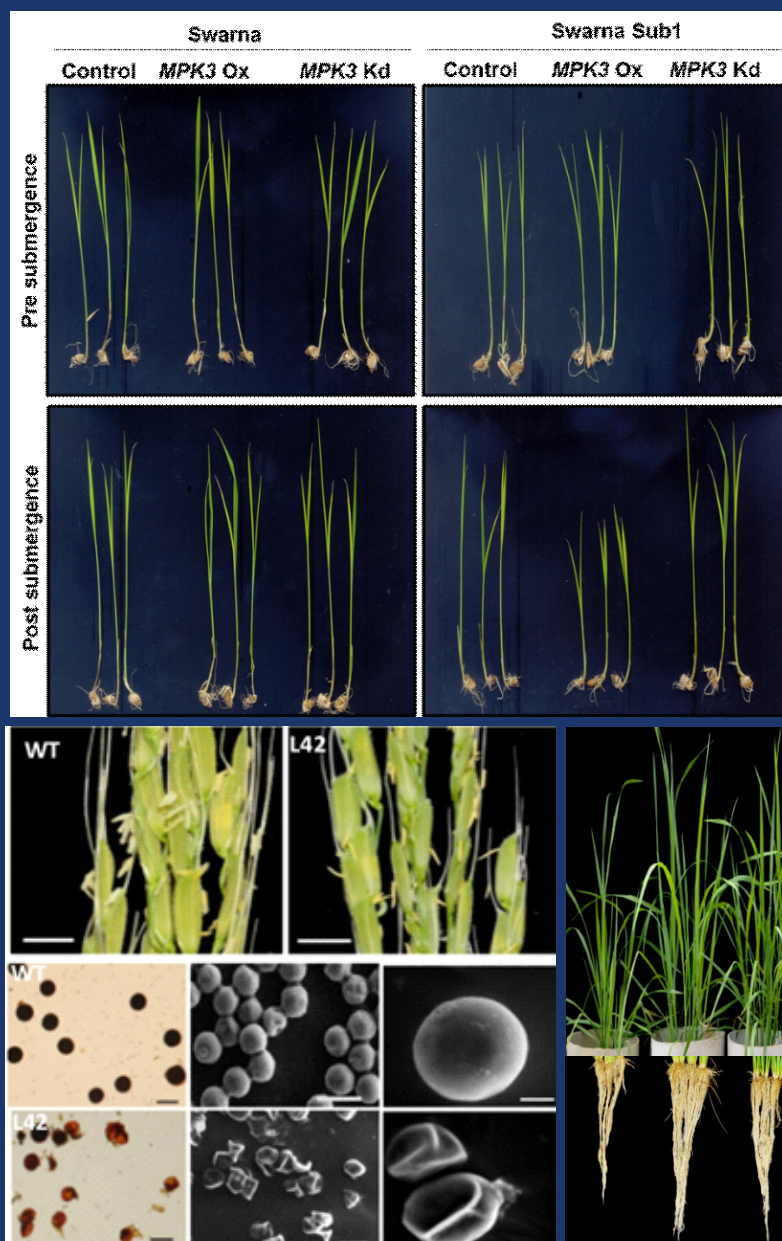


Annual Report

2015-16



National Institute of Plant Genome Research
New Delhi

Message from cover page

Top panel: *MPK3* -silenced lines are susceptible to submergence while *MPK3*-overexpression lines show tolerance: Transgenic Swarna and Swarna Sub1 rice seedlings overexpressing or silenced for *MPK3* and non-transgenic seedlings were subjected to submergence for 7 d in tap water. Representative images are shown for pre- and post-submergence treatment.

Bottom left: Phenotypes of *OsbHLH* overexpression transgenic plants showing defects in anther dehiscence and pollen development.

Bottom right: *OsHAD* overexpression confers low phosphorus tolerance in transgenic rice.

Contents

Sl. No.	Item	Page No.
1.	Mandate	1
2.	Preamble	3
3.	Highlights of the Scientific Achievements	5
4.	Publications and Patents	25
	I. Publications 2016	27
	II. Publications 2015	31
	III. Patents	42
	IV. Technology/Products/Database processed/developed	43
5.	Activities of the Institute	45
6.	Committees of the Institute	89
7.	Staff of the Institute	97
8.	Budget/Auditor's Reports & Audited Accounts	103

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 an autonomous research institute of the Department of Biotechnology, Government of India. NIPGR scientists conduct research in both basic and applied areas of plant science and agricultural biotechnology. Advanced research is being conducted in four major areas viz., computational biology, plant development and architecture, stress biology, and nutritional genomics. Currently 25 scientific faculties are leading research groups in these areas. During the past 17 years, the institute has contributed to fundamental understanding of basic plant biology and made efforts that have far-reaching implications in the agricultural sector. NIPGR is now recognized as one of the premier research institutes in India and abroad. The academic year 2015-2016 was highly productive and researchers were able to publish 160 articles in high impact journals/books. Seven national/international patents were granted/filed during this year. The number of students enrolled in Ph.D. programme and the researchers involved in various projects showed substantial increase. The outputs from current and recent past years are being considered for product developments that are useful for farming community. The institute looks forward to exemplify the growth by focusing not only on relevant basic biology research, but also on development of the technologies and products.

Given the importance of cereals as food, especially rice, various projects on enhanced stress tolerance, nutrient accumulation, reproductive development and seed viability were implemented. In one of the projects, NIPGR researchers have successfully elucidated the molecular mechanism behind submergence tolerance. The findings showed that MPK3, a MAP kinase, is activated during submergence in a SUB1A-dependent manner. The comparative nuclear proteome analysis of rice revealed diverse protein signatures involved in immunity against fungal blast. A separate study revealed that the rice PIMT (protein L-isoaspartylmethyltransferase) isoforms are differentially regulated during seed development and germination, and may play a distinct role for seed vigor and longevity. In foxtail millet, efforts have been made to understand the lignocellulose biosynthesis and gene families involved in cellulose, callose and monolignol biosynthesis.

Legumes contribute 27% of the world's primary crop production and thus the institute continues to augment research in legume biology. In chickpea, significant progress has been made in three major research areas: molecular mapping of important agronomic traits, enhancing seed viability and improving stress tolerance. Several genomic and transcriptomic resources have been developed for gene discovery and molecular mapping studies. Through a genome-wide strategy, natural SNP allelic variants have been identified in two potential candidate genes that govern seed weight and pod number, respectively. During the year, major QTLs of chickpea involved in resistance against Ascochyta blight disease have also been fine mapped. Further, proteomic analysis of dehydration-responsive secretome of chickpea led to the identification of several

differentially regulated proteins, involved in a variety of cellular functions that include metabolism, cell defense and signal transduction. Furthermore, overexpression of FvOXDC (oxalate decarboxylase) in grasspea and soybean led to the reduction of anti-nutrients with simultaneous increase in fungal tolerance.

Besides the major crops mentioned above, NIPGR scientists have also been working on several vegetables and oilseeds of economic importance. In vegetable research, major focus has been on three areas: dissecting immunity against fungus and virus, understanding thermotolerance, and delayed fruit ripening. Ongoing efforts revealed genes associated with defense against *Tomato leaf curl New Delhi virus*. Furthermore, proteometabolomics analyses of transgenic tomato expressing oxalate catabolizing enzyme impinge on defense mechanism against fungal pathogenesis. Suppression of two cell wall catabolizing enzymes viz., α -Man and β -Hex resulted in enhanced shelf life and firmness of tomato fruits. Detailed microarray analysis of ripening mutant unraveled key genes involved in maintaining cellular redox state and metabolism, which might improve storage life of tomato. In sweetpotato, overexpression of a seed albumin led to improved nutrient acquisition. Oilseed mustard is another crop of prime focus, wherein efforts are being made to selectively engineer glucosinolates biosynthesis and transport processes in tissue-specific manner to enhance the food and feed value. These altogether signify NIPGR's concerted efforts to improve the agronomic potential of such crops.

Finally, it is a pleasure to record my appreciation for preparation of the Annual report 2015-16 to Dr. Senthil K. Muthappa and Dr. Gopaljee Jha, Staff Scientists and Administration/Technical Staff of the NIPGR.

Niranjan Chakraborty
(Director)



Highlights of the Scientific Achievements

Highlights of the Scientific Achievements

The highlights of the scientific achievements of National Institute of Plant Genome Research during 2015-2016 are given below:

A. Computational Biology

Study on coevolution pattern and functional conservation or divergence of miR167 and their targets among diverse plant species

The coevolutionary pattern of a miRNA family and their targets underscores its functional conservation or diversification. The miR167 regulates various aspects of plant development in *Arabidopsis* by targeting *ARF6/8*. The evolutionary conservation or divergence of miR167s and their target genes are poorly understood till now. Here we show the evolutionary relationship among 153 *miR167* genes obtained from 33 diverse plant species. We found that out of the 153 of miR167 sequences, 27 have been annotated to be processed from the 3' end, and have diverged distinctively from the other *miR167*s produced from 5' end. Our analysis reveals that gma-miR167h/i and mdm-miR167a are processed from 3' end and have evolved separately, diverged most, resulting in novel targets other than their known ones, and thus led to functional diversification, especially in apple and soybean.

Measuring the plant terpenome for genomic signatures that regulate phytochemical diversity

Increasing numbers of plant nuclear genomes, in various stages of sequencing, provide an unprecedented opportunity for genome mining efforts toward discovery of the observed and potential terpenome. This can be in terms of novel terpene synthase (TPS) enzymes, and their annotations or classification as per the various established subfamilies. We have performed a comprehensive meta-analysis of the terpenome from over 40 plants in terms of sequence identification, domain structure, gene structure patterns, functional role predictions using KEGG and EC pathway maps. The data has enabled us to advance towards a better understanding of lineage-specific expansion in the TPS family, apart from elucidating the evolution of the terpene biosynthetic machinery in plants.

START domains in plants: epigenetics and evolution

This work is focused on a comprehensive computational study of the START domain superfamily highly amplified in the plant kingdom. These domains are believed to play a variety of roles in plant physiology and carry out their function by binding to lipid/sterol ligands via an internal hydrophobic tunnel, although very little information is available about the tissue specific distribution, specific roles and potential substrates of these domains in plants. Automated identification methods were applied to 53 complete plant proteomes and the complete RefSeq data. In all, 1751 START

domains have been identified in 53 complete plant proteomes and 2527 in RefSeq data. The validation of these results was done by the Phytozome annotation, and we are working on, finding overlapping sequences in the two sets of data. Domain organization studies reveal a pattern wherein only one of five different combinations of domains may exist in plants.

Evolutionary patterns of origin and continuity in organellar genomes

Codon adaptation is codon usage bias that results from selective pressure to increase the translation efficiency of a gene. We have performed codon adaptation and usage bias analysis of the annotated genes of plastidial genomes from available plants. Based on the data we find that a single, general, model can explain the vast majority of the variation in codon usage across plastid genomes. Codon usage is determined by a substitution bias towards A+T and selection for adaptive codons that are favored by selection for translation efficiency, as with the basic model presented for bacteria. Given the similarity in the codon usage of the *PsbA* gene from different plastid genomes, the evidence indicates that although there is variation in the strength of selection across genomes and genes, the set of adaptive codons is the same across all plastid genomes, possibly as a result of similar tRNA gene contents.

B. Genome Analysis and Molecular Mapping

Genomic and transcriptomic resources for gene discovery and molecular mapping in chickpea

In the present study, through genome-wide analysis, 21 genes encoding seed storage proteins (SSP) were identified in chickpea with globulins being predominant. Phylogenetic analysis classified them into 3 subfamilies which were supported by their conserved motif structures. Co-expression analysis was used to identify TFs having expression profiles similar to the expression pattern of SSPs. This led to identification of 17 TFs with expression profiles that suggested their involvement in the process of synthesis and accumulation of seed storage proteins. Transcription factors such as CarABI3, CarABI5 and a member of the CCCH gene family, CarC3H45, were selected for further functional characterization. Sub-cellular localization in the nucleus and transactivation assay experiments ascertained that CarABI3 and CarABI5 act as transcription factors. Further, functional validation of ABI3 in chickpea and *Arabidopsis* is being attempted by raising transgenics. Further, genome-wide *in silico* mining and characterization of B3 domain containing proteins was done which identified 52 B3 genes in chickpea, classified into five subfamilies by means of presence of domains other than the B3 domain. Further, an analysis of the chromosomal distributions, gene structures, duplication patterns, phylogeny, and conserved motifs in the chickpea B3 proteins was carried out.

Genetic dissection of complex seed and pod-yield component quantitative traits in chickpea

For quantitative dissection of complex pod/seed yield component quantitative traits, identification of functionally relevant molecular tags especially governing 100-seed weight and pod/seed number is prerequisite for genetic enhancement of *desi* and *kabuli* chickpea. To accomplish these objectives,

a trait-specific association panel (557 germplasm accessions) and 23 diverse intra- and inter-specific mapping populations have been generated, phenotyped precisely in field and analysed through diverse integrated genomics-assisted breeding strategy. The NGS (next-generation sequencing)-led QTL/mQTL-seq driven integrated genome-wide strategy involving traditional QTL mapping, QTL region-specific trait association analysis and differential expression profiling delineated coding and regulatory natural SNP allelic variants in two potential candidate genes, photomorphogenic 9 (*COP9*) signalosome complex subunit 8 (*CSN8*) and pentatricopeptide repeat (PPR) governing seed weight and pod number, respectively, in chickpea. These information will essentially assist us to understand the molecular mechanism and natural allelic diversity-led domestication pattern underlying complex quantitative traits at a genome-wide scale leading to fast-paced genomics-assisted crop improvement of chickpea.

Discovery of candidate genes and defining regulatory elements/modules for agronomic traits in chickpea

We performed whole transcriptome analyses of chickpea genotypes to investigate the molecular basis of drought and salinity stress response. Phenotypic analyses confirmed the contrasting responses of the chickpea genotypes to drought or salinity stress. Comparative analysis of the transcriptomes revealed divergent gene expression in the chickpea genotypes at different developmental stages. A significant fraction (~47%) of the transcription factor encoding genes showed differential expression under stress. The key enzymes involved in various metabolic pathways were affected by drought and/or salinity stresses. Interestingly, transcript isoforms showed expression specificity across the chickpea genotypes and/or developmental stages. Our findings provide insights into the transcriptome dynamics and components of regulatory network associated with drought and salinity stress responses in chickpea.

De novo transcriptome assembly and comprehensive expression profiling in *Crocus sativus* to gain insights into apocarotenoid biosynthesis

Saffron (*Crocus sativus* L.) is commonly known as world's most expensive spice with rich source of apocarotenoids and possesses magnificent medicinal properties. We performed transcriptome sequencing from five different tissues/organs of *C. sativus* using Illumina platform. After comprehensive optimization of *de novo* transcriptome assembly, a total of 105,269 unique transcripts (average length of 1047 bp and N50 length of 1404 bp) were obtained. Functional annotation led to the identification of many genes involved in various biological processes and molecular functions. Transcriptome analysis of *C. sativus* revealed the presence of 16721 SSRs and 3819 transcription factor encoding transcripts. Differential expression analysis revealed preferential/specific expression of many transcripts, including those encoding for transcription factors involved in apocarotenoid biosynthesis in stigma. Overall, these results will pave the way for understanding the molecular basis of apocarotenoid biosynthesis and other aspects of stigma development in *C. sativus*.

C. Molecular Mechanisms of Abiotic Stress Response

Functional analysis of abiotic stress responsive genes from rice

Stress associated protein (SAP) genes encode a family of proteins containing A20/AN1 zinc-finger domains. The project was undertaken to functionally characterize rice *OsiSAPs* and investigate their abiotic stress responses along with mechanism of action at individual gene level. *OsiSAP10*, a water-deficit and salinity induced gene in rice, was evaluated by raising gain-of-function *Arabidopsis* transgenics using a stress-inducible promoter. It conferred NaCl, mannitol and water-deficit tolerance at seedling and advanced vegetative growth phase. This was accompanied by less ROS and cell death under stress in transgenics and resulted in upregulation of several target genes, known to be useful in stress tolerance. Thus, we have identified a potential candidate gene for engineering abiotic stress tolerance. Since different members of SAP gene family show variable activity, it would be desirable to understand over-all contribution of its members to plant life and unravel functional net-work involved.

Molecular regulation of phosphorus (P) utilization in rice

Differentially expressing genes in low P tolerant and sensitive rice genotypes were identified in root and shoot tissues. These genes belonged to different functional categories. Genes involved in membrane lipid remodelling (*GDPDs*) and release of P from organic resources (*OsPAPs*) were chosen for functional characterization. Moreover, rice seedling also showed hydrolysis of phospholipids and increased synthesis of galactolipids under P deficiency. Overexpression/RNAi transgenics of *OsGDPDs* and *OsPAPs* were raised. Initial data showed potential role of these genes in mitigating the effects of low P in transgenics. Experiments are under way to understand the efficacy of *OsPAP9* and *OsPAP21* overexpression lines in solubilizing the organic P sources in soil. *OsGDPDs* overexpressing transgenic lines are being evaluated for change in lipid composition and their behavior under low P environment.

Unraveling complexity of abiotic stress responses in rice via omics approaches

We investigated genome-wide allele-specific methylation (ASMs) in three rice cultivars, IR64 (stress-sensitive), Nagina 22 (drought-tolerant) and Pokkali (salinity-tolerant). Higher frequency of ASMs was found in N22/IR64 as compared to Pokkali/IR64. A total of 539 and 153 genes with ASMs in gene body and/or promoter were differentially expressed under control and/or stress conditions. More than 70% and 66% of DEGs harboring ASMs in gene body and/or promoter in N22/IR64 and Pokkali/IR64, respectively, were found to be present in the abiotic stress related QTLs. Gene ontology enrichment analysis suggested the enrichment of genes involved in various metabolic processes and abiotic stress responses. Further, we identified a set of abiotic stress responsive genes harboring ASMs within transcription factor binding motifs.

Secreted protein of chickpea, CaRRP1, harbors a Btv1-like domain and participates in stress adaptation

Secreted proteins maintain cell structure and biogenesis besides acting in signaling events crucial for cellular homeostasis during stress adaptation. To understand the underlying mechanism of

stress-responsive secretion, the dehydration-responsive secretome was developed from suspension-cultured cells of chickpea. Proteomic analysis led to the identification of 215 differentially regulated proteins, involved in a variety of cellular functions that include metabolism, cell defence, and signal transduction suggesting their concerted role in stress adaptation. Screening of the secretome identified a leaderless Bet v 1-like protein, designated CaRRP1, the export of which was inhibited by brefeldin A. We investigated the gene structure and genomic organization and demonstrated that CaRRP1 may be involved in stress response. Its expression was positively associated with abiotic and biotic stresses. CaRRP1 could complement the aberrant growth phenotype of yeast mutant, deficient in vesicular transport, indicating a partial overlap of protein secretion and stress adaptation.

Integrative analysis and expression profiling of secondary cell wall genes in foxtail millet (*Setaria italica* L.)

Foxtail millet (*Setaria italica* L.) is a model C4 crop for studying systems biology of bioenergy grasses, and therefore, studying the gene families involved in cellulose, callose and monolignol biosynthesis will be useful for identifying genes involved in lignocellulose biosynthesis in other biofuel species using comparative genomics approaches. In view of this, gene families involved in cellulose (*CesA/Csl*), callose (*Gsl*) and monolignol biosynthesis (*PAL*, *C4H*, *4CL*, *HCT*, *C3H*, *CCoAOMT*, *F5H*, *COMT*, *CCR*, *CAD*) have been identified and analysed for their chromosomal location, gene structure, phylogeny, promoters and gene ontology. Expression profiling of candidate lignocellulose genes in response to different abiotic stresses and hormone treatments showed their differential expression pattern, with significant stress-specific higher expression of *SiGsl12*, *SiPAL2*, *SiHCT1*, *SiF5H2*, and *SiCAD6* genes. Molecular characterization of these genes is in progress. The insights gained from the present study could be extrapolated for identifying genes involved in lignocellulose biosynthesis in other biofuel species for further characterization.

Global analysis of WRKY transcription factor superfamily in *Setaria italica* and *S. viridis*

Transcription factors (TFs) have been reported as major players in stress signaling and constitute an integral part of signaling networks. Among the major TFs, WRKY proteins play pivotal roles in regulation of transcriptional reprogramming associated with stress responses. A genome- and transcriptome-wide identification of WRKY TF family performed in *Setaria italica* (SiWRKY) and *S. viridis* (SvWRKY) identified 105 SiWRKY and 44 SvWRKY proteins, respectively. All SiWRKY genes were physically mapped on the *S. italica* genome and their duplication analysis revealed that 10 and 8 gene pairs underwent tandem and segmental duplications, respectively. Expression profiling of candidate SiWRKY genes in response to stress (dehydration and salinity) and hormone treatments (abscisic acid, salicylic acid, and methyl jasmonate) suggested the putative involvement of *SiWRKY066* and *SiWRKY082* in stress and hormone signalling. These genes could be potential candidates for further characterization to delineate their functional roles in abiotic stress signalling.

Molecular and functional characterization of inositol metabolism in chickpea in perspective of abiotic stress responses

Galactinol synthase (GolS) catalyzes the first and rate limiting step of Raffinose Family Oligosaccharide (RFO) biosynthetic pathway, which is a highly specialized metabolic event in

plants. In chickpea, we have shown that galactinol synthase activity as well as galactinol and raffinose content progressively increase as seed development proceeds and become highly abundant in pod and mature dry seeds, which gradually decline as seed germination progresses. Furthermore, artificial aging also stimulates galactinol synthase activity and consequent galactinol and raffinose accumulation in seed. GolS in chickpea are encoded by two divergent genes (*CaGolS1* and *CaGolS2*) which potentially encode five *CaGolS* isoforms through alternative splicing. Biochemical analysis showed that only two isoforms (*CaGolS1* and *CaGolS2*) are biochemically active with similar yet distinct biochemical properties. Further, seed-specific overexpression of *CaGolS1* and *CaGolS2* in *Arabidopsis* resulted in increased accumulation of galactinol and raffinose content in seed and reduced accumulation of age induced excess ROS and consequent lipid peroxidation to improve seed vigor and longevity.

MicroRNA-mediated regulation of heat stress response in tomato (*Solanum lycopersicum*)

Different cultivated varieties of tomato were screened for thermotolerance towards high temperature stress to select the most sensitive and tolerant tomato cultivars. Information was collected at different development stages including germination stage, four-weeks-old plants and inflorescence stages. Seedlings and mature plants were assessed for their survival capabilities at basal heat stress and employing relative water content, proline content and leaf electrolyte leakage, as measures of heat tolerance. Further, these accessions were tested at reproductive stage for tolerance to heat in field conditions. For this, total yield, pollen viability and pollen germination were considered. The in-depth analysis has enabled us to pick two contrasting tomato cultivars, in response to heat stress. Deep sequencing data of small RNAs from control and heat stressed leaf tissue was generated using NGS platform. This identified 437 conserved Sly-miRNAs of which 110 miRNAs showed a significant differential expression in response to heat stress. New conserved miRNA molecules were also identified and validated. Degradome based target confirmation for miRNAs has been performed and expression profiles of targets and respective miRNAs for their anti-correlation by qPCR has also been carried out.

The role of hypoxia-induced nitric oxide in plant adaptation to hypoxia

Lysigenous aerenchyma contributes hypoxic tolerance in roots, by providing an internal aeration system for the transfer of oxygen from the shoot to root. However, aerenchyma formation requires the death of cells in the root cortex. Nitric oxide is known to induce cell death in plants. In order to understand NO role in aerenchyma formation, we investigated whether ethylene-induced aerenchyma requires hypoxia-induced NO. Imposing hypoxic conditions to wheat roots leads to increased DAF-FM fluorescence and increased NO emission which was confirmed by gas phase griess reagent assay. Increased nitrate reductase activity under hypoxia suggests this is responsible for NO production. Scavenging of NO led to a marked reduction in aerenchyma formation in 24 and 48 hours of treatment. Interestingly we found that hypoxically-induced NO induced ethylene biosynthetic genes encoding ACC synthase and AAC oxidase which are crucial for ethylene biosynthesis. NO and ethylene both are involved in induction of genes involved in signal transduction suggesting that hypoxically-induced NO is essential for the development of ethylene-induced aerenchyma formation.

Role of nitrate nutrition and nitric oxide generation on increasing energy efficiency under hypoxia

Using *Arabidopsis* plants grown on nitrate (NO_3^-) or ammonium we examined phytohemoglobin nitric oxide cycle, alternative respiratory pathway, fermentation, and genes involved in TCA cycle and group VII transcription factors involved in hypoxic survival. We found that imposing hypoxia stress (0.8% oxygen) leads to increased nitrate reductase activity, nitric oxide production (NO) and increased methaemoglobin reductase activity and increased transcript abundance of phytohemoglobin 1 gene under NO_3^- nutrition. In contrast, these processes were not responded to hypoxia under NH_4^+ nutrition. Decreased total respiratory rate and increased alternative oxidase capacity and expression was observed under NO_3^- nutrition which correlated with decreased reactive oxygen species, lipid peroxidation and opposing results were observed under NH_4^+ nutrition under hypoxia. NO_3^- nutrition also increased root internal oxygen levels thereby it can play a role in oxygen homeostasis. Further, we found increased fermentation and NAD^+ recycling which might be due to increased expression of *HRE1*, *HRE2*, *RAP 2.2*, and *RAP 2.12* under hypoxia under NO_3^- nutrition. Increased ATP production was observed under NO_3^- nutrition which then further enhanced induction of TCA cycle genes.

Submergence dependent regulation of SUB1A1 by Mitogen Activated Protein Kinase 3 in rice

The ethylene response factor-like protein SUB1A orchestrates a plethora of responses during submergence stress tolerance in rice. In the present study, we report that MPK3 is activated by submergence in a SUB1A-dependent manner, physically interacts and phosphorylates SUB1A in a tolerant-allele-specific manner. Furthermore, the tolerant allele SUB1A1 binds to the MPK3 promoter and regulates its expression in a positive regulatory loop during submergence stress signalling. We present molecular and physiological evidence for the key role of the MPK3-SUB1A1 module in acclimation of rice seedlings to the adverse effects of submergence. Overall, the results provide a mechanistic understanding of submergence tolerance in *Oryza sativa*.

D. Nutritional Genomics

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

During ripening, a protracted form of senescence, degradation of cell wall *N*-glycoproteins and free *N*-glycan levels significantly influence softening in tomato. The suppression of two cell wall modifying enzymes having *N*-glycan processing ability, α -*Man* and β -*Hex* results in enhanced shelf life, firmness and pathogen resistance. To investigate the role of *N*-glycans during ripening, *N*-glycan profiling of RNAi fruits are under progress. We have also demonstrated the RIN-mediated direct transcriptional regulation of α -*Man* during fruit ripening and shown that ethylene may acts in RIN-dependent and -independent ways to regulate α -*Man* expression. Through microarray analysis of ripening mutants, we have identified key genes involved in maintaining cellular redox state and metabolism during fruit ripening. Moreover, we have also reported the role of ROS in tomato ripening and senescence.

Expression of oxalate decarboxylase to reduce oxalate in soya bean and neurotoxin in grass pea

Soya bean and grass pea seeds are important sources of dietary proteins; however, they also contain anti-nutritional metabolite oxalic acid (OA). Moreover, OA also serves as a precursor for the biosynthesis of a grass pea neurotoxin, β -ODAP. We have developed genetically modified soya bean and grass pea with reduced OA level in soya bean and OA and β -ODAP in grass pea without any adverse effect on plant growth and development and seed protein quality. The reduction of OA in soya bean and grass pea not only improved their seed nutritional quality but also conferred tolerance to fungal pathogen *S. sclerotiorum*.

