interacting proteins with SAP1 identified an aminotransferase proteins in yeast two-hybrid screen. Two engineer stress inducible expression of target genes, two promoters from stress inducible genes were characterized in transgenic rice. They were found to be induced by water deficit, salt and heavy metals.

### **Molecular genetic analyses and systems biology of auxin signaling networks in plants**

Recently, the phytohormone auxin has been implicated in abiotic stress responses in plants. We identified several auxin-responsive genes differentially expressed during stress conditions. Functional analysis of two of the selected genes is in progress. The transgenic *Arabidopsis* plants overexpressing one of the genes encoding for glutaredoxin protein showed tolerance to high salt concentration as compared to wild-type plants in terms of percentage seed germination. Further analysis of transgenics with respect to their response to various abiotic stresses is in progress. In the meanwhile, during a precision annotation and transcript profiling of auxin-responsive genes to predict function, a gene family encoding glutaredoxin proteins have been investigated in rice. Glutaredoxins (GRXs) are glutathione-dependent oxidoreductase enzymes involved in a variety of cellular processes. A total of 48 genes encoding glutaredoxin proteins were identified in the rice genome and classified into four classes. The comprehensive expression analysis suggested diverse roles of GRX genes during growth and development in rice. Further, the expression of many of rice GRX genes was influenced by various phytohormones, abiotic and biotic stress conditions, suggesting an important role of GRX proteins in response to these stimuli.

### **Exploring transcriptional regulatory network during water-deficit and high salinity stress in rice**

Rice productivity is severely affected by abiotic stresses such as water-deficit and high salinity worldwide. Several genes encoding for transcription factors have also been found to be differentially expressed in response to abiotic stress in various plant species. TFs play important roles in the regulation of gene expression in response to abiotic stresses and are powerful targets for genetic engineering of stress tolerance. We have identified several TFs up-regulated during water-deficit and high salinity stress conditions and a few of them are being investigated for their function. Two of the homeobox genes were found to be up-regulated at seedling, mature and reproductive stages of development under various stress conditions. Both the proteins were also found to be nuclear-localized. Their functional analysis in transgenic plants and identification of other regulatory components is in progress.

### **Characterization of Mitogen Activated Protein Kinase (MPKs) cascade in rice**

Mitogen Activated Protein Kinase (MAPK) cascade is one of the important signaling cascade that transfers extracellular signals to the nucleus for appropriate cellular readjustment. In our pursuit to understand this cascade in rice, we extended interactome MAP between OsMPKs (MAP kinases) and OsMKKs (MAP kinase kinase). A combination of yeast-two-hybrid screen, in-vitro phosphorylation and in-silico structure prediction and possible docking between the proteins of two families were used. We also observed that induction of phytoalexin biosynthesis gene by UV-B rays



in rice is linked with the activation of MAP kinase. This was deduced by the application of general and specific MAP kinase inhibitor that also inhibited the expression of UV-B induced phytoalexin biosynthesis genes. Using the information available in GEO database, we generated a heat map of transcript accumulation of all the members of MAPK, MAPKK and MAPKKK during abiotic stress and phytohormones application. This heat map helped us to predict the entire MAPK cascade activated by abiotic stress and phytohormones in rice.

### **Water-deficit stress and regulation of nutrient (Pi) utilization in rice**

Root system alterations provide a valuable mean to improve crop plants for better water and nutrient (phosphate) utilization. Several genes commonly involved in water-deficit and phosphate deficiency response has been identified in rice. Efforts would be made to identify root-specific genes using comprehensive gene expression analysis during water-deficit and nutrient deficiency stress. Association mapping approach would also be used to validate the potential genes for these traits in naturally occurring variants. Final set of root related genes would be used for crop improvement in terms of phosphate deficiency and water-deficit stress tolerance.

### **Transcript profiling of dehydration and salt stress in foxtail millet [*Setaria italica* (L.)] and cloning-characterization of stress-related genes**

#### **(i) Differential antioxidative responses to dehydration-induced oxidative stress in core set of foxtail millet cultivars [*Setaria italica* (L.)]**

To explore genetic diversity of drought-induced oxidative stress tolerance in foxtail millet, we employed lipid peroxidation measure to assess membrane integrity under stress as biochemical marker to screen 170 accessions and classified the genotypes as highly tolerant, tolerant, sensitive and highly sensitive. The biochemical results were further validated through quantitative real time PCR analysis of APX and GR, whose transcripts were substantially induced by PEG treatments in tolerant cultivars. Our results suggest that tolerant cultivars possess wider array of antioxidant machinery with efficient ascorbate-glutathione pathway to cope with drought-induced oxidative stress.

#### **(ii) Molecular characterization of a novel DREB2-like gene *SiDREB2* and development of an SNP associated with stress tolerance in foxtail millet [*Setaria italica* (L.)]**

The *DREB* genes code for important plant transcription factors involved in abiotic stress response and signal transduction. Characterization of *DREB* genes and development of functional markers for effective alleles is important for marker assisted selection in foxtail millet. Here we report on characterization of a cDNA (*SiDREB2*) encoding a putative dehydration responsive element binding protein 2 from foxtail millet and developing an allele-specific marker (ASM) for dehydration tolerance. A synonymous single nucleotide polymorphism (SNP) associated with dehydration tolerance was detected at 558<sup>th</sup> bp (an A/G transition) in the *SiDREB2* gene in a core set of 170 foxtail millet accessions used. The developed markers thus will enable marker-aided breeding of foxtail millet for dehydration tolerance.

**(iii) Molecular cloning and characterization of a membrane associated NAC family gene, *SiNAC*, from foxtail millet [*Setaria italica* (L.) P. Beauv.]**

The plant specific NAC (NAM, ATAF and CUC) transcription factors have diverse role in development and stress regulation. A transcript encoding NAC protein, termed *SiNAC* was identified from a salt stress subtractive cDNA library of *S. italica* seedling. This single/low copy gene containing four exons and four introns within the genomic sequence encoded a protein of 462 amino acids. Structural analysis revealed that highly divergent C terminus contains a transmembrane domain. A 1539 bp fragment upstream to the start codon of *SiNAC* gene was cloned and *in-silico* analysis revealed several putative *cis*-acting regulatory elements within the promoter sequence. Transactivation analysis indicated that *SiNAC* activated expression of reporter gene and the activation domain lied at the C terminal. The SiNAC:GFP was detected in the nucleus and cytoplasm while SiNAC  $\Delta C^{1-158}$ :GFP was nuclear localized in onion epidermal cells. Our results suggest that *SiNAC* encodes a membrane associated NAC-domain protein that may function as a transcriptional activator in response to stress and developmental regulation in plants.

**Dehydration-responsive comparative proteomics of ECM in chickpea genotypes with contrasting tolerance**

Dehydration stands to be the most crucial problem in major chickpea growing regions because it is grown on residual moisture and the crop is eventually exposed to terminal dehydration. In a previous study, we had established that c.v. JG-62 is a relatively tolerant, while ICCV-2 is a susceptible genotype of chickpea. To better understand the dehydration adaptation, a proteomic study was performed on the extracellular matrix of c.v. ICCV-2 and LC-ESI-MS/MS analysis led to the identification of 81 dehydration-responsive proteins. The proteome was then compared with that of c.v. JG-62, a tolerant genotype. Comparative proteomics revealed genotype-specific expression of many proteins involved in a variety of cellular functions. In addition, the reversible and irreversible changes in the proteomes revealed their differing ability to recover from dehydration-induced damage. We propose that cell wall restructuring, and superior homeostasis particularly the management of reactive oxygen species may render better dehydration-adaptation.

**Chickpea genes connecting root growth and abiotic stress tolerance**

Rapid expansion of water-stressed areas necessitates improvement of crops with traits such as drought tolerance and adaptation, through conventional breeding and/or genetic manipulation. For cultivated crops like chickpea, where improvement through conventional breeding is difficult because of a narrow genetic base, candidate genes identified by basic research showing stress-tolerance to the model plants may be used for genetic improvement. We have shown that CaZF, a C2H2 zinc finger protein from chickpea, improved salt stress tolerance in yeast and tobacco. Further, it was found that transgenic tobacco lines overexpressing CaZF produced phenotypes, along with stress tolerance, like improved root and shoot growth. All the experimental results conducted this year strongly demonstrated that CaZF is a target of CAP2, an AP2-family transcription factor from chickpea. A new protein kinase CaPKS2 has been identified in chickpea showing role in root development.

### **Molecular and functional characterization of inositol biosynthetic genes in chickpea in perspective of abiotic stress responses**

Inositols are six carbon cyclohexane hexitol and are essential for the survival of plants in normal as well as in environmental stress conditions. In chickpea, inositol seems to play an important role in drought tolerance since inositol content and MIPS transcript has been significantly increased under dehydration condition. Our interest is to study the inositol biosynthetic pathway by characterizing biosynthetic genes (MIPS and IMP) and their coordinate regulation under environmental stresses when plant demands more inositol.

Previously from our lab, two divergent genes /cDNAs (*CaMIPS1* and *CaMIPS2*) encoding *myo* inositol 1 phosphate synthase (MIPS) from chickpea were isolated and characterized. For functional analysis of *CaMIPS* genes, homozygous lines for each gene (*CaMIPS1* & 2) were generated. Almost all lines were found to be overexpressing. Subsequently, inositol content was also measured in few transformed lines and growth pattern under saline environment was analyzed. At 200 mM NaCl, *CaMIPS1* and *CaMIPS2* transformed line showed better growth than control plant and remain green under such stress condition.

A full length Inositol monophosphatase (2<sup>nd</sup> enzyme of inositol biosynthetic pathway) gene and cDNA was cloned and subsequently sequenced.

### **Identification of stress-responsive proteins in grasspea (*Lathyrus sativus* L.) upon exposure to high salinity, low temperature, and abscisic acid treatment**

Salinity and low temperature are two major abiotic stresses and responses to these stresses involve nearly every aspect of plant physiology and metabolism. Increased salinization of arable land is predicted to have devastating global effects, with 30% land loss within the next 25 years and almost 50% by the year 2050. Low temperature is also considered to be a crucial stress factor that many plants have to cope with during their lifecycle and many physiological and molecular changes occur during cold acclimation. We have investigated the stress-responsive proteome of grasspea. Stress-induced physiological responses were monitored in grasspea seedlings, and correlated with the temporal changes in the proteome under different stress conditions viz., salinity, low temperature, and ABA. The comparative stress-responsive proteome of grasspea may provide new information that could be used for targeted breeding approaches for crop improvement. Our future efforts will focus on the functional characterization of the identified stress-responsive proteins and their role in stress tolerance.

## **D. NUTRITIONAL GENOMICS**

### **Molecular cloning, characterization of genes and their uses in increased shelf-life of fruits and vegetables**

Excessive fruit softening during ripening leads to huge post-harvest losses in developing as well as developed countries. Extending the desirable texture during ripening is the key to increasing the shelf life of fruit. Successful efforts to control fruit ripening are based on either reducing the biosynthesis of plant hormone ethylene and/or slowing down the rate of fruit softening by targeting genes involved in cell wall modification. However, these approaches have limited implication to

non-climacteric fruits which do not respond to ethylene during ripening and different genes need to be targeted for different category of fruits. Thus, identification of a common mechanism that is conserved in different types of fruits i.e. both climacteric and non-climacteric would provide new opportunities for controlling fruit softening. We targeted *N*-glycan processing enzymes such as  $\alpha$ -D-mannosidase and  $\beta$ -hexosaminidase for functional characterization in tomato and capsicum with the aim to identify conserved mechanism for climacteric and non-climacteric fruit softening. Our results suggest that silencing of *N*-glycan processing enzymes  $\alpha$ -D-mannosidase and  $\beta$ -hexosaminidase can be a common strategy in both climacteric and non-climacteric species to reduce the post-harvest crop losses.

### **Genetically modified crops expressing *AmA1* for better nutrition**

Genetic modification of crop plants for nutritional quality improvement is an urgent worldwide health issue as the basic needs for much of the world's population are still not met with. Large numbers of people in developing countries exist on simple diets composed primarily of a few staple foods that are poor in quality values. A major target has been the improvement of the amino acid composition, since animals including humans are incapable of synthesizing ten of the twenty amino acids needed for protein synthesis and these "essential" amino acids must therefore be obtained from the diet. The conventional and non-conventional carbohydrate-rich staple crops like rice, wheat, potato, cassava, and sweet potato contain very limited amount of protein. Moreover, these crops do not contain some of the essential amino acids very much needed for human nutrition. Towards this, we have been involved in protein improvement programme in these crops using a seed protein gene *AmA1*. We have successfully developed and characterized the stable lines of *AmA1*-potato which are safe for consumption. Further, our results also demonstrate enhanced protein content in transgenic potatoes did neither change pasting temperature nor did increase peak viscosity to affect crispiness and texture of fried potatoes. Altogether, analyses of these variances imply better cooking and processing quality of the transgenic tubers besides better palatability. The comparative protein profiling suggests that the proteome rebalancing might cause increased protein content in transgenic tubers. To our knowledge, this is the first comprehensive report of translational research towards protein improvement programmes in crop plants. In order to introduce *AmA1* in rice, sweet potato and cassava, construction of tissue-specific expression plasmids and the development of regeneration and transformation systems have been reported in the previous year. Detail molecular characterization of T2 transgenic lines of two commercial indica rice cultivars showed stable expression of *AmA1* while biochemical analyses of T2 seeds showed increase in the level of total protein. Currently, molecular evaluation of T3 generation of the transgenic *AmA1*-rice is in progress. In addition, determination of protein and amino acid content along with the agronomical performance of transgenic sweet-potato lines expressing *AmA1* is being investigated.

### **Over-expression of *OXDC* in edible crops to reduce oxalate toxicity**

Oxalate is the major dietary factor in the processes of urinary tract calculi, hyperoxaluria, hypocalcemia, and nephrolithiasis. Some of the vegetables and fruits such as spinach, groundnut, soybean, tomato etc. are rich in oxalic acid. *OXDC* gene encoding an oxalate catabolizing enzyme oxalate decarboxylase from a wood-rotting fungus *Flammulina velutipes* has been shown to lower down the oxalic acid content in transgenic tobacco. Thus introduction of *OXDC* in vegetables like

spinach and crop plants such as tomato, pea-nut and soybean, which are considered to be the main source of oxalate in typical Indian diet, looks promising. We have developed low oxalate tomatoes that are safe for consumption. Furthering the work, in order to introduce OXDC in groundnut, spinach and soybean, development of reproducible regeneration-cum-transformation systems of each crop was established. We have cloned the OXDC gene under the control of a seed-specific promoter and developed the transgenic soybean expressing the transgene in seed-specific manner. The molecular and biochemical characterization of the T0 transgenic soybean plants have shown stable integration and expression of the transgene that lead to the significant reduction in the oxalic acid content as compared to the untransformed plants. Further, putative transgenic spinach expressing OXDC constitutively have also been obtained and the transformation is being continued in order to increase the number of transgenic lines. Currently, the work on oxalic acid signaling in nutritional disorder using tomato as model plants is under progress.

### **Expression of oxalate decarboxylase to reduce neurotoxin risk factor**

Grasspea (*Lathyrus sativus*), a legume is not edible due to the presence of neurotoxin namely  $\beta$ -N-oxalyl- $\alpha$ , $\beta$ -diaminopropionic acid ( $\beta$ -ODAP), and  $\beta$ -N-Oxalyl amino-L-alanine ( $\beta$ BOAA), though it is one of the most ancient crops with high percentage (28%) of good quality protein and minerals. Excessive consumption of the legume causes neurolathyrism which is characterized by spasticity of leg muscles, and lower limb paralysis. Oxalic acid is an essential precursor of the neurotoxin. It is apparent that introduction of a gene that can specifically degrade oxalate would reduce the neurotoxin in the legume. Thus reducing oxalic acid content in this crop by expressing OXDC is an important strategy to decrease neurotoxins level. Towards this we have developed and characterized transgenic grasspea lines with OXDC gene. The ODAP content in the seeds of the transgenic lines was found to be significantly lower in comparison to their wild type counterparts. We are also in the process of developing homozygous lines expressing OXDC.

### **Molecular characterization and analysis of differentially expressed genes from contrasting *Brassica juncea* gene-pools: an insight into molecular-genetic mechanism of glucosinolates biosynthesis**

Our laboratory is interested on determining the molecular basis of genetic diversity among the available *B. juncea* heterotic genepools. We have constructed subtractive cDNA suppression hybridization (SSH) libraries between *B. juncea* contrasting genepools using cDNA from leaves, roots and pods. A total of 3308 clones were randomly selected from 6 different libraries, produces 426 unique differentially expressed ESTs representing the genes involved in almost all the important biological processes.

Research in our lab is also oriented towards engineering low glucosinolate cultivars in Indian mustard (*B. juncea*). We have isolated and characterized few important glucosinolate biosynthesis genes (viz., *MYB28*, *CYP83A1*, *GSL-ELONG*) from *B. juncea*. Preliminary data clearly reflects that homologs of glucosinolate biosynthesis genes are differentially expressed in contrasting genepools of *B. juncea*. Functional characterizations of these pathway genes are underway. A series of knock-down constructs based on RNAi and antisense strategies were designed for aforementioned genes and are transformed into high glucosinolate *B. juncea* cultivar Varuna. Initial data showed that the

RNAi lines of *BjMYB28* gene have lower ranges of seed glucosinolates compared to that of vector control and the wild-type Varuna.

## **E. PLANT DEVELOPMENT AND ARCHITECTURE**

### **Genetic and molecular investigations of regulatory proteins involved in light-controlled plant growth and development**

Light is one of the most important factors for plant growth and development, and the cross talk of light signaling pathways with other signaling cascades started to be unraveled. We have been investigating the Z-box specific transcription factors in light signaling pathways. ZBF2/GBF1 is a negative regulator in light mediated inhibition of hypocotyl elongation, whereas HY5 positively regulates photomorphogenic growth at various wavelengths of light. To determine the genetic interactions between GBF1 and HY5, we constructed *gbf1 hy5* double mutant and investigated the morphology of the seedlings in dark and light conditions. Our results revealed altered functional relationship between GBF1 and HY5 depending upon the light intensities. The light mediated induction of *CAB1* and *RBCS-1A* gene expression is differentially regulated by GBF1. We have shown earlier that GBF1 acts as a positive regulator of *CAB1*, however negatively regulates *RBCS-1A* gene expression. A recent study strongly puts HY5 as a positive regulator for induction of both *CAB1* and *RBCS-1A* gene expression. We examined the effect of genetic interactions between GBF1 and HY5 on light regulated modulation of *CAB1* and *RBCS-1A* gene expression, Our results indicate that that GBF1 and HY5 interact antagonistically to regulate the expression of *CAB1* and *RBCS-1A*. To examine the possible heterodimerization of GBF1 and HY5 and binding to the DNA, we performed electrophoretic mobility shift assays. Our results suggest that GBF1 and HY5 are able to form heterodimers while interacting with the *RBCS-1A* promoter.

### **Interaction of glucose and brassinosteroid in controlling hypocotyl directional growth**

Brassinosteroid (BR) treatment promotes randomized growth of dark-grown seedling hypocotyl and also perturbs its response to gravity-stimulus. This response was antagonized by ethylene while auxin signaling and transport were found to be involved in facilitating this response. Glucose antagonized BR-induced hypocotyl randomization and restored gravity response. Glucose antagonized BR-regulated global gene expression and also altered BR-regulated differential auxin distribution across the hypocotyl. Any exogenous or endogenous perturbations in brassinosteroid signaling led to non emergence of dark-grown seedling hypocotyl through a hard medium and inability to avoid an impenetrable obstacle suggesting its role in seedling adaptability in subterranean environment.

### **To study the interaction between glucose and cytokinin signal transduction pathway in model plant system *Arabidopsis thaliana***

Whole genome gene expression analysis revealed that a huge number of genes are simultaneously affected by glucose and cytokinin and may account for a number of common responses shared by glucose and cytokinin. Majority of glucose affected genes (89%) were agonistically regulated while only very few (11%) were antagonistically regulated. Glucose was found to affect almost all the important genes involved in cytokinin biosynthesis, perception and signaling.

### **To study the interaction between glucose and auxin signal transduction pathway in model plant system *Arabidopsis thaliana***

Increasing concentration of glucose can modulate root gravitropic response along with seedling root length and total number of adventitious roots. Microarray studies revealed that a huge number of genes are simultaneously affected by sugar and auxin and may account for a number of common responses affected both by sugar and auxin. Reverse microarray analysis suggested that auxin can also affect glucose mediated gene-expression. Majority of the genes commonly affected by both glucose and auxin are involved in response to abiotic or biotic stimuli.

### **Functional analysis of selected components of gene regulatory networks during reproductive development in rice**

The seed-specific genes, namely, *OsHAP3D*, *OsGW2*, *OsMED12*, *14* and *26*, showing seed-specific expression were used to develop over-expression and knock constructs for transforming rice and work on raising transgenics has been initiated. Further, promoters of three anther specific genes *OsiPK*, *OsiBHLH*, *OsiFBOX* were analysed in rice for their anther-/pollen specific expression activity. It was found that *OsiPK* shows maximum expression at dehisced anther stage whereas *OSbHLH* and *OSFbox* show maximum activity at meiotic anther stage. Such promoters would be valuable to understand anther development and generate male sterile plants of utility in hybrid seed production.

### **Molecular, biochemical and functional characterization of Protein L-Isoaspartyl Methyltransferase (PIMT) from plants and its biological role in seed vigor, viability and stress tolerance**

The generation and accumulation of spontaneously damaged isoaspartyl containing proteins in seeds often adversely affect their vigor and viability. The Protein L- Isoaspartyl Methyltransferase (EC 2.1.1.77) (PIMT) combats such damage by catalyzing the conversion of abnormal L isoaspartyl residues to their normal aspartyl residues. Our interest is to understand the molecular regulation and functional significance of PIMT gene(s) / proteins in plants and its exploitation to enhance seed vigor, viability and plant stress adaptation through genetic manipulations. The PIMT1 gene from chickpea (CaPIMT1: Accession no: GQ421817) has previously been cloned and characterized from our lab. Subsequently, CaPIMT2 and its splice variant are cloned, bacterially expressed, purified and biochemically characterized. Role of PIMTs in seed vigor and viability through seed-specific expression are presently being analyzed.