Genetically modified crops expressing *AmA1* for better nutrition

Ectopic expression of seed storage protein *AmA1* in different crop plants has been shown to increase protein and amino acid accumulation in storage organs. In continuation of this aspect, homozygous populations of the transgenic rice lines were recently developed. The detailed analysis of physiological and agro-phenotypic characterization of T5 homozygous lines revealed enhanced photosynthetic activity with increase in yield. The protein quantity was determined on the basis of nitrogen content. There was a 42–67% increase in total protein content in the transgenic seeds as compared to their wild-type counterpart. Metabolite analysis revealed increase in amino acid content with steady level of carbohydrates and saturated fatty acids. Efforts are being made to analyze transgenic rice for safety assessment in addition to detailed comparative omics analyses towards system level understanding of storage protein mediated regulation in plant.

Proteometabolomic analysis of two contrasting ecotypes of sweetpotato (*Ipomoea batata* L.) highlights their nutritional diversity

Sweetpotato has long been acknowledged as a significant contributor of global caloric needs, which continues to be of remarkable economic value. It is an important staple and emergency food in many countries and its annual world production hovers to about 130 million tons. The tubers act as sink and compete for the available photoassimilates eventually leading to the acquisition of nutrients and phytochemicals. Differential display of genes or gene-products, and metabolites causes differences in nutritive value of closely related ecotypes. To better understand the molecular basis for differential nutrient availability and phytochemicals, and exploit the natural genetic variation(s), we aimed at developing proteometabolic profiles of two contrasting ecotypes of sweetpotato. Proteomic analyses led to the identification of 1541 and 1201 proteins in orange fleshed and white fleshed sweetpotato ecotypes, respectively, presumably associated with binding, followed by catalytic, transferase, hydrolase, kinase and transporter activities. Furthermore, metabolome profiling revealed 148 and 126 metabolites in cv. OFSP and WFSP, respectively. This study would provide a basis for future comparative proteometabolomic efforts for sweetpotato, in particular and tuber crops in general. The results would expand our understanding of the proteome as well as metabolome and give new insights into how ecotype-specific traits are developed.

Ectopic expression of amaranth seed storage albumin modulates photoassimilate transport and nutrient acquisition in sweetpotato

Sweetpotato is the seventh most important food crop worldwide, and has a significant contribution to the source of nutrition, albeit with low protein content. Seed storage proteins are known to be utilized as carbon and nitrogen source for growing seedlings. To determine the behaviour of seed storage proteins in non-native system, a seed albumin, *AmA1*, was overexpressed in sweetpotato with an additional aim of improving nutritional quality of tuber proteins. We generated 13 and 15 constitutively overexpressed (COE) *AmA1* and 15 tuber-specifically overexpressed (TOE) *AmA1* lines. A comparative proteomics analysis was performed to investigate transgene-mediated change(s) in the tuber proteome. Introduction of *AmA1* imparted an increase in protein and amino acid contents as well as the phytophenols. The proteometabolomics analysis revealed a rebalancing of the proteome, with no significant effects on the global metabolome profile of the transgenic tubers. The absolute quantification of the metabolites by GC-MS analysis revealed a significant increase in the content of several amino acids. Additionally, the slower degradation of starch and cellulose in transgenic tubers, led to increased post-harvest durability. This study provides a new insight into the role of a seed storage protein in the modulation of photoassimilate movement and nutrient acquisition.

Tissue specific engineering of glucosinolate content and profiles in Indian oilseed mustard (*Brassica juncea*) for higher nutritional value

To increase the food and feed value of *Brassica* crops, our research is aimed towards selective engineering of glucosinolates biosynthesis and transport processes in tissue-specific manner. We earlier demonstrated the development of low glucosinolate *B. juncea* lines having seed glucosinolate as low as 15 $\mu\text{moles g}^{-1}$ DW, through targeted silencing of *BjuMYB28* gene. The low glucosinolate transgenic lines were stable when tested for several growing seasons under contained net house conditions. We recently developed *B. juncea* transgenic lines having significantly high amount of glucoraphanin (43.11 $\mu\text{moles g}^{-1}$ DW), a glucosinolate associated with anti-carcinogenic properties, by suppressing *GSL-ALK* gene family. Further to achieve tissue specific engineering of glucosinolate levels, we have recently developed *B. juncea* transgenic knock-down lines targeting glucosinolate transporter (*GTR1*, *GTR2*) genes and the molecular and phenotypic analysis is in progress. Besides, our lab is also investigating the biochemical regulation of MAM1 proteins, a key enzyme involved in glucosinolate side-chain elongation step and generating the huge glucosinolate diversity present across *Brassica* species.

E. Plant Development and Architecture

Investigations on reproductive development related genes from rice

Male sterility in rice affects seed set and is a useful trait for hybrid seed production. We have identified a bHLH transcription factor gene of rice, by raising gain-of-function transgenics, which results in non-viable pollen and anther indehiscence in rice. This phenotype results in loss of seed set. The gene is regulated at transcriptional and translational levels temporally during anther development. The phenotype is related to faster tapetum degeneration and loss of septum and

stomium rupture. Several metabolic and ROS related protein genes were dis-regulated in transgenics. Further, a large number of ISM and ILP markers were identified, made public as a database and used to generate a genetic linkage map (IR 64X Sonasal) with inter-marker distance of 0.98 cM. The integration of genetic and physical maps detected six ILP markers-containing genes tightly linked to six major QTLs regulating grain weight in rice. These could be utilized in genomics-assisted crop improvement for developing rice varieties with higher grain size/weight and yield.

Factors regulating rice seed size during development

The transcriptome of two genotypes with contrasting seed traits has been analyzed to elucidate genes controlling seed size. Differentially expressed genes have been calculated with respect to flag leaf as control. Additionally, the over expression of a seed-preferential C2H2 transcriptional repressor in transgenic rice has led to alteration in flowering time and seed characters.

Functional characterization of sugar- and auxin-regulated DUF581 domain containing genes encoding expressed proteins of unknown functions in model plant system *Arabidopsis thaliana*

Sugars act as the basic form of energy in the living world. Earlier we identified a land plant-specific sugar regulated zinc finger gene family which was named as FCS Like Zinc-finger (*FLZ*) based on the similarity of its DUF581 domain with FCS-type zinc fingers in metazoans. *FLZ* proteins interact with kinase subunits of SnRK1 and many conserved regulators of plant growth and development, stress mitigation and programmed cell death. Two starvation-inducible genes, i.e., *FLZ6* and *FLZ10*, interact with SnRK1 kinase subunit in the endoplasmic reticulum associated with the nucleus. Knock-down mutants of both genes have compromised growth at the seedling stage. The mutants also showed increased SnRK1.1 in the seedling and rosette stages. Further, the level of SnRK1 downstream marker gene *DARK-INDUCED 6 (DIN6)* was found to be higher in the mutants suggesting that increased kinase subunit level may result in the increase of SnRK1 activity. SnRK1 is a major regulator of growth under energy limited growth conditions and stress. Consistent with this, in the physiological assays, mutants showed better resistance towards energy limited growth conditions such as low light intensity and low sugar. The mutants also showed increased tolerance towards mannitol stress. Taken together, our analysis suggests that *FLZ6* and *FLZ10* act as plant-specific negative regulators of SnRK1 signaling.

Functional characterization of glucose- and heat-responsive *HKL1* gene encoding expressed protein of unknown function in model plant system *Arabidopsis thaliana*

Arabidopsis ortholog of human *Hikeshi*, named as Hikeshi Like 1 (*AtHKL1*) gene is highly up regulated by glucose. Besides glucose, the mRNA transcript level of *HKL1* was also highly induced upon heat stress (HS). Transgenic line overexpressing *HKL1* exhibits improved seedling survival and chlorophyll retention under extreme HS whereas T-DNA insertion mutant showed reduced rate of seedling survival and chlorophyll content than WT. *HSFA1s* are key regulators of HS response and act quite upstream in HS response pathway. Interestingly, a common pool of HS genes subsists between glucose and *HSFA1s*. Quantitative real time (qRT-PCR) expression of these *HS* genes including *HSFA2* was remarkably higher than the WT in *HKL1 OE2* lines under control conditions (NT). These findings suggest that higher *HSP* levels in *OE2* under NT may provide

thermotolerance. Further functional characterization of *HKL1* will be carried out to explore the interaction of glucose signaling and temperature stress in *Arabidopsis* seedlings in order to provide mechanical insight of glucose control of temperature stress tolerance in plants.

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

Under natural growth conditions, plants grow at very high density where they are shaded by their neighbours. Plants avoid shade and escape low light via several morphological alterations such as enhanced growth of the stem, upward direction of leaves. A shade, auxin- and BR- inducible and Glc- repressible gene *AUXIN ENHANCED EXPRESSION1 (AEE1)* encodes for a novel atypical basic Helix-loop-helix protein. The hypocotyl elongation was altered in *ae1* as well as *OE2* seedlings under both light and dark growth conditions as compared to WT. The *ae1* mutant displayed more hypocotyl elongation in stimulated shade conditions also whereas the *OE2* line was resistant for shade-induced hypocotyl elongation as compared to WT. Altogether; our results suggest that *AEE1* might act as a negative regulator of shade-avoidance response. Further characterization of the gene is underway to further explore interaction between glucose and shade avoidance response.

Sirtinol affects meristem maintenance and root development in *Arabidopsis thaliana*

Stem cells maintenance in *A. thaliana* is governed by several transcription factors, phytohormones, miRNAs, and epigenetic factors. A chemical inhibitor, sirtinol, is known to promote some auxin induced phenotypes in *Arabidopsis*. Here, we show that sirtinol affects shoot and root meristem maintenance by altering the expression of stem cell regulators, cell division or differentiation by modulating both auxin and cytokinin signaling in the meristem. The expression of shoot stem cell regulators like *WUSCHEL (WUS)* and *CLAVATA3 (CLV3)* and root meristem regulators like *PLETHORA (PLT)* and *WUS-Related Homeobox 5 (WOX5)* was altered in sirtinol treated seedlings. Altered expression of auxin transporters (*PINs*) and CK biosynthesis/signaling (*IPTs/ARRs*) genes creates a hormonal imbalance, which affects stem cell maintenance and meristematic activity by altering function of other relevant genes.

Protein L-isoaspartyl methyltransferase (PIMT) in rice

PROTEIN L-ISOASPARTYL O-METHYLTRANSFERASE (PIMT) is a protein repairing enzyme which plays an important role in seed vigor and longevity. Rice possesses two genes (*OsPIMT1* and *OsPIMT2*) which encode multiple PIMT isoforms, among which three (*OsPIMT1*, *OsPIMT2* and Δ *OsPIMT2* i.e. *OsPIMT2* protein without N-terminal extension) are found to be biochemically active. We have showed that PIMT isoforms are differentially regulated during seed development and germination. Further analyses of transgenic lines for each *OsPIMT* isoform revealed that they play a distinct role in restricting deleterious isoAsp and ROS accumulation to improve seed vigor and longevity.

Improving chickpea root biomass by genetic transformation

Lateral root emerges from the upper part of the root and initiated by increase of auxin:cytokinin ratio in the pericycle cells. Therefore, a promoter that exclusively expresses at the upper part of the root

could be exploited to express a cytokinin degrading enzyme to increase auxin:cytokinin ratio in that tissue. Accordingly, 1.5 kb promoter sequence of *WRKY6* gene and the coding sequence of cytokinin oxidase 1 gene were cloned from chickpea and fused to make a construct pWRKY6:CaCKX. This construct, when introduced in *Arabidopsis* and tomato, produced a robust lateral root system. The same construct has been introduced into three cultivars of chickpea namely, PUSA362, DCP and BGD72. Several lines of T1 plants, when grown in pots in control condition, showed high number of lateral roots and increased root length without any compromise of vegetative and reproductive growth.

Investigating the effects of increased ambient temperature on vegetative development of crop plants and underlying genetic basis

High temperature induces rapid stem elongation, reduced leaf growth, reduced branching and early flowering at the cost of biomass in the model plant *Arabidopsis thaliana*. We aim to investigate the effects of high temperature on the vegetative development and leaf features of crop plants, tomato (*Solanum lycopersicum*) and rice (*Oryza sativa*), and underlying genetic basis by combining phenomics and genomics approaches. High temperatures caused substantial reduction in plant height of tomato. Moreover, higher temperatures also had drastic negative effects on the leaf length and leaf area. These effects were stronger for the wild species *S. pennellii* compared to cultivated tomato, suggesting that the domestication might have contributed to the high-temperature tolerance in tomato. The reduction in the plant height of tomato in response to high temperatures is in contrast to the observation for the model plant *Arabidopsis*. It will be interesting to decipher the genetic basis of this differential response in tomato.

F. Plant Immunity

Proteometabolomic analysis of transgenic tomato overexpressing oxalate decarboxylase uncovers novel proteins potentially involved in defense mechanism against *Sclerotinia*

Oxalic acid (OA), a small molecular weight metabolite plays dual role in fungal pathogenicity in a concentration dependent manner. Here, we elucidate the low oxalate regulated molecular mechanism imparting immunity to E8.2-OXDC tomato fruit displaying fungal resistance by a comparative proteometabolomic approach. Mass spectrometric analyses identified 92 OXDC-responsive immunity related protein spots (ORIRPs). The analysis identified the main functional categories of the significantly changed metabolic proteins involved in glycolysis and tricarboxylic acid cycle. Proteins related to amino acid, fatty acid metabolism and glutathione cycle were markedly increased; however, the proteins related to ascorbate metabolism and G-protein signaling showed mixed abundance. Furthermore, proteins related to ERAQ/ERAD pathway showed varied abundance. PCA analysis and the biplot revealed a time dependent immunity related protein abundance dynamics. The network consisted of 1849 nodes and 2333 edges and was enriched in proteins involved in acid homeostasis, protein fate and defense signaling. Consistent with the proteomic data, there was remarkable difference in metabolite profile with high accumulation of organic acid in treated E8.2-OXDC fruit. Finally, this study for the first time shed

light on the role of acid homeostasis and the translational reprogramming during non-host resistance.

Analysis of patho-stress responsive nuclear proteome of rice

Nucleus, the regulatory hub of the eukaryotic cell is a dynamic system and a repository of various macromolecules that serve as modulators of stress signaling dictating the cell fate decision. Here, we report the development of immune-responsive comparative nuclear proteome in rice during blast disease that resolved more than 2700 protein spots. The quantitative image analysis revealed 1329 differentially expressed protein spots (OsMRNP, Magnaporthe responsive Nuclear protein). Of the 1513 MRNPs, 1130 protein spots were clearly up-regulated, 198 proteins were down-regulated, and 185 proteins showed a mixed pattern of time-dependent expression. Mass spectrometric analysis and database search led to the identification of 218 proteins presumably involved in a variety of functions, including metabolism, signaling and gene regulation, protein folding and degradation, defense and rescue, transcription regulation and redox homeostasis, cell division, and chromatin remodeling. This study might facilitate the targeted alteration of the nucleus to generate bio-markers for effective engineering strategies for crop improvement program.

Induced immune response of chickpea to a necrotrophic pathogen

Major QTLs of chickpea involved resistance against *Ascochyta* Blight (AB) disease was fine mapped. Further resistance/susceptible polymorphism in candidate genes was identified for breeding and biotechnology use. Beside this, a large scale interaction map for chickpea MEK, MAPK and WRKY proteins was developed. A few legume-specific novel *Exo70* genes were also characterized.

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

Few genes of *Ascochyta rabiei* that are involved in its pathogenicity and virulence were functionally characterised. A novel necrotrophic effector that is indispensable for the disease causing ability of *A. rabiei* was identified and characterised. Furthermore, a BAR domain containing protein was characterized and the phenomenon of endocytosis during early stages fungal pathogenesis was studied.

Genome sequencing and comparative genome and transcriptome analysis of necrotrophic phytopathogenic fungi

De novo whole genome assembly and comprehensive analysis of *Ascochyta rabiei* genome was performed. High confidence protein-coding genes of *A. rabiei* was predicted and comparative genomic studies with other phytopathogenic fungi were performed. Effector repertoire of *A. rabiei* was predicted and secretome annotation was performed to gain maximum knowledge about effectors related to necrotrophy.

Understanding the molecular intricacies of rice-*Rhizoctonia* interactions

Sheath blight disease (SBD) caused by a necrotrophic fungal pathogen *Rhizoctonia solani* is havoc to sustainable cultivation of rice. Doing interaction transcriptomics, intricacies of rice-*Rhizoctonia* interactions was analysed and several key molecules that might play pivotal role in establishment of SBD were identified. Further a mycophagous bacterium (*B. gladioli* strain NGJ1; previously identified) has been shown to control SBD. Two EMS mutants that are defective in mycophagous ability and unable to prevent SBD were also identified. Molecules involved in mycophagous activities will be identified in future and in this regard draft genome sequencing of the bacteria has been performed and initial results suggest that the bacterium is enriched in antifungal compounds.

Tomato 26S proteasome subunit RPT4a regulates ToLCNDV transcription and activates hypersensitive response in tomato

The 26S proteasome have diverse functions in plants defense such as elicitation of defense responses, activation of defense proteasome and programmed cell death. Functional characterization of a *Solanum lycopersicum* 26S proteasomal subunit RPT4a (SIRPT4) gene, which was differentially expressed after *Tomato leaf curl New Delhi virus* (ToLCNDV) infection in the tolerant cultivar H-88-78-1 was performed. Molecular analysis revealed that SIRPT4 protein has an active ATPase activity. DNA binding activity of SIRPT4 onto intergenic (IR) and genic regions of bipartite genome revealed that SIRPT4 can bind to the stem-loop region of both DNA-A- and DNA-B- specific IR fragments. Moreover, this DNA-protein complex was not detected with Rep-specific fragment, which lacked the secondary structure. The result suggested that binding of SIRPT4 with DNA is secondary structure specific. Interestingly, binding of SIRPT4 to IR inhibited the binding of RNA Pol-II, which subsequently reduces bi-directional transcription of ToLCNDV genome. Virus induced gene silencing of SIRPT4 gene revealed conversion of tolerant attributes of cultivar H-88-78-1 into susceptibility. Furthermore, transient overexpression of SIRPT4 resulted in the activation of programmed cell death and antioxidant enzymes system. Overall, present study highlights the non-proteolytic function of SIRPT4 and their participation in the defense pathway against virus infection in tomato.

Investigating the role of glucosinolates and its degradation products in plant fitness in *Brassica juncea*

Glucosinolates have long been recognized for their distinctive benefits to plant defence against both herbivores and pathogens. We recently found that glucosinolates over-accumulate under the biotic stress mimicking conditions and this response is mediated by the differential expression of glucosinolate regulators in *B. juncea*. Thus, these regulators can be selectively manipulated for enhanced resistance of *Brassica* crops against biotic invaders. Our laboratory has initially developed *B. juncea* transgenic lines having higher (ca. >120 μ moles/g DW) and lower (ca. <30 μ moles/g DW) levels of seed aliphatic glucosinolates levels by altering the expression of BjuMYB28 transcription factor gene homologs. We recently developed *B. juncea* transgenic lines having enhanced levels of non-aliphatic glucosinolates by over-expression the *Arabidopsis* genes encoding MYB34, MYB51 and MYB122 transcription factors. We observed a significant increase of non-aliphatic glucosinolates with concomitant decrease of aliphatic glucosinolate pools in the transgenic lines, suggesting cross-talk between glucosinolate pools in *B. juncea*. The over-

expression of few non-aliphatic transcription factors affected the viability of seeds, and the detailed analysis is in progress. We also checked the performance of *B. juncea* transgenic lines having altered aliphatic glucosinolate levels against generalist pests (*Helicoverpa armigera* and *Spodoptera litura*) and a phloem sucking specialist pest (*Lipaphis erysimi*).

Understanding the role of AtSWEET sugar transporters in plant defence against invading host and nonhost pathogens in *Arabidopsis thaliana*

Non-host resistance (NHR) in plants is the most common defence response that imparts broad spectrum disease resistance. It was hypothesised that nutrient limitation to nonhost pathogen (NHP) is a part of plant defence strategy that contributes to NHR. Among nutrients, sugars are major nutrition for pathogens. Recently, a new class of SWEET sugar transporters were reported in various plants and its 17 members in *Arabidopsis* were identified and few were characterized for their diverse role in plant growth and its interaction with microbes. Our aim is to identify the AtSWEET transporter that plays role in plant defence via restriction of sugar availability to pathogens. For this, we applied two approaches i.e., reverse genetic screening to identify mutant plants susceptible to NHP and targeted transcriptomic profiling. Our finding implicates a role for AtSWEET12 transporter encoding gene in plant defence. We propose that during NHP infection, plant regulates *AtSWEET12* along with *AtSUC2* to limit nutrient availability to pathogen in the apoplast by enhancing phloem loading.

Dissecting early plant defense strategies activated in *Arabidopsis* upon *Spodoptera* herbivory

Insect herbivory impacts plant productivity in a significant manner. We use *Arabidopsis* and its herbivore pest *Spodoptera litura*, as model system to study rapidly active defense pathways that help in herbivory recognition. We have identified Ca^{2+} ion conducting cyclic nucleotide gated channels (CNGC) as early targets of insect elicitors. *CNGC19* and *CNGC13* have functional role in insect herbivory and loss-of-function of these genes results in reduced plant defense. Their role in regulating downstream jasmonate and secondary metabolites are being examined. Phosphoinositide-specific phospholipase C (PLCs) are major targets of most internal store Ca^{2+} inhibitors. We try to understand the role of PLCs in Ca^{2+} signal generation and role in plant herbivory defense. How plants rapidly sense this bioactive JA-Ile burst in cytosol is not known. To dissect this, a high throughput forward genetic screen is being undertaken, using JA-Ile induced cytosolic Ca^{2+} elevation in *Arabidopsis* as a marker. We aim to address the question how plants defend rapidly against insect herbivores using Ca^{2+} ion.

Role of *Arabidopsis* CIPK6 in plant immunity

Cytosolic calcium ion (Ca^{+2}) is an essential mediator of plant innate immune response. Only a handful of calcium-binding proteins that link Ca^{+2} with defense response have been identified. Here, we report that two members of a major class of Ca^{+2} -sensor protein family calcineurin B-like protein 1 (CBL1) and CBL9 and their interacting protein CBL-interacting protein kinase 6 (CIPK6) function as negative regulators of immunity in *Arabidopsis thaliana*. Transfer DNA insertion lines *atcipk6* and *atcbl1atcbl9* exhibited enhanced disease resistance to virulent bacteria *Pseudomonas syringae*

and to the bacteria harboring certain but not all of the avirulent effectors. Complementation of *atcipk6* with *AtCIPK6* or overexpression of the gene abolished resistance or increased disease susceptibility, respectively. Upon infection, *atcipk6* plants displayed enhanced expression of defense marker genes and accumulation of salicylic acid, which was required for resistance in *atcipk6*. *AtCIPK6* negatively regulated oxidative burst associated with perception of microbial patterns and bacterial effectors. Absence of functional *AtCIPK6* resulted in hypersensitivity to bacterial elicitor flg22 and a rapid and robust activation of Mitogen Activated Protein Kinase 3 (MAPK3) and MAPK6. Our results revealed that *AtCIPK6* negatively regulates pathogen associated molecular pattern-triggered (PTI)- and effector-triggered (ETI) immunity in *Arabidopsis*.

G. Emerging Areas

Interactome of mediator subunit Med15 in plants

Med15 is a subunit in the tail module of Mediator complex. In fungi and metazoans, KIX domain of Med15 has been shown to be targeted by several transcription factors. Not much is known about the function of Med15 in plants. We have tried to unravel the interactome of Med15 in rice and *Arabidopsis*. In both the cases, a number of proteins including some transcription factors were found to interact with Med15. Mapping analyses revealed that in plants also activation domain of transcription factors interact with the Med15 KIX domain, suggesting a conserved mechanism of Med15 functioning in fungi, animals and plants.

Importance of Med14 in mucilage extrusion from *Arabidopsis* seed coat

Although seeds of land plants have been studied extensively for many years, their seed coats are not so well studied in terms of molecular genetics and control of development. Heterozygous lines of T-DNA insertion in *AtMed14* locus produced some aborted seeds in the siliques of *Arabidopsis*. These seeds were arrested in the early stage of embryo development. Interestingly, the defect in seed was found to be associated with defective Med14 of maternal origin. Our analysis revealed thickening of columella cells in the heterozygous seed coat. Due to thickening of columella cells, there was problem in the mucilage extrusion which could affect the germination process. This is the first report to suggest role of maternally contributed *Med14* allele in mucilage secretion and germination in *Arabidopsis*.

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

The $\Delta 7$ -sterol-C-5-desaturase is an enzyme common to phytosterol and brassinosteroid biosynthesis pathway in plants. We have generated tomato RNAi lines silenced for C-5 sterol desaturase and over-expressing the gene. The phenotypic, biochemical and molecular analysis of tomato transgenic lines was carried out. To identify the molecular mechanism of $\Delta 7$ -sterol-C-5-desaturase, we performed quantitative and qualitative analysis to detect and compare endogenous level of BRs/sterols in wild type, overexpression and RNAi plants. Our results show that decrease in deuterium labelled brassinolide level could be attributed to RNAi mediated downregulation of LeC5SD resulting in decreased BR biosynthesis.

Dissecting the heterotrimeric G-protein signaling in polyploid *Brassica* crops

Heterotrimeric G-protein, a key trans-membrane signalling component, is present across phyla and are is characterized in model plant *Arabidopsis* and rice. However, the hidden complexity of G-protein signalling network, its evolution, and the roles played by G-protein components in regulating various growth and developmental traits from agriculturally important *Brassica* species is limited. We recently identified and performed the molecular characterization of G-protein signaling components from allopolyploid *B. juncea* as well as its two progenitor genomes (*B. rapa* and *B. nigra*). To determine the roles of G-protein genes in plant growth and development, a series of over-expression and knock-down (RNAi based) transgenic lines were developed using *Agrobacterium* mediated genetic transformation and the putative single copy events were selected by segregation analysis and Southern blotting. Our data revealed that the BjuG α (RNAi) seedlings have shorter hypocotyls, and the plant height of the transgenic lines (45 and 60 days after sowing) was also found to be significantly shorter compared to the control line when tested under contained field conditions.

Investigating the metabolite heterotic patterns in *Brassica juncea* using metabolomics approach

We conducted a comprehensive analysis of the metabolite heterotic pattern in two reciprocal F1 hybrids generated from the two inbred lines representing the genetically divergent Indian and east European genepools of *B. juncea*. We used targeted LC/MS analysis for profiling free amino-acids, phyto-hormones, sugars, flavonoids and glucosinolates components across five different plant tissues (flag leaves, young leaves, mature leaves, flower buds and siliques) of *B. juncea*. Our analysis suggested that a large number of metabolites (22 of 40) in buds showed opposite trends of mid-parent heterosis (MPH) between the two reciprocal hybrids. In comparison, siliques and three leaf stages showed almost uni-direction trend of heterosis (either positive or negative) for most of the metabolites, although MPH levels were variable between the two hybrids. Strikingly, we observed that amino acids, flavonoids and sugars showed predominantly negative heterosis whereas glucosinolates fractions showed positive heterosis in most of the tissue types, for both the reciprocal crosses. Phytohormones showed mixed trends of heterosis owing to their distinct and variable physiological roles in the plants. Overall, our data suggest that although metabolites showed a complex MPH levels in the hybrids, but a conserved heterotic pattern was observed for some metabolites across developmental stages.