### **Transcription factors and their networks involved in rice seed maturation**

Seed storage proteins (SSPs), namely prolamins and globulins, accumulate in the endosperm of the developing rice seed. Five NAC transcription factor genes from rice have been found to be tightly co-expressed with more than 25 SSP encoding genes. The role of NAC genes and promoters in rice seed development particularly with reference to SSPs will be elucidated. Other interacting partners and downstream genes would also be identified. Transgenic plants which either overexpress or under express the selected NAC genes will help determine their functions. Detailed analyses of these plants would indicate if the genes can be used to improve the nutrition value of rice seed.

## **Morphogenetics of plant lateral organs: (a) Structure and function of stipules in the grain legume *Pisum sativum*; and (b) Variation in stipule structure among leguminous flora of Delhi**

The details of the structure and function of stipules, thus far treated largely as a taxonomic character, have been explored for the first time in the pea plant by use of a variety of approaches on a set of lines in which leaf and stipule mutations had been permutedly recombined. The main findings are that the stipules share anatomical features of leaves but have better hydraulics. Although complementary to leaves in photosynthesis, they have higher rate of photosynthesis. About 74% of harvest index depends on them. Another approach used was to characterize stipules of Delhi's leguminous flora. While genes for stipules in pea were encountered in other legumes, some new stipule structures were discovered whose analysis is in progress.

## **Regulation of lateral root stem cells and root architecture**

In higher plant, root and lateral roots (LR) are ultimately derived from few root stem cells residing in the root apical meristem. We are specifically interested to identify and understand the function of novel components (including small regulatory RNAs) of the molecular signaling network that regulate root architecture and the initiation, number & spacing of LR and establishment of lateral root stem cell niche. To identify novel regulators of stem cells, we are using LCM-Microarray (Laser Capture Microdissection-Microarray) in a genomic approach. To study the role of small RNA in root branching and stem cell regulation, we are studying the cross talk between siRNA and miRNA in root development. Our analysis showed that mutations in tasiRNA pathway genes lead to altered root architecture phenotype. tasiRNAs appear to be regulating root architecture probably by modulating the activity of different Auxin Response Factor (ARFs) and some microRNA (miRNAs). Interestingly, some shoot organ patterning genes such as YABBY (YAB), FILLAMENTOUS FLOWER (FIL), HD-ZIPIII etc. are also indirectly regulated by small RNA and regulate root branching. We are trying to understand this complex gene network by further molecular genetic analysis. Probable conservation of this small RNA pathway in monocot crops is also being explored. The above knowledge could be used to develop crops (such as maize, rice etc.) with better root system, which can resist harsher environmental conditions and can produce better yield.

## **Novel plant architecture in a DNA-methylation-deficient and dehydration and salinity tolerant mutant in *Catharanthus roseus***

An inflorescence architecture which has not yet been described in any plant was discovered. The *leafless inflorescence (lli)* is characterized by multiple racemose branches that are devoid of leaves. The structure of the inflorescence has been characterized quantitatively and histologically. The connection between abiotic stress tolerance and lli phenotype is under exploration.

## **F. PLANT IMMUNITY**

### **Identification and isolation of genes involved in immune response pathway in chickpea and rice**

Plants frequently encounter different pathogen stresses that adversely affect growth, development and more importantly the overall productivity. Several of these stresses are united by the fact that



at least part of their detrimental effect on plant performance is caused by the deregulation of the immune status. The physiological response to combat such stress conditions arises out of changes in the cellular gene expression and protein profiles. Legumes and cereals share the major part of crop production of which chickpea and rice are crops of primary importance. However, they are continuously challenged with diverse pathogens of which fungal wilt caused by *Fusarium oxysporum* and fungal blight caused by *Magnaporthe grisea* are most important. Our laboratory focus on understanding the molecular basis of disease vs. immune response in order to identify the key determinants and regulatory mechanism in host-pathogen interaction using chickpea-*Fusarium* and rice-*Magnaporthe* as model systems. Towards this, we performed microarray analysis on differential transcriptome of chickpea-*Fusarium* interaction and constructed gene regulatory network specific to disease vs. immune pathway. The resulting network was found to be densely organized and consisted of many coherent sub-networks to which biological significance was assigned. Further, we have cloned three key full-length regulatory genes involved in disease/immune response. Recently, we have focused our study on differential sub-cellular proteome during host-pathogen interaction in chickpea and rice against vascular wilt and blast, respectively. Currently, the pathogen induced temporal changes in nuclear proteome is being monitored using high-resolution 2-DE of nuclear extracted proteins from unstressed and stressed rice seedlings. In addition, the differential disease responsive ECM proteome of chickpea is also being investigated.

### **Genetically modified crops expressing OXDC with enhanced tolerance against fungal pathogenicity**

Oxalic acid, besides being a major antinutrient factor in many crops, has been implicated in pathogenesis of several phytopathogenic fungi e.g. *Sclerotinia sclerotiorum*, *S. rolfsii*, *S. cepivorum* and *Whetzelinia sclerotiorum*. *Sclerotinia* causes substantial loss in crop production each year, throughout the world, causing severe losses of economically important crops that includes 42 varieties, 408 species, 278 genera and 75 families. Thus, introduction of an enzyme that can specifically degrade oxalic acid in these food crops would help to improve the fungal tolerance. Hence, *OXDC* has become a potential choice as donor gene for genetic improvement for patho-stress adaptation. In the previous reports, we showed that an oxalate degrading gene *OXDC* can be expressed functionally in food crops such as tomato. We have now developed transgenic tomato plants expressing *OXDC* under the control of the wound-inducible promoter. Molecular analysis of transgenic plants clearly showed that the over-expression of *OXDC* and the reduction in oxalic acid increases the oxidative burst response upon pathogen challenge as a first step towards the pathogen protection. To understand the transgene induced molecular mechanism for the increased pathogen tolerance in transgenic plants, a comparative proteomic approach has been applied in mature tomato fruit upon pathogen challenge using two-dimensional gel electrophoresis (2-DE). Proteomics analysis on 170 differentially expressed patho-stress responsive proteins in transgenics resulted in identification of 125 proteins with a significant match.

### **Induced immune response of chickpea to a necrotrophic pathogen *Ascochyta rabiei***

Our interest focuses to understand recognition, signalling and regulatory mechanisms controlling the induced immune responses of plants to invading pathogens. The aim of this study is to identify the differentially expressed early-induced genes of chickpea in response to *Ascochyta rabiei* infection.

To gain broader insight into the early responses elicited by chickpea blight fungus *Ascochyta rabiei* during compatible interactions; we isolated early responsive genes of chickpea using PCR based suppression subtractive hybridization (SSH) strategy. We obtained nearly 350 unique genes after homology search and redundancy elimination. Some of the important genes that are presently being characterized in the laboratory include Car131, a resistance gene ortholog, CarWRKY1, a transcription factor and CarGRX1, a glutaredoxin gene. In addition to the genes isolated so far using SSH, we have performed transcriptome profiling using next-generation sequencing (Roche 454 sequencing). Further analyses of the data obtained are presently being carried out.

### **Isolation and functional characterization of genes from chickpea-blight fungus *Ascochyta rabiei* which involved in pathogenesis/virulence**

Localized cell death known as a hypersensitive response (HR) is an important defence mechanism for neutralizing phytopathogens. The hallmark of HR is oxidative burst produced by the host plant. We aimed to identify genes of a necrotrophic chickpea blight fungus *Ascochyta rabiei* involved in counteracting oxidative stress. A subtractive cDNA library was constructed after menadione treatment which resulted in the isolation of 128 unigenes. Differential expression of several genes was validated by quantitative real-time PCR (qRT-PCR) and northern blotting. Some of them which showed high expression after oxidative stress treatments were further assayed for their expression *in planta* using qRT-PCR. The full length sequences of gene coding Old Yellow Enzyme (OYE), Alternate Oxidase (AOX) and a transcription factor YAP1 were isolated. Detailed functional analyses of these genes were carried out under oxidative stress conditions. The knockout mutants of these genes were generated and are being checked for pathogenesis and virulence.

### **Analysis of Mungbean Yellow Mosaic India Virus-Soybean interaction**

Yellow Mosaic Disease (YMD) in soybean is caused by *Mungbean Yellow Mosaic India Virus* (MYMIV), a bipartite geminivirus. It causes yellow mosaic disease to several other legume plants such as blackgram (*Vigna mungo*), mungbean (*Vigna radiata*) and cowpea (*Vigna unguiculata*). We have shown *Agrobacterium* mediated delivery of a virus construct resulted in 100% infection efficiency in soybean. A screening by agroinfection with this construct identified a soybean cultivar showing complete resistance against virus. We demonstrated that the resistance against MYMIV resulted due to an enhanced viral origin of replication-specific siRNA accumulation and DNA methylation in the resistant soybean variety.

## **G. EMERGING AREAS**

### **Functional study of MED15 in plants**

Mediator is a large co-factor involved in transcriptional regulation of eukaryotic genes. Biochemical purification and bioinformatic analyses suggest that most of the subunits of this gigantic complex are conserved in all eukaryotes including yeast, mammals and plants. In fungi and metazoans, the MED15 subunit (known as Gal11 in yeast, ARC105 in mammals, and MDT-15 in *C. elegans* and insects) was found to be very important for lipid metabolism, sugar metabolism and xenobiotic detoxification. In our studies, expression of *Arabidopsis Med15* (*AtMed15*) in yeast drastically changed the morphology of the yeast cells. Analysis of results from washing experiments revealed

that the cells became stickier and adhered more strongly to the solid media surface as compared to the control yeast which harbored just the vector. Moreover, when grown in liquid complete media or supplementary drop-out media, the yeast cells displayed robust flocculation. Considering the possible biotechnological applications in brewery industry and sewage treatment, these observations are under detailed investigation.

**Tandem cropping of spring breadwheat *Triticum aestivum* in semitemperate agroclimates: (a) Definition of the genetic apparatus required for early flowering of wheat for its tandem cropping; and (b) Construction of new lines of wheat suitable for tandem cropping in Indo-Gangetic plains**

Two kinds of breadwheats grown thus far are winter wheat in the autumn-winter-spring-summer season in the temperate areas and spring wheat in the spring-summer season in the temperate areas and winter season in the semitemperate areas. The winter and spring wheats are vernalization and photoperiod sensitive and photoperiod sensitive, respectively. Our work has demonstrated that photoperiod and vernalization insensitive wheat can be grown in the autumn season in the Indo-Gangetic plains. It is because the complementary interaction between *Vrn-1* and *Ppd-D1a* mutations increases the flowering time plasticity of wheat that the autumn cropping of wheat in the north western agro-climate of India appeared as a possibility. This property has been used by our laboratory to demonstrate tandem cropping of two crops of wheat in autumn-winter season. Further, better genotypes have been developed for the autumn cropping of wheat.

**Molecular and functional characterization of  $\Delta 7$ -sterol-C-5-desaturase to explore its importance in plant**

The enzyme delta 7-sterol-C-5-desaturase is involved in phytosterol biosynthesis including the plant hormone brassinosteroid. As brassinosteroid is implicated in different stresses in plants, modulating its level in plants can lead to enhanced tolerance to various biotic and abiotic stresses. Moreover, phytosterols are of great interest in human health as they are effective in reducing serum cholesterol level. Here, we present the cloning and functional characterization of delta 7-sterol-C-5-desaturase from edible fungus *Collybia velutipes*. This gene has been constitutively expressed in transgenic tomato plants to modify plant sterol composition and content as well as its performance towards biotic and abiotic stresses.

**Transcriptional regulation of ABC transporter genes in *Magnaporthe grisea***

*Magnaporthe grisea* causes rice blast disease and thus is responsible for loss of 30% of the annual rice harvest. A number of fungicides are used to control the infection of *M. grisea*. The *M. grisea* genome encodes at least 76 ABC-like transporters, and some of them have been shown to be important for pathogenesis. We are trying to understand how these ABC-transporters are helping the pathogen during pathogenesis. In the long term, this knowledge should help us to control the blast disease in rice.



## **Publications and Patents**



## Publications

2011

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## 2010

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## Patents

1. Chattopadhyay S and Yadav V (2010) Novel stress responsive transcription factor involved in plant growth and development and methods thereof (US Patent-7,674,957 B2).
2. Datta A, Chakraborty S, Chakraborty N, Ghosh S and Meli SV (2010) Polynucleotide sequence of fruit softening associated  $\alpha$ -mannosidase and its uses for enhancing fruit shelf life (PCT/IN2009/000387). Published by WIPO on 14.01.2010 (Pub. No. WO/2010/004582) and by the Indian patent office on 16.04.2010 (1647/DEL/2008).
3. Datta A, Chakraborty S, Chakraborty N, Meli SV and Ghosh S (2010) Polynucleotide sequence of fruit softening associated  $\beta$ -D-N-acetylhexosaminidase and its uses for enhancing fruit shelf life (PCT/IN2009/000388). Published by WIPO on 14.01.2010 (Pub. No. WO/2010/004583) and the Indian patent office on 23.04.2010 (1648/DEL/2008).

## Technology developed/transferred

1. The complete chickpea transcriptome has been generated and information transferred to the industry for the development of "Chickpea Expression Microarray" to make it commercially available.
2. The allele-specific marker developed for dehydration tolerance in foxtail millet is being used for allele mining and marker-aided breeding of foxtail millet by the Tamil Nadu Agricultural University (TNAU), Coimbatore, Tamil Nadu, India.

## **Activities of the Institute**



## Honours / Awards

### **Prof. Akhilesh K. Tyagi**

- Shri Om Prakash Bhasin Award for Science and Technology-2011.

### **Prof. Asis Datta**

- 16<sup>th</sup> Dr. J.N. Baruah Memorial Award from Assam Science Society, Jorhat, September 2, 2010.

### **Dr. Sudip Chattopadhyay**

- Elected Fellow of West Bengal Academy of Science and Technology (W.A.S.T.), 2010.
- Member of the Research Council, CIMAP, Lucknow, 2010.
- J.C. Bose National Fellowship, in recognition of active outstanding performance and contribution to science, January 2011.

### **Dr. Subhra Chakraborty**

- Reliance Industries Platinum Jubilee Awards, National Academy of Sciences, India (NASI), 2010.

### **Dr. Debasis Chattopadhyay**

- National Bioscience Award for Career Development, Department of Biotechnology, Govt. of India.

### **Dr. Alok K. Sinha**

- Alexander-von-Humboldt Fellowship, 2011.

### **Dr. Manoj Prasad**

- Prof. Hira Lal Chakravarty Memorial award in Plant Sciences (2010-2011) by the Indian Science Congress Association (ISCA).

### **Dr. Gitanjali Yadav**

- Associate of the Indian Academy of Sciences (IASc), Bangalore, India.

### **Dr. Mukesh Jain**

- Associate of the National Academy of Agricultural Sciences, New Delhi (2011-2015).
- Associated Editor of 'BMC Research Notes'.

### **Dr. Ananda K. Sarkar**

- Prof. Archana Sharma Memorial Award, ISCA, 2010-2011.

## International Visits

### **Prof. Asis Datta**

- Visited United States of America on the invitation of Department of Microbiology, University of Washington Box 354550, Seattle, WA 98195-4550, October 3, 2010.

### **Dr. Niranjan Chakraborty**

- Visited AB SCIEX facility to attend “AB SCIEX Advanced training programme in Proteomics 2010”, at Darmstad, Germany, October 26 – November 5, 2010.

### **Dr. Subhra Chakraborty**

- Visited AB SCIEX facility to attend “AB SCIEX Advanced training programme in Proteomics 2010”, at Darmstad, Germany, October 26 – November 5, 2010.

### **Dr. Alok K. Sinha**

- Prof. Thomas Roitsch’s lab at Institut für Pflanzenwissenschaften, Bereich Physiologie, Karl-Franzens-Universität, Graz, Austria from November 28 to December 6, 2010.
- AB Sciex Pte LTD, Darmstadt, Germany to attend Basic Operator Training 4800 MALDITOF TOF system, December 7-9, 2010.
- Prof. Dierk Scheel’s Lab at Leibniz Institute for Plant Biochemistry, Halle Germany as Alexander von Humboldt fellow, March 3 to May 31, 2011.

### **Dr. Manoj Prasad**

- Visited Scottish Crop Research Institute (SCRI), Dundee, Scotland, September 9, 2010.
- Visited Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben Germany, as a part of Indo-German collaborative project between IPK and NIPGR during November 18-27, 2010.

### **Dr. Jitendra K. Thakur**

- AB Sciex Pte LTD, Darmstadt, Germany to attend Basic Operator Training 4800 MALDITOF TOF system, December 7-9, 2010.

### **Dr. Mukesh Jain**

- Visited Asilomar Conference Grounds, Pacific Groove, CA, USA to attend the V<sup>th</sup> International Congress on Legume Genetics and Genomics, July 2-8, 2010.

### **Dr. Naveen C. Bisht**

- Visiting Scientist, Joe Jez Lab, Donald Danforth Plant Science Center, St. Louis, USA (Short Term Overseas Fellowship of NIPGR), June 10, 2008-July 20, 2010.



## Invited Lectures

### **Prof. Akhilesh K. Tyagi**

- Academic Staff College, JNU, New Delhi, August, 2010.
- CSIR Foundation Day Lecture, National Botanical Research Institute, Lucknow, September, 2010.
- Indian Institute of Advanced Research, Gandhinagar, Gujarat, February, 2011.
- Banaras Hindu University, February, 2011.
- Khalsa College, New Delhi, March, 2011.

### **Prof. Asis Datta**

- Delivered lecture on “Food security and sustainability in India” at IARI, New Delhi on July 23, 2010.
- Delivered lecture in “International Conference on Science & Spirituality – the Growing Interface” at Sri Saibaba auditorium, New Delhi during July 31 & August 1, 2010.
- Delivered lecture on the occasion of CSIR Foundation Day at Regional Research Laboratory (RRL), Jammu on September 26, 2010.
- Delivered Annual Day Lecture as Chief Guest at NBRI on October 26, 2010.
- Delivered inaugural address at national-level science extravaganza “Biotechnica Chandigarh-2010” at Panjab University Campus, Chandigarh during November 16-18<sup>th</sup>, 2010.
- Delivered Presidential address in the 80<sup>th</sup> Annual Session of National Academy of Sciences, India (NASI) at Jaipur National University, Jaipur during December 2-4, 2010.
- Delivered lecture in National Conference on “Green Technology for Accelerating Sustainable Rural Development” at MGM’s Institute of Biosciences and Technology, Aurangabad during December 23-24, 2010.
- Delivered lecture on “Sustainable agriculture for food security” in 98<sup>th</sup> Indian Science Congress at SRM University, Chennai during January 3-4, 2011.
- Delivered lecture on “Science education and career” at DST-INSPIRE Internship Program at School of Biotechnology, KIIT University, Bhubaneswar during February 11-15, 2011.
- Delivered lecture on “Education and society: issues and challenges” at INSPIRE Science Camps at Centre for Philosophy & Foundations of Science, Darshan Sadan, New Delhi during March 21-23, 2011.

### **Dr. Sudip Chattopadhyay**

- Delivered lecture at Department of Botany, Vishwabharathi University, Shantiniketan, April, 2010.
- Delivered lecture at National Academy of Sciences, Bangalore, July, 2010.
- Delivered lecture at NISER, Bhubaneswar, December 2010.
- Delivered lecture at ILS, Bhubaneswar, December 2010.

### **Dr. Niranjan Chakraborty**

- Proteomic Society of India (PSI) Seminar Series-I on “Indian Proteomics, User’s Perspective”, Shaha Institute of Nuclear Physics, Kolkata, July 2-3, 2010.
- National Conference on Marine Bioresource, Biotechnology and Biodiversity, Jamnagar, Gujarat, November 28-29, 2010.
- 16<sup>th</sup> Refresher Course in Life Sciences, Academic Staff College, JNU Campus, January 19, 2011.
- Guest lectures on Biotechnology, Presidency University, Kolkata, March 18-26, 2011.

### **Dr. Subhra Chakraborty**

- Delivered lecture at 70<sup>th</sup> Orientation Course, Academic Staff College, JNU, April 22 and April 23, 2010.
- Delivered guest lectures in the M.Sc. Plant Molecular Biology and Biotechnology course at Indian Institute of Advanced Research, Ahmedabad, November 23-24, 2010.
- Delivered lecture at “Indo-Italian workshop on bacteria and fungi for environmental sustainability”, Amity University, New Delhi, November 30, 2010.
- Delivered lecture at 72<sup>nd</sup> Orientation Course, Academic Staff College, JNU, December 1, 2010.
- Delivered lecture at 80<sup>th</sup> Annual session of NASI and Symposium on “Climate Change-Research, Awareness and Capacity Building”, Jaipur, December 2-4, 2010.
- Delivered lecture in XXXIV Annual Meeting of Indian Society of Cell Biology, Kolkata, December 4-6, 2010.
- Delivered lecture at 16<sup>th</sup> Refresher Course in Life Sciences, Academic Staff College, JNU, January 17, 2011.
- Delivered lecture at National Seminar on “Food Security and Climate Change: Challenges and Opportunities for Tuber Crops”, Kerala, January 20-22, 2011.
- Delivered guest lectures in the M.Sc. Plant Biotechnology course of Presidency University, Kolkata, March 18-26, 2011.

### **Dr. Debasis Chattopadhyay**

- DREB-domain proteins and their potential in improvement of drought tolerance: Training programme on drought adaptation, University of Agricultural Sciences, GKVK, Bengaluru, 2010.
- Next Generation Sequencing and its application in Genomics and Epigenomics, Academic Staff College, JNU, 2010.