Publications and Patents

Publications

2016

1. Agarwal P, Parida SK, Raghuvarshi S, Kapoor S, Khurana P, Khurana JP and Tyagi AK (2016) Rice improvement through genome-based functional analysis and molecular breeding in India. **Rice** 9: 1.
2. Badoni S, Das S, Sayal YK, Gopalakrishnan S, Singh AK, Rao AR, Agarwal P, Parida SK and Tyagi AK (2016) Genome-wide generation and use of informative intron-spanning and intron-length polymorphism markers for high-throughput genetic analysis in rice. **Scientific Reports** 6: 23765.
3. Bajaj D, Srivastava R, Nath M, Tripathi S, Bharadwaj C, Upadhyaya HD, Tyagi AK and Parida SK (2016) Eco TILLING-based association mapping efficiently delineates functionally relevant natural allelic variants of candidate genes governing agronomic traits in chickpea. **Frontiers in Plant Science** 7: 450.
4. Bajaj D, Upadhyaya HD, Das S, Kumar V, Gowda CLL, Sharma S, Tyagi AK and Parida SK (2016) Identification of candidate genes for dissecting complex branch number trait in chickpea. **Plant Science** 245: 61-70.
5. Chandna R, Augustine R, Kanchupati P, Kumar R, Kumar P, Arya GC and Bisht NC (2016) Class-specific evolution and transcriptional differentiation of 14-3-3 family members in mesohexaploid *Brassica rapa*. **Frontiers in Plant Science** 7: 12.
6. Das S, Singh M, Srivastava R, Bajaj D, Saxena MS, Rana JC, Bansal KC, Tyagi AK and Parida SK (2016) mQTL-seq delineates functionally relevant candidate gene harbouring a major QTL regulating pod number in chickpea. **DNA Research** 23: 53-65.
7. Garg R, Shankar R, Thakkar B, Kudapa H, Krishnamurthy L, Mantri N, Varshney RK, Bhatia S and Jain M (2016) Transcriptome analyses reveal genotype- and developmental stage-specific molecular responses to drought and salinity stresses in chickpea. **Scientific Reports** 6: 19228.
8. Gautam NK, Kumar K and Prasad M (2016) Leaf crinkle disease in urdbean (*Vigna mungo* L. Hepper): An overview on causal agent, vector and host. **Protoplasma** (In Press).

9. Gautam V, Singh A, Singh S and Sarkar AK (2016) An efficient LCM-based method for tissue specific expression analysis of genes and miRNAs. **Scientific Reports** 6: 21577.
10. Gupta AK, Kumari A, Mishra S, Wany A and Gupta KJ (2016) The functional role of nitric oxide in plant mitochondrial metabolism. **Advances in Botanical Research** (In Press).
11. Gupta DB, Rai Y, Gayali S, Chakraborty S and Chakraborty N (2016) Plant organellar proteomics in response to dehydration: Turning protein repertoire into insights. **Frontiers in Plant Science** 7: 460.
12. Gupta KJ and Igamberdiev AU (2016) Reactive nitrogen species in mitochondria and their implications in plant energy status and hypoxic stress tolerance. **Frontiers in Plant Science** 7: 369.
13. Irfan M, Ghosh S, Meli VS, Kumar A, Kumar V, Chakraborty N, Chakraborty S and Datta A (2016) Fruit ripening regulation of alpha-Mannosidase expression by the MADS box transcription factor RIPENING INHIBITOR and ethylene. **Frontiers in Plant Science** 7: 10.
14. Jain D, Khandal H, Khurana JP and Chattopadhyay D (2016) A pathogenesis related-10 protein CaARP functions as aldo/keto reductase to scavenge cytotoxic aldehydes. **Plant Molecular Biology** 90: 171-187.
15. Jain M, Srivastava PL, Verma M, Ghangal R and Garg R (2016) *De novo* transcriptome assembly and comprehensive expression profiling in *Crocus sativus* to gain insights into apocarotenoid biosynthesis. **Scientific Reports** 6: 22456.
16. Kotwal S, Kaul S, Sharma P, Gupta M, Shankar R, Jain M and Dhar MK (2016) *De novo* transcriptome analysis of medicinally important *Plantago ovata* using RNA-seq. **PLoS One** 11(3): e0150273.
17. Kumar A, Ghosh S, Bhatt DN, Narula A and Datta A (2016) *Magnaporthe oryzae* aminosugar metabolism is essential for successful host colonization. **Environmental Microbiology** (In Press).
18. Kumar K, Srivastava V, Purayannur S, Kaladhar VC, Cheruvu PJ and Verma PK (2016) WRKY domain-encoding genes of a crop legume chickpea (*Cicer arietinum*): comparative analysis with *Medicago truncatula* WRKY family and characterization of group-III gene(s). **DNA Research** (In Press).
19. Kumar S, Kumari R and Sharma V (2016) Coevolution mechanisms that adapt viruses to genetic code variations implemented in their hosts. **Journal of Genetics** 95: 3-12.

20. Kumar V, Chattopadhyay A, Ghosh S, Irfan M, Chakraborty N, Chakraborty S and Datta A (2016) Improving nutritional quality and fungal tolerance in soya bean and grass pea by expressing an oxalate decarboxylase. **Plant Biotechnology Journal** (In Press).
21. Kumar V, Irfan M, Ghosh S, Chakraborty N, Chakraborty S and Datta A (2016) Fruit ripening mutants reveal cell metabolism and redox state during ripening. **Protoplasma** 253: 581-594.
22. Malik N, Dwivedi N, Singh AK, Parida SK, Agarwal P, Thakur JK and Tyagi AK (2016) An integrated genomic strategy delineates candidate mediator genes regulating grain size and weight in rice. **Scientific Reports** 6: 23253.
23. Mehra P, Pandey BK and Giri J (2016) Comparative morphophysiological analyses and molecular profiling reveal Pi-efficient strategies of a traditional rice genotype. **Frontiers in Plant Science** 6: 1184.
24. Mtunguja MK, Ranjan A, Laswai HS, Muzanila Y, Ndunguru J and Sinha NR (2016) Genetic diversity of farmer-preferred cassava landraces in Tanzania based on morphological descriptors and single nucleotide polymorphisms. **Plant Genetic Resources** (In Press).
25. Muthamilarasan M, Dhaka A, Yadav R and Prasad M (2016) Exploration of millet models for developing nutrient rich graminaceous crops. **Plant Science** 242: 89-97.
26. Muthamilarasan M, Mangu VR, Zandkarimi H, Prasad M and Baisakh N (2016) Structure, organization and evolution of ADP-ribosylation factors in rice and foxtail millet, and their expression in rice. **Scientific Reports** 6: 24008.
27. Muthamilarasan M and Prasad M (2016) Role of genomics in enhancing nutrition content of cereals. In: Al-Khayri JM, Jain SM, Johnson DV (eds), **Advances in Plant Breeding Strategies, Vol 2: Agronomic, Abiotic and Biotic Stress Traits**. Springer, Switzerland (In Press).
28. Nagulapalli M, Maji S, Dwivedi N, Dahiya P and Thakur JK (2016) Evolution of disorder in Mediator complex and its functional relevance. **Nucleic Acids Research** 44: 1591-1612.
29. Paul A, Rao S and Mathur S (2016) The α -crystallin domain containing genes: identification, phylogeny and expression profiling in abiotic stress, phytohormone response and development in tomato (*Solanum lycopersicum*). **Frontiers in Plant Science** 7: 426.
30. Petla BP, Kamble NU, Kumar M, Verma P, Ghosh S, Singh A, Rao V, Salvi P, Kaur H, Saxena SC and Majee M (2016) Rice PROTEIN L-ISOASPARTYL METHYLTRANSFERASE isoforms differentially accumulate during seed maturation to restrict deleterious isoAsp and

reactive oxygen species accumulation and are implicated in seed vigor and longevity. **New Phytologist** (In Press).

31. Ram H, Jain M, Singh A and Chattopadhyay S (2016) Functional relationship of GBF1 with HY5 and HYH in genome-wide gene expression in *Arabidopsis*. **Plant Molecular Biology Reporter**. 34: 211-220.
32. Rathi D, Gayen D, Gayali S, Chakraborty S and Chakraborty N (2016) Legume proteomics: Progress, prospects and challenges. **Proteomics** 16: 310-327.
33. Shankar R, Bhattacharjee A and Jain M (2016) Transcriptome analysis in different rice cultivars provides novel insights into desiccation and salinity stress responses. **Scientific Reports** 6: 23719.
34. Sharma M and Laxmi A (2016) Jasmonates: Emerging players in controlling temperature stress tolerance. **Frontiers in Plant Science** 6: 1129.
35. Sheikh AH, Eschen-Lippold L, Pecher P, Hoehenwarter W, Sinha AK, Scheel D and Lee J (2016) Regulation of WRKY46 transcription factor function by mitogen-activated protein kinases in *Arabidopsis thaliana*. **Frontiers in Plant Science** 7: 61.
36. Shekhar S, Mishra D, Gayali S, Buragohain AK, Chakraborty S and Chakraborty N (2016) Comparison of proteomic and metabolomic profiles of two contrasting ecotypes of sweetpotato (*Ipomoea batata* L). **Journal of Proteomics** (In Press).
37. Singh RK and Prasad M (2016) Advances in *Agrobacterium tumefaciens*-mediated genetic transformation of graminaceous crops. **Protoplasma** (In Press).
38. Sirohi G, Pandey BK, Deveshwar P and Giri J (2016) Emerging trends in epigenetic regulation of nutrient deficiency response in plants. **Molecular Biotechnology** 58: 159-171.
39. Trivedi DK, Srivastava A, Verma PK, Tuteja N and Gill SS (2016) *Piriformospora indica*: a friend in need is a friend in deed. **Journal of Botanical Sciences** 5: 16-19.
40. Upadhyaya HD, Bajaj D, Das S, Kumar V, Gowda CLL, Sharma S, Tyagi AK and Parida SK (2016) Genetic dissection of seed-iron and zinc concentrations in chickpea. **Scientific Reports** 6: 24050.
41. Upadhyaya HD, Bajaj D, Narnoliya L, Das S, Kumar V, Gowda CLL, Sharma S, Tyagi AK and Parida SK (2016) Genome-wide scans for delineation of candidate genes regulating seed-protein content in chickpea. **Frontiers in Plant Science** 7: 302.

42. Yadav A, Khan Y and Prasad M (2016) Dehydration-responsive miRNAs in foxtail millet: genome-wide identification, characterization and expression profiling. **Planta** 243: 749-766.

2015

43. Ara H and Sinha AK (2015) Role of mitogen activated protein kinase cascade in combating abiotic stress in plants. In: Pandey GK (ed), **Elucidation of Abiotic Stress Signaling in Plants: Functional Genomics Perspectives**. Springer Science, New York, USA, pp 207-229.
44. Augustine R and Bisht NC (2015) Biofortification of oilseed *Brassica juncea* with the anti-cancer compound glucoraphanin by suppressing GSL-ALK gene family. **Scientific Reports** 5: 18005.
45. Augustine R and Bisht NC (2015) Biotic elicitors and mechanical damage modulate glucosinolate accumulation by co-ordinated interplay of glucosinolate biosynthesis regulators in polyploid *Brassica juncea*. **Phytochemistry** 117: 43-50.
46. Bahl JR, Bansal RP, Goel R and Kumar S (2015) Properties of the seed oil of a dwarf cultivar of the pharmaceutical silymarin producing plant *Silybum marianum* (L.) Gaertn. developed in India. **Indian Journal of Natural Products and Resources** 6: 127-133.
47. Bajaj D, Das S, Badoni S, Kumar V, Singh M, Bansal KC, Tyagi AK and Parida SK (2015) Genome-wide high-throughput SNP discovery and genotyping for understanding natural (functional) allelic diversity and domestication patterns in wild chickpea. **Scientific Reports** 5: 12468.
48. Bajaj D, Das S and Parida SK (2015) CNMS: The preferred genic markers for comparative genomic, molecular phylogenetic, functional genetic diversity and differential gene regulatory expression analyses in chickpea. **Journal of Biosciences** 40: 579-592.
49. Bajaj D, Das S, Upadhyaya HD, Ranjan R, Badoni S, Kumar V, Tripathi S, Gowda CLL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) A genome-wide combinatorial strategy dissects complex genetic architecture of seed coat color in chickpea. **Frontiers in Plant Science** 6: 979.
50. Bajaj D, Saxena MS, Kujur A, Das S, Badoni S, Tripathi S, Upadhyaya HD, Gowda CLL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) Genome-wide conserved non-coding microsatellite (CNMS) marker-based integrative genetical genomics for quantitative dissection of seed weight in chickpea. **Journal of Experimental Botany** 66: 1271-1290.

51. Bajaj D, Upadhyaya HD, Khan Y, Das S, Badoni S, Shree T, Kumar V, Tripathi S, Gowda CLL, Singh S, Sharma S, Tyagi AK, Chattopadhyay D and Parida SK (2015) A combinatorial approach of comprehensive QTL-based comparative genome mapping and transcript profiling identified a seed weight-regulating candidate gene in chickpea. **Scientific Reports** 5: 9264.
52. Balyan SC, Mutum RD, Kansal S, Kumar S, Mathur S and Raghuvanshi S (2015) Insights into the small RNA-mediated networks in response to abiotic stress in plants. In: Pandey GK (ed), **Elucidation of Abiotic Stress Signaling in Plants: Functional Genomics Perspectives**. Springer Science, New York, USA, pp 45-91.
53. Barik S, Kumar A, Sarkar Das S, Yadav S, Gautam V, Singh A, Singh S and Sarkar AK (2015) Coevolution pattern and functional conservation or divergence of miR167s and their targets across diverse plant species. **Scientific Reports** 5: 14611.
54. Bhattacharjee A, Ghangal R, Garg R and Jain M (2015) Genome-wide analysis of homeobox gene family in legumes: identification, gene duplication and expression profiling. **PLoS One** 10: e0119198.
55. Bisht NC, Jagannath A, Augustine R, Burma PK, Gupta V, Pradhan AK and Pental D (2015) Effective restoration of male-sterile (*barnase*) lines requires overlapping and higher levels of barstar expression: A multi-generation field analysis in *Brassica juncea*. **Journal of Plant Biochemistry and Biotechnology** 24: 393-399.
56. Chakraborty N (2015) Rice proteomics and beyond. **Journal of Rice Research** 3: 1000e113.
57. Chakraborty S, Salekdeh GH, Yang P, Woo SH, Chin CF, Gehring C, Haynes PA, Mirzaei M and Komatsu S (2015) Proteomics of important food crops in the asia oceania region: current status and future perspectives. **Journal of Proteomics Research** 14: 2723-2744.
58. Chandra A, Verma PK, Islam MN, Grisham MP, Jain R, Sharma A, Roopendra K, Singh K, Singh P, Verma I and Solomon S (2015) Expression analysis of genes associated with sucrose accumulation in sugarcane (*Saccharum* spp. hybrids) varieties differing in content and time of peak sucrose storage. **Plant Biology** 17: 608-617.
59. Chitwood DH, Kumar R, Ranjan A, Pelletier JM, Townsley B, Ichihashi Y, Martinez CC, Zumstein K, Harada JJ, Maloof JN and Sinha NR (2015) Light-induced indeterminacy alters shade avoiding tomato leaf morphology. **Plant Physiology** 169: 2030-2047.

60. Das S, Upadhyaya HD, Bajaj D, Kujur A, Badoni S, Laxmi, Kumar V, Tripathi S, Gowda CL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) Deploying QTL-seq for rapid delineation of a potential candidate gene underlying major trait-associated QTL in chickpea. **DNA Research** 22: 193-203.
61. Das S, Upadhyaya HD, Srivastava R, Bajaj D, Gowda CL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) Genome-wide insertion-deletion (InDel) marker discovery and genotyping for genomics-assisted breeding applications in chickpea. **DNA Research** 22: 377-386.
62. Datta A (2015) N-acetylglucosamine catabolism: unique side of sugar sensing. **Biochemistry & Analytical Biochemistry** 4: 189.
63. Dhariwal R, Gahlaut V, Govindraj BR, Singh D, Mathur S, Vyas S, Bandopadhyay R, Khurana JP, Tyagi AK, Prabhu KV, Mukhopadhyay K, Balyan HS and Gupta PK (2015) Stage-specific reprogramming of gene expression characterizes *Lr48*-mediated adult plant leaf rust resistance in wheat. **Functional and Integrative Genomics** 15: 233-245.
64. Fatima U and Senthil-Kumar M (2015) Plant and pathogen nutrient acquisition strategies. **Frontiers in Plant Science** 6: 750.
65. Garg R, Bhattacharjee A and Jain M (2015) Genome-scale transcriptomic insights into molecular aspects of abiotic stress responses in chickpea. **Plant Molecular Biology Reporter**. 33: 388-400.
66. Garg R, Chevala VVSN, Shankar R and Jain M (2015) Divergent DNA methylation patterns associated with gene expression in rice cultivars with contrasting drought and salinity stress response. **Scientific Reports** 5: 14922.
67. Gaur R, Jeena G, Shah N, Gupta S, Pradhan S, Tyagi AK, Jain M, Chattopadhyay D and Bhatia S (2015) High density linkage mapping of genomic and transcriptomic SNPs for synteny analysis and anchoring the genome sequence of chickpea. **Scientific Reports** 5: 13387.
68. Gautam V and Sarkar AK (2015) Laser assisted microdissection, an efficient technique to understand tissue specific gene expression patterns and functional genomics in plants. **Molecular Biotechnology** 57: 299-308.
69. Ghosh S and Datta A (2015) Agricultural biotechnology for food sufficiency and benefit to human health. In: Talwar GP, Hasnain SE, Sarin SK (eds.), **Textbook of Biochemistry, Biotechnology, Allied & Molecular Medicine (Section VIII, Chapter 72)**. Prentice Hall of India, New Delhi, pp 877-896.

70. Gupta A, Singh M and Laxmi A (2015) Interaction between glucose and brassinosteroid during regulation of lateral root development in *Arabidopsis thaliana*. **Plant Physiology** 168: 307-320.
71. Gupta A, Singh M and Laxmi A (2015) Multiple interactions between glucose and brassinosteroid signal transduction pathways in *Arabidopsis* are uncovered by whole-genome transcriptional profiling. **Plant Physiology** 168: 1091-1105.
72. Gupta KJ and Ewald R (2015) Simultaneous isolation of root and leaf mitochondria from *Arabidopsis*. In: Gupta KJ, Mur LAJ, Neelwarne B (eds.), **Alternative Respiratory Pathways in Higher Plants**. John Wiley & Sons, UK, pp 359-365.
73. Gupta KJ, Neelwarne B and Mur LAJ (2015) Integrating classical and alternative respiratory pathway. In: Gupta KJ, Mur LAJ, Neelwarne B (eds.), **Alternative Respiratory Pathways in Higher Plants**. John Wiley & Sons, UK, pp 3-19.
74. Gupta S, Garg V and Bhatia S (2015) A new set of ESTs from chickpea (*Cicer arietinum* L.) embryo reveals two novel F-box genes, *CarF-box_PP2* and *CarF-box_LysM*, with potential roles in seed development. **PLoS One** 10: e0121100.
75. Gupta S, Garg V, Kant C and Bhatia S (2015) Genome-wide survey and expression analysis of F-box genes in chickpea. **BMC Genomics** 16: 67.
76. Gupta S, Kumar T, Verma S, Bharadwaj C and Bhatia S (2015) Development of gene-based markers for use in construction of the chickpea (*Cicer arietinum* L.) genetic linkage map and identification of QTLs associated with seed weight and plant height. **Molecular Biology Reporter** 42: 1571-1580.
77. Gupta S, Malviya N, Kushwaha H, Nasim J, Bisht NC, Singh VK and Yadav D (2015) Insights into structural and functional diversity of Dof (DNA binding with one finger) transcription factor. **Planta** 241: 549-562.
78. Gupta S, Wardhan V, Kumar A, Rath D, Pandey A, Chakraborty S and Chakraborty N (2015) Secretome analysis of chickpea reveals dynamic extracellular remodeling and identifies a Bet v1-like protein, CaRRP1 that participates in stress response. **Scientific Reports** 5: 18427.
79. Heikrujam M, Sharma K, Prasad M and Agrawal V (2015) Review on different mechanisms of sex determination and sex-linked molecular markers in dioecious crops: a current update. **Euphytica** 201: 161-194.

80. Jain M (2015) Functional genomics of abiotic stress tolerance in plants: A CRISPR approach. **Frontiers in Plant Science** 6: 375.
81. Jain M, Pole AK, Singh VK, Ravikumar RL and Garg R (2015) Discovery of molecular markers for Fusarium wilt via transcriptome sequencing of chickpea cultivars. **Molecular Breeding** 35: 198.
82. Jaiswal V, Gahlaut V, Mathur S, Agarwal P, Khandelwal MK, Khurana JP, Tyagi AK, Balyan HS and Gupta PK (2015) Identification of novel SNP in promoter sequence of *TaGW2-6A* associated with grain weight and other agronomic traits in wheat (*Triticum aestivum* L.). **PLoS One** 10: e0129400.
83. Jalmi SK and Sinha AK (2015) ROS mediated MAPK signaling in abiotic and biotic stress-striking similarities and differences. **Frontiers in Plant Science** 6: 769.
84. Jamsheer KM and Laxmi A (2015) Expression of *Arabidopsis FCS-like zinc finger* genes is differentially regulated by sugars, cellular energy level, and abiotic stress. **Frontiers in Plant Science** 6: 746.
85. Jamsheer KM, Mannully CT, Gopan N and Laxmi A (2015) Comprehensive evolutionary and expression analysis of *FCS-like zinc finger* gene family yields insights into their origin, expansion and divergence. **PLoS One** 10: e0134328.
86. Jha G, Tyagi I, Kumar R and Ghosh S (2015) Draft genome sequence of broad-spectrum antifungal bacterium *Burkholderia gladioli* strain NGJ1, isolated from healthy rice seeds. **Genome Announcements** 3: e00803-15.
87. Jisha V, Dampanaboina L, Vadassery J, Mithöfer A, Kappara S and Ramanan R (2015) Overexpression of an AP2/ERF type transcription factor OsEREBP1 confers biotic and abiotic stress tolerance in rice. **PLoS One** 10: e0127831.
88. Kamthan A, Chaudhuri A, Kamthan M and Datta A (2015) Small RNAs in plants: recent development and application for crop improvement. **Frontiers in Plant Science** 6: 208.
89. Kamthan A, Kamthan M, Kumar A, Sharma P, Ansari S, Thakur SS, Chaudhuri A and Datta A (2015) A calmodulin like EF hand protein positively regulates oxalate decarboxylase expression by interacting with E-box elements of the promoter. **Scientific Reports** 5: 14578.
90. Kansal S, Devi RM, Balyan SC, Arora MK, Singh AK, Mathur S and Raghuvanshi S (2015) Unique miRNome during anthesis in drought-tolerant *indica* rice var. Nagina 22. **Planta** 241: 1543-1559.

91. Kaur H, Petla BP, Kamble NU, Singh A, Rao V, Salvi P, Ghosh S and Majee M (2015) Differentially expressed seed aging responsive heat shock protein OsHSP18.2 implicates in seed vigor, longevity and improves germination and seedling establishment under abiotic stress. **Frontiers in Plant Science** 6: 713.
92. Khujuria YP, Saxena MS, Gaur R, Chattopadhyay D, Jain M, Parida SK and Bhatia S (2015) Development and integration of genome-wide polymorphic microsatellite markers onto a reference linkage map for constructing a high-density genetic map of chickpea. **PLoS One** 10: e0125583.
93. Kiep V, Vadassery J, Lattke J, Maaß JP, Pieter E, Boland W and Mithöfer A (2015) Systemic cytosolic Ca^{2+} elevation is activated upon wounding and herbivory in *Arabidopsis*. **New Phytologist** 207: 996-1004.
94. Kole C, Muthamilarasan M, Henry R, Edwards D, Sharma R, Abberton M, Batley J, Bentley A, Blakeney M, Bryant J, Cai H, Cakir M, Cseke LJ, Cockram J, de Oliveira AC, De Pace C, Dempewolf H, Ellison S, Gepts P, Greenland A, Hall A, Hori K, Hughes S, Humphreys MW, Iorizzo M, Ismail AM, Marshall A, Mayes S, Nguyen HT, Ogbonnaya FC, Ortiz R, Paterson AH, Simon PW, Tohme J, Tuberosa R, Valliyodan B, Varshney RK, Wulschleger SD, Yano M and Prasad M (2015) Application of genomics-assisted breeding for generation of climate resilient crops: progress and prospects. **Frontiers in Plant Science** 6: 563.
95. Kujur A, Bajaj D, Upadhyaya HD, Das S, Ranjan R, Shree T, Saxena MS, Badoni S, Kumar V, Tripathi S, Gowda CL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) Employing genome-wide SNP discovery and genotyping strategy to extrapolate the natural allelic diversity and domestication patterns in chickpea. **Frontiers in Plant Science** 6: 162.
96. Kujur A, Bajaj D, Upadhyaya HD, Das S, Ranjan R, Shree T, Saxena MS, Badoni S, Kumar V, Tripathi S, Gowda CLL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) A genome-wide SNP scan accelerates trait-regulatory genomic loci identification in chickpea. **Scientific Reports** 5: 11166.
97. Kujur A, Upadhyaya HD, Shree T, Bajaj D, Das S, Saxena MS, Badoni S, Kumar V, Tripathi S, Gowda CL, Sharma S, Singh S, Tyagi AK and Parida SK (2015) Ultra-high density intra-specific genetic linkage maps accelerate identification of functionally relevant molecular tags governing important agronomic traits in chickpea. **Scientific Reports** 5: 9468.
98. Kumar K, Muthamilarasan M, Bonthala VS, Roy R and Prasad M (2015) Unraveling 14-3-3 proteins in C4 panicoids with emphasis on model plant *Setaria italica* reveals phosphorylation-dependent subcellular localization of RS splicing factor. **PLoS One** 10: e0123236.

99. Kumar R, Agarwal P, Pareek A, Tyagi AK and Sharma AK (2015) Genomic survey, gene expression, and interaction analysis suggest diverse roles of ARF and Aux/IAA proteins in Solanaceae. **Plant Molecular Biology Reporter** 33: 1552-1572.
100. Kumar S and Bhatia S (2015) Isolation of *Catharanthus roseus* (L.) G. don nuclei and measurement of rate of *Tryptophan decarboxylase* gene transcription using nuclear run-on transcription assay. **PLoS One** 10: e0127892.
101. Kumar S and Kumari R (2015) Occurrence of molecularly diverse *Bt* Cry toxin-resistant mutations in insect pests of *Bt* corn and cotton crops and remedial approaches. **Current Science** 108: 1483-1490.
102. Kumar S and Kumari R (2015) Origin, structure and function of millions of chromosomes present in the macronucleus of unicellular eukaryotic ciliate, *Oxytricha trifallax*: a model organism for transgenerationally programmed genome rearrangements. **Journal of Genetics** 94: 171-176.
103. Kumar S, Kumari R and Pandey R (2015) New insight-guided approaches to detect, cure, prevent and eliminate malaria. **Protoplasma** 252: 717-753.
104. Kumar T, Bharadwaj C, Alam A, Singh P, Singhal T, Chauhan SK, Bhatia S and Sarker A (2015) Development and characterization of recombinant inbred lines for seed related traits in chickpea. **International Journal of Tropical Agricultural** 33: 639-642.
105. Kumar V and Jain M (2015) The CRISPR-Cas system for plant genome editing: advances and opportunities. **Journal of Experimental Botany** 66: 47-57.
106. Kushwaha N, Sahu PP, Prasad M and Chakraborty S (2015) Chilli leaf curl virus infection highlights the differential expression of genes involved in protein homeostasis and defense in resistant chilli plants. **Applied Microbiology and Biotechnology** 99: 4757-4770.
107. Lata C, Muthamilarasan M and Prasad M (2015) Drought stress responses and signal transduction in plants. In: Pandey GK (ed), *Elucidation of Abiotic Stress Signaling in Plants: Functional Genomics Perspectives*. Springer Science, New York, USA, pp 195-225.
108. Maiti P, Ghorai P, Ghosh S, Kamthan M, Tyagi RK and Datta A (2015) Mapping of functional domains and characterization of the transcription factor Cph1 that mediate morphogenesis in *Candida albicans*. **Fungal Genetics Biology**. 83: 45-57.
109. Meena MK, Ghawana S, Dwivedi V, Roy A and Chattopadhyay D (2015) Expression of chickpea CIPK25 enhances root growth and tolerance to dehydration and salt stress in transgenic tobacco. **Frontiers in Plant Science** 6: 683.