### **Dr. Alok K. Sinha**

- Delivered lecture on “Metabolic engineering towards better understanding of monoterpenoid indole alkaloid (MIA) pathway in *Catharanthus roseus*” at the Department of Biochemical Engineering & Biotechnology, Indian Institute of Technology Delhi on November 12, 2010.
- Delivered lecture on “Unraveling complexity of Mitogen Activated Protein Kinase cascade in Rice” at the Department of Biosciences, Jamia Millia Islamia as an Extension Lecture series on “Recent Trends in Biosciences” on November 13, 2010.

- Delivered lecture on “Unraveling complexity of Mitogen Activated Protein Kinase cascade in Rice” at Institut für Pflanzenwissenschaften, Bereich Physiologie, Karl-Franzens-Universität, Graz, Austria on December 2, 2010.
- Delivered lecture on “Mitogen activated protein kinase cascade in rice” at Leibniz Institute of Plant Biochemistry, Halle, Germany on May 13, 2011.

#### **Dr. Sabhyata Bhatia**

- Delivered lecture on “Whole genome sequencing and molecular mapping in chickpea (*Cicer arietinum* L.)” at the V<sup>th</sup> International Congress on Legume Genetics and Genomics, Asilomar Conference Grounds, California, USA, July 2-8, 2010.
- A Comprehensive Genetic Map of Chickpea (*Cicer arietinum*) For Facilitating Genomics Research and Breeding Applications, Plant & Animal Genomes XIX Conference, San Diego, CA, January 15-19, 2011.
- Generation of EST resources for gene discovery and marker development in chickpea (*Cicer arietinum* L.), National Symposium on ‘Emerging Trends in Plant Sciences’ at Banaras Hindu University, Varanasi, March 3-4, 2011.

#### **Dr. Praveen Verma**

- Delivered lead talk on “Functional Genomics of Plant-Fungal interactions” at National Institute of Plant Genome Research, New Delhi symposium on Molecular Approaches for Management of Fungal Diseases of Crop Plants, at Indian Institute of Horticultural Research, Bangalore, December 27-30, 2010.
- Delivered plenary lecture on “Functional Genomics of Plant and Pathogen Interactions” at national Symposium on Biotechnological Perspective of Plants, Microbes and their Interactions, at B R A Bihar University, Muzaffarpur, January 15-17, 2011.
- Delivered lecture on “Plant Functional Genomics” at Academic Staff College, Jawaharlal Nehru University, on January 21, 2011.
- Delivered lecture on “Plant Immune System” at Academic Staff College, University of Delhi, February 21, 2011.

#### **Dr. Manoj Prasad**

- Delivered lecture on “SNP identification and development of an allele-specific marker for a novel DREB2-like gene *SiDREB2* in foxtail millet (*Setaria italica* L.)” at National Conference on ‘Emerging Trends in Plant Sciences’, Dept. of Botany, Banaras Hindu University (BHU), Varanasi, UP, March 3, 2011.
- Delivered lecture on “Tomato cultivar tolerant to *Tomato leaf curl New Delhi virus* infection induces virus-specific siRNA accumulation and defense associated host gene expression” at 98<sup>th</sup> Session of the Indian Science Congress Association (ISCA), SRM University, Chennai, January 4, 2011.
- Delivered lecture on “Molecular Markers Technology: Principles & Practices” at National workshop on ‘Identification & validation of molecular markers for enhancement of agricultural productivity’, Dept. of Molecular Biology & Genetic Engineering, GBPU&AT, Pantnagar, August 9, 2010.

- Delivered lecture on “Tomato cultivar tolerant to *Tomato leaf curl New Delhi virus* infection induces virus-specific siRNA accumulation and defense associated host gene expression” at National conference on ‘Whitefly and Thrips Transmitted Viruses’, Dept. of Plant Molecular Biology, University of Delhi, South Campus, August 28, 2010.

**Dr. Jitendra Kr. Thakur**

- Delivered lecture on “Thread of life”, in DST-INSPIRE Internship Camp at KIIT, Bhubaneswar, June 1-5, 2010.
- Delivered lecture on “Regulation of gene expression – Transcription”, in 16<sup>th</sup> Refresher Course in Life Sciences organized by UGC-Academic Staff College, Jawaharlal University, New Delhi, January 18, 2011.

**Dr. Mukesh Jain**

- Delivered lecture on ‘*De novo* transcriptome assembly from next generation sequencing data’ at the Biotech Centre, University of Delhi South Campus, New Delhi, February, 2011.
- Delivered lecture on ‘Optimization of *de novo* transcriptome assembly using NGS data’ at the National Institute of Plant Genome Research, New Delhi, March 2011.

**Dr. Ananda K. Sarkar**

- Delivered lecture on Small RNAs’ and Small Population of ‘Founder Cells’ Regulate the Fountain of Youth in Higher Plants at Banaras Hindu University on March 03, 2011.

## Participation in National/International Conference/Workshops

### **Prof. Akhilesh K. Tyagi**

- Conference on “India-EU and Member States Partnership for a Strategic Roadmap in Research and Innovation” jointly organized by the Department of Science & Technology, Govt. of India and the European Commission at the hotel The Claridges, Surajkund, New Delhi in November 2010.
- “Indo-German Partnering Workshop on Bio-economy” organized by the Department of Biotechnology at NIPGR during November 23-24, 2010.
- International Conference entitled “Recent Trends in Developing Bioremediation Strategies for Hexachlorocyclohexane (HCH) and other Chlorinated Contaminants” organized by the Department of Zoology, University of Delhi (under the umbrella of Indo-Swiss Collaboration in Biotechnology) during February 9 – 11, 2011.
- Science and Spiritual Quest, AISSQ, Vigyan Bhawan, New Delhi, 2011.

### **Prof. Asis Datta**

- National-level science extravaganza “Biotechnica Chandigarh-2010” at Panjab University campus, Chandigarh during November 16-18, 2010.
- “Indo-Italian Workshop on Bacteria & Fungi for Environmental Sustainability” at Amity Institute of Microbial Technology (AIMT), Amity University, Noida on November 29, 2010.
- GRC-2010 at Aurangabad during December 16-21, 2010.
- Brainstorming session on the development of Science and Technology in the country, at Yojana Bhawan, New Delhi December 23, 2010.
- 98<sup>th</sup> Indian Science Congress at SRM University, Chennai during January 3-4, 2011.
- Science Academies summit at SRM University, Chennai on January 4, 2011.
- 22<sup>nd</sup> Meeting of Scientific Advisory Committee to the Cabinet (SAC-C) at CSIR Science Centre, K.K. Birla Lane, New Delhi on February 2, 2011.
- Chief Guest of the 10<sup>th</sup> Agricultural Science Congress, theme “Soil, Plant and Animal Health for Enhanced and Sustained Agricultural Productivity” held at Lucknow during February 10-12, 2011.
- Chief Guest at National Conference on “Emerging Trends in Plant Sciences” at Banaras Hindu University, Varanasi during March 3-4, 2011.
- Attended conference of the Vice-chancellors of Central and State Universities at Vigyan Bhawan, New Delhi during March 25-26, 2011.
- Attended of the Council as a member held on March 30, 2011 at BITS, Pilani.

### **Dr. Niranjana Chakraborty**

- Bioscience Leadership Retreat (BLR), Thiruvananthapuram, February 4-5, 2011.

### **Dr. Subhra Chakraborty**

- Participated in AB SCIEX Advanced training programme in Proteomics 2010, Germany, October 26 – November 5, 2010.
- Participated in Indo-Italian workshop on bacteria and fungi for environmental sustainability, Amity University, New Delhi, November 29-December 1, 2010.
- Participated in 80<sup>th</sup> Annual session of NASI and Symposium on “Climate Change-Research, Awareness and Capacity Building”, Jaipur, December 2-4, 2010.
- Participated in XXXIV Annual Meeting of Indian Society of Cell Biology, Kolkata, December 4-6, 2010.
- Participated in National Seminar on “Food Security and Climate Change: Challenges and Opportunities for Tuber Crops”, Kerala, January 20-22, 2011.

### **Dr. Alok K. Sinha**

- Attended workshop on “Basic Operator Training 4800 MALDITOF TOF system” proteomics at AB Sciex Pte LTD, Darmstadt, Germany during December 7-9, 2010.

### **Dr. Sabhyata Bhatia**

- V<sup>th</sup> International Congress on Legume Genetics and Genomics, Asilomar Conference Grounds, California, USA, July 2-8, 2010.
- Plant & Animal Genomes XIX Conference, San Diego, CA, January 15-19, 2011.
- National Symposium on ‘Emerging Trends in Plant Sciences’ at Banaras Hindu University, Varanasi, March 3-4, 2011.

### **Dr. Manoj Prasad**

- Participated in National conference on ‘Whitefly and Thrips Transmitted Viruses’ at Dept. of Plant Molecular Biology, University of Delhi, South Campus, August 27-28, 2010.
- Participated in the 7<sup>th</sup> Solanaceae meeting at Apex City Quay Hotel in Dundee, Scotland, September 5-9, 2010.
- Participated in National workshop on ‘Marker-Assisted-Selection (MAS) for crop improvement’ at ICRISAT, Greater Hyderabad, October 27-29, 2010.
- Participated in the 10<sup>th</sup> Gatersleben Research Conference (GRCX), on ‘Sequence-informed crop Research’ at Quedlinburg & IPK, Gatersleben, Germany, November 22-24, 2010.
- Participated in 98<sup>th</sup> Session of the Indian Science Congress Association (ISCA) at SRM University, Chennai, January 3-7, 2011.

### **Dr. Jitendra Kr. Thakur**

- DST-INSPIRE Internship Camp organized at KIIT, Bhubaneswar, June 1-5, 2010.
- XXII Bioinformatics Coordinators meeting & Symposium at Pondicherry University, Puducherry, February 2-4, 2011.

**Dr. Gitanjali Yadav**

- Attended the 3rd Workshop on Bioinformatics and Molecular Modeling in Drug Design, at the Ambedkar Center for Biomedical Research, New Delhi during February 24–26, 2011.

**Dr. Mukesh Jain**

- V<sup>th</sup> International Congress on Legume Genetics and Genomics, Asilomar Conference Grounds, Pacific Grove, CA, USA, July 2-8, 2010.
- 1<sup>st</sup> regional workshop on “Next generation sequencing experimental design and quantitative genomics”, Biotech Centre, University of Delhi South Campus, New Delhi, February 25-26, 2011.

**Dr. Ananda K. Sarkar**

- ‘Small RNAs’ and Small Population of ‘Founder Cells’ Regulate the Fountain of Youth in Higher Plants at Banaras Hindu University on March 03-04, 2011.

## Visitors to the Institute

- Mr. Tomoaki Wada, Director General, National Institute of Science and Technology Policy (NISTEP), Ministry of Education, Culture, Sports, Science and Technology, Japan; Mr. Hiroaki Hirata, Deputy Director (NISTEP) and Dr. Goki Inada, First Secretary, Economic Division, Embassy of Japan, New Delhi visited NIPGR on June 26, 2010 for exchanging views on Genomic Research on Plants in India and Public Acceptance of Genome Modified Organization in India.
- Prof. Tuan-hua David Ho, Past President, American Society of Plant Biology, Professor and Associate Chair, Deptt. of Biology, Washington University, St. Louis and Prof. Su-May Yu, Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan, Republic of China visited NIPGR on October 22, 2010 to discuss some scientific issues with the Director.
- Rt Hon David Willetts MP, Minister of State for Universities and Science, a member of Cabinet, UK accompanied by Mr. Steve Visscher, Biotechnology and Biological Sciences Research Council (BBSRC), UK, Mr. Brian Harris, Head, Agriculture and Food Sector, BBSRC, Mr. Andrew Jackson, Counsellor, Knowledge Economy, British High Commission, Dr. Chris Darby, Head, Science & Innovation, British High Commission and Dr. Alicia Greated, Director, Research Councils UK India Office visited NIPGR on November 12, 2010 to promote joint UK-India research activities concerning the global food supply challenges.
- Dr. Lars Hinrichsen, Managing Director, Danish Meat Research Institute, Denmark, Professor Mogens Horder, University of Southern Denmark and Dr. Rasmus L. Krogh-Meyer, Special Adviser, Danish Agency for Science, Technology and Innovation, Denmark visited NIPGR on November 15, 2010 to discuss some research issues with the Director.
- Prof. B.W. Poovaiah, Reagent Professor, Washington State University, Pullman, USA, came to India in connection with National Academy of Sciences, India (NASI) annual meeting during November 24, 2010 to November 29, 2010 and visited NIPGR. His trip was sponsored by USA Government.
- Dr. Somen Nandi, Managing Director, Global HealthShare Initiative visited NIPGR on December 15, 2010 to promote global health and wellness, particularly in developing and low-income countries through the power of sharing.
- Prof. Janet Allen, Director Research, Biotechnology and Biological Sciences Research Council (BBSRC), Swindon, UK; Dr. Brian Harris, Head of Agriculture and Food Sector, BBSRC and Dr. Tim Willis, Head of International Relations Unit, BBSRC visited NIPGR on February 17, 2011 to get an in-depth overview of the research activities of NIPGR and to discuss possible ways to develop collaborations.



## Symposia/Workshop/Special Lectures Organized

### **Dr. T.N. Khoshoo Memorial Lecture Award (June 7, 2010)**

Prof. A.K. Sharma, Honorary Professor, Calcutta University delivered the “Dr. T.N. Khoshoo Memorial Lecture Award”. It was followed by the “Life Time Distinction Award” to Prof. M.G.K. Menon, Advisor, ISRO; President, ISI Kolkata and Chancellor, NEHU; and the “Life Time Achievement Award” to Prof. H.Y. Mohan Ram, INSA Honorary Scientist and formerly Professor and Head, Deptt. of Botany, Delhi University and young women working on orchids were also recognized. The function was organized by The Orchid Society of India (TOSI), Department of Botany, Panjab University, Chandigarh on June 7, 2010 at NIPGR.



**Prof. A.K. Sharma, Honorary Professor, Calcutta University and Chairman, SAC, NIPGR delivered the “Dr. T.N. Khoshoo Memorial Lecture Award”**

**Annual Student Research Symposium – SciEfflux-2010 (July 23-24, 2010)**

The Institute organized a two day Student Research Symposium during July 23-24, 2010. On this occasion, the 2<sup>nd</sup> and 4<sup>th</sup> year students of the Institute delivered their presentations related to theme & progress of their research followed by a cultural event “RAINBOW”.



**Inauguration of Annual Student Research Symposium – SciEfflux-2010**



**Students performing in the cultural event “RAINBOW”**

### **Indo-German Partnering Workshop on Bio-economy (November 23-24, 2010)**

“Indo-German Partnering Workshop on Bio-economy” was organized by the Department of Biotechnology at NIPGR during November 23-24, 2010. Mr. Felix Kahle, Counsellor, Science & Technology, German Embassy, Prof. Akhilesh Tyagi, Director, NIPGR and Dr. S. Natesh, Senior Adviser, DBT and many other senior scientists from Germany and India as well as from private sectors delivered talks on the theme.

### **Foundation Day (November 30<sup>th</sup>, 2010)**

The Institute celebrated its 12<sup>th</sup> Foundation Day by organizing “J. C. Bose Memorial Lecture” on Tuesday, November 30, 2010. On this occasion, Prof. Deepak Pental, Department of Genetics, University of Delhi, South Campus, New Delhi, delivered the Lecture on “Opportunities and Constraints in Plant Breeding”. Besides, researchers/students of the Institute were facilitated with medals/mementos for the best scores in Ph.D. course work and for best presentation in Students Research Symposium 2010. The invited guests from nearby institutions as well as staff and students of the Institute attended the function.



**Prof. Akhilesh Kumar Tyagi, Director, NIPGR; Prof. Deepak Pental, Department of Genetics, University of Delhi; and Dr. Sabhyata Bhatia, Scientist, NIPGR (L to R)**

## **National Workshop on “Advances and Challenges in Next Generation Sequencing & Bioinformatics of Genome Analysis” (March 28-30, 2011)**

The BTIS-NET DISC at NIPGR organized the third Bioinformatics Workshop titled ‘Advances & Challenges in Next Generation Sequencing & Bioinformatics of Genome Analysis’ from 28-30th March 2011, jointly convened by Dr. Gitanjali Yadav and Dr. Mukesh Jain, Scientist, NIPGR. The endeavor of the organizing committee was to provide an opportunity to all the participants to benefit from the rich experience and expertise available in bioinformatics and DNA sequencing in India. Specifically, this workshop was organized to discuss about the advances and challenges in the NGS data analysis. In view of the encouraging inputs received in our previous workshops, the number of participants and the duration of the workshop were increased for the current year. This year, the workshop was partially sponsored by the industry, including Roche Diagnostics India Pvt Ltd, Illumina and Premas Biotech Pvt. Ltd. Twenty seven participants were selected and invited to attend this workshop. The first day of the workshop included lectures by eminent scientists in the area of Next Generation Sequencing (NGS) technology and was open to all. The welcome address was delivered by the Sub-DIC coordinator, while Prof. Vani Brahmachari, renowned geneticist and molecular biologist, from ACBR, University of Delhi, delivered the Inaugural lecture entitled ‘Genetic plasticity in clinical isolates of *M. tuberculosis* and its implications’, describing her experience in the area of NGS. The remaining presentations included discussion on several aspects of the NGS. Dr. Raghuvanshi from UDSC covered the use of NGS technology in novel miRNA identification. Dr. Sharma from IGIB highlighted the potential of NGS in environmental and industrial microbiology. Dr. Jain covered the new developments and challenges in de novo assembly of transcriptomes. Thereafter, Dr. Gupta from Roche, India, told about how Roche 454 platform can be used for various NGS applications. Dr. Naved from Premas Biotech highlighted the power of Illumina technology in various applications. The second and third days of the workshop included, alternatively, two lecture sessions and four tutorial sessions, in the area of genome analyses. Young scientists working in the area of plant computational biology delivered talks for the lecture sessions, whereas previously designed hands-on practicals were imparted in the tutorial sessions. These included tutorials on Genome Annotation, Genome Comparison, Transcriptome analyses and Genome Browsers. Overall, the various demonstration sessions emphasized the need for data interpretation, data analysis and function prediction for the output of various genome sequencing technologies. The lecture sessions included a lecture by Dr. Gitanjali Yadav entitled ‘Bioinformatics of Genome Analyses’ while Dr. Debasis Chattopadhyay, NIPGR gave a talk titled ‘Next Generation Sequencing and its applications in genomics and epigenomics’. Dr. Chattopadhyay elaborated upon the history of genome sequencing, the methods involved and described in details the applications of the new and futuristic methods with specific examples from plant genomes. The third day ended with the valedictory session where an informal interaction was conducted with all participants who appreciated all the sessions and gave positive feedback on the workshop.



**Participants of the Workshop**

## Monthly Seminar Series (2010-2011)

The Institute organized the “Monthly Seminar Series” (initiated in the year 2009) in the year 2010-11 by inviting renowned scientists to present their work, for the benefit of the students and young researchers of the Institute. Dr. Gitanjali Yadav and Dr. Ananda Kumar Sarkar, Scientists of the Institute, have been entrusted with the work to organize the activities of the Seminar Series. The Seminar Series includes the inaugural lecture, by the new faculty member(s) of the Institute and lecture by the invited speaker.

During the period under report, the following lectures were organized at the Institute as part of “Monthly Seminar Series:

Name of the scientist / invited speaker	Lecture	Date
Dr. Malali Gowda Michigan State University, USA	Deep Sequencing of Transcriptome Improves Genome Annotation and Reveals Novel RNA Species	April 09, 2010
Dr. Pankaj Jaiswal Oregon State University, USA	Crop Plant Genomics in the new age: A systems approach	August 13, 2010
Dr. Andrew Sharpe NRC Plant Biotechnology Institute (NRC-PBI), Canada	Sequencing and assembly of the B. oleracea genome	November 26, 2010
Dr. Nese Sreenivasulu Leibniz Institute of Plant Genetics & Crop Plant Research IPK, Germany	Systems Biology of Seed Metabolism for Improving Yield Stability	December 10, 2010
Dr. Arvind Bharti National Center for Genome Resources, Santa Fe, U.S.A.	Making Sense from vast amount of next-gen short sequence reads	December 22, 2010
Dr. K.V. Prabhu Indian Agricultural Research Institute (IARI)	Molecular Marker Assisted Plant Breeding	January 19, 2011
Dr. Shashi Bhushan RVZ/DFG Research Center for Experimental Biomedicine, Wuerzburg, Germany	Structural Determination of Macromolecular Complexes by Cryo-Electron Microscopy	March 22, 2011

## Academic Courses and Training Programmes

### Ph. D. Programme

As in the previous years, the response for admission to Institute's Ph. D. programme was very encouraging this year also. The candidates are selected after a national level test/interview conducted by NIPGR. Only CSIR/UGC/DBT-JRF/ICMR Fellowship awardees are eligible to apply. The selected scholars are first required to do course work, which is followed by research work on different areas on Plant Genomics in various laboratories. A total number of 116 students have registered for the Programme leading to Ph. D. degree to JNU since the Academic year 2001-2002, and out of these, 31 students have been awarded with Ph. D. degree, & the rest are at various stages of their Ph. D. work.