110. Meena MK, Ghawana S, Sardar A, Dwivedi V, Khandal H, Roy R and Chattopadhyay D (2015) Investigation of genes encoding calcineurin B-like protein family in legumes and their expression analyses in chickpea (*Cicer arietinum* L.). **PLoS One** 10: e0123640.
111. Meena MK and Vadassery J (2015) Channels hold the key: cyclic nucleotide gated channels (CNGC) in plant biotic stress signaling. **Endocytobiosis & Cell Research** 26: 25-30.
112. Meenu, Augustine R, Majee M, Pradhan AK and Bisht NC (2015) Genomic origin, expression differentiation and regulation of multiple genes encoding CYP83A1, a key enzyme for core glucosinolate biosynthesis, from the allotetraploid *Brassica juncea*. **Planta** 241: 651-665.
113. Mehra P, Pandey BK and Giri J (2015) Genome-wide DNA polymorphisms in low phosphate tolerant and sensitive rice genotypes. **Scientific Reports** 5: 13090.
114. Mukhopadhyay P and Tyagi AK (2015) OsTCP19 influences developmental and abiotic stress signaling by modulating ABI4-mediated pathways. **Scientific Reports** 5: 9998.
115. Muthamilarasan M, Bonthala V, Khandelwal R, Jaishankar J, Shweta S, Nawaz K and Prasad M (2015) Global analysis of WRKY transcription factor superfamily in *Setaria* identifies potential candidates involved in abiotic stress signaling. **Frontiers in Plant Science** 6: 910.
116. Muthamilarasan M, Khan Y, Jaishankar J, Shweta S, Lata C and Prasad M (2015) Integrative analysis and expression profiling of secondary cell wall genes in C4 biofuel model *Setaria italica* reveals targets for lignocellulose bioengineering. **Frontiers in Plant Science** 6: 965.
117. Muthamilarasan M and Prasad M (2015) Advances in plant sciences for nutritional security. In: Peter KV (ed), *Horticulture for Nutrition Security*. Astral International Pvt. Ltd., New Delhi, India, pp 125-139.
118. Muthamilarasan M and Prasad M (2015) Advances in *Setaria* genomics for genetic improvement of cereals and bioenergy grasses. **Theoretical and Applied Genetics** 128: 1-14.
119. Mysore KS and Senthil-Kumar M(eds.) (2015) *Plant Gene Silencing: Methods and Protocols*. (Book Series: Methods in Mol. Biol. Vol. 1287). **Springer Science**, New York, USA, pp 1-307.
120. Nagaraj S, Senthil-Kumar M, Ramu VS, Wang K and Mysore KS (2015) Plant ribosomal proteins, RPL12 and RPL19, play a role in nonhost disease resistance against bacterial pathogens. **Frontiers in Plant Science** 6: 1192.

121. Narula K, Pandey A, Gayali S, Chakraborty N and Chakraborty S (2015) Birth of plant proteomics in India: A new horizon. **Proteomics** 127: 34-43.
122. Natarajan K and Datta A (2015) Gene transcription. In: Talwar GP, Hasnain SE, Sarin SK (eds.), **Textbook of Biochemistry, Biotechnology, Allied & Molecular Medicine (Section VIII, Chapter 65)**. Prentice Hall of India, New Delhi, pp 798-808.
123. Pandey C, Raghuram B, Sinha AK and Gupta M (2015) miRNA plays a role in the antagonistic effect of selenium on arsenic stress in rice seedlings. **Metallomics** 7: 857-866.
124. Pandey P, Ramegowda V and Senthil-Kumar M (2015) Shared and unique responses of plants to multiple individual stresses and stress combinations: physiological and molecular mechanisms. **Frontiers in Plant Science** 6: 723.
125. Pandey P, Sinha R, Mysore KS and Senthil-Kumar M (2015) Impact of concurrent drought stress and pathogen infection on plants. In: Mahalingam R (ed), Combined Stresses in Plants. **Springer Science**, New York, USA, pp 203-222.
126. Pandey P, Senthil-Kumar M and Mysore KS (2015) Advances in plant gene silencing methods. In: Mysore KS, Senthil-Kumar M (eds.), Plant Gene Silencing: Methods and Protocols (Series: Methods in Mol. Biol. Vol. 1287). **Springer Science**, New York, USA, pp 3-23.
127. Parida SK, Verma M, Yadav SK, Ambawat S, Das S, Garg R and Jain M (2015) Development of genome-wide informative simple sequence repeat markers for large-scale genotyping applications in chickpea and development of web resource. **Frontiers in Plant Science** 6: 645.
128. Parween S, Nawaz K, Roy R, Pole AK, Venkata Suresh B, Misra G, Jain M, Yadav G, Parida SK, Tyagi AK, Bhatia S and Chattopadhyay D (2015) An advanced draft genome assembly of a desi type chickpea (*Cicer arietinum* L.). **Scientific Reports** 5: 12806.
129. Priya P, Bandhiwal N, Misra G, Mondal S and Yadav G (2015) IGMAP: An interactive mapping and clustering platform for plants. **Molecular Plant** 8: 818-821.
130. Qamar A, Mysore KS and Senthil-Kumar M (2015) Role of proline and pyrroline-5-carboxylate metabolism in plant defense against invading pathogens. **Frontiers in Plant Science** 6: 503.
131. Raghuram B, Sheikh AH, Rustagi Y and Sinha AK (2015) MicroRNA biogenesis factor DRB1 is a phosphorylation target of mitogen activated protein kinase, MPK3 in both rice and *Arabidopsis*. **FEBS Journal** 282: 521-536.

132. Rai V, Sanagala R, Sinilal B, Yadav S, Sarkar AK, Dantu PK and Jain A (2015) Iron availability affects phosphate deficiency-mediated responses, and evidences of cross talk with auxin and zinc in *Arabidopsis*. **Plant and Cell Physiology** 56: 1107-1123.
133. Ramegowda V and Senthil-Kumar M (2015) The interactive effects of simultaneous biotic and abiotic stresses on plants: Mechanistic understanding from drought and pathogen combination. **Journal of Plant Physiology** 176: 47-54.
134. Royo B, Moran JF, Ratcliffe RG and Gupta KJ (2015) Nitric oxide induces the alternative oxidase pathway in *Arabidopsis* seedlings deprived of inorganic phosphate. **Journal of Experimental Botany** 66: 6273-6280.
135. Ruhela D, Kamthan M, Saha P, Majumdar SS, Datta K, Abdin MZ and Datta A (2015) In vivo role of *Candida albicans* β -hexosaminidase (HEX1) in carbon scavenging. **Microbiology Open** 4: 730-742.
136. Sahu PP and Prasad M (2015) Application of molecular antiviral compounds: novel approach for durable resistance against geminiviruses. **Molecular Biology Reporters** 42: 1157-1162.
137. Samanta S and Thakur JK (2015) Importance of mediator complex in the regulation and integration of diverse signaling pathways in plants. **Frontiers in Plant Science** 6: 757.
138. Samanta S and Thakur JK (2015) Role of plant mediator complex in stress response. In: Pandey GK (ed), **Elucidation of Abiotic Stress Signaling in Plants: Functional Genomics Perspectives**. Springer Science, New York, USA, pp 3-28.
139. Scholz SS, Reichelt M, Vadassery J and Mithöfer A (2015) Calmodulin-like protein CML37 is a positive regulator of ABA during drought stress in *Arabidopsis*. **Plant Signaling and Behaviour** 10: e1011951.
140. Sharma E, Sharma R, Borah P, Jain M and Khurana JP (2015) Emerging roles of auxin in abiotic stress responses. In: Pandey GK (ed), **Elucidation of Abiotic Stress Signaling in Plants: Functional Genomics Perspectives**. Springer Science, New York, USA, pp 299-328.
141. Sharma G, Giri J and Tyagi AK (2015) Rice OsSAP7 negatively regulates ABA stress signalling and imparts sensitivity to water-deficit stress in *Arabidopsis*. **Plant Science** 237: 80-92.
142. Singh AP, Pandey BK, Deveshwar P, Narnoliya L, Parida SK and Giri J (2015) JAZ repressors: Potential involvement in nutrients deficiency response in rice and chickpea. **Frontiers in Plant Science** 6: 975.

143. Singh D and Laxmi A (2015) Transcriptional regulation of drought response: a tortuous network of transcriptional factors. **Frontiers in Plant Science** 6: 895.
144. Singh M, Gupta A and Laxmi A (2015) Ethylene acts as a negative regulator of glucose induced lateral root emergence in *Arabidopsis*. **Plant Signaling and Behaviour** 10: e1058460.
145. Singh P, Mohanta TK and Sinha AK (2015) Unraveling the intricate nexus of molecular mechanisms governing rice root development: OsMPK3/6 and auxin-cytokinin interplay. **PLoS One** 10: e0123620.
146. Singh VK and Jain M (2015) Genome-wide survey and comprehensive expression profiling of Aux/IAA gene family in chickpea and soybean. **Frontiers in Plant Science** 6: 918.
147. Singh VK, Jain M and Garg R (2015) Genome-wide analysis and expression profiling suggest diverse roles of GH3 genes during development and abiotic stress responses in legumes. **Frontiers in Plant Science** 5: 789.
148. Srivastava S, Bharti RK, Verma PK and Thakur IS (2015) Cloning and expression of gamma carbonic anhydrase from *Serratia* sp. ISTD04 for sequestration of carbon dioxide and formation of calcite. **Bioresource Technology** 188: 209-213.
149. Srivastava V and Verma PK (2015) Genome wide identification of LIM genes in *Cicer arietinum* and response of Ca-2LIMs in development, hormone and pathogenic stress. **PLoS One** 10: e0138719.
150. Thakore D, Srivastava AK and Sinha AK (2015) Model based fed batch cultivation and elicitation for the overproduction of ajmalicine from hairy roots of *Catharanthus roseus*. **Biochemical Engineering Journal** 97: 73-80.
151. Tyagi RK and Datta A (2015) Translation of genetic message. In: Talwar GP, Hasnain SE, Sarin SK (eds.), **Textbook of Biochemistry, Biotechnology, Allied & Molecular Medicine (Section VIII, Chapter 66)**. Prentice Hall of India, New Delhi, pp 809-819.
152. Upadhyaya HD, Bajaj D, Das S, Saxena MS, Badoni S, Kumar V, Tripathi S, Gowda CLL, Sharma S, Tyagi AK and Parida SK (2015) A genome-scale integrated approach aids in genetic dissection of complex flowering time trait in chickpea. **Plant Molecular Biology** 89: 403-420.
153. Verma M, Kumar V, Patel RK, Garg R and Jain M (2015) CTDB: an integrated chickpea transcriptome database for functional and applied genomics. **PLoS One** 10: e0136880.

154. Verma P, Chandra A, Roy AK, Malaviya DR, Kaushal P, Pandey D and Bhatia S (2015) Development, characterization and cross-species transferability of genomic SSR markers in berseem (*Trifolium alexandrinum* L.), an important multi-cut annual forage legume. **Molecular Breeding** 35: 23.
155. Verma P, Goyal R, Chahota RK, Sharma TR, Abdin MZ and Bhatia S (2015) Construction of a genetic linkage map and identification of QTLs for seed weight and seed size traits in lentil (*Lens culinaris* Medik.). **PLoS One** 10: e0139666.
156. Verma S, Gupta S, Bandhiwal N, Kumar T, Bharadwaj C and Bhatia S (2015) High-density linkage map construction and mapping of seed trait QTLs in chickpea (*Cicer arietinum* L.) using genotyping-by-sequencing (GBS). **Scientific Reports** 5: 17512.
157. Yadav CB, Bhareti P, Muthamilarasan M, Mukherjee M, Khan Y, Rathi P and Prasad M (2015) Genome-wide SNP identification and characterization in two soybean cultivars with contrasting Mungbean Yellow Mosaic India Virus disease resistance traits. **PLoS One** 10: e0123897.
158. Yadav CB, Bonthala VS, Muthamilarasan M, Pandey G, Khan Y and Prasad M (2015) Genome-wide development of transposable elements-based markers in foxtail millet and construction of an integrated database. **DNA Research** 22: 79-90.
159. Yadav CB, Muthamilarasan M, Pandey G and Prasad M (2015) Identification, characterization and expression profiling of Dicer-like, Argonaute and RNA-dependent RNA polymerase gene families in foxtail millet. **Plant Molecular Biology Reports** 33: 43-55.
160. Yadav M, Babu S and Yadav G (2015) Patterns of codon usage in plastidial genomes of ancient plants provide insights into evolution. **Proceeding of International Conference Bioinformatics Models, Methods and Algorithms** 2015: 144-149.

Patent(s)

1. Chakraborty S, Chakraborty N, Datta A, Asraf N, Basu S, Nag P, and Singh M (2016) Polynucleotides derived from chickpea and uses thereof (APANo. 2010288112).
2. Chakraborty S, Chakraborty N, Datta A, Asraf N, Basu S, Nag P and Singh M (2015) Polynucleotides derived from chickpea and uses thereof (US Patent No. 9,163,255).
3. Chakraborty N, Chakraborty S, Datta A, Wardhan V and Jahan K (2015) Polynucleotide encoding CaTLP1 protein and uses thereof (US No.14/399,706).

4. Datta A, Chakraborty S, Chakraborty N, Ghosh S and Meli VS (2015) Polynucleotide sequence of fruit softening associated A-Mannosidase and its uses for enhancing fruit shelf life [European Patent N. 2315835 (09787597.5)].
5. Datta A, Chakraborty S, Chakraborty N, Ghosh S and Meli VS (2015) Polynucleotide sequence of fruit softening associated A-Mannosidase and its uses for enhancing fruit shelf life (US Patent No. 8962918).
6. Datta A, Chakraborty S, Chakraborty N, Meli VS and Ghosh S (2015) Polynucleotide sequence of fruit softening associated B-D-N-acetylhexosaminidase and its uses for enhancing fruit shelf life (US Patent No. 8987556).
7. Datta A, Chakraborty S, Chakraborty N, Meli VS and Ghosh S (2015) Polynucleotide sequence of fruit softening associated B-D-N-acetylhexosaminidase and its uses for enhancing fruit shelf life (Japanese Patent No. 5836802).

Technology/Products/Database processed/developed

1. Developed low glucosinolate *B. juncea* lines having seed glucosinolate as low as 15 $\mu\text{moles g}^{-1}$ DW, through targeted silencing of *BjuMYB28* gene.
2. Developed *B. juncea* transgenic homozygous lines having significantly high amount of glucoraphanin (43.11 $\mu\text{moles g}^{-1}$ DW), a glucosinolate associated with anti-carcinogenic properties, by suppressing *GSL-ALK* gene family.
3. LCM-based protocol developed for tissue specific small RNA isolation and expression analysis



Activities of the Institute

Honours / Awards

Prof. Akhilesh K. Tyagi

- ❖ Dr. T.N. Khoshoo Memorial Lecture Award by The Orchid Society of India, 2015.

Dr. Subhra Chakraborty

- ❖ Elected Fellow, Indian Academy of Sciences, Bangalore, India.

Dr. Alok Krishna Sinha

- ❖ TATA Innovation Fellowship Award, Department of Biotechnology, Ministry of Science and Technology, Government of India, 2015.

Dr. Manoj Prasad

- ❖ National Bioscience Award-2014, Department of Biotechnology, Ministry of Science and Technology, Government of India 2015.
- ❖ Elected Fellow of the Indian Virological Society, India 2015.

Dr. Gitanjali Yadav

- ❖ DBT-Cambridge Lectureship Award – 2015.
- ❖ Member of DBT task force on CTEP (Conference, Travel, Exhibition and Public Lecture) Funding.

Dr. Mukesh Jain

- ❖ Fellow, National Academy of Sciences India (NASI), Allahabad, 2015.
- ❖ Fellow, National Academy of Agricultural Sciences (NAAS), New Delhi, 2016.

Dr. Jagadis Gupta Kapuganti

- ❖ Innovative Young Biotechnology Award by Department of Biotechnology, 2015.

Dr. Senthil Kumar Muthappa

- ❖ National Academy of Agricultural Sciences (NAAS) associate.

Dr. Jitender Giri

- ❖ INSA Young Scientist Medal 2015.

Dr. Swarup K. Parida

- ❖ NASI-SCOPUS Young Scientist Award 2015 in 'Agriculture'.
- ❖ ASSOCIATE FELLOW of the National Academy of Agricultural Sciences (NAAS), New Delhi.
- ❖ Member Crop Science Society of America.
- ❖ Member Indian Science Congress Association (ISCA), Indian Society for Plant Biochemistry and Biotechnology and Indian Society of Genetics and Plant Breeding.

Dr. Aashish Ranajan

- ❖ Young Scientist Award from Indian Society for Plant Physiology, New Delhi, 2015.

International Visits

Dr. Subhra Chakraborty

- ❖ Visited Chungbuk University, Korea to attend the 7th International Symposium on Frontiers in Agriculture Proteome Research, the 2nd AOAPO Conference & 6th Plant Proteomics Conference in South Korea, September 21 to 26, 2015.
- ❖ Visited Atlanta, USA to attend 6th International Conference & Expo on Proteomics, Atlanta, USA, March 29-31, 2016.

Dr. Manoj Prasad

- ❖ Attended and delivered three lectures on 'Advances in Genetics and Genomics of Foxtail Millet (*Setaria italica*) for Crop Improvement of Millets, Cereals and Bioenergy grasses'; 'Foxtail millet: A C4 Model Crop with Rich Genetic and Genomic Resources for Enhancing Climate Resilience in Cereals and Bioenergy Grasses' and 'Assembly of highly heterozygous mango (*Mangifera indica* cv. Amrapali) genome using PacBio long sequence reads' in the International Symposium on Plant and Animal Genome XXIV (PAG 2016), San Diego, California, USA, January 9 - 13, 2016.

Dr. Mukesh Jain

- ❖ Visited University of Dhaka, Dhaka, Bangladesh to participate and deliver a lecture in 2nd International South Asian Biotechnology Conference 2016 on Biotechnology for Sustainable Development, February 5-6, 2016.

Dr. Naveen Chandra Bisht

- ❖ Visited Max Planck Institute of Chemical Ecology, Jena, Germany as Max Planck India Fellow (2012), jointly funded by The Max Plank Society (Germany) and the Department of Science & Technology, Govt. of India, September 03, 2015 - October 02, 2015.

Dr. Jagadis Gupta Kapuganti

- ❖ IBERS, Aberystwyth University under UKIERI collaborative program, November 12, 2015 – November 24, 2015.
- ❖ IBERS, Aberystwyth University under UKIERI collaborative program, March 13, 2016 - March 27, 2016.

Dr. Gopaljee Jha

- ❖ Visited Germany Max Planck Institute for Plant Breeding Research, Colonge, Germany, under INSA bilateral exchange programme, July 26, 2015 – November 16, 2015.

Invited Lectures

Prof. Akhilesh Kumar Tyagi

- ❖ National Symposium on Germplasm to Genes: Harnessing Biotechnology for Food Security and Health at NASC Pusa on August 10, 2015.
- ❖ Chief Guest in the inaugural function of Delhi University Botanical Society, University of Delhi, North Campus on September 30, 2015.
- ❖ Valedictory Lecture in the DST-INSPIRE CAMP at University of Allahabad on November 7, 2015.
- ❖ Plenary Talk in the Conference entitled “BITS Conference on gene and genome regulation” at BITS, Pilani during February 18 – 19, 2016.
- ❖ Key-note address and to inaugurate the Workshop on “New Innovative Biotechnique” at Department of Botany, Meerut College, Meerut on March 14, 2016.
- ❖ Jiwaji University, Gwalior on March 19, 2016.

Prof. Asis Datta

- ❖ Keynote/Lead Lecture on NUTRITION at NASI – DIPAS Science Awareness Programme for ITBP Jawans and Officers held on April 7, 2015.
- ❖ Guest of Honor, at Plenary Session on Rajyoga Meditation for better human understanding & relationship held at Prajapati Brahma Kumari Ishwaria Vishwavidyalaya, Mount Abu, Rajasthan on May 31, 2015.
- ❖ Delivered invited talk on “Promoting Research in Central Universities” in the Review meeting of Hon'ble HRM with Vice-Chancellors held at Vigyan Bhawan, New Delhi on July 07, 2015.
- ❖ Keynote/Lead Lecture as Chief Guest in the 4th Prof. J.J. Ghosh Memorial Lecture, held at Department of Biochemistry, Calcutta University, Kolkata on July 20, 2015.
- ❖ Delivered inaugural lecture at the Symposium on “Recent Advances in Biotechnology -2015, organized by the Department of Biotechnology, Visva Bharati on July 31, 2015.
- ❖ Delivered 1st Distinguished lecture at Jamia Millia Islamia, on September 11, 2015.
- ❖ Addressed Scientists of CIMAP- Bangalore & Lucknow, at CIMAP, Bangalore during September 17-19, 2015.
- ❖ Delivered plenary Lecture as Guest of Honor – Chasing the dream – the path from research to human benefit in the National Conference on Plant and Animal Molecular Biology, at Mody University, Lakshmangarh, Sikar, Rajasthan, September 25-26, 2015.
- ❖ Delivered plenary lecture in the 56th Association of Microbiologist of India 2015 held in JNU on December 9, 2015.
- ❖ Delivered Inaugural talk in the 1st Annual conference on “Trends in Cell and Molecular Biology (TCMB-2015) held at BITS Pilani, Goa Campus, on December 19, 2015.

- ❖ Delivered Inaugural talk in the 17th All India Congress of Cytology and Genetics and Symposium on “Exploring Genomes: The New Frontier” held at IICB, Kolkata during December 22-24, 2015.
- ❖ Keynote address in the National Conference on “Genomics and Society – Prospects, Challenges and Concerns, organized by Department of Biotechnology, University of Kerala, on February 17, 2016.
- ❖ Delivered a talk in the Special Lecture Series on “Life Sciences” at Babasaheb Bhimrao Ambedkar University, Lucknow on March 30, 2016.

Dr. Niranjan Chakraborty

- ❖ Delivered lecture for the M.Sc. Biotechnology/Bioscience students at Banasthali University, August 26, 2015.
- ❖ Delivered lecture in the Targeted Proteomics Workshop and International Symposium at IIT Bombay, Mumbai, December 10-14, 2015.
- ❖ Delivered talk in the 2nd South Asian Biotechnology Conference 2016 at University of Dhaka, Bangladesh, February 05-09, 2016.

Dr. Subhra Chakraborty

- ❖ Delivered lecture in National Symposium on Germplasm to genes: Harnessing Biotechnology for food security and health, Society for Plant Biochemistry and Biotechnology, ICAR National Research Centre on Plant Biotechnology, IARI, New Delhi, August 9-11, 2015.
- ❖ Deliver lecture in 21-days training programme (Winter School) on "Genomics and phenomics assisted crop breeding: principles and practices", IARI, New Delhi, November 19, 2015.
- ❖ Chaired session in Indo-German workshop on “Novel approaches to investigate signals and defenses in plant-biotic interactions”, NIPGR, New Delhi, December 1, 2015.
- ❖ Conducted and delivered lecture in Education Day program and chaired session in Targeted Proteomics Workshop and International Symposium, at Indian Institute of Technology (IIT) Bombay, Mumbai, December 11-15, 2015.
- ❖ Delivered lecture in 2nd Plant Proteomics Workshops/Training Programme, Department of Botany, University of Delhi, New Delhi, December 21-26, 2015.
- ❖ Delivered Platinum Jubilee Lecture in the 103rd Indian Science Congress, University of Mysore, Karnataka, January 2-5, 2016.
- ❖ Delivered lecture in the VIP Omics Meet, ABSciex, New Delhi, February 6, 2016.
- ❖ Delivered lecture in National Symposium and Workshop on Advances in Proteomics, Institute of Life Sciences (ILS), Bhubaneswar, March 14-16, 2016.
- ❖ Organized and delivered lecture in 6th International Conference & Expo on Proteomics, Atlanta, USA, March 29-31, 2016.

Dr. Debasis Chattopadhyay

- ❖ Delivered lecture on “A new biological function of PR-10 proteins” at National Botanical Research Institute, Lucknow, on 37th Annual Meeting of Plant Tissue Culture Association, February 27, 2016
- ❖ Delivered lecture on “NGS, Assembly and annotation, National workshop on NGS data: assembly & exploration, at NIPGR, March 10, 2016.

Dr. Alok Krishna Sinha

- ❖ Delivered talk on a topic entitled “Transgenic Approach Towards Yield enhancement & Pest Resistance in Joha and Black Rice” at Brainstorming session on scented rice of North Eastern Region, India at IAAST, Guwahati, June 26, 2015.
- ❖ Delivered lecture on a topic entitled “A blue light mediated MKK3-MPK6-MYC2 module regulating Arabidopsis Seedling Development” at National Symposium on Germplasm to Genes: Harnessing Biotechnology for Food Security and Health, at National Agricultural Science Centre, Pusa, New Delhi, India, August 10, 2015.
- ❖ Delivered lecture on a topic entitled “Role of Mitogen Activated Protein Kinase in Plant Defence” at Novel approaches to investigate signals and defenses in plant-biotic interactions, organized by NIPGR, Delhi – Max Planck Institute for Chemical Ecology, Germany- DST India Partner group inauguration and workshop at NIPGR New Delhi, December 1, 2015.
- ❖ Delivered lecture on a topic entitled “Light Signalling and MAP Kinase Cascade: A Crosstalk” at 3rd International Plant Physiology Congress “Challenges and strategies in plant biology research” held at JNU, New Delhi, December 11-14, 2015.
- ❖ Delivered talk on a topic entitled “Transgenic Plants: An Application of Plant Biotechnology” at “INSPIRE” Internship program (Science Camp) Organized by the Department of Science & Technology (DST) at Deshbandhu College, University of Delhi, Kalkaji, New Delhi, December 14-18, 2015.
- ❖ Delivered lecture on a topic entitled “Regulation of submergence tolerance gene, Sub1A1 by MAP kinase in rice” at 1st International Conference on Human Implications of Biotechnology – 2016 at Central University of South Bihar Patna, February 12-14, 2016.
- ❖ Delivered lecture on a topic entitled “Phosphorylation based regulation of Sub1A1 by MAP kinase in rice during inundation” at 37th Annual Meeting of PTCA (India) and a National Symposium on 'Plant Biotechnology for Crop Improvement' at CSIR-NBRI, Lucknow, February 25-27, 2016.

Dr. Sabhyata Bhatia

- ❖ Delivered lecture on “Development of genomic resources for gene discovery and molecular mapping in chickpea”, at Annual Group Meet on Chickpea and MULLaRP PAU, Ludhiana, September 02, 2015.

- ❖ Delivered lecture on “Development of genomic resources for QTL identification and functional genomics”, at Summer school on “Novel Genomic Tools and Modern Breeding Approaches for Enhancing Productivity and Nutritional Quality of Pulse Crops”, at ICAR-IIPR, KANPUR, September 11, 2015.