### Students enrolled for Ph. D. Programme 2010-11

Sl. No.	Name of the Student	Name of the Supervisor
1.	Mr. Naveen Malik	Prof. Akhilesh K. Tyagi
2.	Ms. Gunjan Sharma	Prof. Akhilesh K. Tyagi
3.	Ms. Shaista Praveen	Dr. Niranjana Chakraborty
4.	Mr. Naval Dutt Kholia	Dr. Subhra Chakraborty
5.	Ms. Priyanka Jawa	Dr. Subhra Chakraborty
6.	Ms. Hitaishi Khandal	Dr. Debasis Chattopadhyay
7.	Ms. Jalmi Siddhi Kashinath	Dr. Alok Krishna Sinha
8.	Mr. Chandra Kant	Dr. Sabhyata Bhatia
9.	Ms. Manisha	Dr. Praveen Verma
10.	Ms. Rinkee Kumari	Dr. Manoj Prasad
11.	Ms. Amita Yadav	Dr. Manoj Prasad
12.	Ms. Nidhi Dwivedi	Dr. Jitender K. Thakur
13.	Mr. Sourobh Maji	Dr. Jitender K. Thakur
14.	Mr. Pradeep Dahiya	Dr. Jitender K. Thakur
15.	Mr. Muhammed Jamsheer K.	Dr. Ashverya Laxmi
16.	Mr. Venkateswara Rao	Dr. Manoj Majee
17.	Mr. Vikash Kumar Singh	Dr. Mukesh Jain
18.	Ms. Swati Sharma	Dr. Mukesh Jain
19.	Ms. Archita Singh	Dr. Ananda K. Sarkar
20.	Ms. Sharmila Singh	Dr. Ananda K. Sarkar
21.	Mr. Vibhav Gautam	Dr. Ananda K. Sarkar

## Ph. D. Degrees awarded to NIPGR Scholars

The Jawaharlal Nehru University, New Delhi, awarded the degree of Doctoral of Philosophy to the following scholars of the Institute during the year under report:

SI No.	Name of the Scholar	Thesis title	Name of the Supervisor
1.	Mr. Susheel Kumar Raina	Study of effects of abiotic stress on terpenoid indole alkaloid production in <i>Catharanthus roseus</i>	Dr. Alok Krishna Sinha
2.	Mr. Mani Kant Choudhary	Proteome analysis of rice ( <i>Oryza sativa</i> L.) nucleus under dehydration and molecular cloning of candidate genes	Dr. Niranjan Chakraborty
3.	Mr. V. Babu Rajendra Prasad	Molecular cloning and functional characterization of enhancer of hy5 in <i>Arabidopsis thaliana</i>	Dr. Sudip Chattopadhyay
4.	Ms. Aarti Pandey	Nuclear protein profiling and identification of differentially expressed dehydration responsive proteins (DRPs) in legume	Dr. Niranjan Chakraborty
5.	Mr. Kamal Kumar	Molecular and functional characterization of a WRKY transcription factor from chickpea	Dr. Praveen Verma
6.	Ms. Aparna Singh	Interplay of ZBF1 and ZBF2 in Light Signaling to Control Light-mediated Seedling Development in <i>Arabidopsis thaliana</i>	Dr. Sudip Chattopadhyay
7.	Mr. Neeraj Kumar Rai	Molecular mapping and characterization of Tomato Leaf Curl Virus (ToLCV) resistance gene(s) in tomato	Dr. Manoj Prasad



## Research Scholars other than Ph.D. students associated with NIPGR

### Research Associates

Deepti Jain  
Divya S. Bhat  
Divya Srivastava  
Doel Ray  
Geeta Prakash  
Hareesh PS  
Hussain Ara  
Meenu  
Monika Jaggi  
Nazrul Islam  
Poonam Sharma  
Pradipto Mukhopadhyay  
Rohini Garg  
Sarika Gupta  
Sarita Bhutty  
Shalu Chaudhary  
Sourabh Saxena  
Sumit Ghosh  
Toshiba Haider  
V. Babu Rajendra Prasad  
Vivek Dixit  
Yashpal Khajuria

### Project Fellows

Anand Pratap Singh  
Anil Kumar  
Arvind Kumar  
Daljit Singh  
Ganga Jena  
Gangisetty Nagaraju  
Gopal Mishra  
Jyoti Reddy Cheruku  
Kajal Kumari  
Manju Yadav  
Niraj Shah  
Nisha Gupta  
Pallavi Singh  
Pragati Kumari  
Pratima Sharma  
Priyanka Verma  
Raghvendra Sharma  
Rajesh Pujari  
Rashmi Gaur  
Ravi K. Patel  
Renu Kumari  
Sachin Pundhir  
Sarita Jha  
Shalu Jhanwar  
Sharat Chandra

Smiriti Shridhar  
Subhendu Shekhar  
Sudip Ghosh  
Sushmita Biswas  
Swaraj Basu  
Swati Chaudhary  
Swati Puranik  
Vishakha Sharma

## Training Programme

The Institute accepts students from different Universities/Institutes as trainees and provides them facilities and guidance. A list of students from various universities/institutions trained by faculty of the Institute is given below:

1. Aditya Sharma Jamia Millia Islamia University, New Delhi
2. Arun Kumar Jamia Millia Islamia University, New Delhi
3. Arundhati Halder Haldia Institute of Technology, West Bengal
4. Ayushman Ghosh Presidency College, Calcutta University
5. Babita Singh Jamia Millia Islamia University, New Delhi
6. B.S. George Indian Academy of Sciences, Bharthidasan University, Thiruchirapalli
7. Bhumika Nath Thapar University, Patiala
8. Gaurav Shoeran Amity University, Noida
9. Hina Ojha College of Agriculture, Swami Keshvanand Rajasthan Agricultural University, Bikaner
10. Jincy Mathew Karunya University, Coimbatore
11. Kamran Javed Jamia Millia Islamia University, New Delhi
12. Lalitesh Kushwaha DAVV, Indore
13. Monika Sharma Jaipur National University, Rajasthan
14. Mohit Misra Jamia Millia Islamia University, New Delhi
15. Nisha Rana Hans Raj Mahila Maha Vidyalaya, Jalandhar
16. Paridhi Mehta Banasthali Vidyapeeth, Rajasthan
17. Prashasti TERRI University, New Delhi
18. Priyanka Singh Manav Rachna International University, Faridabad
19. Rajesh K. Jha Magadh University, Bodhgaya, Bihar
20. Rucha Paretkar Elphinstone College, University of Mumbai
21. Sanjay Sah Banaras Hindu University, UP
22. Sashank Agarwal Jamia Millia Islamia University, New Delhi
23. Shubhi Sahni Vellore Institute of Technology, VIT University, Tamil Nadu
24. Suchita Banaras Hindu University, Varanasi
25. Sudhanshu Sekhar TM Bhagalpur University Bihar
26. Swati Shree Padhi Haldia Institute of Technology, West Bengal
27. Tanu Sri TERI University, New Delhi
28. Umang Choubisa Jaipur Engineering College and Research Centre, Jaipur

## Facilities established at the Institute

### **NIPGR Sub-DIC Facility**

The Distributed Information Sub-Center (DISC) facility at NIPGR has now completed five years since its inception. The facility functions as a resource for all scientists within the institute and for researchers in plant biology in other national institutes, with the objective of providing research and training opportunities in computational biology. In addition, DISC at NIPGR also implements, secures and operates major computational, networking and scientific resources at the institute, including linux based IT Infrastructure, academic web and email servers. Bioinformatics trainings are conducted annually at both long-term and short-term levels. Under this programme, traineeship and studentship is awarded to two candidates every year for a period of six months, from January to June. The selection is through a nation-wide interview and this year, it was awarded to Ms. Babita Singh and Ms. Nisha Rana from Delhi and Jalandhar, respectively. Short term trainings are provided to larger groups of 20-30 participants, where two- or three- day workshop is conducted annually, for Ph.D. scholars, postdoctoral researchers and teachers from various colleges and universities, in order to provide an opportunity to all participants to benefit from the rich experience and expertise available in bioinformatics in India. The specific endeavor of the workshop organizing committee this year was to enhance and spread awareness about the advances and challenges in next generation sequencing (NGS) technology and its applications to plant biology. Apart from training, several research avenues in plant sciences are currently being explored by the Sub-DIC in the broad areas of stress biology, computational genomics and protein-protein interactions studies. A number of scientific applications, online databases and scientific web servers are hosted by the center. The facility has a large collection of commercial and public domain softwares covering a wide range of applications like sequence and structure analysis, molecular modeling and simulations, structure prediction and drug design.

### **National Plant Gene Repository**

In India, different R&D institutions and Universities besides The National Institute of Plant Genome Research (NIPGR) are intensely involved in plant genomics research. Recently completed work of rice genome sequences, ongoing effort on tomato, potato and chickpea sequencing along with different EST-based projects are giving out many novel and important genes and promoters. However, the large sets of these items are scattered in various laboratories all over the country. It is thus a difficult task to find the components one wants from various individual sources. Therefore, proper cataloging, documentation, storage, maintenance and distribution of various gene libraries, clones, and promoters are pre-requisites, which would help functional and application genomics, the next steps in gene revolution. Further, these efforts are also important in the new era of patent regime. Towards this, the Department of Biotechnology has set up National Plant Gene Repository (NaPGeR) at National Institute of Plant Genome Research to serve as National facility. NaPGeR has come in to existence during 2008. The activities of NaPGeR are (1) storage and distribution of genes, promoters and ESTs in form of DNA clone, library, etc. and (2) to develop a database for all stocks and other information. Infrastructure for setting up NaPGeR has been established.

The equipments been procured and the manpowers sanctioned have already been recruited. The research protocols to be followed in NaPGeR have been developed. Identification of potential Indian laboratories involved in genomics research and development of the NaPGeR web page has been completed.

### **Plant Growth Facility**

The National Institute of Plant Genome Research (NIPGR) hosts a Plant Growth Facility (PGF). This state-of-the-art facility is located in a total area of 850 m<sup>2</sup>, housing plant growth chambers providing 48.2 m<sup>2</sup> of environmentally controlled plant growth area, connected to a central control system. The facility also includes a service area comprising of soil and media preparation room, storage shelves, an autoclave and an incinerator dedicated for solid waste disposal. The facility is made available for plant scientists for maintaining their plant materials/cultures.



## Grant-in-Aid Schemes

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
1.	Prof. Akhilesh K. Tyagi	Functional analysis of gene regulatory networks during flower and seed development in rice	DBT Govt. of India
2.	Prof. Akhilesh K. Tyagi	J. C. Bose Fellowship	DST Govt. of India
3.	Prof. Asis Datta	N-Acetylglucosamine-kinase HXK-1 regulatory role in morphogenesis and pathogenesis in human fungal pathogen <i>Candida albicans</i>	ICMR Govt. of India
4.	Dr. Sudip Chattopadhyay	Functional analysis of MYC2 transcription factor family in rice	DBT Govt. of India
5.	Dr. Sudip Chattopadhyay	Ripening of fleshy fruits species and their adaptation to stress	IFCPAR
6.	Dr. Niranjana Chakraborty	Analysis of dehydration responsive subcellular phosphoproteome in crop plants	DBT Govt. of India
7.	Dr. Niranjana Chakraborty	Functional genomics of water deficit stress in chickpea of Next Generation Challenge Programme on Chickpea Genomics	DBT Govt. of India
8.	Dr. Niranjana Chakraborty	Molecular cloning & characterization of CaTLP1 dehydration responsive tubby like protein from chickpea	DBT Govt. of India
9.	Dr. Niranjana Chakraborty	Proteomic analysis of dehydration responsive endomembrane Fraction of Rice ( <i>Oryza sativa</i> D.)	CSIR Govt. of India
10.	Dr. Subhra Chakraborty	Construction of chickpea BAC library as genomic resource, cloning and characterization of R-gene for <i>Fusarium wilt</i>	DBT Govt. of India
11.	Dr. Subhra Chakraborty	Establishing transcriptome map and the unigene database of Chickpea ( <i>Cicer arietinum</i> ) as a resource for functional and application genomics study	DBT Govt. of India
12.	Dr. Subhra Chakraborty	National Plant Gene Repository at NIPGR	DBT Govt. of India

13.	Dr. Subhra Chakraborty	Analysis of diseases-responsive subcellular phosphoproteome in crop plants	DBT Govt. of India
14.	Dr. Subhra Chakraborty	Genetic engineering of vegetable and legume crops with oxalate decarboxylase gene for removal of oxalic acid on antinutritional stress factor for better human nutrition_	ICMR Govt. of India
15.	Dr. Subhra Chakraborty	Functional genomics of Seed development & nutrition of Next Generation Challenge Programme on Chickpea Genomics	DBT Govt. of India
16.	Dr. Subhra Chakraborty	Comparative metabolite profiling of transgenic and non-transgenic potato expressing AmA1 protein	DBT Govt. of India
17.	Dr. Debasis Chattopadhyay	Indian Initiative on Tomato Genome Sequencing	DBT Govt. of India
18.	Dr. Debasis Chattopadhyay	Role of CAPKS, a SOS-2 like protein kinase from Chickpea in root development and abiotic stress tolerance	DBT Govt. of India
19.	Dr. Praveen Verma	Isolation and functional characterization of genes from necrotrophic chickpea-blight fungus <i>Ascochyta rabiei</i> which are involved in pathogenesis during compatible interactions	DBT Govt. of India
20.	Dr. Praveen Verma	Analysis of chickpea response to <i>Ascochyta</i> infection and generation of ORFeome for target gene of Next Generation Challenge Programme on Chickpea Genomics	DBT Govt. of India
21.	Dr. Sabhyata Bhatia	DNA barcoding of <i>Dalbergia</i> species	DBT Govt. of India
22.	Dr. Sabhyata Bhatia	Construction of the transcript map and development of functional markers for chickpea	DBT Govt. of India
23.	Dr. Sabhyata Bhatia	Indo-Canadian Pulse Genomics Initiative	DBT Govt. of India
24.	Dr. Sabhyata Bhatia	Chickpea genome sequence analysis and its alignment to genetic map of Next Generation Challenge Programme on Chickpea Genomics	DBT Govt. of India
25.	Dr. Jitendra K. Thakur	Functional Study of Mediator Complex, a Transcriptional Co-activator, in Plant Growth and Development	DBT Govt. of India

26.	Dr. Manoj Prasad	Biotechnological approach towards forage crop improvement (Molecular characterization of genes involved in expression of components of apomixes)	DBT Govt. of India
27.	Dr. Manoj Prasad Dr. Sabhyata Bhatia	Biotechnological approach towards forage crop improvement (Development of SSR markers in berseem ( <i>Trifolium alexandrinum</i> ) and exploitation of marker resources of <i>M.truncatula</i> for germplasm characterization of berseem and for development of high density linkage map of red clover ( <i>Trifolium pratense</i> ))	DBT Govt. of India
28.	Dr. Manoj Prasad	Transcript profiling of salt and drought stress in foxtail millet ( <i>Setaria italica</i> L) and cloning characterization of DREB2 homologue	DBT Govt. of India
29.	Dr. Manoj Prasad	Transcriptome based identification of overlapping responses of salt and drought tolerance in foxtail millet & comparative genome mapping & tapping of stress responsive genes in foxtail millet & barley	DBT Govt. of India
30.	Dr. Gitanjali Yadav	<i>In Silico</i> bioprospecting by analysis of plant stress response pathways	DBT Govt. of India
31.	Dr. Gitanjali Yadav (Scientist Incharge)	Establishment of Distributed Information Sub-Centre (DISC)	DBT Govt. of India
32.	Dr. Sushil Kumar	Characterization of CG-Methylation deficient <i>gsr</i> mutants of <i>Catharanthus roseus</i> demonstration of the epigenetic control of development and adaptation related functions in plants	DBT Govt. of India
33.	Dr. Sushil Kumar	Construction of genotypes with new floricultural phenotypes in periwinkle <i>Catharanthus roseus</i>	DST Govt. of India
34.	Dr. Sushil Kumar	Identification and mapping of Quantitative Trait Loci for the yield of Terpenoid Indole Alkaloids in the medicinal plant <i>Catharanthus roseus</i>	CSIR Govt. of India
35.	Dr. Naveen C. Bisht	Molecular characterization and analysis of differentially expressed genes from contrasting Brassica juncea gene-pools and insight into molecular-genetic mechanism of glucosinolates biosynthesis	DBT Govt. of India

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|-----|----------------------|---|-----------------------|
| 36. | Dr. Manoj Majee      | Molecular analysis, biochemical study and physiological significance of protein L-isoaspartate 1 (D-aspartate1) O-methyltransferase (PIMT) from stress tolerant plants and its exploitation to enhance seed vigor, viability and seed longevity in plants | DBT<br>Govt. of India |
| 37. | Dr. Manoj Majee      | Molecular characterization and differential expression of 1-myoinositol 1-phosphate synthase (MIPS) gene family in drought tolerant legumes   | DST<br>Govt. of India |
| 38. | Dr. Ashvarya Laxmi   | To study the interaction between auxin and sugar signal transduction pathway in model plant system <i>Arabidopsis thaliana</i>  | DBT<br>Govt. of India |
| 39. | Dr. Ashvarya Laxmi   | To study the interaction between glucose and brassinosteroid signal transduction pathway in a model plant system <i>Arabidopsis thaliana</i>  | DST<br>Govt. of India |
| 40. | Dr. Mukesh Jain      | Molecular genetic analysis and systems biology of auxin signaling networks in plants  | DBT<br>Govt. of India |
| 41. | Dr. Ananda K. Sarkar | Ramalingaswami Fellowship   | DBT<br>Govt. of India |



## **Construction Activities at the Institute**

The buildings under Phase-II comprising Lab Block (15 Labs) of approximately 6500 sq.mtr. area and Residences - 28 units (Type III – 12 Nos., Type IV – 12 Nos., Type V – 4 Nos.) of approximately 3269.05 sq. mtr. area are at its advanced stage of construction. The type V residences are of duplex type and others are three storeyed. The laboratory block structure comprises of three story building. It is expected that the buildings shall be ready for use in the next financial year.



## **Committees of the Institute**



## Society

**Shri Pawan Kumar Bansal**

Hon'ble Minister of Science & Technology and Earth Sciences

Ministry of Science & Technology and Earth Sciences, Government of India, New Delhi  
(President)

(February 2011 to till date)

**Shri Prithviraj Chavan**

Hon'ble Minister of State (Independent Charge) Ministry of Science & Technology and Earth Sciences, Government of India, New Delhi  
(President)

(up to January 2011)

**Prof. M. K. Bhan**

Secretary

Department of Biotechnology  
Government of India, New Delhi

**Prof. Sudhir K. Sopory**

Vice Chancellor

Jawaharlal Nehru University  
New Delhi

(28th January 2011 to till date)

**Prof. B. B. Bhattacharya**

Vice Chancellor

Jawaharlal Nehru University  
New Delhi

(up to 27th January 2011)

**Prof. A.K. Sharma**

University of Kolkata  
Kolkata

**Prof. V. L. Chopra**

Former Member, Planning Commission  
New Delhi

**Dr. S. Ayyappan**

Director General

Indian Council for Agricultural Research  
New Delhi

**Prof. Dipankar Chatterji**

Indian Institute of Science  
Bangalore

**Prof. Avadesha Surolia**

Director, NII  
New Delhi

**Dr. Rakesh Tuli**

Executive Director  
NABI, Mohali

**Ms. Sheila Sangwan**

Additional Secretary and Financial Adviser  
Department of Biotechnology  
Ministry of Science and Technology  
Government of India  
New Delhi

**Dr. V. P. Gupta**

Adviser

Department of Biotechnology  
Ministry of Science & Technology  
Government of India  
New Delhi

**Prof. R. S. Paroda**

Chairman

Trust for Advancement of Agricultural Sciences  
New Delhi

**Dr. E. A. Siddiq**

Acharya N.G. Ranga Agricultural University  
Hyderabad

**Prof. Ved Prakash**

Vice-Chairman

University Grants Commission  
New Delhi

**Prof. Akhilesh Kumar Tyagi**

Director, NIPGR

(Member-Secretary)

## Governing Body

**Prof. M. K. Bhan**

Secretary  
Department of Biotechnology  
Government of India  
New Delhi  
(Chairman)

**Prof. Sudhir K. Sopory**

Vice Chancellor  
Jawaharlal Nehru University  
New Delhi  
(28th January 2011 to till date)

**Prof. B. B. Bhattacharya**

Vice Chancellor  
Jawaharlal Nehru University  
New Delhi  
(up to 27th January 2011)

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Indian Council for Agricultural Research  
New Delhi

**Prof. Dipankar Chatterji**

Indian Institute of Science  
Bangalore

**Ms. Sheila Sangwan**

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Ministry of Science and Technology  
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New Delhi

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**Prof. Ved Prakash**

Vice-Chairman  
University Grants Commission  
New Delhi

**Prof. Akhilesh Kumar Tyagi**

Director, NIPGR  
(Member-Secretary)

## Scientific Advisory Committee

**Prof. A.K. Sharma**

University of Calcutta  
Kolkata  
(Chairman)

**Prof. Sudhir K. Sopory**

Vice Chancellor  
Jawaharlal Nehru University  
New Delhi  
(Co-Chairman)

**Dr. P. Ananda Kumar**

Project Director  
National Research Centre on Plant  
Biotechnology (NRCPB), IARI, New Delhi

**Dr. Ramesh V. Sonti**

Centre for Cellular & Molecular Biology (CCMB)  
Hyderabad

**Prof. Jitendra P. Khurana**

University of Delhi, South Campus  
New Delhi

**Prof. M. Udayakumar**

University of Agricultural Sciences  
Bangalore

**Dr. Rakesh Tuli**

Executive Director  
NABI, Mohali, Punjab

**Prof. K. Veluthambi**

Madurai Kamaraj University  
Madurai

**Dr. Shyam Kumar Sharma**

Vice-Chancellor  
CSK Himachal Pradesh  
Agricultural University  
PalamPur- 176062

**Dr. K. C. Bansal**

Director  
National Bureau of Plant Genetic Resources  
PUSA, New Delhi

**Dr. (Mrs.) Usha Barwale**

Maharashtra Hybrid Seeds Co. Ltd.  
Mumbai

**Dr. V. P. Gupta**

Advisor  
Department of Biotechnology  
Ministry of Science & Technology  
Govt. of India, New Delhi

**Prof. Akhilesh Kumar Tyagi**

Director, NIPGR

## Academic Committee

**Prof. Akhilesh Kumar Tyagi**

Director, NIPGR  
(Chairman)

**Prof. Rajendra Prasad**

School of Life Sciences  
Jawaharlal Nehru University  
New Delhi

**Prof. K. C. Upadhyay**

School of Life Sciences  
Jawaharlal Nehru University  
New Delhi

**Dr. Raj K. Bhatnagar**

International Centre for Genetic Engineering  
and Biotechnology (ICGEB)  
New Delhi  
(outside expert)

**Prof. Rakesh Tuli**

Executive Director  
NABI, Mohali  
(outside expert)

**Dr. Niranjana Chakraborty**

National Institute of Plant Genome Research  
New Delhi

**Dr. Debasis Chattopadhyay**

National Institute of Plant Genome Research  
New Delhi

**Dr. S. Chandrasekaran**

Coordinator (Evaluation)  
Jawaharlal Nehru University  
New Delhi  
(Special Invitee)



## Finance Committee

**Prof. M. K. Bhan**

Secretary, Department of Biotechnology  
Ministry of Science & Technology  
Government of India  
New Delhi  
(Chairman)

**Ms. Sheila Sangwan**

Additional Secretary and Financial Adviser  
Department of Biotechnology  
Ministry of Science and Technology  
Government of India  
New Delhi

**Dr. Satish K. Gupta**

National Institute of Immunology  
New Delhi

**Shri B. Bose**

Former Senior Manager  
National Institute of Immunology  
New Delhi

**Shri Virendra Kapoor**

Director  
Department of Biotechnology  
New Delhi

**Prof. Akhilesh Kumar Tyagi**

Director,  
NIPGR, New Delhi

**Shri Sandeep Datta**

Manager, NIPGR  
(Non-Member Secretary)

## Building Committee

**Dr. V. C. Vora**

Former Director  
IMTECH, Chandigarh  
(Chairman)

**Prof. Sandip K. Basu**

National Institute of Immunology  
New Delhi

**Ms. Sheila Sangwan**

Additional Secretary and Financial Adviser  
Department of Biotechnology  
Ministry of Science and Technology  
Government of India  
New Delhi

**Prof. Rajendra Prasad**

School of Life Sciences  
Jawaharlal Nehru University  
New Delhi

**M/s. S. D. Sharma & Associates**

Institute's Architect  
Panchkula (Haryana)

**Shri B. Bose**

Management Consultant  
National Institute of Immunology  
New Delhi

**Shri O. P. Nayar**

Consultant Engineer  
NIPGR, New Delhi

**Shri Sandeep Datta**

Manager  
NIPGR, New Delhi  
(Member-Secretary)

## **Staff of the Institute**



## SCIENTIFIC STAFF

Prof. Akhilesh Kumar Tyagi, Director

Prof. Asis Datta, Professor of Eminence

Dr. Sudip Chattopadhyay, Scientist – VI \*

Dr. Niranjana Chakraborty, Scientist – VI

Dr. Subhra Chakraborty, Scientist – VI

Dr. Debasis Chattopadhyay, Scientist – V

Dr. Alok Krishna Sinha, Scientist – V

Dr. Sabhyata Bhatia, Scientist – V

Dr. Praveen Verma, Scientist – IV

Dr. Manoj Prasad, Scientist – IV

Dr. Jitendra K. Thakur, Scientist – III

Dr. Gitanjali Yadav, Scientist – III

Dr. Ashverya Laxmi, Scientist – III

Dr. Manoj Majee, Scientist – III

Dr. Mukesh Jain, Scientist – III

Dr. Naveen C. Bisht, Scientist – III

Dr. Ananda K. Sarkar, Scientist – II

Dr. Jitender Giri, Scientist – II

Dr. Swarup K. Parida, Scientist – II

Dr. Pinky Agarwal, Scientist – II

Dr. Sushil Kumar, INSA Senior Scientist

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\* resigned from services w.e.f March 05, 2011 (AN)

## TECHNICAL STAFF

Dr. Sarjeet Singh Thakur, P. I. O. & Technical Staff Gr. – I

Ms. Umamaheswari Rajamani, Technical Staff Gr. – I

Shri Sunil Kumar, Technical Staff Gr. – I

Shri R. S. Tomar, Technical Staff Gr. – I

Shri P. S. Negi, Technical Staff Gr. – I

Shri Arun Kumar, Technical Staff Gr. – II

Shri Shankar Acharya, Technical Staff Gr. – II

Shri C. Ravi Shankar, Technical Staff Gr. – II

Shri Shobharam Valmееki, Technical Staff Gr. – II

Shri Ravi Kant Singh, Jr. Engineer (Civil)

Shri Vikrant Jain, Jr. Engineer (Electrical)\*

Shri Ashok Kumar, Technical Staff Gr. – III

Shri Anand Singh Rana, Technical Staff Gr. – III

Shri Rajendra, Technical Staff Gr. – III

Shri Shailendra Kharwal, Technical Staff Gr. – III

Shri J. Surendar, Technician – II

Shri V. Janardhan, Technician – II

Shri P. K. Mishra, Lab Attendant – I

Shri Arabinda Das, Lab Attendant – I

Shri B. P. Mandal, Lab Attendant – I

Shri Tul Bahadur Thapa, Lab Attendant – II

Shri Shyam Bahadur Gurung, Lab Attendant – II

Ms. Neeta Maurya, Lab Attendant – II

Shri Mahender Singh, Lab Attendant – II

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\* resigned from services w.e.f. November 15, 2010 (AN)

▪ resigned from services w.e.f. September 14, 2010 (FN)

## ADMINISTRATIVE & FINANCE STAFF

Shri Sandeep Datta, Manager

Dr. V. K. Sharma, Librarian / Information Scientist

Shri Sudhir Patwal, Administrative Officer

Shri Rajinder Raina, Purchase-Cum-Store Officer

Shri Ashok Chauhan, Finance Officer

Shri O. P. Nayar, Consultant Engineer

Shri Kamal Verma, PS to Director

Ms. Rashmi Singh, Management Assistant

Ms. Vinita Sharma, Management Assistant

Ms. Rajani Aswal, Jr. Management Assistant

Ms. Sonali Bhardwaj, Jr. Management Assistant

Shri Tapas Shit, Jr. Management Assistant

Shri Mohammad Shahid, Jr. Management Assistant \*

Shri Mitesh Raj Bhardwaj, Jr. Management Assistant

Shri Devender Singh Bhandari, Assistant

Shri Ramesh Singh Chaudhary, Jr. Assistant

Shri Hari Singh Negi, Jr. Assistant

Shri Kuldeep Singh, Staff Car Driver

Shri Manmohan Singh Rawat, Office Attendant

Shri Bhrigunath Manjhi, Office Attendant

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\* resigned from services w.e.f December 30, 2010 (AN)





# **Budget/Auditor's Report & Audited Accounts**



## Budget

The Financial resource of the National Institute of Plant Genome Research is the core grant provided by the Govt. of India, Department of Biotechnology comprising of Non-Recurring and Recurring grants.

The Department of Biotechnology in their projections for financial year 2010-11 have allocated grant of Rs.2425 lakhs including Rs.1020 lakhs for infrastructure facility in respect of NIPGR.

The source and application of funds during the financial year 2010-11 in respect of Institute is as under:

### Sources of Funds

The Govt. of India, Department of Biotechnology, released grant of Rs. 2425 lakhs during 2010-11 as detailed below:

Non Recurring	Rs. 1020 lakhs
Recurring	Rs. 1405 lakhs

Besides, the Institute also earned an interest of Rs. 57,88,598/- on the balance in saving bank account of the Institute during the year.

### Application of Funds

(As per Utilization Certificate furnished to the Department of Biotechnology for the year 2010-11)

The total expenditure on research activities and infrastructure development during the year 2010-2011) was Rs.25,41,39,218/- including Rs.11,36,82,312/- on infrastructure development.

### OVER ALL EXPENDITURE AT A GLANCE

#### A-Non-Recurring

1. Land & Building	Rs. 5,18,82,746
2. Equipment	Rs. 4,70,84,002
3. Furniture & Fixtures	Rs. 15,67,181
4. Books/Scientific Journals	Rs. 1,24,50,632
5. Vehicle	<u>Rs. 6,97,751</u>

**Total = Rs. 11,36,82,312**

#### B-Recurring

1. Manpower	Rs.2,87,92,755
2. Consumable	Rs.4,42,06,155
3. Contingencies	Rs.5,23,87,417
4. Training/Networking	Rs. 77,04,802
5. Field Development	Rs. 49,14,127
6. Travel	<u>Rs. 24,51,650</u>

**Total = Rs.14,04,56,906**

*Mehra & Sistani*  
*Chartered Accountants*  
*New Delhi*

**AUDITOR'S REPORT**

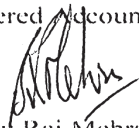
We have audited the attached Balance Sheet of NATIONAL INSTITUTE OF PLANT GENOME RESEARCH (formerly National Center for Plant Genome Research), Aruna Asaf Ali Marg, J.N.U. Campus, New Delhi-110067 as on 31st March 2011 and annexed Income and Expenditure Account and Receipts and Payments Account for the year ended on that date with the books of accounts and vouchers maintained by the Institute and report as under:-

1. That the Institute's Balance Sheet, Income and Expenditure Account & Receipt and Payment Account are in agreement with the books of accounts.
2. We conducted our audit in accordance with auditing standards generally accepted in India. Those Standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amount and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.
3. Subject to Accounting Policies and Notes on Account as per Schedule-24, in our opinion and to the best of our information and according to the explanations given to us, the said accounts give a true and fair view:
  - i) In the case of Balance Sheet of the State of Affairs of the Institute as at 31<sup>st</sup> March, 2011 and
  - ii) In the case of Income and Expenditure Account of the excess of Income over expenditure during the ended on that date.

New Delhi,  
Date: 09<sup>th</sup> August 2011



For Mehra & Sistani  
Chartered Accountants

  
(Sanjiv Rai Mehra)  
Partner  
Membership No. 80402

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**BALANCE SHEET AS ON 31st MARCH 2011**

Amount in ₹

LIABILITIES	Schedule	Current Year	Previous Year
Corpus/Capital Fund	1	822,672,379	871,980,080
Reserves and Surplus	2	48,253,471	37,236,231
Earmarked/Endowment Funds	3	26,638,119	19,776,611
Secured Loans and Borrowings	4	-	-
Unsecured Loans and Borrowings	5	-	-
Deferred Credit Liabilities	6	-	-
Current Liabilities and Provisions	7	59,127,161	57,173,778
<b>TOTAL</b>		<b>956,691,130</b>	<b>986,166,700</b>
<b>ASSETS</b>			
Fixed Assets	8	783,970,966	735,287,317
Investments-From Earmarked/Endowment Funds	9	25,100,000	17,700,000
Investments- Others	10	-	-
Current Assets, Loans, Advances etc.	11	147,620,164	233,179,383
Miscellaneous Expenditure (to the extent not written off or adjusted)		-	-
<b>TOTAL</b>		<b>956,691,130</b>	<b>986,166,700</b>
Significant Accounting Policies and notes on accounts	24		
Contingent Liabilities		-	-

Schedules 1 to 24 form the integral part of accounts

**AS PER OUR SEPARATE REPORT  
OF EVEN DATE ATTACHED.  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS**

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof.AKHILESH Kr.TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER

PLACE: NEW DELHI  
DATE: August 9, 2011

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**INCOME & EXPENDITURE FOR THE YEAR ENDED 31st MARCH 2011**

Amount in ₹

INCOME	Schedule	Current Year	Previous Year
Income from Sales/ Services	12		
Grants / Subsidies (Recurring)	13	140,500,000	130,000,000
Fees/ Subscriptions	14	-	-
Income from Investments (Income on Invest. from earmarked/ endow.Fund)	15	-	-
Income from Royalty, Publication etc.	16	33,000	-
Interest Earned	17	8,595,413	11,489,802
Deferred Income- Fixed Assets	18	71,218,422	76,220,169
Increase / (decrease) in stock of Finished goods and works-in-progress	19	-	-
<b>TOTAL (A)</b>		<b>220,346,835</b>	<b>217,709,971</b>
<b>EXPENDITURE</b>			
Establishment Expenses	20	29,170,694	30,965,892
Other Administrative Expenses etc.	21	108,940,479	103,885,004
Expenditure on Grants, Subsidies etc.	22	-	-
Interest	23	-	-
Depreciation (Net Total at the year-end - corresponding to Schedule 8)		71,218,422	76,220,169
<b>TOTAL (B)</b>		<b>209,329,595</b>	<b>211,071,065</b>
<b>Balance being excess of Income over Expenditure (A - B)</b>		<b>11,017,240</b>	<b>6,638,906</b>
Balance being excess of Expenditure over Income (B - A)			
Transfer to Special Reserve (Specify each)		-	-
Transfer to / from General Reserve		-	-
<b>BALANCE BEING SURPLUS CARRIED TO CORPUS/ CAPITAL FUND</b>		<b>11,017,240</b>	<b>6,638,906</b>
Significant Accounting Policies and notes on accounts	24		
Contingent Liabilities		-	-

Schedules 1 to 24 form the integral part of accounts

**AS PER OUR SEPARATE REPORT  
OF EVEN DATE ATTACHED.  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS**

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof.AKHILESH Kr.TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER

PLACE: NEW DELHI  
DATE: August 9, 2011

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**RECEIPTS & PAYMENTS FOR THE YEAR ENDED 31st MARCH 2011**

Amount in ₹

RECEIPTS Particulars	Current Year		Previous Year	
<b>Opening Balance</b>				
In Saving Account/Short Term deposits	67,650,439		117,900,697	
<b>Grants Received from Deptt of Biotechnology</b>				
Non recurring	102,000,000		160,000,000	
Recurring	140,500,000		130,000,000	
Interest Earned	5,788,598		7,694,975	
Security Deposit from Contractors	-		1,635,456	
EMD from Contractors	-		1,113,911	
Refund of Deposits by DCSE	366,828		-	
Refund of consumable advance	89,307		-	
Refund of contingency advance	-		98,527	
Hostel/Mess Security	184,918		286,000	
Service Charges Received	33,000		-	
Refund of Equipment advance	7,950,089		-	
<b>TOTAL</b>		<b>324,563,179</b>		<b>418,729,566</b>

**AS PER OUR SEPARATE REPORT  
OF EVEN DATE ATTACHED.  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS**

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof.AKHILESH Kr.TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER

PLACE: NEW DELHI  
DATE: August 9, 2011

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**RECEIPTS & PAYMENTS FOR THE YEAR ENDED 31st MARCH 2011**

Amount in ₹

Payments Particulars	Current Year	Previous Year
Building under Construction	2,249,574	2,442,984
Deposits with RITES for Building	50,000,000	140,000,000
Land	-	-
Lab Equipment	53,773,465	36,347,146
Office Equipment	561,413	1,865,088
Computer/Peripherals	699,213	477,380
Furniture	1,567,181	2,526,778
Books & scientific Journals	12,450,632	12,179,315
Advance for Vehicle	697,751	-
<b>Manpower</b>		
Salaries and Wages	26,980,375	29,662,950
Contribution to Provident fund	1,812,380	881,237
<b>Consumables</b>		
a) Chemicals ,Glasswares & Consumables	44,120,745	34,340,169
b) Other Lab Items	207,717	271,444
<b>Contingencies</b>		
a) Publication of Papers	757,248	639,122
b) Electricity and water charges	20,328,876	20,249,188
c) Seminar,Conference & Workshops	185,126	299,360
d) Maintenance of Equipment	8,337,459	3,955,685
e) Maintenance of A.C. Plant	2,253,228	1,879,337
f) Maintenance of Building	3,426,602	4,456,479
g) Vehicles Running and Maintenance	-	
(i) Petrol ,Oil & Lubricants	771,675	580,679
(ii) Maintenance	278,753	233,015
h) Postage, Telephone and Comm. Charges		
(i) Postage & Telegrams	303,972	243,203
(ii) Telephone & Fax	357,536	403,362
i) Printing and Stationary	961,067	1,017,566
j) Security expenses	4,441,243	2,797,164
k) Auditors Remuneration	20,957	-
l) Committee Meeting Expenses	133,007	195,767
m) Journals and periodicals	59,045	48,952
n) Advertisement and Publicity	398,950	456,518
o) Misc.contingencies	3,745,633	3,541,704

Continued...



p) Professional Charges	2,411,772		814,665	
q) Rates & Taxes	2,003,460		16,166,927	
r) Field Development	5,402,127		2,520,756	
s) Training affiliation and Others	2,453,533		2,359,793	
t) NIPGR Fellowships	5,251,269		3,088,955	
u) Travelling and Conveyance Expenses				
(i) Travelling	2,429,449		964,485	
(ii) Conveyance & Transport	22,201		27,604	
<b>Others</b>				
a) Contingency Advance	723,808		-	
b) Consumable Advance	-		39,155	
c) Equipment advance	-		22,900,089	
d) Security Deposit paid	744,770		144,688	
e) Refund of Earnest Money deposit	1,102,768		-	
f) Hostel charges	-		60,418	
<b>Closing Balance</b>				
In Saving Bank Account/Short term Deposit	60,137,199		67,650,439	
<b>TOTAL</b>		<b>324,563,179</b>		<b>418,729,566</b>

**AS PER OUR SEPARATE REPORT  
OF EVEN DATE ATTACHED.  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS**

**(ASHOK CHAUHAN)**  
FINANCE OFFICER

**(SANDEEP DATTA)**  
MANAGER

**(Prof.AKHILESH Kr.TYAGI)**  
DIRECTOR

**(SANJIV RAI MEHRA)**  
PARTNER

**PLACE: NEW DELHI  
DATE: August 9, 2011**

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2011**

**Amount in ₹**

<b>SCHEDULE 1 CORPUS /CAPITAL FUND</b>	<b>Current Year</b>		<b>Previous Year</b>	
<b>Grants in Aid Non recurring</b>				
Balance as at the beginning of the year	639,578,412		555,798,581	
Add: Contributions received during the year	102,000,000		160,000,000	
Less : Reduced during the year	71,218,422		76,220,169	
		670,359,990		639,578,412
<b>Fixed Assets Fund</b>				
Balance as at the beginning of the year	231,345,708		210,746,341	
Add: Contributions received during the year	2,761,904		83,458,785	
Less Contribution refunded during the year	24,171		-	
Less:Reduced during the year	82,827,012		62,859,418	
		151,256,429		231,345,708
<b>Research Fund</b>				
Balance as at the beginning of the year	862,696		862,696	
Add: Contributions received during the year	-		-	
		862,696		862,696
<b>Students &amp; Staff welfare Fund</b>				
Balance as at the beginning of the year	193,264		193,264	
Add: Contributions received during the year	-		-	
		193,264		193,264
<b>BALANCE AS AT THE YEAR- END</b>		<b>822,672,379</b>		<b>871,980,080</b>

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof.AKHILESH Kr.TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2011**

Amount in ₹

SCHEDULE 2- RESERVES AND SURPLUS:	Current Year		Previous Year	
<b>1.Capital Reserve:</b>				
As per last Account	-	-	-	-
Addition during the year	-	-	-	-
Less: Deduction during the year	-	-	-	-
<b>2.Revaluation Reserve:</b>				
As per last Account	-	-	-	-
Addition during the year	-	-	-	-
Less: Deduction during the year	-	-	-	-
<b>3.Special Reserves:</b>				
As per last Account	-	-	-	-
Addition during the year	-	-	-	-
Less: Deduction during the year	-	-	-	-
<b>4. General Reserve:</b>				
As per last Account	37,236,231		30,597,325	-
Addition during the year	11,017,240		6,638,906	
		48,253,471		37,236,231
<b>TOTAL</b>		<b>48,253,471</b>		<b>37,236,231</b>

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Amount in ₹

SCHEDULE -3	Current Year		Previous Year	
<b>Fund Debt Employees Provident Fund</b>				
a) Opening balance of the fund	19,776,611		12,584,330	
b) Additions to the Fund				
i) Donations / grants	-		-	
ii) Income from investments/saving account	3,077,832		1,908,548	
iii) Regular subscription/ refund of advance recd.	5,631,281		5,955,733	
<b>TOTAL (a+b)</b>		<b>28,485,724</b>		<b>20,448,611</b>
c) Utilisation/Expenditure towards objectives of fund				
i. Capital Expenditure	-		-	-
- Fixed Assets	-		-	-
- Others	-		-	-
ii Revenue Expenditure				
Salaries, Wages and allowances etc.	-		-	-
Rent	-		-	-
Other Administrative expenses	-		-	-
Advance payment to Subscribers	1,251,000		672,000	-
Final payment to Subscribers	596,605		-	-
<b>TOTAL (c)</b>		<b>1,847,605</b>		<b>672,000</b>
<b>NET BALANCE AS AT THE YEAR-END (a+b-c)</b>		<b>26,638,119</b>		<b>19,776,611</b>

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Amount in ₹

<b>SCHEDULE 4- SECURED LOANS AND BORROWINGS:</b>	<b>Current Year</b>		<b>Previous Year</b>	
			-	
1. Central Government		-		-
2. State Government (Specify)		-		-
3. Financial Institutions				
a) Term Loans		-		-
b) Interest accrued and due		-		-
4. Banks:				
a) Term Loans		-		-
-Interest accrued and due		-		-
b) Other Loans (Specify)		-		-
-Interest accrued and due		-		-
5. Other Institutions and Agencies		-		-
6. Debentures and Bonds		-		-
<b>TOTAL</b>		Nil		Nil

Amount in ₹

<b>SCHEDULE 5- UNSECURED LOANS AND BORROWINGS</b>	<b>Current Year</b>		<b>Previous Year</b>	
			-	
1. Central Government		-		-
2. State Government (Specify)		-		-
3. Financial Institutions		-		-
4. Banks:		-		-
a) Terms Loans		-		-
b) Other Loans (Specify)		-		-
5. Other Institutions and Agencies		-		-
6. Debentures and Bonds		-		-
7. Fixed Deposits		-		-
8. Others (Specify)		-		-
<b>TOTAL</b>		Nil		Nil

Amount in ₹

<b>SCHEDULE-6 DEFERRED CREDIT LIABILITIES</b>	<b>Current Year</b>		<b>Previous Year</b>	
			-	
a. Acceptances secured by hypothecation of capital equipment and other assets		-		-
b. Others		-		-
<b>TOTAL</b>		Nil		Nil