Dr. Praveen Verma

- ❖ Delivered lecture on “Plant interactions with fungal pathogens: Novel insights for effectors and their targets” in workshop on Novel Approaches to Investigate Signals and Defenses in Plant-Biotic Interactions at New Delhi, India, December 1, 2015.
- ❖ Delivered lecture on “Functional characterization of a novel PEXEL-like effector protein of chickpea blight fungus *Ascochyta rabiei* and possible target” in 56th Annual Conference of Association of Microbiologists of India (AMI-2015) and International Symposium on 'Emerging Discoveries in Microbiology', December 7, 2015.
- ❖ Delivered lecture on “Secreted effectors of necrotrophic fungi: Quest for possible host targets” in International 3rd International Plant Physiology Congress Challenges and Strategies in Plant Biology Research at New Delhi, India, December 11-14, 2015.
- ❖ Delivered lecture on “From Genome to Genes for Pathogenesis” in workshop on “Functional analysis of pathogenicity genes of plant pathogens, Division of Plant Pathology, IARI, New Delhi, India, January 20, 2016.
- ❖ Delivered lecture on “Fungal Genomics: Sequencing and Bioinformatics Analysis” in 3rd International Conference on Biotechnology and Bioinformatics (ICBB-2016) by International Centre for Stem Cells, Cancer and Biotechnology (ICSCCB), Pune, India, February 5-7, 2016.
- ❖ Delivered lecture on “Fungal Genomics: Novel insights for effectors and their targets” in 6th International Conference on “Plant, Pathogens and People” at New Delhi, India, February 23-27, 2016.

Dr. Manoj Prasad

- ❖ Delivered a lecture on “Establishment of epigenetic mechanism to control geminivirus infection in tomato” at Winter School at Division of Vegetable Science in Indian Agricultural Research Institute, New Delhi, India on September 26, 2015.
- ❖ Delivered a lecture on “Establishment of epigenetic mechanism to control geminivirus infection in tomato” at International Centre for Genetic Engineering and Biotechnology, New Delhi on November 23, 2015.
- ❖ Delivered a lecture on “Role of epigenetic and small RNA based mechanisms in providing tolerance against plant viruses” at Winter School on 'Functional analysis of pathogenicity genes of plant pathogens' at Indian Agricultural Research Institute, New Delhi, India on January 18, 2016.
- ❖ Delivered a lecture on “Foxtail millet: A climate change resilient model crop with rich genetic and genomic resources for genetic improvement of cereals and bioenergy grasses” at Hindustan college of Science and Technology, Mathura, Uttar Pradesh on January 23, 2016.

- ❖ Delivered a lecture on “Advances in Genetics and Genomics of Foxtail Millet (*Setaria italica*) for Crop Improvement of Millets, Cereals and Bioenergy grasses” at Winter School on 'Integration of conventional and biotechnological approaches for improvement of dual purpose crops and grasses' at ICAR-Indian Grassland and Fodder Research Institute, Jhansi, Uttar Pradesh, India on February 2, 2016.
- ❖ Delivered a lecture on “Advances in Genetics and Genomics of Foxtail Millet (*Setaria italica*) for Crop Improvement of Millets, Cereals and Bioenergy grasses” at ICAR sponsored Winter School on 'Marker free transgenics and methods of transgene detection' at National Research Centre for Plant Biotechnology, New Delhi, India on February 4, 2016.

Dr. Jitendra K. Thakur

- ❖ National conference on plant and animal molecular biology (NCPAMB-2015) on Understanding the importance of KIX domain proteins in plants, Mody University of Science and Technology, Lakshmangarh, Rajasthan, September 25-26, 2015.
- ❖ 14th FAOBMB Congress and 84th Annual Meeting of SBC(I) on Understanding the importance of KIX domain proteins in plants, CCMB Hyderabad and BITS Pilani, Hyderabad Campus, November 27-30, 2015.
- ❖ 1st international conference on Trends in Cell and Molecular Biology (TCMB 2015) and workshop, Understanding the importance of KIX domain proteins in plants, BITS Pilani KK Birla Goa Campus, Goa, December 19-23, 2015.

Dr. Gitanjali Yadav

- ❖ Invited talk at 5th Refresher course in Basic Sciences (Interdisciplinary) organised by UGC-Academic Staff College, Jamia Millia Islamia University, New Delhi, May 2015.
- ❖ Invited Talk on “Bioinformatics in Agriculture” during National BTISNET Sub-DIC Workshop at Central Island Agriculture Research Institute (CIARI), Port Blair, India, August 30, 2015.
- ❖ Public Lecture on 'Genomics and Bioinformatics' at DBT sponsored popular lecture series organised by Amity Institute of Biotechnology, Amity University, Gwalior, November 05, 2015.
- ❖ Expert Lecture at National Workshop on “Biomolecular Interactions” at the National Centre for Biological Sciences, Bangalore, India, November 25, 2015.
- ❖ Oral Talk on “Invasion Genomics” at Guha Research Conference (GRC) Gaya, Bodhgaya, Bihar, India, November 29, 2015.
- ❖ Lecture on “The Floral Transition Network of *Arabidopsis thaliana*” at the 3rd International Plant Physiology Congress: Challenges and Strategies in Plant Biology Research” at Convention Centre, JNU, New Delhi, India, December 11-14, 2015.
- ❖ Expert lecture on 'Computational approaches to address problems in Biology and Chemistry' at 6th Workshop on Bioinformatics and Molecular Modelling in Drug Design, ACBR, University of Delhi, January 21-23, 2016.
- ❖ Invited Lecture on “Genomic Signatures Controlling Phytochemical Diversity” at the first Annual Meeting of the Indian National Young Science Academy (INYS), at INSA, New Delhi, February 27, 2016.

- ❖ Young Investigator Talk on “The Evolution of Flowers: A Computational Study” at the 8th Young Investigator Meeting (YIM-2016) Manesar, India, February 28th – March 02, 2016.
- ❖ Inaugural Session Talk at the National Workshop on 'NGS Data: Assembly and Exploration' organised by the Sub-DIC NIPGR, March 10-11, 2016.

Dr. Ashverya Laxmi

- ❖ Invited lecture at Arabidopsis 2016 conference at IISER Mohali

Dr. Mukesh Jain

- ❖ Delivered lecture on Genome-wide discovery and differential regulation of conserved and novel microRNAs in crop plants via deep sequencing. In: Summer School on RNA interference as a tool for plant functional genomics and crop improvement, NRCPB, New Delhi, May 6-26, 2015.
- ❖ Delivered lecture on Next generation genomics for mining genes/alleles associated with agronomic traits. In: “National Bioinformatics Training Program on High-throughput Omics Data for mining of important genes/traits linked to Agricultural Productivity”, GBPAU, Pantnagar, September 9-12, 2015.
- ❖ Delivered lecture on Next generation sequencing in transcriptome analysis and gene expression profiling. In: “DBT sponsored short term training course on Methodologies used in gene expression analysis”, SP Pune University, Pune, September 29 – October 20, 2015.
- ❖ Delivered lecture on DNA microarrays and its applications in gene expression profiling. In: “DBT sponsored short term training course on Methodologies used in gene expression analysis”, SP Pune University, Pune, September 29 – October 20, 2015.
- ❖ Delivered lecture on Next generation genomics: Connecting genes and (epi)genomic variations to abiotic stress response/adaptation. In: “3rd International Plant Physiology Congress- Challenges and Strategies in Plant Biology Research”, Jawaharlal Nehru University, New Delhi, December 11-14, 2015.
- ❖ Delivered lecture on Genomics approaches for connecting genes and (epi)genomic variations to abiotic stress response/adaptation. In: “2nd International South Asian Biotechnology Conference 2016 on Biotechnology for Sustainable Development”, University of Dhaka, Dhaka, Bangladesh, February 5-6, 2016.
- ❖ Delivered lecture on Genomics approaches for discovery of candidate genes and (epi) genomic variations involved in abiotic stress response/adaptation. In: “Science Day 2016”, JNU, New Delhi, February 26, 2016.
- ❖ Delivered lecture on Genome-wide discovery of non-coding RNAs and their differential regulation: A case study in chickpea. In: “National Workshop on NGS Data: Assembly and Exploration”, NIPGR, New Delhi, March 10-11, 2016.
- ❖ Delivered lecture on Integrated genomics approaches for translational plant biology. In: “Symposium on Genome Biology and Big Data Bioinformatics”, UDSC, New Delhi, March 29, 2016.

Dr. Naveen Chandra Bisht

- ❖ Delivered a talk entitled “Enhancing nutritional value of oilseed Brassica juncea through RNAi-based silencing”, in a summer school on 'RNA-interference as a Tool for Plant Functional Genomics and Crop Improvement', NRCPB, IARI, New Delhi, May 06-26, 2015.
- ❖ Delivered a talk entitled “Genetic engineering of glucosinolate biosynthesis and transport processes for enhancing the nutritional value of Brassica crops”, in a ICAR-Winter School on 'Advances in Improvement of Vegetable Crops using Biotechnological Approaches', Dept. of Vegetable Sciences, IARI, New Delhi, September 18, 2015 and October 08, 2015.
- ❖ Delivered a talk entitled “Enhancing nutritional value of oilseed Brassica juncea through genetic manipulation of glucosinolate biosynthesis and transport”, at the 3rd International Plant Physiology Congress at Jawaharlal Nehru University in New Delhi, December 11-14, 2015.

Dr. Ananda K. Sarkar

- ❖ Delivered a talk on “Role of microRNAs in Plant Meristems and Organ Patterning”/ International workshop on "microRNAs in Plant development and stress", ICGEB, New Delhi, November 20, 2015.
- ❖ Delivered a talk on “Conserved Small RNA Mediated Regulation of Root Architecture”/ 1st Annual conference on Trends in Cell and Molecular Biology (TCMB), BITS Pilani KK Birla, Goa Campus, December 19-20, 2015.
- ❖ Delivered a talk on “Current Understanding of the Regulation of Root Stem Cells & Root Architecture through Conserved/Non-conserved Pathways”/ National Seminar on "Plant and Microbe: Diversity & Utilization", March 19, 2016.
- ❖ Delivered a talk on “Regulation of Root Architecture through Conserved Small RNA Pathways”/ "Arabidopsis 2016: Emerging Challenges in Plant Biology", IISER Mohali, March 21, 2016.

Dr. Gopaljee Jha

- ❖ Delivered lecture on “Functional analysis of pathogenicity genes of plant pathogens” in ICAR sponsored National Training Program (Centres of Advance Faculty Training, CAFT), Division of Plant Pathology, IARI, New Delhi, India, January 20, 2016.

Dr. Senthil Kumar Muthappa

- ❖ Delivered talk on 'Virus-induced gene silencing and its applications for functional genomics in dicotyledonous plants' at DBT sponsored short term training course (STTC) on “virus induced gene silencing (VIGS), Hindustan College of Science and Technology (HCST) Mathura, UP, January 26, 2016.
- ❖ Delivered plenary talk on 'Virus-induced gene silencing - a functional genomic tool for plant biology research' at National Seminar on Frontiers in Biotechnology, Bharathiar University, Coimbatore, February 18 – 19, 2016.

Dr. Jitender Giri

- ❖ National Symposia on “Challenges in Plant Sciences: Now and then” Held, Department of Botany, Meerut University, Meerut, U.P., December 09, 2015.
- ❖ National Conference on “Recent Developments in Stress tolerance and Plant Biotechnology”, Lyallpur Khalsa College, Jalandhar, February 11, 2016.
- ❖ Faculty development programme on “New Innovative Biotechniques”, Department of Botany, Meerut College, Meerut, U.P., March 15, 2016.

Dr. Swarup K. Parida

- ❖ Delivered a talk on Challenges and Strategies in Plant Biology Research, 3rd International Plant Physiology Congress, New Delhi, December 11-14, 2015.
- ❖ Delivered a talk on Integrated genomic strategy for rapid quantitative dissection of complex traits in crop plants- National Seminar on Plant Genomics and Biotechnology: Challenges and Opportunities in 21st Century, OUAT, Bhubaneswar, Odisha, January 23-24, 2016.

Dr. Jyothilakshmi Vadassery

- ❖ Delivered a talk on “The Intelligent plant: Use of calcium fluxes by Arabidopsis against insect herbivory”, PMB Seminar, ICGEB, July 24, 2015.
- ❖ Delivered a talk on "Plant defense against insect herbivores" at 1st Refresher Course in Life Science & Biotechnology organized by Academic Staff College (ASC), HRDC, JNU, August 07, 2015.
- ❖ Delivered a talk on “Friend or Foe- A calcium connection in plant-microbe interaction” at 56th International Annual Conference of Association of Microbiologists of India (AMI 2015), JNU, New Delhi, December 07-10, 2015.
- ❖ Delivered a talk on “Calcium regulated plant defense strategies upon insect herbivory” at Arabidopsis Conference 2016- Emerging Challenges in Plant Biology, IISER Mohali, March 20-22, 2016.

Dr. Aashish Ranajan

- ❖ Delivered a talk on Detecting connections between genotype and phenotype, Mini-course for Research Students, Department of Botany, University of Delhi, Delhi, September 02, 2015.
- ❖ Delivered a talk on Transcriptomic insights into the plant structure and function: A parasitic plant and a giant unicellular alga, 3rd International Plant Physiology Congress, New Delhi, December 13, 2015.

Participation in National/International Conference/Workshops

Prof. Akhilesh K. Tyagi

- ❖ Brain Storming Session on Regulatory Aspects of GM Crops, Food & Nutrition at the National Agri-Food Biotechnology Institute, Mohali on April 27, 2015.
- ❖ Chaired a Session in the International Conference on “Low Temperature Science & Biotechnological Advances” at NASC Complex, Pusa, New Delhi on April 30, 2015.
- ❖ Brain Storming Session on Climate Change at the Indian Institute of Integrative Medicine, Jammu on May 19, 2015.
- ❖ Symposium on “The Indian Human Heritage: A Genomic View by INSA at Hyderabad on October 9, 2015.
- ❖ 3rd International Congress of Plant Physiology (ICPP-2015) at JNU, New Delhi during December 11-14, 2015.
- ❖ Brainstorming discussion on “Accelerated domestication of under-utilized crops” at DBT, New Delhi on January 28, 2016.
- ❖ Inaugurated the Biomass to Biovalue Summit (BBS-2016) as Chief Guest at the Centre for Innovative and Bioprocessing Unit, Mohali on February 11, 2016.
- ❖ 37TH Annual Meeting of PTCA-2016 and National Symposium on “Plant Biotechnology for Crop Improvement” at NBRI, Lucknow on February 25, 2016.

Prof. Asis Datta

- ❖ Statutory Meeting of the ISCA, University of Mysore, January 2, 2016.

Dr. Niranjana Chakraborty

- ❖ Participated in the Council meeting of Proteomics Society, India (PSI) at CCMB, Hyderabad, August 8-9, 2015.
- ❖ Participated in the 7th Annual meeting of Proteomics Society, India (PSI) at VIT, Vellore, December 3-5, 2015.
- ❖ Participated in the General meeting of Indian National Science Academy at IISER, Bhopal, December 28-30, 2015.

Dr. Subhra Chakraborty

- ❖ Attended the Seminar cum hands on workshop on Computational Core for Plant Metabolomics, JNU, New Delhi April 21, 2015.

- ❖ Attended the National Symposium on Germplasm to genes: Harnessing Biotechnology for food security and health, Society for Plant Biochemistry and Biotechnology, ICAR National Research Centre on Plant Biotechnology, IARI, New Delhi, August 9-11, 2015.
- ❖ Attended Indo-German workshop on “Novel approaches to investigate signals and defenses in plant-biotic interactions”, NIPGR, New Delhi, December 1, 2015.
- ❖ Attended Proteomics Society, India (PSI) 7th annual meeting and the EC meeting, Centre for BioSeparation Technology (CBST), VIT University, Vellore, December 3-6, 2015.
- ❖ Attended the Targeted Proteomics Workshop and International Symposium, at Indian Institute of Technology (IIT) Bombay, Mumbai, December 11-15, 2015.
- ❖ Attended the 2nd Plant Proteomics Workshops/Training Programme, Department of Botany, University of Delhi, New Delhi, December 21-26, 2015.
- ❖ Attended the Biotechnology: Roadmap for 2020 prior to the Press Conference of Hon'ble Minister for S&T and ES announcing National Biotechnology Development Strategy (2015-2020) New Delhi, December 30, 2015.
- ❖ Attended 103rd Indian Science Congress, University of Mysore, Karnataka, January 2-5, 2016.
- ❖ Attended the Global Biotechnology Summit, Vigyan Bhawan, New Delhi, February 5-6, 2016.
- ❖ Attended VIP Omics Meet, ABSciex, New Delhi, February 6, 2016.
- ❖ Attended the National Symposium and Workshop on Advances in Proteomics, Institute of Life Sciences (ILS), Bhubaneswar, March 14-16, 2016.
- ❖ Attended the 6th International Conference & Expo on Proteomics, Atlanta, USA, March 29-31, 2016.

Dr. Debasis Chattopadhyay

- ❖ Participated in National symposium on plant biotechnology for crop improvement, NBRI, Lucknow, February 25-27, 2016.

Dr. Alok Krishna Sinha

- ❖ Brainstorming session on scented rice of North Eastern Region, India at IAAST, Guwahati, June 26, 2015.
- ❖ National Symposium on Germplasm to Genes: Harnessing Biotechnology for Food Security and Health, at National Agricultural Science Centre, Pusa, New Delhi, India, August 9-11, 2015.
- ❖ Novel approaches to investigate signals and defenses in plant-biotic interactions, organized by NIPGR, Delhi – Max Planck Institute for Chemical Ecology, Germany- DST India Partner group inauguration and workshop at NIPGR New Delhi, December 01, 2015.
- ❖ 3rd International Plant Physiology Congress “Challenges and strategies in plant biology research” held at JNU, New Delhi, December 11-14, 2015.
- ❖ “INSPIRE” Internship program (Science Camp) Organized by the Department of Science & Technology (DST) at Deshbandhu College, University of Delhi, Kalkaji, December 14-18, 2015.
- ❖ 1st International Conference on Human Implications of Biotechnology – 2016 at Central University of South Bihar Patna, February 12-14, 2016.

- ❖ 37th Annual Meeting of PTCA (India) and a National Symposium on 'Plant Biotechnology for Crop Improvement' at CSIR-NBRI, Lucknow, February 25-27, 2016.

Dr. Sabhyata Bhatia

- ❖ Co-chaired and poster presentation in the “3rd International Plant Physiology Congress”, at JNU, New Delhi, India, December 11-14, 2015.
- ❖ 5th International Conference on Next Generation Genomics and Integrated Breeding for Crop Improvement, ICRISAT, Hyderabad, India, February 18-20, 2015.

Dr. Manoj Prasad

- ❖ Attended and delivered a lecture on “Establishment of epigenetic mechanisms to control geminivirus infection in tomato” in the XXIV National Conference on 'VIROCON-2015: Transboundary Viral Diseases under One Health: Perspective and Challenges' at North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, Meghalaya, October 8-10, 2015.
- ❖ Attended and delivered a lecture on “Molecular Markers for Characterizing Medicinal Plant Genome” in the National Seminar on 'Recent advance in research and development medicinal and aromatic plant' at State Forest Research Institute, Jabalpur, Madhya Pradesh, India, November 27-28, 2015.
- ❖ Attended and delivered a lecture on “Foxtail millet: A climate change resilient model C4 crop with rich genetic and genomic resources for genetic improvement of cereals and bioenergy grasses” in the “3rd International Plant Physiology Congress: Challenges and Strategies in Plant Biology Research” at Jawaharlal Nehru University, New Delhi, India, December 11-14, 2015.
- ❖ Attended and delivered a lecture on “Establishment of epigenetic mechanisms to control geminivirus infection in tomato” in the National Conference on 'Biotechnology for sustainable development' at Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India, December 17-19, 2015.
- ❖ Attended and delivered a lecture on “Establishment of epigenetic mechanisms to control geminivirus infection in tomato” in the 1st International Conference on 'Trends in Cell and Molecular Biology' at Birla Institute of Technology, Goa, India, December 19-21, 2015.
- ❖ Attended and delivered three lectures on 'Advances in Genetics and Genomics of Foxtail Millet (*Setaria italica*) for Crop Improvement of Millets, Cereals and Bioenergy grasses'; 'Foxtail millet: A C4 Model Crop with Rich Genetic and Genomic Resources for Enhancing Climate Resilience in Cereals and Bioenergy Grasses' and 'Assembly of highly heterozygous mango (*Mangifera indica* cv. Amrapali) genome using PacBio long sequence reads' in the 'International Symposium on Plant and Animal Genome XXIV (PAG 2016)' at San Diego, California, USA, January 9-13, 2016.
- ❖ Attended and delivered a lecture on “Foxtail millet: A climate change resilient model C4 crop with rich genetic and genomic resources for genetic improvement of cereals and bioenergy

grasses” in the “India-South Africa Bilateral Agricultural Biotechnology Workshop” at National Institute of Plant Genome Research, New Delhi, India, February 23-27, 2016.

- ❖ Attended and delivered a lecture on “Establishment of epigenetic mechanisms to control geminivirus infection in tomato” in the 37th Annual Meeting of Plant Tissue Culture Association and National Symposium on 'Plant Biotechnology for Crop Improvement' at CSIR-National Botanical Research, Lucknow, Uttar Pradesh, India, February 25-27, 2016.

Dr. Jitendra K. Thakur

- ❖ National conference on plant and animal molecular biology (NCPAMB-2015), Mody University of Science and Technology, Lakshmangarh, Rajasthan, September 25-26, 2015.
- ❖ 14th FAOBMB Congress and 84th Annual Meeting of SBC(I), CCMB Hyderabad and BITS Pilani, Hyderabad Campus, November 27-30, 2015.
- ❖ 1st international conference on Trends in Cell and Molecular Biology (TCMB 2015) and workshop, BITS Pilani KK Birla Goa Campus, Goa, December 19-23, 2015.
- ❖ National Workshop on NGS Data: Assembly and Exploration, NIPGR, New Delhi, March 10-11, 2016.

Dr. Gitanjali Yadav

- ❖ 3rd International Plant Physiology Congress: Challenges and Strategies in Plant Biology Research” at Convention Centre, JNU, New Delhi, India, December 11-14, 2015.
- ❖ National Symposium on “Molecular and Cellular Biology Beyond the Rubicon: Graduating Perspectives”, National Institute of Immunology (NII), December 23-24, 2015.
- ❖ Annual Meeting of the Indian National Young Science Academy (INIAS), at INSA, New Delhi, February 27, 2016.
- ❖ International Conference on “Recent Advances in Biotechnology & Nanobiotechnology” (Int-BIONANO-2016), Amity University, Gwalior, India, February 10-12, 2016.
- ❖ 8th Young Investigator Meeting (YIM-2016) Manesar, India, February 28th – March 02, 2016.
- ❖ National Workshop funded by DBT on "NGS Data: Assembly and Exploration", NIPGR, March 10-11, 2016.

Dr. Ashverya Laxmi

- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.
- ❖ Arabidopsis 2016, IISER Mohali, March 20-22, 2016.

Dr. Manoj Majee

- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.

Dr. Mukesh Jain

- ❖ Summer School on RNA interference as a tool for plant functional genomics and crop improvement, NRCPB, New Delhi, May 6-26, 2015.
- ❖ National Bioinformatics Training Program on High-throughput Omics Data for mining of important genes/traits linked to Agricultural Productivity, GBPAU, Pantnagar, September 9-12, 2015.
- ❖ DBT sponsored short term training course on Methodologies used in gene expression analysis, SP Pune University, Pune, September 29– October 20, 2015.
- ❖ 3rd International Plant Physiology Congress-Challenges and Strategies in Plant Biology Research, Jawaharlal Nehru University, New Delhi, December 11-14, 2015.
- ❖ 2nd International South Asian Biotechnology Conference 2016 on Biotechnology for Sustainable Development, University of Dhaka, Dhaka, Bangladesh, February 5-6, 2016.
- ❖ National Workshop on NGS Data: Assembly and Exploration, NIPGR, New Delhi, March 10-11, 2016.
- ❖ Symposium on Genome Biology and Big Data Bioinformatics, UDSC, New Delhi, March 29, 2016.

Dr. Naveen Chandra Bisht

- ❖ Indo-German workshop entitled “Novel Approaches to Investigate Signals and Defenses in Plant-Biotic Interactions”, NIPGR, New Delhi, December 01, 2015.
- ❖ 3rd International Plant Physiology Congress at Jawaharlal Nehru University in New Delhi, December 11-14, 2015.

Dr. Jagadis Gupta Kapuganti

- ❖ 5th Ramalingaswami Conclave, Faridabad, Haryana, December 18-20, 2015.
- ❖ 1st International Conference on Human Implications of Biotechnology 2016, Patna, February 12-16, 2016.
- ❖ Young Investigator Meeting, Manesar, Haryana, February 27, 2016 - March 3, 2016.

Dr. Ananda K. Sarkar

- ❖ Attended workshop on “Role of microRNAs in Plant Meristems and Organ Patterning”/ International workshop on "microRNAs in Plant development and stress", ICGEB, New Delhi, November 20, 2015.
- ❖ Attended Seminar on “Conserved Small RNA Mediated Regulation of Root Architecture”/ 1st Annual conference on Trends in Cell and Molecular Biology (TCMB), BITS Pilani KK Birla, Goa Campus, December 19-20, 2015.
- ❖ Attended Seminar on “Current Understanding of the Regulation of Root Stem Cells & Root Architecture through Conserved/Non-conserved Pathways”/ National Seminar on "Plant and Microbe: Diversity & Utilization", March 19, 2016.

- ❖ Attended conference on “Regulation of Root Architecture Through Conserved Small RNA Pathways”/ "Arabidopsis 2016: Emerging Challenges in Plant Biology", IISER Mohali, March 21, 2016.

Dr. Gopaljee Jha

- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.

Dr. Saloni Mathur

- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.

Dr. Senthil Kumar Muthappa

- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.
- ❖ DBT Ramalingaswami Fellows “5th conclave”, Regional Center for Biotechnology, Faridabad, 18-20th December, 2015.

Dr. Pinky Agarwal

- ❖ National Symposium on Germplasm to Genes, NRCPB, India, August 9-11, 2015.
- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.

Dr. Jyothilakshmi Vadassery

- ❖ MPI-DST partner group kick-off workshop on “Novel approaches to investigate signals and defenses in plant-biotic interactions on December 1-2, 2015.
- ❖ 56th International Annual Conference of Association of Microbiologists of India (AMI 2015), JNU, New Delhi, December 7-10, 2015.
- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.
- ❖ Arabidopsis Conference 2016-Emerging Challenges in Plant Biology, IISER Mohali, March 20-22, 2016.

Dr. Aashish Ranajan

- ❖ 3rd International Plant Physiology Congress, JNU, New Delhi, December 11-14, 2015.
- ❖ Phenotyping for drought adaptive traits with special reference to stable isotopes, Department of Crop Physiology, UAS, Bengaluru, January 18-23, 2016.

Visitors to the Institute

- ❖ A Vietnamese Delegation headed by **Dr. Ho Ngoc Luat**, Director General, Dept. of Local Science & Technology Development (DLSTD), Ministry of Science & Technology (MoST), Vietnam visited NIPGR on September 23, 2015 to explore the possibility of collaboration in the field of Biotechnology. The other members of the delegation were **Mr. Pham Hoang Ha**, Principal Official, Asia & Africa Division, Dept. of International Cooperation, MoST, **Ms. Nguyen Thi Le Hang**, Officer of DLSTD, MoST, **Ms. Nguyen Thi Thu Hoai**, Officer of DLSTD, MoST, **Ms. Nguyen ThiHuyen Trang**, Officer of DLSTD, MoST and Ms. Nguyen ThiHao, Officer of DLSTD, MoST, Vietnam.
- ❖ Minister of Science & Tech. of Bangladesh, **H.E. Mr. Yeafesh Osman** visited NIPGR on October 14, 2015 to interact with the Scientists and visit labs and facilities and to have cooperation with India in the field of Biotechnology. **Mr. MdSerajulHuq Khan**, Secretary, Ministry of Science & Technology, Bangladesh, **Mr. ATM Mostafizur Rahman**, Additional Secretary, Ministry of



Minister of Science & Technology of Bangladesh, H.E. Mr. Yeafesh Osman (centre) visited NIPGR laboratories alongwith his delegation. Prof. Akhilesh Kumar Tyagi, the then Director, NIPGR explaining the on-going research activities to the delegation.

Science & Technology, Bangladesh and Project Director, National Oceanographic Research Institute, Bangladesh, **Dr. Mohammad Shawkat Akbar**, Project Director, Construction of RNPP Project, **Mr. Al MamunMurshed**, Director, Prime Minister's Office, Bangladesh, **Mr. Md.Rezaul Karim**, Principal Scientific Officer, Bangladesh Council of Scientific and Industrial Research, **Dr. MdSalimullah**, Director General, National Institute of Biotechnology, Dhaka, Bangladesh, **Md.Firoz Ahmed**, Senior Assistant Secretary, Ministry of Science & Technology, Bangladesh also accompanied the Hon'ble Minister.

- ❖ **A delegation from the Netherlands visited NIPGR on October 21, 2016 regarding collaborative training programme on Agri-biotech and Food scheduled at the Wageningen University, Netherlands. The delegation included Dr. ArjoRothuis**, Account Manager Asia, Wageningen University, **Mr. Anand Krishnan**, Deputy Counsellor, Embassy of Netherlands, **Ms. Linda Reijers**, Agriculture Attaché, Embassy of Netherlands, New Delhi, **Ms. Akanksha Sharma**, Sr. Policy Advisor, Science & Technology, Embassy of Netherlands, New Delhi, **Mr. Freek-Jan Frerichs**, Attaché Science & Technology, Consulate Mumbai.
- ❖ **Mr. Steve Kroft**, President & CEO and **Mr. Rod Mattern**, International Sales Manager, Conviron, Canada met with the Director, NIPGR on January 27, 2016 to discuss some scientific issues.
- ❖ **Prof. Dale Sanders**, Director and **Dr. Christopher Darby**, Director of International Strategy, John Innes Centre, UK visited NIPGR on February 24, 2016 to learn about the research activities at NIPGR and to explore the possibility of collaboration between John Innes Centre, UK and NIPGR.
- ❖ A Dutch delegation visited NIPGR on February 29, 2016 to discuss on-going research at NIPGR. The delegation included **Dr. Ivo Rieu**, Deptt. Molecular Plant Physiology, Institute of Water and Wetland Research, Graduate School Experimental Plant Sciences, Radbound Univ., Nijmegen, The Netherlands and **Dr. Ir Wilco Ligterink**, Laboratory of Plant Physiology, Wageningen University, The Netherlands.

Study Tours at the Institute

The students from the following Universities/Colleges/School(s) visited NIPGR to familiarize themselves with the frontier research being carried out at NIPGR and interacted with the faculty.

- ❖ B.Sc. students, Shri Nehru Maha Vidyalaya SNMV College of Arts & Science, Coimbatore, Tamil Nadu on August 24, 2015.
- ❖ B.Sc. (Hon.) students, Hans Raj College, University of Delhi on October 1, 2015.
- ❖ Meritorious students of Class 9 referred by Madhya Pradesh Council of Science & Technology, Bhopal on October 8, 2015.
- ❖ B.Sc. students of Sri Aurobindo College, New Delhi on October 20, 2015.
- ❖ B.Tech. (Biotechnology & Bioinformatics) students of Tamil Nadu Agricultural University, Coimbatore on November 26, 2015.
- ❖ B.Sc. students of Kalindi College, University of Delhi on December 17, 2015.
- ❖ B.Sc. students of Maharani Lakshmi Ammanni College for Women, Bangalore on December 18, 2015.
- ❖ B.Sc. students of Seshadripuram First Grade College, Bangalore on December 21, 2015.

Symposia/Workshop/ Special Lectures/Events Organized

Digital India Week (July 1-7, 2015)

The Institute took an initiative in the mass movement of Hon'ble Prime Minister of India called "Digital India". In this connection, Institute observed July 1 – 7, 2015 as Digital India Week. The objective of Digital India Programme during the Digital India Week is to Inform, Educate & Engage citizens in the ongoing Government efforts to transform India into Digitally empowered society and knowledge economy. On this series of events, an essay writing competition was organized on July 7, 2015 in the Institute. The theme of the essay was commensurate to the Digital India Week. The best essay was conferred certificate on the occasion of Foundation Day of the Institute.

Annual Student Research Symposium – SciEfflux-2015 (August 7-8, 2015)

The Institute organized a two-day Student Research Symposium during August 7-8, 2015. On this occasion, the 2nd and 4th 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-2015



Students performing in the cultural event “RAINBOW”

Hindi Pakhwara (September 1-14, 2015)

Hindi Pakhwara was observed during September 1-14, 2015 in the Institute. All the members of the staff, student and researcher were requested to do maximum work in Hindi during this period. The staff members were encouraged to use Hindi in the deliberations of the meetings, seminars, etc., organized during this period, to work in Hindi on computers and to opt for forms in Hindi which are used for various purposes inside the Institute, besides all other official works. In addition, a Hindi Lecture on “Himalaya and the Climate Changes” by Prof. S. P. Singh, Former Vice- Chancellor, HNB Garhwal University, Uttarakhand was organized on September 09, 2015 in the Institute to exhibit the effortless use of Hindi in every field of education.

Like every year, an Essay Competition was organized to commemorate 'Hindi Diwas' on September 14, 2015. Members of NIPGR community participated enthusiastically in the event. The first and second best essays were conferred prize and certificate on the occasion of Foundation Day of the Institute.

Public Lecture as part of the 30th year Foundation Day Celebration of DBT (November 20, 2015)

The National Institute of Plant Genome Research celebrated the 30 years of establishment of the Department of Biotechnology, Government of India. As a part of the celebrations, NIPGR organized a Public Lecture on November 20, 2015 at its premises by Prof. N.R. Jagannathan, Head, Department of NMR and MRI Facility, AIIMS, New Delhi on the topic “Magnetic Resonance Imaging (MRI) in Health Care and in Plant Science Research”.



Prof. N.R. Jagannathan during the question & answer session after his Public Lecture

Foundation Day (November 30, 2015)

The Institute celebrated its 17th Foundation Day by organizing “J. C. Bose Memorial Lecture” on Monday, November 30, 2015. On this occasion, Prof. Avadhesha Surolia, Bhatnagar Fellow, Council of Scientific & Industrial Research (CSIR), Honorary Professor, Molecular Biophysics Unit Indian Institute of Science, Bangalore delivered the lecture on “Lectins : From The Backyard To The Leading Lights of Biology’s Emerging Frontier”. Besides, researchers/students of the Institute were facilitated with medals/mementos for the best scores in Ph.D. course work, for best presentation in Students Research Symposium 2015 and for the best two essays in the Nibandh Pratiyogita conducted during Hindi Pakhwara and Digital India Week. The invited guests from nearby institutions as well as staff and students of the Institute attended the function.



Professor Avadhesha Surolia, lighting a Lamp on the occasion of 17th Foundation Day of NIPGR



Musical presentation by the Pandit Shubhendra Rao on the occasion of 17th Foundation Day of NIPGR

Indo-German National Workshop on “Novel approaches to investigate signals and defenses in plant-biotic interactions” (December 1, 2015)

Dr. Jyotilakshmi Vadassery, Scientist, National Institute of Plant Genome Research, New Delhi and Prof. Wilhelm Boland, Scientist, Max Planck Institute for Chemical Ecology, Germany jointly organized the Indo-German national workshop on plant interactions at the NIPGR on December 01, 2015. A kick-off workshop was conducted as an inauguration of this Partner Group to bring together researchers from Max Planck Institute for Chemical Ecology (MPI-CE), University of Halle and NIPGR, India to enhance international collaboration and above all bring science across borders. The topic of the workshop was “Novel approaches to investigate signals and defenses in plant-biotic interactions”. Students and faculty of NIPGR, selected Indian guests and students from other institutes participated in the event. The workshop comprised of an array of talks on plant defense, calcium signaling, metabolomics, and symbiosis by both German and Indian speakers, followed by lively discussions. 6 German and 7 Indian speakers gave talks on various aspects of plant-biotic interactions. A panel discussion on emerging trends in plant-biotic interactions was headed by Prof. Dr. Wilhelm Boland and Dr. Ramesh Sonti and was a platform for exchange of ideas and great way to end the workshop.



**Participants during the Indo German National workshop
jointly organized by NIPGR and MPI-CE**

NIPGR DISC Workshop on 'NGS Data: Assembly and Exploration' (March 10-11, 2016)

The Distributed Information Sub Centre (DISC) at NIPGR organized a Bioinformatics Workshop titled 'NGS Data: Assembly and Exploration' on 10-11th March 2016, with the goal to strengthen NGS data analytical skills among plant biologists. 30 participants were selected based upon abstracts received from all over India, and these were given a pre-workshop survey as well as a feedback survey after completion of workshop, in order to understand their needs better and for future workshop design. The Inaugural session was held at 9 am on March 10th, 2016. After the welcome address by Coordinator and Keynote address by Director, Dr. D. Chattopadhyay delivered a lecture on the theme of the workshop and stressed upon the methods of assembly and annotation, along with cases studies from his group. Expert lectures were delivered on diverse aspects of NGS, such as rare genetic diseases, fungal genome sequencing, Abiotic Stress, RNA-Seq/ChIP-Seq data analysis, crop genomics and analysis of non-coding RNAs. Apart from these, specially designed hands-on tutorial sessions covering Quality checks analyses and RNA-Seq were also imparted to participants, who were encouraged to interact with each other as well as with the organising team. The workshop culminated on the second day with the valedictory session, distribution of certificates, proceedings and prizes, followed by an informal interactive session on the workshop. Finally, Dr. J.K. Thakur, Dy. Coordinator, Sub-DIC delivered vote of thanks.



Participants of the Workshop

Monthly Seminar Series (2015-2016)

The Institute organized the "Monthly Seminar Series" (initiated in the year 2009) in the year 2015-16 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. Chandan Goswami, NISER (Bhubaneswar)	Plant-animal interactions: Importance of thermo-sensitive ion channels	Jun 02, 2015
Prof. Kadambot Siddique, Winthrop Professor and Hackett Professor of Agriculture Chair and Director at UWA Institute of Agriculture, University of Western Australia	Australian Agriculture and Global Food Security	Jun 04, 2015
Prof. Luis Mur from IBERS, Wales, UK	NO, hemoglobins and plant stress.	Jul 09, 2015
Prof. Neelima Sinha, University of California - Davis, USA	Understanding and visualizing stress and its impact on yield	Sep 15, 2015
Prof. N.R. Jagannathan, Head, NMR and MRI Facility, AIIMS, New Delhi	Magnetic Resonance Imaging in Health Care	Nov 20, 2015
Prof. Sanjeev Galande from IISER, Pune	Evolutionary adaptation of transcription factors into Wnt signaling network: Insights into the head organizer in hydra	Jan 06, 2016
Prof. Eduardo Blumwald, Department of Plant Sciences, UC - Davis, California, USA	Cellular pH homeostasis and control of vesicular trafficking and protein processing by NHX -type cation/proton antiporters	Jan 22, 2016
Prof. Howard Griffiths, Department of Plant Sciences, University of Cambridge, UK	The algal photosynthetic carbon concentrating mechanism and prospects for introduction into higher plants	Feb 26, 2016

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 187 students have registered for the Programme leading to Ph. D. degree to JNU since the Academic year 2001-2002, and out of these, 79 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 2015-16

Sl. No.	Name of the Student	Name of the Supervisor / Joint Supervisor
1.	Ms. Akanksha Pareek	Dr. Niranjana Chakraborty
2.	Ms. Megha Choudhary	Dr. Debasis Chattopadhyay
3.	Ms. Lalita Pal	Dr. Debasis Chattopadhyay
4.	Ms. Kirti	Dr. Alok Krishna Sinha
5.	Ms. Sumaira Tayyeba	Dr. Alok Krishna Sinha
6.	Mr. Gourav Singh	Dr. Sabhyata Bhatia
7.	Ms. Rekha Rani	Dr. Praveen Verma
8.	Mr. Yeshveer Singh	Dr. Praveen Verma
9.	Mr. Saurabh Pandey	Dr. Manoj Prasad
10.	Ms. Rupali Kumari	Dr. Jitendra K. Thakur
11.	Ms. Archana Tiwari	Dr. Ashverya Laxmi
12.	Ms. Juhi Kumari	Dr. Naveen C. Bisht
13.	Mr. Pradeep Kumar Pathak	Dr. Jagadis G. Kapuganti
14.	Ms. Ritika Jaintu	Dr. Jagadis G. Kapuganti
15.	Ms. Mahima	Dr. Ananda K. Sarkar
16.	Mr. Vishnu Mishra	Dr. Ananda K. Sarkar
17.	Ms. Kirti Tyagi	Dr. Gopaljee Jha
18.	Ms. Chandni Bansal	Dr. Saloni Mathur
19.	Mr. Vadivel Murugan I.	Dr. Senthil K Muthappa
20.	Mr. Lokesh Verma	Dr. Jitender Giri
21.	Ms. Jyoti Bhadouria	Dr. Jitender Giri
22.	Ms. Laxmi	Dr. Swarup K. Parida
23.	Mr. Virevol Thakro	Dr. Swarup K. Parida
24.	Ms. Deepika Mittal	Dr. Jyothilakshmi Vadassery
25.	Mr. Ramgopal	Dr. Jyothilakshmi Vadassery
26.	Ms. Juhi Bhattacharya	Dr. Aashish Ranjan
27.	Mr. Jyotirmaya Mathan	Dr. Aashish Ranjan

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 (2015-2016) under report:

Sl. No.	Name of the Student	Thesis Title	Name of the Supervisor
1.	Mr. Karunesh Kumar	Cloning and characterization of 14-3-3 like gene(s) in foxtail millet [<i>Sataria italica</i> (L.) P. Beauv.]	Dr. Manoj Prasad
2.	Ms. Sandhya Verma	Molecular analysis of effector gene(s) of <i>Ascochyta rabiei</i> suppressing defense responses in <i>Cicer arietinum</i>	Dr. Praveen Verma
3.	Ms. Kanika Narula	Proteomic characterization of <i>Magnaporthe-rice</i> interaction and AmA1 function	Dr. Subhra Chakraborty
4.	Ms. Jalmi Siddhi Kashinath	Functional Characterization of a Group-C Mitogen Activated Protein Kinase, OsMPK7 in Rice	Dr. Alok Krishna Sinha
5.	Mr. Kamlesh Kumar Sahu	Mechanisms of introgressive breeding in Tomato	Dr. Debasis Chattopadhyay
6.	Ms. Pallavi Singh	Investigation of mitogen activated protein kinase (MAPK) signaling components involved during rice root development	Dr. Alok Krishna Sinha
7.	Ms. Annapurna Bhattacharjee	Functional characterization and regulatory network of homeobox transcription factors in abiotic stress responses in rice	Dr. Mukesh Jain

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

Research Associates

Aakanksha Wany	Papri Nag
Aarti Gupta	Poonam Kanwar
Aarti Pandey	Prabhakara Lal Srivastava
Abira Chaudhuri	Prabodh Kumar Bajpai
Aditi Gupta	Pradipto Mukhopadhyay
Alka Singh	Preeti Singh
Alok Kumar Gupta	Raghu Ram B
Amit Kumar Kushwaha	Rahul Kumar
Arvind Kumar	Rehna Augustine
Ashutosh Kumar	Renu Kumari
Ayushi Jha	Sandhya Galidevara
Chandra Bhan Yadav	Sandhya Verma
Debaleena B.Chattopadhyaya	Santosh Kumar
Deepa Kumari Ruhela	Saurabh Badoni
Deepak Gayen	Shweta
Gaurav Sharma	Sonal Mishra
Hanumantha Rao	Subhasis Samanta
Harmeet Kaur	Suboot Hairat
Jalmi Siddhi Kashinath	Swagata Ghosh
Kamal Kumar	Tirthankar Bandyopadhyay
Kanika Narula	Toshiba Haider
Lipika Bhattacharjee	Upendra Kumar Singh
Manashi Mishra	Vijay Wardhan
Md. Iqbal Raja Khan	Vikash Srivastava
Mohd. Irfan	Vimal Kumar Pandey
Mukesh Kumar Meena	Vinay Kumar
Neelofer Mirza	

Project Fellows

Amit Kumar	Karishma
Anil Kumar	Kashif Nawaz
Anil Kumar Pole	Krishna Kumar
Anita Tripathi	Meenakshi Sharma
Anjugam P.	Megha Varshney
Ankit Singla	Neha Srivastava
Aprajita Sharma	Niraj Kumar Khemka
Arunava Mandal	Pramila Yadav
Avisha Verma	Pratima Sharma
Awdhesh Kr.Mishra	Priyanka Ghorai
Ayan Sadhukhan	Purnima Singh
B.Rengasamy	Rajeev Kumar
Chandana Pandey	Rajul Tayal
Chevala VVS Narayana	Rishi Srivastava
Deepak Bajaj	Rohit Khandelwal
Dinesh Kr.Tripathy	Shubhendu Shekhar
Durga Madhab Swain	Shweta
Ekta Kumai	Sonal Gupta
Gopal Singh	Sukriti Sharma
Harshita Bharti Saksena	Sushmita Biswas
Jitendra Kumar Verma	Swarnmala
Juhi Kumari	Umang Koul
Kamlesh Kumar Sahu	

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:

Trainees at Post Graduate level

Amarnath Kumar	M.Sc. (Biotechnology), Dept. of Biotechnology, L.N.M., University, Darbhanga.
Aparna Pal	M.Sc. (Biotechnology), Banasthali University, Newai, Rajasthan.
Aparna Sahu	M.Sc. Life Sciences (School of Life Sciences), DAVV, Indore, M.P
Archishman Pradhan	M.Sc. Department of Genetics, South Campus, Delhi University.
Archna Sharma	M.Sc. (Biotechnology), Banasthali University, Rajasthan.
Arpita Kumari	M.Sc. (Biotechnology) from L.N. Mithila University, Darbhanga, Bihar.
Ashok Kumar	M.Sc. Devi Ahilya University, Indore.
Athiraj Natraj	M.Sc. Central University of Tamil Nadu, Thiruvavur, (IAS summer fellow).
Awadesh Yadav	M.Sc. (Biotechnology), VBS Purvanchal University, Jaunpur, U.P.
Divya Malik	M.Sc. (Biotechnology), Department of Bioscience & Biotechnology, Banasthali University, Rajasthan.
Jyotsna Pandey	M.Sc. Bioinformatics, Jamia Millia Islamia University.
Kanchan	M.Tech, NIT Bhopal.
Karishma Dohare	M.Sc. (Biochemistry) from D.A.V.V, Indore.
Kavya Chezhiyan	M.Tech, Bharathidasan University, Tiruchirapalli.
Kiran Patidar	M.Sc. Industrial Microbiology, School of Life Sciences, Devi Ahilya Vishwavidhyalaya, Indore, M.P.
Kumari Ekta	M.Sc. (Biotechnology), 4 th Semester, Department of Biotechnology, L.N. Mithila University, Darbhanga, Bihar.

Masthan Basha	M.Sc. Integrated student, Yogi Vemana University, Kadapa (IASs).
Medha Sharma	B.Tech Plus M.Tech Biotechnology (5) year programme from Gautam Budha University, Greater Noida, U.P.
Monika Vikal	M.Sc. in Biotechnology, Banasthali University, Rajasthan.
Nileshita Saxena	M.Sc. Department of Biotechnology, Amity University, Haryana.
Prakash Patel	M.Sc. Industrial Microbiology at School of Life Sciences, DAVV Indore, M.P.
Preeti Sharnagat	M.Sc., Industrial Microbiology III, School of Life Sciences, DAVV Indore, M.P.
Priyanshu Sharma	M.Sc. Banasthali Vidyapeeth University, Rajasthan.
Rajbala, Darbhanga	M.Sc. from DBT, Lalit Narayan Mithila University, Bihar.
Reshu Rajaura	M.Sc. Gautam Budha University.
Reyaz Ahmad	M.Sc. (Biotechnology) L.N. Mithila University, Darbhanga.
Rhythm Vanvari	Pursuing M. Tech Biotechnology at Jaypee Institute of Information Technology, Noida.
Ritika Kulshreshtha	M.Tech (Biotechnology) from Maulana Azad National Institute of Technology, Bhopal, M.P., India.
Sanjana	M.Sc. (Biotechnology) Banasthali Vidyapith, Rajasthan.
Sanjay S.	M.Tech. DBT, Delhi Technical University.
Sayali Rane	M.Sc./M.Tech from Savitri Bai Phule Pune University, Maharashtra.
Shailnee Gupta	M.Sc. (Biotechnology), Banasthali University, Rajasthan.
Shubham	M.Sc. (Biotechnology) Jaipur National University, Jaipur, Rajasthan.
Shweta Agarwal	GB University, Greater Noida.
Shweta Tyagi	M.Sc. (Biotechnology) D.A.V. College, Muzaffarnagar.
Sreenath Raju	M.Tech Bioinformatics, Tamilnadu Agricultural University.
Swati Sharma	M.Sc. Punjab University, Chandigarh.
Tandrima Dey	M.Tech (Biotechnology) at Haldia Institute of Technology, Haldia (West Bengal).
Vanana Jaggi	M.Sc. Microbiology (final year) from Maharishi Markandeshwar University, Haryana.
Vishnu M. Nair	M.Sc. in Biotechnology from Amrita Viswa Vidyapeetham, Kollam.

Trainees at Under Graduate level

Alisha B.	B.Sc. (Biotechnology) from St. Anthony's College, Shillong.
Aruna Boro	B.Sc. (2 nd Year) in Biotechnology from St. Anthonys College, Shillong Meghalaya.
B. Akil	Bharathidasan University, Tiruchirappalli.
Nandika Sharma	B.Tech (8 th Semester student) from Amity University, Uttar Pradesh.
Pratham Vardhan	B.Tech (Biotechnology) in Jaypee Institute of Information Technology, New Delhi.
Priyanka Patil	Vilasrao Deshmukh College of Agricultural Biotechnology, Latur, (IASc-INSNA-NASI Summer Research Fellowship).
S. Sivagami Alias Sindhu	Bharathidasan University, Tiruchirappalli.
S.S. Aathira	B.Tech (Biotechnology) Tamil Nadu Agricultural University, Coimbatore (IASc-INSNA-NASI Summer Research Fellowship).
Shamayita Poddar	B. Tech , Haldia Institute of Technology, Haldia, Purba Medinipur, West Bengal.
Tanisha Jaiswal	B.Sc. (H) pursuing in Biotechnology from Jaipur National University, Rajasthan.

Trainees at Under Graduate level

Ranjith Kumar Ellur	Scientist, ICAR, IARI, New Delhi.
Reema Rani	Scientist, Biotechnology, ICAR - Directorate of Rapeseed Mustard Research Centre, Bharatpur, Rajasthan.
Sutapa Sarkar	Scientist, ICAR-CRRI, Cuttack, Odisha.

Other activities at NIPGR

NIPGR Sub-DIC Facility (DISC)

The Distributed Information Sub Centre (DISC) at NIPGR, was established in 2007, in order to serve as a support structure for all IT related issues at the institute, in addition to providing computational facilities, bioinformatics related services to the researchers in various laboratories at the Institute. The center specializes in comparative genomics and stress biology of plants. Major activities of the center during the current year include Organellar genome comparative studies, legume genome mapping, development of algorithms to perform text and data mining (TDM) in order to compare actual and potential terpenome of plants, as well as construction of phytochemical databases, apart from online web server design in the area of plant biology.

In addition, the DISC performs regular training of researchers under short and long term programs, at both individual and group levels. At the individual level, two students were trained for six months in Bioinformatics in the laboratory, whereas at the group level, lectures and hands-on demonstrations were imparted by DISC staff in the area of computational biology at conferences and workshops organized by various universities in India. At the group training level, a two-day workshop on the theme of 'NGS Data: Assembly and Exploration' was conducted on March 10-11 2016, for Ph.D. scholars, postdoctoral researchers and teachers from various colleges and universities, in order to enhance and spread awareness about the use and applications of Next Generation Sequencing Applications and their utility in plant genome biology. The DISC facility has an in-house reference manager, several in-house databases on a variety of themes including essential oils, plant prion proteins, isoprenoids, KIX domains, glycoproteins etc. DISC also houses a large collection of internally developed online web-servers for multi-variate analyses in plant biology, such as transcription factor families, histone domain motifs, biomolecular networks, plant-sugar interactions and chickpea genome browser. In addition, the facility provides access to public bioinformatics resources covering a wide range of applications like sequence and structure analyses, molecular modeling and simulations, structure prediction and drug design.

INSPIRE Faculty Award: Epigenomics of stress adaptation in plants, Awardee: Rohini Garg

Salinity and drought stresses often affect plant growth and crop yield adversely. Understanding of DNA methylation at whole genome level can provide insights into the regulatory mechanisms underlying abiotic stress response/adaptation. To investigate the role of DNA methylation in abiotic stress responses in chickpea, we performed whole genome bisulphite sequencing (BS-seq) of genomic DNA isolated from roots of chickpea seedlings under control and stress (desiccation and salinity) conditions. More than 100 million reads were generated for each sample after comprehensive optimization of library preparation for BS-seq. About 52% of total reads mapped to the chickpea genome from each sample. Methylated cytosines under different contexts (CG, CHG

and CHH) were identified from each sample using an optimized pipeline. Genome-wide maps of methylated cytosines at single-base resolution revealed distinct patterns of DNA methylation under control and stress conditions. Frequency of CG methylation (73-75%) was higher as compared to other types under control/stress conditions. Further analyses of these data, including annotation and differential methylation patterns under stress conditions is under progress. Further, to investigate the candidate genes responsible for salinity and drought tolerance, we integrated information about identified microsatellites with stress responsive genes identified in our previous studies. Of the 173 microsatellites, 64 exhibited polymorphism between 12 cultivars of chickpea with differing susceptibility to drought or salt stress. Fifty-seven of these polymorphic microsatellites were found to be present within differentially expressed genes under drought and salt stress conditions. These genes can be used as targets for crop improvement after validation with forward or reverse genetics approaches.