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Amount in ₹

<b>SCHEDULE 7- CURRENT LAIBILITIES AND PROVISIONS</b>	<b>Current Year</b>		<b>Previous Year</b>	
<b>A. CURRENT LIABILITIES</b>				
<b>1. Acceptances</b>	-	-	-	
<b>2. Sundry Creditors</b>				
a) For Goods	-	-	-	
b) Others	-	-	-	-
<b>3. Advances Received</b>				
(i) Security deposits from contractors	4,072,492		2,437,036	
Add: Variations during the year	-		1,635,456	
Less: Variations during the year	744,770		-	
		3,327,722		4,072,492
(ii) Earnest Money deposit	7,728,074		6,614,163	
Add: Variations during the year	-		1,113,911	
Less: Variations during the year	1,102,768		-	
		6,625,306		7,728,074
(iii) Hostel Security from Students	286,000		286,000	
Add: Variations during the year	124,500		-	
		410,500		286,000
<b>4. Projects Grants/Fellowships</b>				
(i) CSIR	415,080		(361,861)	
(ii) DBT	33,547,522		30,462,247	
(iii) DST	1,593,127		1,167,908	
(iv) ICMR	651,927		2,644,807	
(v) INSA	-		85,490	
(vi) IFCPAR	878,194		248,524	
(vii) Fellowships (Annexure-1 to 51)	2,461,604		2,799,913	
		39,547,454		37,047,028
<b>5. Interest accrued but not due on :</b>				
(a) Secured Loans /borrowings	-		-	
(b) Unsecured Loans/borrowings	-		-	
<b>6. Statutory Liabilities</b>				
a) Overdue	-		-	
b) Others	-		-	
<b>7. Other Current Liabilities;-</b>				
Audit fees payable	34,193		25,369	
Outstanding Expenses payable	9,181,986		8,014,815	
		9,216,179		8,040,184
<b>TOTAL (A)</b>		<b>59,127,161</b>		<b>57,173,778</b>
<b>B. PROVISIONS</b>				
1. For Taxation		-		-
2. Gratuity		-		-
3. Superannuation/Pension		-		-
4. Accumulated Leave Encashment		-		-
5. Trade Warranties/Claims		-		-
6. Others (Specify)		-		-
<b>TOTAL (B)</b>		-		-
<b>TOTAL (A+B)</b>		<b>59,127,161</b>		<b>57,173,778</b>

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**SCHEDULE 8- FIXED ASSETS**

ASSETS	RATE	W.D.V.as on 01.04.2010	Additions/Sales			Total As on 31.03.2011	Depreciation for the year	W.D.V. as on 31.03.2011
			Upto 30.09.10		Sales			
			On or After 01.10.10					
<b>1.Land</b>								
a) Free Hold	0%	40,000,000	-	-	-	-	40,000,000	
b) Lease hold		-	-	-	-	-	-	
<b>2. Building</b>								
a) On Freehold Land		-	-	-	-	-	-	
b) On Leasehold Land		-	-	-	-	-	-	
c) Ownership flats/premises		-	-	-	-	-	-	
d) Superstructures on Land not belonging to the entity	10%	1,107,945	-	-	-	110,795	997,151	
<b>3. Plant Machinery &amp; Equipment</b>								
a) Lab Equipments(Crore)	40%	90,454,008	29,575,773	24,197,692	-	52,851,451	91,376,022	
b) Lab Equipment (Project)	40%	135,420,956	61,258,344	20,776,462	-	82,827,012	134,628,750	
<b>4. Vehicles</b>	15%	918,836	-	-	191,999	109,026	617,811	
<b>5. Furniture &amp; Fixtures</b>	10%	13,519,930	1,254,971	312,210	-	1,493,101	13,594,010	
<b>6. Office Equipments</b>	15%	6,739,652	477,120	96,293	12,000	1,087,940	6,213,125	
<b>7. Computer / Peripherals</b>	60%	1,453,761	196,563	502,650	-	1,140,989	1,011,985	
<b>8. Books &amp; Scientific journals</b>	60%	17,786,662	108,154	12,294,103	-	14,425,120	15,763,799	
<b>Total of Current Year</b>		<b>307,401,750</b>	<b>92,870,925</b>	<b>58,179,410</b>	<b>203,999</b>	<b>154,045,434</b>	<b>304,202,653</b>	
<b>Capital work in Progress</b>		<b>427,885,567</b>	<b>21,888,326</b>	<b>29,994,420</b>	<b>0</b>	<b>-</b>	<b>479,768,313</b>	
<b>Grand Total</b>		<b>735,287,317</b>	<b>114,759,251</b>	<b>88,173,830</b>	<b>203,999</b>	<b>154,045,434</b>	<b>783,970,966</b>	

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Amount in ₹

<b>SCHEDULE -9 INVESTMENTS FROM FUND DEBT EMPLOYEES PROVIDENT FUND</b>	<b>Current Year</b>		<b>Previous Year</b>	
1. In Government Securities	-		-	
2. Other approved Securities	-		-	
3. Shares	-		-	
4. Debentures and Bonds	-		-	
5. Subsidiaries and Joint Ventures	-		-	
6. Others-Financial Institutions	25,100,000		17,700,000	
		25,100,000		17,700,000
<b>TOTAL</b>		<b>25,100,000</b>		<b>17,700,000</b>

Amount in ₹

<b>SCHEDULE 10 - INVESTMENTS - OTHERS</b>	<b>Current Year</b>		<b>Previous Year</b>	
1. In Government Securities		-		-
2. Other approved Securities		-		-
3. Shares		-		-
4. Debentures and Bonds		-		-
5. Subsidiaries and Joint Ventures		-		-
6. Others		-		-
<b>TOTAL</b>		<b>Nil</b>		<b>Nil</b>

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Amount in ₹

SCHEDULE -11 CURRENT ASSETS, LOANS, ADVANCES ETC.	Current Year		Previous Year	
<b>A. CURRENT ASSETS:</b>				
<b>1. Inventories:</b>				
a) Stores and Spares	-		-	
b) Loose Tools	-		-	
c) Stock-in- trade				
Finished Goods	-		-	
Work-in-progress	-		-	
Consumables	2,920,227		-	
		2,920,227		-
<b>2. Sundry Debtors</b>				
a) Debts Outstanding for a period exceeding six months	-		-	
b) Others	-		-	
<b>3. Cash balance in hand</b> (including cheques/drafts and imprest)	-		-	-
<b>4. Bank Balances:</b>				
<b>a) With Schedules Banks:</b>				
-On Current Accounts	-		-	-
-On Deposit Accounts (includes margin money)	2,700,000		485,000	-
-On Savings Account	113,612,333		145,409,741	-
-NIPGR CPF Account	1,538,119		2,076,611	-
		117,850,452		147,971,352
<b>b) With non- Scheduled Banks:</b>				
-On Current Accounts	-		-	-
-On Deposit Accounts	-		-	-
-On Savings Accounts	-		-	-
		-		-
<b>5. Post Office- Savings Accounts</b>	-		-	-
<b>TOTAL (A)</b>		<b>120,770,679</b>	-	<b>147,971,352</b>

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Amount in ₹

SCHEDULE- 11 CURRENT ASSETS, LOANS, ADVANCES ETC.	Current Year		Previous Year	
<b>B. LOANS,ADVANCES AND OTHER ASSETS:</b>				
<b>1. Loans:</b>				
a)Staff		-		-
b)To other Entities engaged in activities/objectives similar to that of the entity		-		-
<b>2. Advances and other amounts recoverable in cash or in kind for value to be received</b>				
a) On Capital Account (Equipment Adv.)	14,950,000		22,900,089	
b) On Capital Account (Equipment Adv.projects)	-		54,727,480	
c) Contingencies Advance	1,485,751		761,943	
d) Consumable Advance	9,799		99,106	
e) Advance for assets	938,125		-	
f) Security				
(i) Delhi Vidyut Board	24,000		24,000	
ii) Reliance Inds Ltd.	26,000		26,000	
iii) BSES (consumption deposit)	2,142,000		2,142,000	
iv) VSNL (Internet Lease)	70,000		70,000	
(v) Relience Comm.Infrast.Ltd.(Telephone)	2,000		2,000	
vi) Queens Road Sevice Station	50,000		50,000	
vii) Tata Communications Ltd	94,688		94,688	
		19,792,363		80,897,306
<b>3. Income Accrued:</b>				
a) On Investments from Earmarked/Endowment Funds	-		-	
b) On Investments - Others	-		-	
c) On Loans and Advances	-		-	
d) Others -(M/s RITES Ltd)	7,057,122		4,250,307	
(includes income due unrealised - Rs.Nil)			-	
		7,057,122		4,250,307
<b>4. Claims Receivable</b>				
Mess Charges	-		60,418	
		-		60,418
<b>TOTAL (B)</b>		<b>26,849,485</b>	-	<b>85,208,031</b>
<b>TOTAL (A +B)</b>		<b>147,620,164</b>	-	<b>233,179,383</b>

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Amount in ₹

<b>SCHEDULE- 12 INCOME FROM SALES/SERVICES</b>	<b>Current Year</b>		<b>Previous Year</b>	
	<b>1. Income from Sales</b>			
a) Sales of Finished Goods		-		-
b) Sales of Raw Material		-		-
c) Sales of Scraps		-		-
<b>2. Income from Services</b>				
a) Labour and Processing Charges		-		-
b) Professional/Consultancy Services		-		-
c) Agency Commission and Brokerage		-		-
d) Maintenance Services (Equip./Property)		-		-
e) Others (Specify)		-		-
<b>TOTAL</b>		Nil		Nil

Amount in ₹

<b>SCHEDULE -13 GRANTS/SUBSIDIES</b>	<b>Current Year</b>		<b>Previous Year</b>	
	(Irrevocable Grants & Subsidies Received)			
a) Central Government	140500000		130,000,000	
b) State Government(s)	-		-	
c) Government Agencies	-		-	
d) Institutions/Welfare Bodies	-		-	
e) International Organisation	-		-	
f) Others (Specify)	-		-	
		140,500,000		130,000,000
<b>TOTAL</b>		<b>140,500,000</b>		<b>130,000,000</b>

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Amount in ₹

<b>SCHEDULE 14 - FEES/SUBSCRIPTIONS</b>	<b>Current Year</b>		<b>Previous Year</b>	
a) Entrance Fees	-		-	
b) Annual Fees/Subscriptions	-		-	
c) Seminar/Programme Fees	-		-	
d) Consultancy Fees	-		-	
e) Others (Specify)	-		-	
		Nil		Nil
<b>TOTAL</b>		Nil		Nil

Amount in ₹

<b>SCHEDULE 15- INCOME FROM INVESTMENTS</b>	<b>Current Year</b>		<b>Previous Year</b>	
(Income on Invest. from Earmarked/Endow. Funds transferred to Funds)				
<b>1) Interest</b>				
a) On Govt. Securitites	-		-	
b) Other Bonds/Debentures	-		-	
<b>2) Dividends</b>				
a) On Shares	-		-	
b) On Mutual Fund Securities	-		-	
<b>3) Rents</b>	-		-	
<b>4) Other (Specify)</b>	-		-	
		Nil		Nil
<b>TOTAL</b>		Nil		Nil
<b>TRANSFERRED TO EARMARKED/ENDOWMENT FUND</b>				

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Amount in ₹

<b>SCHEDULE 16 INCOME FROM ROYALTY, PUBLICATION ETC</b>	<b>Current Year</b>		<b>Previous Year</b>	
1) Income form Royalty		-		-
2) Income form Publications		-		-
3) Service Charges		33,000		-
<b>TOTAL</b>		<b>33,000</b>		<b>Nil</b>

Amount in ₹

<b>SCHEDULE 17 INTEREST EARNED</b>	<b>Current Year</b>		<b>Previous Year</b>	
<b>1) On Term Deposits:</b>				
a) With Scheduled Banks	-		4,053,256	
b) With Non- Scheduled Banks			-	
c) With Instituitons			-	
d) Others-(M/s.RITES Ltd.)	2,806,815		4,250,307	
		2,806,815		8,303,563
<b>2) On Savings Accounts:</b>				
a) With Scheduled Banks	5,788,598		3,186,239	
b) With Non- Scheduled Banks				
c) Post Office Savings Accounts			-	
d) Others	-		-	
		5,788,598		3,186,239
<b>3) On Loans:</b>		-		-
a) Employees/Staff		-		-
b) Others		-		-
<b>4) Interest on Debtors and Other Receivables</b>		-		-
<b>TOTAL</b>		<b>8,595,413</b>		<b>11,489,802</b>
<b>Note</b> - Tax Deducted at source to be indicated				

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Amount in ₹

<b>SCHEDULE 18 - OTHER INCOME</b>	<b>Current Year</b>		<b>Previous Year</b>	
1) Profit on Sale/disposal of Assets:	-		-	
a) Owned assets	-		-	
b) Assets acquired out of grants or recd. free of cost	-		-	
2) Export Incentives realised	-		-	
3) Fees for Miscellaneous Services	-		-	
4) Deferred Income - Fixed Assets	71,218,422	71,218,422	76,220,169	76,220,169
<b>TOTAL</b>		<b>71,218,422</b>		<b>76,220,169</b>

Amount in ₹

<b>SCHEDULE 19 - INCREASE/(DECREASE) IN STOCK OF FINISHED GOODS &amp; WORK IN PROGRESS</b>	<b>Current Year</b>		<b>Previous Year</b>	
<b>a) Closing Stock:</b>				
- Finished Goods	-		-	
- Work-in-progress	-		-	
<b>b) Less: Opening Stock</b>				
- Finished Goods	-		-	
- Work-in-progress	-		-	
<b>NET INCREASE/(DECREASE) [a-b]</b>		<b>Nil</b>		<b>Nil</b>

Amount in ₹

<b>SCHEDULE 20 ESTABLISHMENT EXPENSES</b>	<b>Current Year</b>		<b>Previous Year</b>	
a) Salaries and Wages	27,358,314		30,084,655	
b) Allowances and Bonus				
c) Contribution to Provident Fund	1,812,380		881,237	
d) Contribution to Other Fund (Specify)	-		-	
e) Staff Welfare Expenses	-		-	
f) Expen.on Empl. Retirement and Terminal Benefits	-		-	
g) Others (Specify)	-		-	
		29,170,694		30,965,892
<b>TOTAL</b>		<b>29,170,694</b>		<b>30,965,892</b>

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**Amount in ₹**

<b>SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC.</b>	<b>Current Year</b>		<b>Previous Year</b>	
<b>1. Consumables</b>				
a) Chemicals ,Glasswares & Consumables	42,102,793		34,746,964	
b) Other Lab Items	207,717		271,444	
<b>2. Contingencies</b>				
a) Publication of Papers	630,900		765,470	
b) Electricity and water charges	20,128,747		19,473,997	
c) Seminar,Conference & Workshops	185,126		299,360	
d) Maintenance of Equipment	6,755,518		6,986,279	
e) Maintenance of AC Plant	2,253,228		1,708,425	
f) Maintenance of Building	3,740,716		4,089,769	
g) Vehicles Running and Maintenance				
(i) Petrol ,Oil & Lubricants	771,675		545,037	
(ii) Maintenance	201,774		309,994	
h) Postage, Telephone and Comm. Charges				
(i) Postage & Telegrams	236,104		296,161	
(ii) Telephone & Fax	384,964		371,540	
i) Printing and Stationary	961,067		1,005,791	
j) Security expenses	4,187,596		2,833,976	
k) Auditors Remuneration	29,781		13,236	
l) Committee Meeting Expenses	133,007		189,767	
m) Journals and periodicals	57,411		50,586	
n) Advertisement and Publicity	398,950		456,518	
o) Mise.contingencies	5,388,913		3,499,579	
p) Rates & Taxes	2,003,460		16,166,927	
q) Professional Charges	2,411,772		814,665	
r) Field Development	5,232,414		2,603,437	
s) Training affiliation and Others	2,453,533		2,192,869	
t) NIPGR Fellowships	5,631,663		3,202,929	
u) Travelling and Conveyance Expenses				
(i) Travelling	2,429,449		962,885	
(ii) Conveyance & Transport	22,201		27,399	
<b>TOTAL</b>		<b>108,940,479</b>		<b>103,885,004</b>

**(ASHOK CHAUHAN)**  
FINANCE OFFICER

**(SANDEEP DATTA)**  
MANAGER

**(Prof.AKHILESH Kr.TYAGI)**  
DIRECTOR

**(SANJIV RAI MEHRA)**  
PARTNER  
**For MEHRA & SISTANI**  
**CHARTERED ACCOUNTANTS**

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre For Plant Genome Research)  
**SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2011**

Amount in ₹

<b>SCHEDULE 22 EXPENDITURE ON GRANTS,SUBSIDIES ETC.</b>	<b>Current Year</b>	<b>Previous Year</b>
a) Grants given to Institutions/ Organisations	-	-
b) Subsidies given to Institutions / Organisations	-	-
	Nil	Nil
<b>TOTAL</b>	Nil	Nil

<b>SCHEDULE 23 - INTEREST</b>	<b>Current Year</b>	<b>Previous Year</b>
a) On Fixed Loans	-	-
b) On Other Loans (including Bank Charges)	-	-
c) Others(specify)	-	-
	Nil	Nil
<b>TOTAL</b>	Nil	Nil

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**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
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ACCOUNTING POLICIES AND NOTES FORMING PARTS OF THE BALANCE SHEET AS AT  
AND INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED ON 31st MARCH, 2011

1. The annual accounts have been prepared in the revised format of accrual system of accounting, except for extramural funds and Contributory Provident Fund.
2. (a) Recurring Grants have been recognised in the Income & Expenditure account and non-recurring Grants have been shown as addition to grants in aid in the year of receipts.  
  
(b) Grants for core funds relating to depreciable fixed assets are treated as deferred income and recognised in the Income and Expenditure Account on a systematic and rational basis over the useful life of such assets i.e. such grants are allocated to income over the periods and in the proportions in which depreciation is charged. During the year income recognised in respect of such Grants amounts to ₹7,12,18,422/-.
3. (a) The depreciation has been provided w.e.f. the date of purchase of fixed assets as per the rates prescribed by Income Tax act 1961.  
  
(b) Full depreciation is charged during the year of acquisition and no depreciation is provided during the year of sale of assets.  
  
(c) Depreciation of ₹8,28,27,012/- has been provided during the year and directly debited to fixed assets fund. These assets were created out of the non-recurring grants of the projects.
4. Fixed assets have been created with grants received from the Department of Bio-Technology. The condition of these grants, inter alia, stipulates that assets will be the property of Government, who will be free to sell or otherwise dispose off the same. The Govt. of India has the discretion to gift the assets to the Institute if it considers appropriate, but no such gifts have been made so far. Therefore, in effect the ownership of the assets lies with Govt. of India and not with the Institute.
5. All purchases of chemicals, glassware, consumables and stationery have been charged to consumption at the time of purchase. However, the closing stock has been worked out and shown in the respective schedule. The closing stock of these items amounting to ₹29,20,227/- was available at the end of the year.
6. (a) Expenses and Overheads incidental to construction of building of institute are added to the capital work in progress to be capitalized along with the building.

(b)Part of the building of the institute has been completed and put into use. The cost of the entire building shall be capitalized on completion and after getting completion certificate from the Authorities.

7. The Institute has a policy of allocating the overheads and transfer of expenditure from Institute to different projects at the end of year on proportionate basis after taking into account the amount of maximum permissible limits for overheads sanctioned by the funding agency in each project. During the year institute has allocated ₹6,34,500 /- as overheads to different projects.
8. No provision has been made by the Institute towards the gratuity payable and other terminal benefits to staff.
9. Previous year figures have been re-grouped/re-arranged wherever considered necessary.
10. Interest earned from RITES Limited amounted to ₹28,06,815/- has been recorded as per the statement provided by RITES, however total interest accrued during the year as per form 16A provided by the bankers is ₹86,07,410/-.