Grant-in-Aid Schemes

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
1	Prof. Akhilesh K. Tyagi	Association and genetic mapping of loci for seed size/weight in rice of Seed Biology	DBT Govt. of India
2	Prof. Akhilesh K. Tyagi	J. C. Bose Fellowship	DST Govt. of India
3	Prof. Akhilesh K. Tyagi	Functional Characterization of Genetic and Epigenetic Regulatory Networks Involved in the Reproductive Development in Rice	DBT Govt. of India
4	Prof. Asis Datta	Biotechnological approaches to improve nutritional and post-harvest quality, drought tolerance and pathogen resistance in edible crops	DBT Govt. of India
5	Prof. Asis Datta	Regulatory dynamics of N-acetylglucosamine metabolism in model fungal pathogen, <i>Candida albicans</i>	CSIR Govt. of India
6	Dr. Niranjana Chakraborty	Functional Proteomic Studies in North East Rice (<i>Oryza sativa</i> L.) for Dehydration Tolerance	DBT Govt. of India
7	Dr. Niranjana Chakraborty	Proteomic analysis of dehydration-responsive secretome of grasspea (<i>Lathyrus sativus</i> L.)	CSIR Govt. of India
8	Dr. Niranjana Chakraborty	Functional analysis of candidate abiotic stress responsive genes "Challenge Programme on Chickpea Functional Genomics"	DBT Govt. of India
9	Dr. Subhra Chakraborty	TATA Innovation Fellowship: Elucidating immune-related pathostress-responsive ECM reporter in legume and tuber crops by comparative proteomic analysis	DBT Govt. of India
10	Dr. Subhra Chakraborty	Understanding seed nutrient dynamics by system biology approach "Challenge Programme on Chickpea Functional Genomics"	DBT Govt. of India
11	Dr. Debasis Chattopadhyay	Regulation of root development by auxin and cytokinin mediated signaling of Root Development and Nutrition	DBT Govt. of India
12	Dr. Debasis Chattopadhyay	TATA Innovation Fellowship: Association of transcript polymorphic simple sequence repeats, SNPs and microRNAs with agronomic traits in chickpea	DBT Govt. of India

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
13	Dr. Alok Krishna Sinha	Study of the role of Mitogen Activated Protein Kinase (MAPK) during rice root development of Root Development and Nutrition	DBT Govt. of India
14	Dr. Alok Krishna Sinha	Investigation of cross talk between light and MAP kinase signaling pathways in <i>Arabidopsis thaliana</i>	DST Govt. of India
15	Dr. Alok Krishna Sinha	National Bioscience Award: Characterization of versatile role of OsMPK3, rice mitogen activated protein Kinase	DBT Govt. of India
16	Dr. Sabhyata Bhatia	Functional genomics of nodulation in chickpea root of Root Development and Nutrition	DBT Govt. of India
17	Dr. Sabhyata Bhatia	Indo- Australian project Genomic Approaches for Stress Tolerant Chickpea	DST Govt. of India
18	Dr. Sabhyata Bhatia	Dissecting molecular mechanisms involved in chickpea seed development "Challenge Programme on Chickpea Functional Genomics"	DBT Govt. of India
19	Dr. Praveen Verma	Identification and characterization of effectors from necrotrophic blight fungus <i>Ascochyta rabiei</i> and their targets from the chickpea	DBT Govt. of India
20	Dr. Praveen Verma	Towards identification, isolation and characterization of Exobasidium vexans strains and their pathogenic determinants/ effectors, from blister blight infested tea-plantation of Assam and development of a future roadmap for effective management practices	DBT Govt. of India
21	Dr. Praveen Verma	Understanding genetic and molecular basis of <i>Ascochyta</i> blight resistance in chickpea "Challenge Programme on Chickpea Functional Genomics"	DBT Govt. of India
22	Dr. Manoj Prasad	Mapping of Mungbean yellow Mosaic Virus resistance loci in soybean	DBT Govt. of India
23	Dr. Manoj Prasad	Introgression of begomovirus resistance genes in tomato (<i>solanum Lycopersicum</i> L.) using MAS and Genomics approach	DBT Govt. of India

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
24	Dr. Manoj Prasad	Characterization of ubiquitin/26S proteasome pathway-related genes by VIGS in tomato during ToLCNDV infection	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. Jitendra K. Thakur	DNA methylation and histone (H3K9Ac and H3K27me3) markings during seed development in two rice varieties with contrasting seed size/weight of Seed Biology	DBT Govt. of India
27	Dr. Jitendra K. Thakur	Functional Analysis of a Mediator Subunit Gene, Med17, in Rice and <i>Arabidopsis</i>	DBT Govt. of India
28	Dr. Gitanjali Yadav (Scientist Incharge)	Establishment of Distributed Information Sub-Centre (DISC)	DBT Govt. of India
29	Dr. Gitanjali Yadav	START domains in Plants: Epigenetics & Evolution under Women Excellence Award Scheme	DST Govt. of India
30	Dr. Gitanjali Yadav	Comparative analysis of plant organellar genes with their nuclear and free-living counterparts to understand genome organization, gene content and evolutionary patterns of origin and continuity	INSA Govt. of India
31	Dr. Ashverya Laxmi	To Study the role of glucose and its interaction with hormones in controlling <i>Arabidopsis thaliana</i> root directional responses of Root Development and Nutrition	DBT Govt. of India
32	Dr. Ashverya Laxmi	Functional characterization of sugar-and auxin-regulated DUF581 domain containing genes encoding expressed proteins of unknown functions in model plant system <i>Arabidopsis thaliana</i>	DBT Govt. of India
33	Dr. Manoj Majee	Investigation the role of Protein L-Isoasparty1 Methyltransferase (PIMT) in plant stress adaptation	DBT Govt. of India
34	Dr. Mukesh Jain	Functional genomics approaches in understanding the regulation of flowering and synthesis, and accumulation of apocarotenoids in saffron crocus (<i>Crocus sativus</i> L.)	DBT Govt. of India

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
35	Dr. Mukesh Jain	Transcriptome and epigenome diversity analysis during seed development for discovery of molecular markers and gene regulatory mechanism in chickpea of Seed Biology	DBT Govt. of India
36	Dr. Mukesh Jain	Exploring transcriptome dynamics of chickpea development for candidate gene discovery and defining regulatory elements/modules "Challenge Programme on Chickpea Functional Genomics"	DBT Govt. of India
37	Dr. Naveen C. Bisht	Development of low Glucosinolate <i>Brassica Juncea</i> transgenic lines using RNAi based down-regulation of glucosinolate pathway genes	DBT Govt. of India
38	Dr. Naveen C. Bisht	Tissue specific engineering of glucosinolate content and profiles in Indian oilseed mustard (<i>Brassica juncea</i>) for higher nutritional value and uncompromised defense response	DBT Govt. of India
39	Dr. Jagadis Gupta Kapuganti	A Partnership to maximize nitrogen use efficiency in crops by understanding a NO-mediated modulatory switch	DST Govt. of India
40	Dr. Jagadis Gupta Kapuganti	Hypoxia- induced nitric oxide as a tool in protection of plants under flooding and pathogen attack	DBT Govt. of India
41	Dr. Jagadis Gupta Kapuganti	Ramalingaswami Fellowship	DBT Govt. of India
42	Dr. Ananda K. Sarkar	Molecular characterization of variation in root system architecture among selected Indica rice varieties of Root Development and Nutrition	DBT Govt. of India
43	Dr. Saloni Mathur	Identification of heat responsive miRNAs in tomato (<i>Solanum lycopersicum</i>)	DST Govt. of India
44	Dr. Gopaljee Jha	Gold nanoparticles based simple, quick and onsite early diagnostic kit for apple scab disease	DBT Govt. of India
45	Dr. Gopaljee Jha	Understanding the molecular intricacies of <i>Rice-Rhizoctonia</i> interactions	DBT Govt. of India

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
46	Dr. Senthil Kumar Muthappa	Ramalingaswami Fellowship	DBT Govt. of India
47	Dr. Jitender Giri	Identification of genes involved in regulation of phosphate utilization by root under water-deficit stress in rice of Root Development and Nutrition	DBT Govt. of India
48	Dr. Swarup K. Parida	Association and genetic mapping of loci for seed size/weight in chickpea of Seed Biology	DBT Govt. of India
49	Dr. Pinky Agarwal	Transcriptome and small RNA diversity analysis of developing seed contrasting rice varieties of Seed Biology	DBT Govt. of India
50	Dr. Pinky Agarwal	Elucidation of seed storage protein encoding genes in rice and their promoter analysis	DST Govt. of India
51	Dr. Jyothilakshmi Vadassery	Calcium regulated plant defense strategies upon insect pest attack	MPGI Govt. of Germany
52	Dr. Jyothilakshmi Vadassery	Calcium regulated plant defense strategies upon insect pest attack	DST Govt. of India
53	Dr. Ashish Ranajan	Ramalingaswami Fellowship	DBT Govt. of India
54	Dr. Rohini Garg (INSPIRE Faculty Award)	INSPIRE Fellowship: Epigenomics and stress Adaptation in Plant	DST Govt. of India
55	Dr. Rohini Garg (Young Scientist Scheme)	G-Quadruplexes: Prevalence, function relvance and epigentic regulation in plants	DBT Govt. of India
56	Dr. Shilpi Nidhi (ICMR SRFship)	Morphological transition and gene regulation in Candida albicans induced by free internal amino acid	ICMR Govt. of India
57	Dr. Ranjita Sinha (Young Scientist Scheme)	Dissecting physiological and molecular response adapted by chickpea plants exposed to concurrent drought stress and bacterial pathogen infection by using transcript profiling and VIGS	DST Govt. of India

Sl. No.	Investigator / Co-Investigator	Title of the Scheme	Funded by
58	Dr. Prachi Pandey (Young Scientist Scheme)	Uncovering the unique stress tolerance mechanisms of contrasting chickpea genotypes against simultaneous drought stress and pathogen infection: An approach based on miRNA-induced gene silencing	DST Govt. of India
59	Dr. Priyanka Sood (Young Scientist Scheme)	Development of genetic transformation system in C4 Setaria models (<i>Setaria italic</i> and <i>S. viridis</i>)	DST Govt. of India
60	Dr. Chandra Bhan Yadav (Young Scientist Scheme)	Whole genome bisulfate sequencing for methylation analysis in two foxtail millet cultivars with contrasting response to abiotic stress	DST Govt. of India
61	Dr. Aarti Gupta (N-PDF Scheme)	Dissection of miRNA regulating unique tolerance mechanisms under concurrent drought and bacterial pathogen stress in Arabidopsis through MIR VIGS	DST Govt. of India
62	Dr. Aparajita Jha (N-PDF Scheme)	Understanding oxalate-responsive metabolic remodeling and enhancing nutritional quality and stress tolerance in groundnut by expressing oxalate decarboxylase	DST Govt. of India
63	Dr. Aakanksha Wany (N-PDF Scheme)	Functional analysis of transcriptional reprogramming during plant defense under varying nitrogen nutrition	DST Govt. of India
64	Dr. Prabodh Kumar Bajpai (N-PDF Scheme)	Inducible expression of β -purothionin gene in <i>Brassica juncea</i> to develop resistance against Alternaria blight and sclerotiorum	DST Govt. of India
65	Dr. Bhoomika Varshney (N-PDF Scheme)	Study of dehydration response in chickpea (<i>Cicer arietinum</i> L.) using omics approaches	DST Govt. of India

Committees of the Institute

Society

Dr. Harsh Vardhan

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

Prof. Krishnaswamy VijayRaghavan

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

Prof. M. Jagadesh Kumar

Vice Chancellor Jawaharlal Nehru University, New Delhi (w.e.f. January 28, 2016)

Prof. Sudhir K. Sopory

Vice Chancellor Jawaharlal Nehru University, New Delhi (Up to January 27, 2016)

Dr. S. Ayyappan

Director General, Indian Council for Agricultural Research, New Delhi

Prof. V. L. Chopra

Former Member, Planning Commission New Delhi

Prof. R. B. Singh

Former Director, IARI President, NAAS, New Delhi

Shri J. B. Mohapatra

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

Prof. Avadhesha Surolia

Former Director, National Institute of Immunology, New Delhi

Dr. Mohd. Aslam

Scientist 'G', Department of Biotechnology Ministry of Science & Technology Government of India, New Delhi (w.e.f. October 01, 2015 till date)

Dr. K.S. Charak

Advisor Department of Biotechnology Ministry of Science & Technology Government of India, New Delhi (up to September 2015)

Dr. Dinakar M. Salunke

Executive Director, Regional Centre for Biotechnology, Gurgaon, Haryana

Prof. H. Devaraj

Vice-Chairman, University Grants Commission, New Delhi

Prof. Jitendra P. Khurana

Professor & Head; Coordinator (UGC-SAP) Department of Plant Molecular Biology University of Delhi, South Campus New Delhi

Dr. Chandrima Shaha

Director, National Institute of Immunology New Delhi

Prof. Akhilesh Kumar Tyagi

Director, NIPGR (Member-Secretary)

Governing Body

Prof. Krishnaswamy VijayRaghavan

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

Prof. M. Jagadesh Kumar

Vice Chancellor
Jawaharlal Nehru University, New Delhi
(w.e.f. January 28, 2016)

Prof. Sudhir K. Sopory

Vice Chancellor
Jawaharlal Nehru University, New Delhi
(Up to January 27, 2016)

Dr. S. Ayyappan

Director General
Indian Council for Agricultural Research
New Delhi

Prof. R. B. Singh

Former Director, IARI
President, NAAS, New Delhi

Shri J. B. Mohapatra

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

Dr. K. S. Charak

Advisor, Department of Biotechnology
Ministry of Science & Technology
Government of India, New Delhi
(up to September 2015)

Dr. Mohd. Aslam

Scientist 'G', Department of Biotechnology
Ministry of Science & Technology
Government of India
New Delhi
(w.e.f. October 01, 2015 till date)

Dr. Dinakar M. Salunke

Executive Director
Regional Centre for Biotechnology
Gurgaon, Haryana

Prof. H. Devaraj

Vice-Chairman
University Grants Commission
New Delhi

Prof. Jitendra P. Khurana

Professor & Head; Coordinator (UGC-SAP)
Department of Plant Molecular Biology
University of Delhi, South Campus
New Delhi

Dr. Chandrima Shaha

Director,
National Institute of Immunology
New Delhi

Prof. Akhilesh Kumar Tyagi

Director, NIPGR
(Member-Secretary)

Finance Committee

Prof. Krishnaswamy VijayRaghavan

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

Shri J. B. Mohapatra

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

Prof. Jitendra P. Khurana

Professor & Head; Coordinator (UGC-SAP)
Department of Plant Molecular Biology
University of Delhi, South Campus
New Delhi

Shri N.S. Padmanabhan

Senior Manager
National Institute of Immunology
New Delhi

Ms. Kusum Lata Sharma

Deputy Secretary
Department of Biotechnology
Ministry of Science and Technology
Government of India
New Delhi

Prof. Akhilesh Kumar Tyagi

Director, NIPGR
New Delhi

Shri Sandeep Datta

Manager, NIPGR
(Non-Member Secretary)

Scientific Advisory Committee

Prof. Sudhir K. Sopory

Vice Chancellor
Jawaharlal Nehru University
New Delhi (Chairman)

Prof. K. Veluthambi

UGC-BSR Faculty Fellow
Department of Plant Biotechnology
School of Biotechnology
Madurai Kamaraj University, Madurai
(Co-Chairman)

Prof. Jitendra P. Khurana

Professor & Head; Coordinator (UGC-SAP)
Department of Plant Molecular Biology
University of Delhi, South Campus
New Delhi

Prof. M. Udayakumar

Department of Crop Physiology
University of Agricultural Sciences
Hebbal GKVK, Bangalore

Dr. K. C. Bansal

Director
National Bureau of Plant Genetic Resources
PUSA, New Delhi

Dr. Imran Siddiqi

Centre for Cellular & Molecular Biology
(CCMB), Hyderabad

Dr. R. S. Sangwan

Chief Executive Officer,
Center of Innovative and Applied Bio-
processing (CIAB), Mohali, Punjab

Dr. T. R. Sharma

Project Director
National Research Centre on Plant
Biotechnology (NRCPB)
Lal Bahadur Shastri Building, IARI, Pusa
Campus, New Delhi

Dr. A. K. Singh

Professor & Head,
Genetics Division, IARI,
Pusa, New Delhi

Dr. (Mrs.) Usha Barwale

Maharashtra Hybrid Seeds Co. Ltd.
Mumbai

Dr. Kuldeep Singh

Senior Molecular Geneticist & Director
Punjab Agricultural University, Ludhiana

Dr. Usha Vijayaraghavan

Professor, Department of Microbiology &
Cell Biology, Indian Institute of Science
Bangalore

Dr. K. S. Charak

Advisor
Department of Biotechnology
Ministry of Science & Technology
Govt. of India, New Delhi
(up to September 2015)

Dr. Mohd. Aslam

Scientis 'G'
Department of Biotechnology
Ministry of Science & Technology
Govt. of India, New Delhi
(w.e.f. October 01, 2015 till date)

Prof. Akhilesh Kumar Tyagi

Director, NIPGR
(Member-Secretary)

Academic Committee

Prof. Akhilesh Kumar Tyagi

Director, NIPGR
(Chairman)

Prof. Supriya Chakraborty

School of Life Sciences
Jawaharlal Nehru University
New Delhi
(up to January 08, 2016)

Dr. Rohini Muthuswamy

School of Life Sciences
Jawaharlal Nehru University
New Delhi
(up to January 08, 2016)

Dr. Raj K. Bhatnagar

ICGEB, New Delhi
(up to January 08, 2016)

Prof. Indranil Dasgupta

Department of Plant Molecular Biology
University of Delhi,
South Campus, New Delhi
(up to January 08, 2016)

Prof. R. Madhubala

School of Life Sciences
Jawaharlal Nehru University
New Delhi
(w.e.f. January 09, 2016 till date)

Dr. A.K. Nandi

School of Life Sciences
Jawaharlal Nehru University
New Delhi
(w.e.f. January 09, 2016 till date)

Dr. K. C. Bansal

Director,
National Bureau of Plant Genetic Resources
(NBPGR), ICAR, Pusa, New Delhi
(w.e.f. January 09, 2016 till date)

Dr. Arun Kumar Sharma

Associate Professor,
Department of Plant Molecular Biology,
University of Delhi, South Campus,
New Delhi
(w.e.f. January 09, 2016 till date)

Dr. Niranjana Chakraborty

National Institute of Plant Genome
Research
New Delhi

Dr. Sabhyata Bhatia

National Institute of Plant Genome
Research
New Delhi

Coordinator (Evaluation)

Jawaharlal Nehru University
New Delhi
(Special Invitee)

Building Committee

Dr. Dinakar M. Salunke

Executive Director
Regional Centre for Biotechnology
Gurgaon, Haryana
(Chairman)

Prof. Jitendra P. Khurana

Professor & Head; Coordinator (UGC-SAP)
Department of Plant Molecular Biology
University of Delhi, South Campus
New Delhi

Prof. Rajendra Prasad

School of Life Sciences
Jawaharlal Nehru University
New Delhi

Shri J. B. Mohapatra

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

M/s. S. D. Sharma & Associates

Institute's Architect
Panchkula (Haryana)

Shri Sunil Kumar Sharma

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, Distinguished Emeritus Scientist

Dr. Niranjan Chakraborty, Scientist – VII

Dr. Subhra Chakraborty, Scientist – VII

Dr. Debasis Chattopadhyay, Scientist – VI

Dr. Alok Krishna Sinha, Scientist – VI

Dr. Sabhyata Bhatia, Scientist – VI

Dr. Praveen Verma, Scientist – V

Dr. Manoj Prasad, Scientist – V

Dr. Jitendra K. Thakur, Scientist – IV

Dr. Gitanjali Yadav, Scientist – IV

Dr. Ashverya Laxmi, Scientist – IV

Dr. Manoj Majee, Scientist – IV

Dr. Mukesh Jain, Scientist – IV*

Dr. Naveen C. Bisht, Scientist – IV

Dr. Jagadis Gupta Kapuganti – IV

Dr. Ananda K. Sarkar, Scientist – III

Dr. Gopaljee Jha, Scientist – III

Dr. Saloni Mathur, Scientist – III

Dr. Senthil Kumar Muthappa, Scientist – III

Dr. Jitender Giri, Scientist – III

Dr. Swarup K. Parida, Scientist – III

Dr. Pinky Agarwal, Scientist – III

Dr. JyothiLakshmi Vadassery, Scientist – III

Dr. Aashis Ranjan, Scientist – III

*on lien w.e.f. 20/10/2015

Technical Staff

Ms Umamaheswari Rajamani, Technical Staff Gr. – I

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

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

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

Shri Sunil Kumar, Technical Staff Gr. – I

Shri Sunil Kumar Avasthi, Technical Staff Gr. – I

Dr. Santosh Kumar Gupta, Technical Staff Gr. – I

Shri Neeraj Nim, Programmer

Shri Arun Kumar, Technical Staff Gr. – II

Shri Shankar Acharya, Technical Staff Gr. – II

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

Shri Shobharam Valmeeki, Technical Staff Gr. – II

Shri Anand Singh Rana, Technical Staff Gr. – II

Shri Ashok Kumar, Technical Staff Gr. – II

Shri Rajendra, Technical Staff Gr. – II

Shri Dinesh Mehta, Technical Staff Gr. – II

Shri Ratneshwar Thakur, Technical Staff Gr. – II

Shri Subhasish Mondal, Technical Assistant – II

Shri Shailendra Kharwal, Technical Staff Gr. – III

Shri Anand Dangi, Technical Staff Gr. – III

Shri Lokesh Singh Chandolia, Technical Staff Gr. – III

Shri Brihaspati Narayan Shukla, Technician -I

Shri Arabinda Das, Multi Tasking Staff

Shri P. K. Mishra, Multi Tasking Staff

Shri B. P. Mandal, Multi Tasking Staff

Shri Tul Bahadur Thapa, Multi Tasking Staff

Shri Shyam Bahadur Gurung, Multi Tasking Staff*

Ms Neeta Maurya, Multi Tasking Staff

Shri Mahender Singh, Multi Tasking Staff

*retired on July 31, 2015.

Administrative & Finance Staff

Shri Sandeep Datta, Manager
Dr. V. K. Sharma, Librarian / Information Scientist
Shri Rajinder Raina, Purchase-Cum-Store Officer
Shri Sudhir Patwal, Administrative Officer
Shri Rakesh Mohan, Finance Officer
Shri Sunil Kumar Sharma, Consultant
Shri Kamal Kumar Verma, PS to Director
Ms Rashmi Singh, Management Assistant*
Ms Vinita Sharma, Management Assistant
Ms Rajani Aswal, Management Assistant
Ms Sonali, Jr. Management Assistant
Shri Tapas Shit, Jr. Management Assistant
Shri Mitesh Raj Bhardwaj, Jr. Management Assistant
Shri Achint Gupta, Jr. Management Assistant
Shri Ravi Kant Singh, Jr. Engineer (Civil)
Shri Naveen Kumar Sudda, Jr. Engineer (Electrical)
Shri Devender Singh Bhandari, Assistant
Shri Ramesh Singh Chaudhary, Jr. Assistant
Shri Hari Singh Negi, Jr. Assistant
Shri Kuldeep Singh, Driver
Shri Manmohan Singh Rawat, Multi Tasking Staff
Shri Bhrigunath Manjhi, Multi Tasking Staff

* resigned on April 30, 2015.

**Budget/
Auditor's Reports &
Audited Accounts**

Budget

The Financial resources of the National Institute of Plant Genome Research are the core grant provided by the Govt. of India, Department of Biotechnology, comprising of Grants for creation of Capital Assets, Grants-in-Aid Salaries and Grants-in-Aid General.

The Department of Biotechnology in their projections for financial year 2015-16 have allocated grant of ₹2860.00 lakhs including ₹510.00 lakhs for infrastructure facilities in respect of NIPGR.

The source and application of funds during the financial year 2015-16 in respect of Institute is as under:

Sources of Funds

The Govt. of India, Department of Biotechnology, released grants of ₹2860 lakhs during 2015-16 as detailed below:

Grants for Creation of Capital Assets	₹510.00 lakhs
Grants-in-Aid Salaries	₹650.00 lakhs
Grants-in-Aid General	₹1700.00 lakhs

Besides, the Institute has also earned an interest of ₹40, 41,378/- on bank deposits of the Institute during the year, apart from the opening balance of ₹94, 35,432/- carried forward from previous year.

Application of Funds

(As per Utilization Certificate furnished to the Department of Biotechnology for the year 2015-16)

The total expenditure on research activities and infrastructure development during the year 2015-16 was ₹27,21,82,742/- including ₹4,10,62,845/- on infrastructure development.

OVER ALL EXPENDITURE AT A GLANCE

<u>A-Grants for creation of Capital Assets</u>		Amount in ₹
1. Land & Building		5,24,744
2. Equipment		3,60,68,185
3. Furniture & Fixtures		8,28,992
4. Books/Scientific Journals		36,40,924
Total =		<u>4,10,62,845</u>
<u>B-Grants-in-Salaries</u>		
1. Manpower		6,21,73,094
Total =		<u>6,21,73,094</u>
<u>C-Grant-in-Aid General</u>		
1. Consumables		3,42,58,343
2. Contingencies		10,75,05,713
3. Training/Networking/Fellowship		2,13,52,371
4. Campus/Field Development		56,01,083
5. Travel		2,29,293
Total =		<u>16,89,46,803</u>
Closing balance at the end of the year 2015-16		<u>2,72,94,068</u>

INDEPENDENT AUDITOR'S REPORT

Report on the financial statements

We have audited the accompanying financial statements of **NATIONAL INSTITUTE OF PLANT GENOME RESEARCH** (formerly National Centre for Plant Genome Research) Aruna Asaf Ali Marg, J.N.U. Campus, New Delhi-110067, which comprise the Balance sheet as at March 31, 2016, and the Income & Expenditure Account and the Receipts & Payments Account for the year ended on that date, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation of these financial statements that gives a true and fair view of financial position and financial performance of the Institute in accordance with the Accounting Standards issued by The Institute of Chartered Accountants of India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentations of financial statements that gives a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risk of material misstatements of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the institute's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our qualified audit opinion.

Basis for Qualified Opinion

- (i) *Provision for gratuity and leave encashment has been made based on actuarial valuation by an actuarial for the first time. After considering the ad hoc provision outstanding in the books of the NIPGR prior to this valuation a sum of Rs. 3,04,57,164/- has been charged to Income & Expenditure Account in this year. This includes certain amount pertaining to previous years also. In the absence of any working, the amount pertaining to prior years cannot be worked out.*



1-E/15, Jhandewalan Extn., New Delhi-110055, India. E-mail : info@ykdco.com
Fax : (91-11) - 23549789, Phones : (91-11) - 23528511, 23638325, 23536857, 23550475

Contd..2/*

: 2 :

- (ii) Pending approval of final cost of construction by building committee, Phase-II of the building has not been capitalised. Also no depreciation has been charged on the same. In the absence of working/information, we are not in a position to ascertain and quantify the impact thereof on the financial statements. (Also refer point no. 6 (b) of schedule no. 24 to the financial statements).

Qualified Opinion

In our opinion and to the best of our information and according to the explanations given to us, except for the possible effects of the matter described in the Basis for Qualified Opinion paragraph, the financial statements give a true and fair view in conformity with the accounting principles generally accepted in India:

- a) In the case of Balance Sheet of the state of affairs of the Institute as at 31st March, 2016;
- b) In the case of Income and Expenditure Account, of the excess of Expenditure over Income during the year ended on that date and
- c) In the case of Receipts and Payments Account, of the receipts and payments during the year ended on that date.