**For Mehra & Sistani.  
Chartered Accountants**

**(ASHOK CHAUHAN)**  
FINANCE OFFICER

**(SANDEEP DATTA)**  
MANAGER

**(Prof.AKHILESH Kr.TYAGI)**  
DIRECTOR

**(SANJIV RAI MEHRA)**  
PARTNER

**Place: New Delhi  
Date: August9, 2011**

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre for Plant Genome Research)  
**NEW DELHI**

**CSIR PROJECT**

**R/P entitled "Identification and mapping of Quantitative Trait Loci for the yeild of terpenoid indole alkaloids in the medicinal plant Catharanthus roseus".**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	197,468		178,212	
Equipment	-		-	
<b><u>Grant- In- Aid for</u></b>				
i) Staff	(93,600)		143,791	
ii) Contingencies	511,000		876,000	
iii) Equipment	-		-	
iv) Overheads	-		-	
<b>TOTAL</b>		<b>614,868</b>		<b>1,198,003</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Staff	-		156,000	
ii) Contingencies	255,725		844,535	
iii) Equipment	-		-	
iv) Overheads	-		-	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	359,143		197,468	
Equipment	-		-	
<b>TOTAL</b>		<b>614,868</b>		<b>1,198,003</b>

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
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CHARTERED ACCOUNTANTS

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
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**NEW DELHI**

**CSIR PROJECT**

**R/P entitled "Identification and molecular cloning of genes encoding dehydration responsive proteins (DRPs) from differential subcellular proteome of rice".**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	(559,329)		(259,639)
<b><u>Grant- In- Aid for</u></b>			
i) Staff	247,520		-
ii) Contingencies	225,000		-
iii) Overheads	12,500		-
<b>TOTAL</b>		<b>(74,309)</b>	<b>(259,639)</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Staff	61,707		114,400
ii) Contingencies	-		185,290
iii) Overheads	12,500		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	(148,516)		(559,329)
<b>TOTAL</b>		<b>(74,309)</b>	<b>(259,639)</b>

(ASHOK CHAUHAN)  
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**CSIR PROJECT**

**R/P entitled "Proteomic analysis of dehydration-responsive endomembrane fraction of rice (*Oryza sativa L.*)".**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b>OPENING BALANCE</b>			
With Bank in Saving A/c	-		-
<b>Grant- In- Aid for</b>			
i) Staff	176,000		-
ii) Contingencies	550,000		-
iii) Overheads	-		-
<b>TOTAL</b>		<b>726,000</b>	<b>-</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Staff	127,400		-
ii) Contingencies	394,147		-
iii) Overheads	-		-
<b>CLOSING BALANCE</b>			
With Bank in Saving A/c	204,453		-
<b>TOTAL</b>		<b>726,000</b>	<b>-</b>

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**DBT PROJECT**

**R/P entitled "Nutritional Genomics: Value Added transgenic crops for better nutrition & fungal resistance"**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(55,569)		(55,569)
<b><u>Grant- In- Aid for</u></b>			
i) Manpower	-		-
ii) Consumable	-		-
iii) Travel	-		-
iv) Contingencies	-		-
<b>TOTAL</b>		<b>(55,569)</b>	<b>(55,569)</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Manpower	-		-
ii) Consumable	-		-
iii) Travel	-		-
iv) Contingencies	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(55,569)		(55,569)
<b>TOTAL</b>		<b>(55,569)</b>	<b>(55,569)</b>

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**DBT PROJECT**

**R/P entitled Isolation and characterization of early-responsive chickpea genes involved in defense/resistance in response to Ascochyta infection**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(30,036)		(30,036)
Equipment	(48,474)		(48,474)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	-		-
<b>TOTAL</b>		<b>(78,510)</b>	<b>(78,510)</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(30,036)		(30,036)
Equipment	(48,474)		(48,474)
<b>TOTAL</b>		<b>(78,510)</b>	<b>(78,510)</b>

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**NEW DELHI**

**DBT PROJECT**

**R/P entitled Molecular cloning, characterization of genes and their uses in increased shelf life of fruits & vegetables**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	(183,471)		(183,471)	
Equipment	75,034		75,034	
<b><u>Grant- In- Aid for</u></b>				
i) Equipment	-		-	
ii) Manpower	-		-	
iii) Consumable	-		-	
<b>TOTAL</b>		<b>(108,437)</b>		<b>(108,437)</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Equipment	-		-	
ii) Manpower	-		-	
iii) Consumable	-		-	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	(183,471)		(183,471)	
Equipment	75,034		75,034	
<b>TOTAL</b>		<b>(108,437)</b>		<b>(108,437)</b>

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**NEW DELHI**

**DBT PROJECT**

**R/P entitled Indian initiative on Tomato genome sequencing**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	182,961		1,664,874
Equipment	5,701		5,701
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	596,000		751,000
iii) Consumable	800,000		416,000
iv) Travel	9,000		11,000
v) Contingencies	85,000		60,000
<b>TOTAL</b>		<b>1,678,662</b>	<b>2,908,575</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	77,432		507,744
iii) Consumable	680,996		2,110,248
iv) Travel	-		8,543
v) Contingencies	146,741		93,378
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	767,792		182,961
Equipment	5,701		5,701
<b>TOTAL</b>		<b>1,678,662</b>	<b>2,908,575</b>

(ASHOK CHAUHAN)  
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**NEW DELHI**

**DBT PROJECT**

**R/P entitled Establishing a Proteomics Facility at NCPGR, New Delhi**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c	2,475,605		2,475,605	
<b><u>Grant- In- Aid for</u></b>				
i) Equipment	-		-	
<b>TOTAL</b>		<b>2,475,605</b>		<b>2,475,605</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Equipment	-		-	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c	2,475,605		2,475,605	
<b>TOTAL</b>		<b>2,475,605</b>		<b>2,475,605</b>

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**DBT PROJECT**

**R/P entitled Molecular Mapping of Tomato Leaf Curl Virus (ToLCV) in Tomato**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	248,674		189,991
Equipment	(9,816)		(9,816)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		
ii) Manpower	-		249,000
iii) Consumable	-		480,000
iv) Travel	-		25,000
v) Contingencies	-		50,000
<b>TOTAL</b>		<b>238,858</b>	<b>984,175</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	(9,816)		-
ii) Manpower	221,446		186,193
iii) Consumable	13,224		486,897
iv) Travel	13,761		13,235
v) Contingencies	243		58,992
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		248,674
Equipment	-		(9,816)
<b>TOTAL</b>		<b>238,858</b>	<b>984,175</b>

**(ASHOK CHAUHAN)**  
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**DBT PROJECT**

**R/P entitled Construction of molecular genetic linkage map in the medicinal plant, Catharanthus roseus**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	178,643		(108,453)
Equipment	(260)		(260)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		353,000
iii) Consumable	-		400,000
iv) Travel	-		9,000
v) Contingencies	-		75,000
<b>TOTAL</b>		<b>178,383</b>	<b>728,287</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	(260)		-
ii) Manpower	159,637		160,189
iii) Consumable	(7,719)		321,574
iv) Travel	19,865		-
v) Contingencies	6,860		68,141
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		178,643
Equipment	-		(260)
<b>TOTAL</b>		<b>178,383</b>	<b>728,287</b>

(ASHOK CHAUHAN)  
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**DBT PROJECT**

**R/P entitled In Silico Bioprospecting by analysis of plant stress response pathways**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

RECEIPTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	115,918		456,728
Equipment	(257,989)		(257,989)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	1,000,000		-
ii) Manpower	249,000		-
iii) Contingencies	500,000		-
iv) Travel	50,000		-
v) Overheads	100,000		-
<b>TOTAL</b>		<b>1,756,929</b>	<b>198,739</b>

PAYMENTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
i) Equipment	124,790		-
ii) Manpower	99,471		-
iii) Contingencies	268,433		299,698
iv) Travel	-		41,112
v) Overheads	100,000		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	547,014		115,918
Equipment	617,221		(257,989)
<b>TOTAL</b>		<b>1,756,929</b>	<b>198,739</b>

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof.AKHILESH KUMAR TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
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**NEW DELHI**

**DBT PROJECT**

**R/P entitled The genetic and molecular interactions of ZBF1 with other regulatory components of light signaling pathways in Arabidopsis.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	4,592		4,592
Equipment	-		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	} 300,000		-
ii) Manpower			-
iii) Consumable			-
iv) Travel			-
v) Contingencies			-
<b>TOTAL</b>		<b>304,592</b>	<b>4,592</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	} 304,592		-
ii) Manpower			-
iii) Consumable			-
iv) Travel			-
v) Contingencies			-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring		-	4,592
Equipment		-	-
<b>TOTAL</b>		<b>304,592</b>	<b>4,592</b>

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**DBT PROJECT**

**R/P entitled Establishment of a Distributed Information Sub-Centre at National Institute for  
Plant Genome Research, New Delhi.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(285,795)		(4,170)
Equipment	607,926		207,926
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		400,000
ii) Manpower	600,000		600,000
iii)Contingencies	200,000		175,000
iv) Travel	50,000		30,000
v) Other Cost	140,000		125,000
<b>TOTAL</b>		<b>1,312,131</b>	<b>1,533,756</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	409,541		-
ii) Manpower	472,954		941,266
iii)Contingencies	180,357		158,003
iv) Travel	11,147		13,197
v) Other Cost	164,286		99,159
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(124,539)		(285,795)
Equipment	198,385		607,926
<b>TOTAL</b>		<b>1,312,131</b>	<b>1,533,756</b>

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**DBT PROJECT**

**R/P entitled Automated DNA sequencing and controlled environment plant growth chamber facility**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Savings A/C			
Equipment	(344,639)		(344,639)
			-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
<b>TOTAL</b>		<b>(344,639)</b>	<b>(344,639)</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Equipment	(344,639)		(344,639)
<b>TOTAL</b>		<b>(344,639)</b>	<b>(344,639)</b>

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**DBT PROJECT**

**R/P entitled Characterization of CG-Methylation Deficient gsr Mutants of Catharanthus Roseus: Demonstration of the Epigenetic Control of Development and Adaptation related functions in plants**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	126,261		267,107
Equipment	800,000		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	(140,518)		800,000
ii) Manpower	-		327,000
iii) Consumable	300,000		700,000
iv) Travel	-		8,000
v) Contingencies	-		25,000
<b>TOTAL</b>		<b>1,085,743</b>	<b>2,127,107</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	659,482		-
ii) Manpower	106,684		405,600
iii) Consumable	147,570		768,880
iv) Travel	4,788		-
v) Contingencies	-		26,366
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	167,219		126,261
Equipment	-		800,000
<b>TOTAL</b>		<b>1,085,743</b>	<b>2,127,107</b>

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**DBT PROJECT**

**R/P entitled Cloning and Characterization of Ehy1, A Regulatory gene of light signaling  
from Arabidopsis Thaliana**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	25,056		25,056
Equipment	35,120		35,120
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	-		-
<b>TOTAL</b>		<b>60,176</b>	<b>60,176</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	34,247		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	25,929		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		25,056
Equipment	-		35,120
<b>TOTAL</b>		<b>60,176</b>	<b>60,176</b>

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**DBT PROJECT**

**R/P entitled Construction of chickpea BAC library as genomic resource, cloning and characterization of R-gene/s for Fusarium wilt**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	540,599		(168,118)
Equipment	1,709,000		760,000
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		949,000
ii) Manpower	877,000		621,000
iii) Consumable	4,500,000		700,000
iv) Travel	22,000		49,000
v) Contingencies	50,000		-
<b>TOTAL</b>		<b>7,698,599</b>	<b>2,910,882</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	16,33,681		-
ii) Manpower	541,284		446,458
iii) Consumable	565,984		175,427
iv) Travel	55,114		37,920
v) Contingencies	3,595		1,478
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	4,823,622		540,599
Equipment	75,319		1,709,000
<b>TOTAL</b>		<b>7,698,599</b>	<b>2,910,882</b>

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**DBT PROJECT**

**R/P entitled Establishing transcriptome map and the unigene database of Chickpea (*Cicer arietinum*)  
as a resource for functional and application genomics study**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	3,207,790		3,518,359
Equipment	(43,424)		(43,424)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	700,000		-
ii) Manpower	627,000		958,000
iii) Consumable	5,378,000		3,122,000
iv) Travel	37,000		-
v)Contingencies	95,000		54,000
<b>TOTAL</b>		<b>10,001,366</b>	<b>7,608,935</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	666,089		472,973
iii) Consumable	3,059,785		3,848,184
iv) Travel			37,482
v)Contingencies	23,519		85,930
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	5,595,397		3,207,790
Equipment	656,576		(43,424)
<b>TOTAL</b>		<b>10,001,366</b>	<b>7,608,935</b>

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**DBT PROJECT**

**R/P entitled Biotechnological approach towards forage crop improvement (Molecular characterization of genes involved in expression of components of apomixis)**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	91,489		103,870
Equipment	(20,980)		(20,980)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		194,000
iii) Consumable	-		325,000
iv) Travel	-		18,000
v)Contingencies	-		46,000
<b>TOTAL</b>		<b>70,509</b>	<b>665,890</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	72,800		121,529
iii) Consumable	-		407,824
iv) Travel	-		14,889
v)Contingencies	320		51,139
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	18,369		91,489
Equipment	(20,980)		(20,980)
<b>TOTAL</b>		<b>70,509</b>	<b>665,890</b>

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**DBT PROJECT**

**R/P entitled Biotechnological approach towards forage crop improvement (Development of SSR markers in Berseem (*Trifolium alexandrinum*) and exploitation of marker resources of *M.truncatula* for germplasm characterization of berseem and for development of high density linkage map of red clover (*Trifolium pratense*)**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

RECEIPTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
<b>OPENING BALANCE</b>			
With Bank in Saving A/c			
Recurring	138,882		(79,546)
Equipment	70		70
<b>Grant- In- Aid for</b>			
i) Equipment			-
ii) Manpower	332,000		437,000
iii) Consumable	483,000		500,000
iv) Travel	2,000		13,000
v) Contingencies	50,000		47,000
<b>TOTAL</b>		<b>1,005,952</b>	<b>917,524</b>

PAYMENTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
i) Equipment	-		-
ii) Manpower	193,957		245,858
iii) Consumable	496,411		480,483
iv) Travel	14,493		2,211
v) Contingencies	62,573		50,020
<b>CLOSING BALANCE</b>			
With Bank in Saving A/c			
Recurring	238,448		138,882
Equipment	70		70
<b>TOTAL</b>		<b>1,005,952</b>	<b>917,524</b>

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**DBT PROJECT**

**R/P entitled DNA barcoding of *Dalbergia species***

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	482,318		(88,705)
Equipment	(191,459)		372,925
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		624,000
iii) Consumable	-		500,000
iv) Travel	-		-
v) Contingencies	-		25,000
<b>TOTAL</b>		<b>290,859</b>	<b>1,433,220</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		564,384
ii) Manpower	154,742		349,843
iii) Consumable	267,641		192,785
iv) Travel	14,556		2,620
v) Contingencies	320		32,729
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	45,059		482,318
Equipment	(191,459)		(191,459)
<b>TOTAL</b>		<b>290,859</b>	<b>1,433,220</b>

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**DBT PROJECT**

**R/P entitled Construction of the transcript map and development of functional markers for chickpea**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	233,353		719,566
Equipment	2,160,711		3,499,000
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	(378,000)		-
ii) Manpower	80,000		-
iii) Consumable	557,000		-
iv) Travel	-		-
v) Contingencies	17,000		-
<b>TOTAL</b>		<b>2,670,064</b>	<b>4,218,566</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	1,821,484		1,338,289
ii) Manpower	184,228		131,733
iii) Consumable	601,900		339,439
iv) Travel	13,974		15,041
v) Contingencies	17,410		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	69,841		233,353
Equipment	(38,773)		2,160,711
<b>TOTAL</b>		<b>2,670,064</b>	<b>4,218,566</b>

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**DBT PROJECT**

**R/P entitled Molecular characterization and analysis of differentially expressed genes from contrasting Brassica juncea gene-pools: and insight into molecular-genetic mechanism of glucosinolates biosynthesis**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

RECEIPTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(38,337)		368,381
Equipment	(622)		(622)
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	250,000		-
iii) Consumable	265,000		-
iv) Travel	-		-
v) Contingencies	15,000		-
<b>TOTAL</b>		<b>491,041</b>	<b>367,759</b>

PAYMENTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
i) Equipment	-		-
ii) Manpower	166,400		-
iii) Consumable	305,008		249,600
iv) Travel	-		153,691
v) Contingencies	19,189		-
			3,427
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	1,066		(38,337)
Equipment	(622)		(622)
<b>TOTAL</b>		<b>491,041</b>	<b>367,759</b>

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof.AKHILESH KUMAR TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER  
For MEHRA & SISTANI  
CHARTERED ACCOUNTANTS

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
(Formerly National Centre for Plant Genome Research)  
**NEW DELHI**

**DBT PROJECT**

**R/P entitled Molecular analysis, Biochemical study and physiological significance of protein L-isoasparty 1 (D-asparty1) O-methyltransferase (PIMT) from stress tolerant plants and its exploitation to enhance seed vigor,viability and seed longevity in plants**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(29,793)		366,942
Equipment	(4,057)		48,754
<b><u>Grant- In- Aid for</u></b>			
i) Equipment			-
ii) Manpower	250,000		-
iii) Consumable	340,000		-
iv) Travel	-		-
v) Contingencies	20,000		-
<b>TOTAL</b>		<b>576,150</b>	<b>415,696</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		52,811
ii) Manpower	126,812		191,226
iii) Consumable	314,756		177,756
iv) Travel	-		-
v) Contingencies	10,392		27,753
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	128,247		(29,793)
Equipment	(4,057)		(4,057)
<b>TOTAL</b>		<b>576,150</b>	<b>415,696</b>

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**DBT PROJECT**

**R/P entitled Setting up of Phytotron facilities as a part of the project(Centre for knowledge management and translational research for crop improvement (CKMTRC)**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Equipment	3,445,267		26,266,923
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
<b>TOTAL</b>		<b>3,445,267</b>	<b>26,266,923</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment			22,821,656
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Equipment	3,445,267		3,445,267
<b>TOTAL</b>		<b>3,445,267</b>	<b>26,266,923</b>

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**DBT PROJECT**

**R/P entitled Role of CAPKS, a SOS-2 like protein kinase from Chickpea in root development and abiotic stress tolerance**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(52,948)		839,503
Equipment	18,511		207,423
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	251,000		-
iii) Consumable	445,000		-
iv) Travel	2,000		-
v) Contingencies	15,000		-
<b>TOTAL</b>		<b>678,563</b>	<b>1,046,926</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		188,912
ii) Manpower	233,600		278,400
iii) Consumable	323,921		573,183
iv) Travel	(3,560)		18,000
v) Contingencies	19,716		22,868
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	86,375		(52,948)
Equipment	18,511		18,511
<b>TOTAL</b>		<b>678,563</b>	<b>1,046,926</b>

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**DBT PROJECT**  
**R/P entitled National Plant Gene Repository**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	476,125		1,326,600
Equipment	5,097,813		6,500,000
<b><u>Grant- In- Aid for</u></b>			
i) Equipment			-
ii) Manpower	936,800		-
iii) Consumable	326,000		-
iv) Travel	24,000		-
v) Contingencies	27,000		-
<b>TOTAL</b>		<b>6,887,738</b>	<b>7,826,600</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	4,487,987		1,402,187
ii) Manpower	819,858		473,540
iii) Consumable	457,300		325,587
iv) Travel	-		24,233
v)Contingencies	17,116		27,115
			-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	495,651		476,125
Equipment	609,826		5,097,813
<b>TOTAL</b>		<b>6,887,738</b>	<b>7,826,600</b>

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**DBT PROJECT**

**R/P entitled Transcriptome based identification of overlapping responses of salt and drought tolerance in foxtail millet and comparative genome mapping and tagging of stress responsive genes in foxtail millet and barley**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	12,181		192,427	
Equipment	(295,273)		(271,073)	
<b><u>Grant- In- Aid for</u></b>				
i) Equipment	-		-	
ii) Manpower	467,000		308,000	
iii) Consumable	585,000		590,000	
iv) Travel	133,000		119,000	
v) Contingencies	43,000		47,000	
<b>TOTAL</b>		<b>944,908</b>		<b>985,354</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Equipment	-		24,200	
ii) Manpower	295,880		468,000	
iii) Consumable	591,207		574,351	
iv) Travel	68,400		158,957	
v) Contingencies	36,424		42,938	
			-	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	248,270		12,181	
Equipment	(295,273)		(295,273)	
<b>TOTAL</b>		<b>944,908</b>		<b>985,354</b>

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**DBT PROJECT**

**R/P entitled Transcript profiling of salt and drought stress in foxtail millet (*Sataria italica L*) and cloning  
characterization of DREB2 homologue**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

RECEIPTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(15,241)		422,212
Equipment	116		109,376
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	187,000		-
iii) Consumable	500,000		-
iv) Travel	18,000		-
v) Contingencies	50,000		-
<b>TOTAL</b>		<b>739,875</b>	<b>531,588</b>

PAYMENTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
i) Equipment	-		109,260
ii) Manpower	171,600		187,200
iii) Consumable	473,999		224,007
iv) Travel	34,086		-
v) Contingencies	50,345		26,246
			-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	9,729		(15,241)
Equipment	116		116
<b>TOTAL</b>		<b>739,875</b>	<b>531,588</b>

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**DBT PROJECT**

**R/P entitled To Study the interaction between auxin and sugar signal transduction pathway in model plant system *Arabidopsis thaliana***

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	637,224		207,839
Equipment	10,579		550,579
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	(10,579)		-
ii) Manpower	-		211,000
iii) Consumable	350,000		350,000
iv) Travel	-		-
v) Contingencies	32,000		39,000
<b>TOTAL</b>		<b>1,019,224</b>	<b>1,358,418</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		540,000
ii) Manpower	62,903		134,307
iii) Consumable	622,387		-
iv) Travel	-		-
v) Contingencies	57,734		36,308
			-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	276,200		637,224
Equipment	-		10,579
<b>TOTAL</b>		<b>1,019,224</b>	<b>1,358,418</b>

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**DBT PROJECT**

**R/P entitled Molecular genetics analysis and system biology of Auxin signaling networks in plants**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	243,935		252,225	
Equipment	40		490,451	
<b><u>Grant- In- Aid for</u></b>				
i) Equipment	-		-	
ii) Manpower	170,000		187,000	
iii) Consumable	599,000		521,000	
iv) Travel	-		-	
v) Contingencies	-		28,000	
<b>TOTAL</b>		<b>1,012,975</b>		<b>1,478,676</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Equipment	-		490,411	
ii) Manpower	137,884		93,600	
iii) Consumable	319,704		622,690	
iv) Travel	-		-	
v) Contingencies	-		28,000	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	555,347		243,935	
Equipment	40		40	
<b>TOTAL</b>		<b>1,012,975</b>		<b>1,478,676</b>

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**DBT PROJECT**

**R/P entitled Functional analysis of MYC2 transcription factor family in rice**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	5,238		360,436
Equipment	58,687		505,000
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	(59,000)		-
ii) Manpower	218,000		75,000
iii) Consumable	897,000		680,000
iv) Travel	23,000		-
v) Contingencies	20,000		16,000
<b>TOTAL</b>		<b>1,162,925</b>	<b>1,636,436</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		446,313
ii) Manpower	199,167		187,200
iii) Consumable	878,019		896,442
iv) Travel	-		23,275
v) Contingencies	20,023		19,281
			-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	66,029		5,238
Equipment	(313)		58,687
<b>TOTAL</b>		<b>1,162,925</b>	<b>1,636,436</b>

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**DBT PROJECT**

**R/P entitled Isolation and functional characterization of genes from necrotrophic chickpea-blight fungus  
*Ascochyta rabiei* which involved in pathogenesis during compatible interactions.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	111,883		-
Equipment	355,736		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	(181,000)		1,853,000
ii) Manpower	530,000		436,000
iii) Consumable	500,000		500,000
iv) Travel	25,000		25,000
v) Contingencies	25,000		50,000
<b>TOTAL</b>		<b>1,366,619</b>	<b>2,864,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	174,351		1,497,264
ii) Manpower	530,400		326,979
iii) Consumable	214,532		546,723
iv) Travel	37,337		-
v) Contingencies	26,086		25,415
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	383,528		111,883
Equipment	385		355,736
<b>TOTAL</b>		<b>1,366,619</b>	<b>2,864,000</b>

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**DBT PROJECT**

**R/P entitled Analysis of dehydration-responsive subcellular phosphoproteome in corp plants.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	138,418		-	
Equipment	31,825		-	
<b><u>Grant- In- Aid for</u></b>				
i) Equipment	181,000		536,000	
ii) Manpower	327,000		436,000	
iii) Consumable	600,000		600,000	
iv) Travel	17,000		25,000	
v) Contingencies	4,000		50,000	
<b>TOTAL</b>		<b>1,299,243</b>		<b>1,647,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Equipment	61,127		504,175	
ii) Manpower	289,506		327,180	
iii) Consumable	578,751		624,590	
iv) Travel	-		16,536	
v) Contingencies	27,705		4,276	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c				
Recurring	190,456		138,418	
Equipment	151,698		31,825	
<b>TOTAL</b>		<b>1,299,243</b>		<b>1,647,000</b>

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**DBT PROJECT**

**R/P entitled Functional analysis of gene regulatory networks during flower and seed development in rice .**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	1,330,577		-
Equipment	439,015		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		3,288,000
ii) Manpower	250,000		630,000
iii) Consumable	799,000		800,000
iv) Travel	-		50,000
v) Contingencies	185,000		200,000
<b>TOTAL</b>		<b>3,003,592</b>	<b>4,968,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	198,633		2,848,985
ii) Manpower	376,200		99,723
iii) Consumable	646,916		172,817
iv) Travel	-		-
v) Contingencies	111,088		76,883
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	240,382		1,330,577
Equipment	1,430,373		439,015
<b>TOTAL</b>		<b>3,003,592</b>	<b>4,968,000</b>

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**DBT PROJECT**

**R/P entitled Analysis of diseases-responsive subcellular phosphoproteome in crop plants.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	1,278,731		-
Equipment	1,918,960		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		1,936,000
ii) Manpower	-		533,000
iii) Consumable	-		800,000
iv) Travel	-		30,000
v) Contingencies	-		75,000
<b>TOTAL</b>		<b>3,197,691</b>	<b>3,374,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	457,489		17,040
ii) Manpower	411,913		28,768
iii) Consumable	657,795		127,501
iv) Travel	14,635		-
v) Contingencies	44,413		3,000
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	149,975		1,278,731
Equipment	1,461,471		1,918,960
<b>TOTAL</b>		<b>3,197,691</b>	<b>3,374,000</b>

**(ASHOK CHAUHAN)**  
FINANCE OFFICER

**(SANDEEP DATTA)**  
MANAGER

**(Prof.AKHILESH KUMAR TYAGI)**  
DIRECTOR

**(SANJIV RAI MEHRA)**  
PARTNER  
**For MEHRA & SISTANI**  
**CHARTERED ACCOUNTANTS**

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
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**NEW DELHI**

**DBT PROJECT**

**R/P entitled Indo-Canadian Pulse Genomics Initiative (InCan-PGI).**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	3,337,791		-
Equipment	2,600,000		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		2,600,000
ii) Manpower	-		500,000
iii) Consumable	-		2,500,000
iv) Travel	-		290,000
v) Contingencies	-		100,000
<b>TOTAL</b>		<b>5,937,791</b>	<b>5,990,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	238,596		-
iii) Consumable	1,992,501		47,476
iv) Travel	-		-
v) Contingencies	4,289		4,733
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	1,102,405		3,337,791
Equipment	2,600,000		2,600,000
<b>TOTAL</b>		<b>5,937,791</b>	<b>5,990,000</b>

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**DBT PROJECT**

**R/P entitled Molecular genetics of plant development: Regulation Stem Cells and lateral organ patterning through the activity of novel genes and small RNAs.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	599,209		-
Equipment	-		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	830,000		810,323
iii) Consumable	-		-
iv) Travel	-		500,000
v) Contingencies	244,000		-
<b>TOTAL</b>		<b>1,673,209</b>	<b>1,310,323</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	900,000		515,323
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	493,854		195,791
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	279,355		599,209
Equipment	-		-
<b>TOTAL</b>		<b>1,673,209</b>	<b>1,310,323</b>

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**DBT PROJECT**

**R/P entitled Next Generation Challenge Programme on Chickpea Genomics.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	17,405,589		-
Equipment	19,986,888		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		70,500,000
ii) Manpower	1,518,000		3,770,000
iii) Consumable	15,860,000		14,700,000
iv) Travel	-		300,000
v) Contingencies	100,000		500,000
<b>TOTAL</b>		<b>54,870,477</b>	<b>89,770,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	16,776,464		50,513,112
ii) Manpower	2,864,104		291,784
iii) Consumable	16,802,811		1,445,315
iv) Travel	72,983		30,000
v) Contingencies	269,297		97,312
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	14,874,394		17,405,589
Equipment	3,210,424		19,986,888
<b>TOTAL</b>		<b>54,870,477</b>	<b>89,770,000</b>

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**DBT PROJECT**

**R/P entitled Functional study of mediator complex, a transcriptional co-activator in plant Growth & Development.**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		-
Equipment	-		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	1,000,000		-
ii) Manpower	187,000		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	600,000		-
vi) Overheads	240,000		-
<b>TOTAL</b>		<b>2,027,000</b>	<b>-</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	358,690		-
ii) Manpower	117,794		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	489,500		-
vi) Overheads	240,000		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	179,706		-
Equipment	641,310		-
<b>TOTAL</b>		<b>2,027,000</b>	<b>-</b>

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**DBT PROJECT**

**R/P entitled Comparative metabolite profiling of transgenic and non-transgenic potato  
expressing AmA1 protein**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		-
Equipment	-		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	450,000		-
ii) Manpower	400,000		-
iii) Consumable	600,000		-
iv) Travel	30,000		-
v) Contingencies	50,000		-
<b>TOTAL</b>		<b>1,530,000</b>	<b>-</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	45,619		-
iii) Consumable	299,312		-
iv) Travel	-		-
v) Contingencies	15,800		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	719,269		-
Equipment	450,000		-
<b>TOTAL</b>		<b>1,530,000</b>	<b>-</b>

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**DBT PROJECT**

**R/P entitled Molecular cloning and characterization of dehydration responsive Tubby-like protein CaTLP1**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		-
Equipment	-		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	280,000		-
iii) Consumable	400,000		-
iv) Travel	25,000		-
v) Contingencies	50,000		-
<b>TOTAL</b>		<b>755,000</b>	<b>-</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	54,852		-
iii) Consumable	233,594		-
iv) Travel	-		-
v) Contingencies	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	466,554		-
Equipment	-		-
<b>TOTAL</b>		<b>755,000</b>	<b>-</b>

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**DST PROJECT**

**DST-DAAD (German Academic Exchange Service) R/P entitled Biochemical and characterization of mitogen active protein kinases (MAPKs) from Arabidopsis and rice**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	18,169		18,169
Equipment	-		-
<b><u>Grant- In- Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	-		-
<b>TOTAL</b>		<b>18,169</b>	<b>18,169</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	18,169		
v) Contingencies	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		18,169
Equipment	-		-
<b>TOTAL</b>		<b>18,169</b>	<b>18,169</b>

(ASHOK CHAUHAN)  
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**NEW DELHI**

**DST PROJECT**

**R/P under SERC Fast Track Scheme entitled Construction of genotypes with new floricultural phenotypes in periwinkle Catharanthus roseus**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	177,673		397,357
Equipment	-		4,547
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		110,000
iv) Travel	-		-
v) Contingencies	-		40,000
vi) Overheads	-		100,000
<b>TOTAL</b>		<b>177,673</b>	<b>651,904</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		4,547
ii) Manpower	14,594		172,606
iii) Consumable	13,953		151,283
iv) Travel	-		-
v) Contingencies	-		45,795
vi) Overheads	-		100,000
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	149,126		177,673
Equipment	-		-
<b>TOTAL</b>		<b>177,673</b>	<b>651,904</b>

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**NEW DELHI**

**DST PROJECT**

**R/P under SERC FAST Track Scheme entitled Molecular characterization and differential expression of 1-myo-inositol 1-phosphate synthase (MIPS) gene family in drought tolerant legumes**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	81,811		163,250
Equipment	-		671,502
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	-		-
vi) Overheads	-		-
<b>TOTAL</b>		<b>81,811</b>	<b>834,752</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		615,084
ii) Manpower	-		-
iii) Consumable	13,372		127,553
iv) Travel	-		-
v) Contingencies	-		10,304
vi) Overheads	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	12,021		81,811
Equipment	56,418		-
<b>TOTAL</b>		<b>81,811</b>	<b>834,752</b>

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**DST PROJECT**

**R/P entitled Financial Assistance for a award of J.C.Bose Fellowship to Prof. Akhilesh Kumar Tyagi**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	328,237		-
Equipment	-		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	300,000		280,000
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	1,000,000		503,429
vi) Overheads	100,000		100,000
<b>TOTAL</b>		<b>1,728,237</b>	<b>883,429</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	280,000		240,000
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	789,936		215,192
vi) Overheads	100,000		100,000
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	558,301		328,237
Equipment	-		-
<b>TOTAL</b>		<b>1,728,237</b>	<b>883,429</b>

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**DST PROJECT**

**R/P under SERC Fast Track Scheme entitled To study the interaction between glucose and brassinosteroid signal transduction pathway in a model plant system Arabidopsis thaliana**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	420,000		-
Equipment	-		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	-		400,000
iv) Travel	-		10,000
v) Contingencies	-		10,000
vi) Overheads	-		84,000
<b>TOTAL</b>		<b>420,000</b>	<b>504,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	-		-
iii) Consumable	364,437		-
iv) Travel	-		-
vi) Contingencies	5,104		-
vi) Overheads	-		84,000
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	50,459		420,000
Equipment	-		-
<b>TOTAL</b>		<b>420,000</b>	<b>504,000</b>

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**DST PROJECT**

**R/P under SERC Fast Track Scheme entitled Development, characterization and use of microsatellite markers in foxtail millet(*setaria italica (L.) P. Beauv*)**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	198,436		-
Equipment	119,287		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		177,000
ii) Manpower	-		240,000
iii) Consumable	-		200,000
iv) Travel	-		10,000
v) Contingencies	-		10,000
vi) Overheads	-		126,000
<b>TOTAL</b>		<b>317,723</b>	<b>763,000</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	117,287		57,713
ii) Manpower	160,000		80,000
iii) Consumable	27,894		171,784
iv) Travel	8,277		-
v) Contingencies	-		9,780
vi) Overheads	-		126,000
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	2,265		198,436
Equipment	2,000		119,287
<b>TOTAL</b>		<b>317,723</b>	<b>763,000</b>

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

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DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER  
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CHARTERED ACCOUNTANTS

**NATIONAL INSTITUTE OF PLANT GENOME RESEARCH**  
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**NEW DELHI**

**DST PROJECT**

**A'(WOS-A) entitled "Functional characterization of mitogen activated protein kinase-3 (OsMPK3) in rice"**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		-
Equipment	-		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	200,000		-
ii) Manpower	420,000		-
iii) Consumable	150,000		-
iv) Travel	20,000		-
v) Contingencies	20,000		-
vi) Overheads	100,000		-
<b>TOTAL</b>		<b>910,000</b>	<b>-</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	53,750		-
iii) Consumable	-		-
iv) Travel	-		-
v) Contingencies	-		-
vi) Overheads	100,000		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	556,250		-
Equipment	200,000		-
<b>TOTAL</b>		<b>910,000</b>	<b>-</b>

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**DST PROJECT**

**WOS-A entitled "Role of amino acids in morphogenesis of Candida albicans"**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	-		-
Equipment	-		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	240,000		-
iii) Consumable	150,000		-
iv) Travel	10,000		-
v) Contingencies	10,000		-
vi) Overheads	82,000		-
<b>TOTAL</b>		<b>492,000</b>	<b>-</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	65,806		-
iii) Consumable	79,489		-
iv) Travel	-		-
v) Contingencies	-		-
vi) Overheads	82,000		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	264,705		-
Equipment	-		-
<b>TOTAL</b>		<b>492,000</b>	<b>-</b>

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**ICMR PROJECT**

**R/P entitled Genetic manipulation of biosynthesis of neurotoxin in transgenic lathyrus by expressing oxalate decarboxylase from Collybia velutipes**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	2,098,904		956,570
Equipment	105,958		(13,086)
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		119,044
ii) Manpower	-		950,300
iii) Contingencies	-		1,062,500
iv) Overheads	-		60,384
<b>TOTAL</b>		<b>2,204,862</b>	<b>3,135,712</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	169,000		391,258
iii) Contingencies	1,155,628		479,208
iv) Overheads	-		60,384
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	774,276		2,098,904
Equipment	105,958		105,958
<b>TOTAL</b>		<b>2,204,862</b>	<b>3,135,712</b>

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**ICMR PROJECT**

**R/P entitled Genetic engineering of vegetable and legume corps with oxalate decarboxylase gene for removal of oxalic acid on antinutritional stress factor for better human nutrition**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	510,940		-
Equipment	300,000		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		300,000
ii) Manpower	53,016		204,100
iii) Contingencies	-		450,000
iv) Overheads	-		22,888
v) Travel	-		-
<b>TOTAL</b>		<b>863,956</b>	<b>976,988</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	234,160		143,160
iii) Contingencies	449,433		-
iv) Overheads	-		22,888
v) Travel	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(119,637)		510,940
Equipment	300,000		300,000
<b>TOTAL</b>		<b>863,956</b>	<b>976,988</b>

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**ICMR PROJECT**

**R/P entitled N-acetylglucosamine-Kinase HXK-1 regulatory role in morphogenesis and pathogenesis in human fungal pathogen *Candida albicans***

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	34,963		-
Equipment	-		-
<b><u>Grant - In - Aid for</u></b>			
i) Equipment	-		-
ii) Manpower	-		265,200
iii) Contingencies	300,000		300,000
iv) Overheads	-		-
<b>TOTAL</b>		<b>334,963</b>	<b>565,200</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
i) Equipment	-		-
ii) Manpower	176,800		88,400
iii) Contingencies	160,875		441,837
iv) Overheads	-		-
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c			
Recurring	(2,712)		34,963
Equipment	-		-
<b>TOTAL</b>		<b>334,963</b>	<b>565,200</b>

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**INSA PROJECT**

**R/P entitled Genomics/Genetics in the medicinal plant Catharanthus roseus**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
<b><u>OPENING BALANCE</u></b>				
With Bank in Saving A/c	85,490		145,434	
<b><u>Grant - In - Aid for</u></b>				
i) Salary	120,000		240,000	
ii) Contingencies	25,000		50,000	
<b>TOTAL</b>		<b>230,490</b>		<b>435,434</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>		
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>	
i) Salary	180,000		300,000	
ii) Contingencies	50,490		49,944	
<b><u>CLOSING BALANCE</u></b>				
With Bank in Saving A/c			85,490	
<b>TOTAL</b>		<b>230,490</b>		<b>435,434</b>

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**IFCPAR PROJECT**

**R/P entitled Ripening of fleshy fruits species and their adaptation to stress**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

RECEIPTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	248,524		-
<b><u>Grant - In - Aid for</u></b>			
i) Salary	302,558		187,200
ii) Contingencies	597,044		666,000
<b>TOTAL</b>		<b>1,148,126</b>	<b>853,200</b>

PAYMENTS		AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR
i) Salary	269,932		7,632
ii) Contingencies	-		597,044
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	878,194		248,524
<b>TOTAL</b>		<b>1,148,126</b>	<b>853,200</b>

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**NEW DELHI**

**FELLOWSHIP GRANT CSIR**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	1,464,712		1,275,899
Amt. received from CSIR for Research Fellowships & Associateships	9,694,321		6,967,638
<b>TOTAL</b>		<b>11,159,033</b>	<b>8,243,537</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Amount paid for Research Fellowships & Associateships	9,292,282		6,778,825
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	1,866,751		1,464,712
<b>TOTAL</b>		<b>11,159,033</b>	<b>8,243,537</b>

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**FELLOWSHIP GRANT UGC**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	5,508		12,759
Amt.received from UGC for Research Fellowships & Associatships	1,065,558		2,940,940
<b>TOTAL</b>		<b>1,071,066</b>	<b>2,953,699</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Amount paid for Research Fellowships & Associatships	1,047,082		2,948,191
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	23,984		5,508
<b>TOTAL</b>		<b>1,071,066</b>	<b>2,953,699</b>

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**FELLOWSHIP GRANT DBT**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	806,745		15,533
Amt. received from DBT for Research Fellowships & Associateships	668,222		2,846,121
<b>TOTAL</b>		<b>1,474,967</b>	<b>2,861,654</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Amount paid for Research Fellowships & Associateships	1,449,766		2,054,909
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	25,201		806,745
<b>TOTAL</b>		<b>1,474,967</b>	<b>2,861,654</b>

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**DBT POSTDOCTORAL FELLOWSHIP GRANT**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	449,185		11,731
Amt.received from DBT for Research Fellowships & Associatships	1,210,800		931,510
<b>TOTAL</b>		<b>1,659,985</b>	<b>943,241</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Amount paid for Research Fellowships & Associatships	1,196,355		494,056
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	463,630		449,185
<b>TOTAL</b>		<b>1,659,985</b>	<b>943,241</b>

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**FELLOWSHIP GRANT ICMR**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	7,250		30,894
Amt. received from ICMR for Research Fellowships & Associateships	691,471		298,000
<b>TOTAL</b>		<b>698,721</b>	<b>328,894</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Amount paid for Research Fellowships & Associateships	633,617		321,644
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	65,104		7,250
<b>TOTAL</b>		<b>698,721</b>	<b>328,894</b>

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**FELLOWSHIP GRANT TWAS**

**RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
With Bank in Saving A/c	66,513		244,400
Amt.received from ICGEB for Research Fellowships & Associatships	244,400		-
<b>TOTAL</b>		<b>310,913</b>	<b>244,400</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Amount paid for Research Fellowships & Associatships	293,979		177,887
<b><u>CLOSING BALANCE</u></b>			
With Bank in Saving A/c	16,934		66,513
<b>TOTAL</b>		<b>310,913</b>	<b>244,400</b>

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**FELLOWSHIP GRANT TWAS**  
**RECEIPT AND PAYMENT ACCOUNT OF NIPGR EMPLOYEES CONTRIBUTORY PROVIDENT FUND ACCOUNT**  
**FOR THE PERIOD 1st APRIL 2010 TO 31st MARCH 2011**

<b>RECEIPTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
<b><u>OPENING BALANCE</u></b>			
In Savings Account	2,076,611		3,159,330
In Fixed Deposit	17,700,000		9,425,000
<b><u>SUBSCRIPTIONS</u></b>			
(i) Amount of Regular Subscription	4,781,681		5,335,158
(ii) Refund of advances received from Subscribers	849,600		620,575
Amount received from NIPGR			
Core grant to meet Institute's liability towards Contribution & Deficit of Interest	1,812,380		881,237
<b><u>INTEREST EARNED</u></b>			
Savings Account	1,265,452		1,027,311
<b>TOTAL</b>		<b>28,485,724</b>	<b>20,448,611</b>

<b>PAYMENTS</b>		<b>AMOUNT-IN-RUPEES</b>	
<b>PARTICULARS</b>	<b>CURRENT YEAR</b>		<b>PREVIOUS YEAR</b>
Advances paid to Subscribers	1,251,000		672,000
Final payment of Subscribers	596,605		-
<b><u>CLOSING BALANCE</u></b>			
In Savings Account	1,538,119		2,076,611
In Fixed Deposit	25,100,000		17,700,000
<b>TOTAL</b>		<b>28,485,724</b>	<b>20,448,611</b>

(ASHOK CHAUHAN)  
FINANCE OFFICER

(SANDEEP DATTA)  
MANAGER

(Prof. AKHILESH KUMAR TYAGI)  
DIRECTOR

(SANJIV RAI MEHRA)  
PARTNER

**For MEHRA & SISTANI**  
**CHARTERED ACCOUNTANTS**



**COMMENTS ON AUDITOR'S NOTES ON ACCOUNTS FOR THE YEAR ENDED**  
**MARCH 31, 2011**

1. The annual accounts have been prepared in the revised format of accrual system of accounting, as prescribed by the Govt. of India. However, the accounts pertaining to extra mural funds and Contributory Provident Fund have been prepared on cash basis due to requirement of the funding agencies and prevailing practice.
2. (a) This is an informative item.  
(b) The item relates to disclosures with respect to treatment of depreciation on fixed assets.
3. The items included in this para are disclosures, made towards accounting policies adopted in preparation of annual accounts.
4. The stipulation is as per provision of General Financial Rules prescribed by the Government, i.e. though the ownership remains with the Government, all assets are shown, as belongs to the Institute.
5. This is an informative item.
6. The expenses and overheads directly related to the construction of permanent building of NIPGR are added to the capital cost of the building.
7. This is an informative item.
8. The expenditure on staff payments including terminal benefits of employees of the Institute are being met from the Grants allocated by the Department of Biotechnology, as and when the payment is released. The liability on account of payment of gratuity shall be met from the respective head of account, whenever the liability occurs and in accordance with the prescribed Rules.
9. This is an informative item.
10. As per the Agreement, the Construction Management agency M/s RITES Ltd is required to open a separate bank account for funds received from the institute and to credit the interest to the account of NIPGR. As per information received from the agency, the amount of ₹ 28,06,815/-has been depicted in the Annual Accounts for the year 2010-11. The balance interest (accrued) shall be accounted in the books of accounts of the Institute, after realization and information received from the agency.

**(Ashok Chauhan)**  
**Finance Officer**

**(Sandeep Datta)**  
**Manager**

**(Prof. Akhilesh Kumar Tyagi)**  
**Director**