For V. K. DHINGRA & CO.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N


(VIPUL GIROTRA)
PARTNER
M.No. : 084312



PLACE: NEW DELHI
DATE: AUGUST 26, 2016

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
BALANCE SHEET AS ON 31st MARCH 2016

		AMOUNT IN ₹	
LIABILITIES	Schedule	Current Year	Previous Year
Corpus/Capital Fund	1	741,870,669	761,268,374
Reserves and Surplus	2	(29,263,925)	7,271,982
Earmarked/Endowment Funds	3	42,648,261	35,776,849
Secured Loans and Borrowings	4	-	-
Unsecured Loans and Borrowings	5	-	-
Deferred Credit Liabilities	6	-	-
Current Liabilities and Provisions	7	115,011,757	78,776,467
TOTAL		870,266,762	883,093,672
ASSETS			
<u>Fixed Assets</u>			
Tangible Assets	8	713,170,031	752,441,836
Intangible Assets	8	4,389,396	2,256,587
Investments-From Earmarked/Endowment Funds	9	40,443,638	35,300,000
Investments- Others	10	-	-
Current Assets, Loans, Advances etc.	11	112,263,697	93,095,249
Miscellaneous Expenditure (to the extent not written off or adjusted)		-	-
TOTAL		870,266,762	883,093,672
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 V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

PLACE: NEW DELHI
DATE: August 26, 2016

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
INCOME & EXPENDITURE FOR THE YEAR ENDED 31st MARCH 2016

		AMOUNT IN ₹	
INCOME	Schedule	Current Year	Previous Year
Income from Sales/ Services	12	-	-
Grants / Subsidies (Recurring)	13	235,000,000	220,000,204
Fees/ Subscriptions	14	-	-
Income from Investments (Income on Investment from Earmarked/ Endowment Fund)	15	-	-
Income from Royalty, Publication etc.	16	-	-
Interest Earned	17	4,041,378	5,479,847
Other Income	18	1,368,729	1,911,036
Deferred Income- Fixed Assets	18	57,716,936	62,766,806
Increase / (decrease) in stock of Finished goods and works-in-progress	19	-	-
TOTAL (A)		298,127,043	290,157,893
EXPENDITURE			
Establishment Expenses	20	92,442,869	60,450,670
Other Administrative Expenses etc.	21	183,529,810	166,359,933
Prior Period Expenses	21	1,221,051	4,164,236
Expenditure on Grants, Subsidies etc.	22	-	-
Interest	23	-	-
Depreciation (Net Total at the year-end - corresponding to Schedule-8)		57,716,936	62,766,806
TOTAL (B)		334,910,666	293,741,645
Balance being excess of Income over Expenditure (A - B)			
Balance being excess of Expenditure over Income (B - A)		(36,783,623)	(3,583,752)
Transfer to Special Reserve (Specify each)		-	-
Transfer to / from General Reserve		-	-
BALANCE BEING DEFICIT/ SURPLUS CARRIED TO CORPUS/ CAPITAL FUND		(36,783,623)	(3,583,752)
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 V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

PLACE: NEW DELHI
DATE: August 26, 2016

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
RECEIPTS & PAYMENTS FOR THE YEAR ENDED 31st MARCH 2016

AMOUNT IN ₹

RECEIPTS	Current Year		Previous Year	
Particulars				
Opening Balance				
In Saving Account/Short Term deposits	86,766,075		106,599,647	
Reserve & Surplus	247,716		2,823,038	
Grants Received from Deptt of Biotechnology				
Non recurring	51,000,000		20,000,000	
Recurring	235,000,000		220,000,204	
Projects & Fellowships				
Sponsored Projects (Including all receipts & recoverable amounts)	85,537,798		79,627,589	
Sponsored Fellowship	33,052,901		35,287,587	
Interest Earned	4,041,378		5,479,847	
Security Deposit from Contractors	4,196,708		3,942,660	
EMD from Contractors	-		-	
Remittances	1,728,573		659,457	
Refund of Consumable advance	-		-	
Refund of Equipment advance	-		12,798	
Refund of Contingency advance	40,236		-	
Hostel/Mess Security	101,500		135,000	
Service Charges Received	-		-	
Other Income	1,392,834		2,029,448	
Contribution for Retirement Benefits-Gratuity	210,962		-	
TOTAL		503,316,681		476,597,275

AS PER OUR SEPARATE REPORT
OF EVEN DATE ATTACHED.
For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

PLACE: NEW DELHI
DATE: August 26, 2016

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
RECEIPTS & PAYMENTS FOR THE YEAR ENDED 31st MARCH 2016

AMOUNT IN ₹

<u>PAYMENTS</u> Particulars	Current Year		Previous Year	
Building under Construction	524,744		16,326,938	
Deposits with RITES for Building	-		-	
Land	-		-	
Lab Equipment	31,372,169		20,517,577	
Office Equipment	2,171,891		1,482,978	
Computer/Peripherals	845,983		-	
Furniture & Fixture	828,992		5,249,959	
Books & Scientific Journals	3,640,924		3,011,194	
Vehicle	-		-	
<u>Manpower</u>				
Salaries and Wages	61,159,556		53,878,103	
Contribution to Provident fund	1,013,538		440,903	
<u>Consumables</u>				
a) Chemicals ,Glasswares & Consumables	35,125,879		46,143,212	
b) Other Lab Items	-		-	
<u>Contingencies</u>				
a) Publication of Papers	2,943,446		2,268,328	
b) Electricity and water charges	61,265,446		51,833,022	
c) Seminar,Conference & Workshops	738,492		417,013	
d) Maintenance of Equipment	15,978,837		21,450,674	
e) Maintenance of AC Plant	3,058,541		4,183,067	
f) Maintenance of Building	670,959		712,295	
g) Vehicles Running and Maintenance				
(i) Petrol ,Oil & Lubricants	230,465		323,854	
(ii) Maintenance	55,560		76,708	
h) Postage, Telephone and Comm. Charges				
(i) Postage & Telegrams	41,855		25,117	
(ii) Telephone & Fax	406,999		345,782	
i) Printing and Stationary	788,600		1,350,597	
j) Security expenses	7,438,986		3,456,615	
k) Auditors Remuneration	27,400		24,450	
l) Committee Meeting Expenses	151,325		714,087	
m) Legal fees	36,000		36,000	
n) Journals and Periodicals	177,191		136,993	
o) Advertisement and Publicity	346,556		268,231	
p) Misc.contingencies	12,017,340		10,145,859	
q) Professional Charges	837,055		3,276,557	
r)Rates & Taxes	3,221,950		2,876,782	
Campus/ Field Development	5,601,383		7,188,553	
Training affiliation and Others	1,550,524		722,250	
NIPGR Fellowships	19,801,877		9,171,770	
Travelling and Conveyance Expenses				
(i) Travelling	219,480		950,245	
(ii) Conveyance & Transport	9,813		9,553	

Continued

<u>Others</u>				
a) Contingency Advance	341,958		48,816	
b) Consumable Advance	553,650		781,902	
c) Equipment advance	56,592		-	
d) Security Deposit paid	5,798,242		3,466,080	
e) Refund of Earnest Money deposit	-		-	
f) Hostel/Mess Security	143,000		166,500	
g)TDS-94C&J	-		-	
h) Outstanding expenses				
i) Remittances	1,728,573		659,457	
j) New Pension Scheme	-		18,320	
Sponsored Projects	83,236,542		83,053,114	
Sponsored Fellowship	34,892,287		32,621,745	
<u>Closing Balance</u>				
In Saving Bank Account/Short term Deposit	102,266,081		86,766,075	
TOTAL		503,316,681		476,597,275

AS PER OUR SEPARATE REPORT
OF EVEN DATE ATTACHED.
For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

PLACE: NEW DELHI
DATE: August 26, 2016

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

<u>SCHEDULE 1</u>	Current Year		Previous Year	
<u>CORPUS /CAPITAL FUND</u>				
Grants in Aid Non recurring				
Balance as at the beginning of the year	650,261,602		691,975,297	
Add: Contributions received during the year	51,000,000		20,000,000	
Add: Value of project equipments transferred	-		1,053,110	
Less: Value of project equipments transferred	1,053,110		-	
Less : Reduced during the year	57,716,936		62,766,806	
		642,491,556		650,261,602
Fixed Assets Fund				
Balance as at the beginning of the year	109,950,812		133,859,477	
Add: Contributions received during the year	17,924,760		14,519,082	
Add: Rectified entry due to last year ommission	-		(1,229)	
Less: Contribution refunded during the year	165,227		(128,516)	
Less: Value of project equipments transferred	-		1,053,110	
Add : Value of Project Equipment transferred back	1,053,110			
Less:Reduced during the year	30,440,302		37,501,924	
		98,323,153		109,950,812
Research Fund				
Balance as at the beginning of the year	862,696		862,696	
Add: Contributions received during the year	-		-	
		862,696		862,696
Students & Staff Welfare Fund				
Balance as at the beginning of the year	193,264		193,264	
Add: Contributions received during the year	-		-	
		193,264		193,264
<u>BALANCE AS AT THE YEAR- END</u>		741,870,669		761,268,374

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

SCHEDULE 2- RESERVES AND SURPLUS:	Current Year		Previous Year	
1.Capital Reserve:				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-		-	
		-		-
2.Revaluation Reserve:				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-		-	
		-		-
3.Special Reserves: 11 ISRFG FUND				
As per last Account	2,823,038		-	
Addition during the year	247,716		2,823,038	
Less: Deduction during the year	-		-	
		3,070,754		2,823,038
4. General Reserve:				
As per last Account	4,448,944		8,032,698	
Addition during the year	-		-	
Less: Deduction during the year	(36,783,623)		(3,583,752)	
Less: Short & Excess	-		(2.00)	
		(32,334,679)		4,448,944
TOTAL		(29,263,925)		7,271,982

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

<u>SCHEDULE 3A</u>	Current Year		Previous Year	
Fund Debt Employees Provident Fund				
a) Opening balance of the fund	35,776,849		28,128,754	
b) Additions to the fund				
i) Donations/grant	-		-	
ii) Income from Investments/Savings Account	3,012,575		2,970,192	
iii) Regular Subscription/Refund of Advance received	6,061,232		4,737,000	
iv) Receipt towards Management share & Interest (Deficit only)	1,013,538		440,903	
Total (a+b)		45,864,194		36,276,849
c) Utilization/Expenditure towards objectives of fund	-		-	
i. <u>Capital Expenditure</u>				
* Fixed Assets	-		-	
* Others	-		-	
ii Revenue Expenditure				
Advance payment to Subscribers	660,000		500,000	
Part final withdrawal	1,750,000		-	
Final payment to Subscribers	805,933		-	
Total (c)		3,215,933		500,000
TOTAL - A (a+b-c) (Annexure-67)		42,648,261		35,776,849

AMOUNT IN ₹

<u>SCHEDULE 3B</u>	Current Year		Previous Year	
11th International Symposium on Rice Functional Genomics				
a) Opening balance	-		2,702,528	
b) Funds received during the year	-		-	
c) Interest received	-		135,510	
Total (a+b)		-		2,838,038
a) Utilization/Expenditure towards Organization of Symposium	-		15,000	
b) Fund transferred to NIPGR Specific Fund A/c	-		2,823,038	
Total (c)		-		2,838,038
TOTAL-B (a+b-c)		-		-
TOTAL (3A+3B)		42,648,261		35,776,849

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

<u>SCHEDULE 4-</u> <u>SECURED LOANS AND BORROWINGS:</u>	Current Year		Previous Year	
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	-		-	
		-		-
<u>TOTAL</u>		-		-

AMOUNT IN ₹

<u>SCHEDULE 5-</u> <u>UNSECURED LOANS AND BORROWINGS</u>	Current Year		Previous Year	
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)	-		-	
		-		-
<u>TOTAL</u>		-		-

AMOUNT IN ₹

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

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

SCHEDULE 7-	Current Year		Previous Year	
CURRENT LAIBILITIES AND PROVISIONS				
<u>A. CURRENT LIABILITIES</u>				
1. Acceptances	-	-	-	
2. Sundry Creditors				
a) For Goods	-		-	
b) Others	-	-	-	-
3. Advances Received				
(i) Security deposits from contractors	7,480,612		7,296,024	
Add: Variations during the year	-		184,588	
Less: Variations during the year	1,734,884		-	
		5,745,728		7,480,612
(ii) Earnest Money deposit	-		16,990	
Add: Variations during the year	-		-	
Less: Variations during the year	-		16,990	
		-		-
(iii) Hostel Security from Students	497,400		528,900	
Add: Variations during the year	-		-	
Less: Variations during the year	41,500		31,500	
		455,900		497,400
4. Projects Grants/Fellowships				
(i) CSIR	250,412		-	
(ii) DBT	28,308,589		34,313,749	
(iii) DST	2,775,802		4,131,479	
(iv) NASI	159,932		45,783	
(v) INSA	186,348		52,313	
(vi) Fellowships	3,024,284		3,274,580	
(Annexure-1 to 66)		34,705,367		41,817,904
5. Interest accrued but not due on :				
(a) Secured Loans /borrowings	-		-	
(b) Unsecured Loans/borrowings	-		-	
		-		-
6. Statutory Liabilities				
a) CRIS Due	-		-	
b) Others	-		-	
		-		-
7. Other Current Liabilities;-				
Audit fees payable	23,000		22,472	
Outstanding Expenses payable	38,878,998		23,958,079	
		38,901,998		23,980,551
TOTAL (A)		79,808,993		73,776,467
<u>B. PROVISIONS</u>				
1. For Taxation	-		-	
2. Gratuity	11,718,154		2,500,000	
3. Superannuation/Pension	-		-	
4. Accumulated Leave Encashment	23,484,610		2,500,000	
5. Others (Specify)	-		-	
		35,202,764		5,000,000
TOTAL (B)		35,202,764		5,000,000
TOTAL (A+B)		115,011,757		78,776,467

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

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

SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st March 2016

SCHEDULE 8- FIXED ASSETS

ASSETS	RATE	W.D.V.As on 01.04.2015	Additions/Sales		Total As on 31.03.2016 Rs	Depreciation for the year Rs	W.D.V. As on 31.03.16
			Upto 30.09.15	On or After 01.10.15			
1.Land							
a) Free Hold	0%	43,200,000	-	-	43,200,000	-	43,200,000
b) Lease hold		-	-	-	-	-	-
2.(A) Building							
a) On Freehold Land	10%	193,327,096	524,744	-	193,851,840	19,385,184	174,466,656
b) On Leasehold Land		-	-	-	-	-	-
c) Ownership flats/premises	10%	-	-	-	-	-	-
d) Superstructures on Land not belonging to the entity	10%	654,231	-	-	654,231	65,423	588,807
2.(B) Building (Projects)	10%	38,452,839	-	-	38,452,839	3,845,284	34,607,555
3. Plant Machinery & Equipment							
a) Lab Equipments(Core)	40%	54,810,591	7,639,737	23,732,432	85,129,650	29,052,627	56,077,023
b) Lab Equipment (Project)	40%	58,234,378	1,453,647	10,229,088	70,970,223	26,595,018	44,375,205
4. Vehicles	15%	1,384,066	-	-	1,384,066	198,498	1,124,822
5. Furniture & Fixtures	10%	42,055,572	704,112	124,880	42,884,564	4,282,212	38,602,352
6. Office Equipments	15%	5,420,127	692,800	1,490,641	7,603,568	1,028,737	6,574,831
7. Computer / Peripherals	60%	583,477	42,850	803,133	1,429,460	616,736	812,724
8. Books & Scientific Journals	60%	3,250,928	66,430	492,259	3,809,617	2,138,093	1,671,524
9. E-Journals	25%	2,256,587	-	3,082,235	5,338,822	949,426	4,389,396
Total of Current Year		443,629,891	11,124,320	39,954,668	494,648,134	88,157,238	406,490,895
Capital work in Progress		311,068,532	-	-	311,068,532	-	311,068,532
Grand Total		754,698,423	11,124,320	39,954,668	805,716,666	88,157,238	717,559,427

Note: Lab Equipments (Project) having WDV of ₹10,53,110/- as on 01.04.2014 transferred to Lab Equipment (Core) in F.Y.2014-15 have been reinstated as project assets during the year. Corresponding impact on depreciation has also been carried out during the year.

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

<u>SCHEDULE -9</u>	Current Year		Previous Year	
<u>INVESTMENTS FROM FUND DEBT EMPLOYEES</u>				
<u>PROVIDENT FUND</u>				
1. In Government Securities	-		-	
2. Other approved Securities	-		-	
3. Shares	-		-	
4. Debentures and Bonds	-		-	
5. Subsidiaries and Joint Ventures	-		-	
6. Others-Financial Institutions	40,443,638		35,300,000	
		40,443,638		35,300,000
<u>TOTAL</u>		40,443,638		35,300,000

AMOUNT IN ₹

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

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

<u>SCHEDULE -11</u> <u>CURRENT ASSETS, LOANS, ADVANCES ETC.</u>	Current Year		Previous Year	
<u>A. CURRENT ASSETS:</u>				
<u>1. Inventories:</u>				
a) Stores and Spares	-		-	
b) Loose Tools	-		-	
c) Stock-in- trade				
Finished Goods	-		-	
Work-in-progress	-		-	
Consumables	2,818,947		2,499,958	
		2,818,947		2,499,958
<u>2. Sundry Debtors</u>				
a) Debts Outstanding for a period exceeding six months	-		-	
b) Others	-		-	
		-		-
<u>3. Cash balance in hand</u> (including cheques/drafts and imprest)	-		-	
		-		-
<u>4. Bank Balances:</u>				
<u>a) With Schedules Banks:</u>				
-On Current Accounts	-		-	
-On Deposit Accounts (includes margin money)	4,680,754		2,823,038	
-On Savings Account	97,585,327		83,943,037	
-NIPGR CPF Account	2,204,623		476,849	
-11th ISRFG	-		-	
		104,470,704		87,242,924
<u>b) With non- Scheduled Banks:</u>				
-On Current Accounts	-		-	
-On Deposit Accounts	-		-	
-On Savings Accounts	-		-	
		-		-
<u>5. Post Office- Savings Accounts</u>	-		-	
		-		-
<u>TOTAL (A)</u>		107,289,651		89,742,882

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

<u>SCHEDULE- 11</u>	Current Year		Previous Year	
<u>CURRENT ASSETS, LOANS, ADVANCES ETC.</u>				
<u>B. LOANS,ADVANCES AND OTHER ASSETS:</u>				
<u>1. Loans:</u>				
a)Staff		-		-
b)To other Entities engaged in activities/objectives similar to that of the entitiy		-		-
<u>2. Advances and other amounts recoverable in cash or in kind for value to be received</u>				
a) On Capital Account (Equipment Adv.)	-		-	
b) On Capital Account (Equipment Adv.projects)	-		-	
c) Contingencies Advance	1,731,306		122,743	
d) Consumable Advance	34,200		-	
e) Advance for assets	56,592		-	
<u>f) Security</u>				
(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	
		4,230,786		2,531,431
<u>3. Income Accrued:</u>				
a) On Investments from Earmarked/Endowment Funds	-		-	
b) On Investments - Others	-		-	
c) On Loans and Advances	-		-	
d) Others -(M/s RITES Ltd)	743,260		743,260	
(includes income due unrealised - ₹Nil)				
		743,260		743,260
<u>4. Claims Receivable</u>	-		-	
<u>5. Prepaid Expenses</u>	-		77,676	
		-		77,676
<u>TOTAL (B)</u>		4,974,046		3,352,367
<u>TOTAL (A +B)</u>		112,263,697		93,095,249

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

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

AMOUNT IN ₹

<u>SCHEDULE -13</u>	Current Year		Previous Year	
<u>GRANTS/SUBSIDIES</u>				
(Irrevocable Grants & Subsidies Received)		-		
a) Central Government	235,000,000		220,000,204	
b) State Government(s)	-		-	
c) Government Agencies	-		-	
d) Institutions/Welfare Bodies	-		-	
e) International Organisation	-		-	
f) Others (Specify)	-		-	
		235,000,000		220,000,204
<u>TOTAL</u>		235,000,000		220,000,204

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

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

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

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

SCHEDULE 16	Current Year		Previous Year	
INCOME FROM ROYALTY, PUBLICATION ETC.				
1) Income form Royalty	-		-	-
2) Income form Publications	-		-	-
3) Service Charges	-		-	-
		-		-
TOTAL		-		-

AMOUNT IN ₹

SCHEDULE 17	Current Year		Previous Year	
INTEREST EARNED				
1) On Term Deposits:				
a) With Scheduled Banks	158,526		1,796,116	
b) With Non- Scheduled Banks	-		-	
c) With Instituitons	-		-	
d) Others-(M/s.RITES Ltd.)	-		-	
		158,526		1,796,116
2) On Savings Accounts:				
a) With Scheduled Banks	3,882,852		3,683,731	
b) With Non- Scheduled Banks	-		-	
c) Post Office Savings Accounts	-		-	
d) Others	-	3,882,852	-	3,683,731
3) On Loans:				
a) Employees/Staff	-		-	
b) Others	-		-	
		-		-
4) Interest on Debtors and Other Receivables	-		-	
		-		-
TOTAL		4,041,378		5,479,847
Note - Tax Deducted at source to be indicated				

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

SCHEDULE 18 - OTHER INCOME	Current Year		Previous Year	
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) Other Income				
a. Licence fee from Staff Quarters/Canteen	248,700		327,600	
b. Guest House Charges	319,600		276,900	
c. Hostel fee/Rent recovery/Admission Fee	576,239		1,187,436	
d. Miscellenous Income(Tender Fees,Sale of Scrap Material)	224,190		119,100	
4) Deferred Income - Fixed Assets	57,716,936		62,766,806	
		59,085,665		64,677,842
TOTAL		59,085,665		64,677,842

AMOUNT IN ₹

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

AMOUNT IN ₹

SCHEDULE 20 ESTABLISHMENT EXPENSES	Current Year		Previous Year	
a) Salaries and Wages	60,972,167		60,009,767	
b) Allowances and Bonus	-		-	
c) Contribution to Provident Fund	1,013,538		440,903	
d) Contribution to Other Fund (Specify)	-		-	
e) Staff Welfare Expenses	-		-	
f) Expen.on Empl. Retirement and Terminal Benefits	30,457,164		-	
g) Others (Specify)	-		-	
		92,442,869		60,450,670
TOTAL		92,442,869		60,450,670

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC.	Current Year		Previous Year	
1. Consumables				
a) Chemicals ,Glasswares & Consumables	40,330,096		44,215,625	
b) Other Lab Items	-	40,330,096	-	44,215,625
2. Contingencies				
a) Publication of Papers	2,872,069		1,969,178	
b) Electricity and water charges	63,421,424		52,465,042	
c) Seminar,Conference & Workshops	772,520		434,147	
d) Maintenance of Equipment	18,508,585		20,855,326	
e) Maintenance of AC Plant	2,968,905		4,895,006	
f) Maintenance of Building	4,986,125		4,001,609	
g) Vehicles Running and Maintenance				
(i) Petrol ,Oil & Lubricants	224,513		384,299	
(ii) Maintenance	90,590		122,413	
h) Postage, Telephone and Comm. Charges				
(i) Postage & Telegrams	41,855		27,556	
(ii) Telephone & Fax	387,102		340,957	
i) Printing and Stationary	842,806		1,486,974	
j) Security expenses	6,048,299		3,673,626	
k) Auditors Remuneration	27,928		22,472	
l) Committee Meeting Expenses	155,335		723,573	
m) Legal fees	36,000		72,000	
n) Journals and periodicals	178,066		119,719	
o) Advertisement and Publicity	540,277		296,515	
p) Misc.contingencies	7,422,569		5,285,051	
q) Rates & Taxes	3,221,950		2,876,782	
r) Professional Charges	4,526,624		2,396,615	
s) Assets written off	25,641			
t) Prior Period Expenditure	1,221,051	118,520,234	4,164,236	106,613,096
3. Campus/Field Development	5,622,771	5,622,771	7,157,878	7,157,878
4.(a) Training affiliation and Others	1,550,524		722,250	
b) NIPGR Fellowships	18,497,943	20,048,467	10,855,522	11,577,772
5. Travelling and Conveyance Expenses				
(i) Travelling	219,480		950,245	
(ii) Conveyance & Transport	9,813	229,293	9,553	959,798
TOTAL		184,750,861		170,524,169

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership. No. 084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH
(Formerly National Centre For Plant Genome Research)
SCHEDULES FORMING PART OF BALANCE SHEET AS ON 31st MARCH 2016

AMOUNT IN ₹

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

AMOUNT IN ₹

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

For V. K. DHINGRA & Co.
CHARTERED ACCOUNTANTS
Firm Registration No. : 000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership. No. 084312

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

**ACCOUNTING POLICIES AND NOTES FORMING PARTS OF THE BALANCE SHEET AS AT
AND INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED ON 31st MARCH, 2016**

1. The annual accounts have been prepared in the revised format of accrual system of accounting, except for Interest Income, Extramural Funds and Contributory Provident Fund, which are accounted for on cash basis.
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 relatable 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 ₹ 5,77,16,936/-.
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 Rules, 1961. The depreciation on lab equipment has been charged at 40% p.a at par with depreciation rates prescribed for medical equipments under section 32(1)(i) and Appendix I under Rule 5(1).
- (b) Full depreciation is charged during the year of acquisition in case the assets is acquired in the first half and 50% of rate of depreciation for assets acquired during the second half of the financial year. No depreciation is provided during the year of disposal of assets.
- (c) Depreciation of ₹ 3,04,40,302/- 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 at the end of the accounting year the value of the quantities in stock is reflected as Closing Inventory. The closing stock has been worked out on cost basis and shown in the respective schedule. The closing stock of these items amounting to ₹28,18,947/- was available at the end of the year.

6. (a) Construction Cost 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) The cost of phase –II of the building of the Institute will be capitalized after vetting of final cost by the Building Committee and approval by the Governing Body as per Institutional norms. Pending capitalisation, no depreciation has been charged on the same during the year though the same has been put to use.
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 ₹16, 28,554/- as overheads to different projects.
8. The Institute has made a provision of ₹3,04,57,164/- towards the terminal benefits payable to staff, as per Actuarial Valuation.
9. Interest earned on deposits with the banks is treated as income as per instruction contained in Uniform Formats of accounts for Autonomous Bodies. However, permission for the same is obtained from the DBT invariably on year to year basis.
10. As per approval of the competent authority a reserve fund with name 11th ISRFG Fund has been created and to be used for the purposes specified in this regard.
11. Previous year figures have been re-grouped/re-arranged wherever considered necessary.

For V.K DHINGRA & Co.
 CHARTERED ACCOUNTANTS
 Firm Registration No.:000250N

(RAKESH MOHAN)
 FINANCE OFFICER

(SANDEEP DATTA)
 MANAGER

(Dr NIRANJAN CHAKRABORTY)
 DIRECTOR

(VIPUL GIROTRA)
 PARTNER

Membership No.084312

Place: New Delhi
 Date: August 26, 2016

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

CSIR PROJECT

R/P entitled "Proteomic analysis of dehydration-responsive SECRETOME OF GRASSPEA (*Lathyrus sativus* L.)".

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	-		-	
<u>Grant- In- Aid for</u>				
i) Staff	880,020		-	
ii) Contingencies	750,000		-	
iii) Overheads	-			
TOTAL		1,630,020		-

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Staff	900,774		-	
ii) Contingencies	695,095		-	
iii) Overheads	-		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	34,151		-	
TOTAL		1,630,020		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

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

CSIR PROJECT

R/P entitled "Regulatory Dynamics of N-acetylglucosamine metabolism in Model fungal Pathogen, *Vandida albicans*".

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c	-			
<u>Grant- In- Aid for</u>				
i) Staff	216,000			
ii) Contingencies	200,000			
iii) Overheads	-			
TOTAL		416,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Staff	-			
ii) Contingencies	199,739			
iii) Overheads	-			
<u>CLOSING BALANCE</u> With Bank in Saving A/c	216,261			
TOTAL		416,000		-

For V.K.DHINGRA & co.
CHARTERED ACCOUNTANTS
Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr.NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER

Membership No.084312

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

DBT PROJECT

R/P entitled "Nutritional Genomics: Value Added transgenic crops for better nutrition & fungal resistance"
RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

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

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

For V.K.DHINGRA & co.
CHARTERED ACCOUNTANTS
Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**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 FROM 1st APRIL 2015 TO 31st MARCH 2016**

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

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

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**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 FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,506,265		(75,737)	
Equipment	157,476		157,476	
<u>Grant- In- Aid for</u>				
i) Equipment	557,000			
ii) Manpower	-		1,442,000	
iii)Contingencies	-		358,000	
iv) Travel	-		66,000	
v) Other Cost	-		310,000	
TOTAL		2,220,741		2,257,739

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	13,500			
ii) Manpower	492,000		366,229	
iii)Contingencies	187,140		153,036	
iv) Travel	36,892		29,371	
v) Other Cost	31,847		45,362	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	758,386		1,506,265	
Equipment	700,976		157,476	
TOTAL		2,220,741		2,257,739

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

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

DBT PROJECT

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

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

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

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

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**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 FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	19,419		17,419	
Equipment	(20,980)		(20,980)	
<u>Adjustment</u>				
i) Equipment			-	
ii) Manpower			-	
iii) Consumable	1,561		2,000	
iv) Travel			-	
v)Contingencies			-	
TOTAL		-		(1,561)

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	-		-	
iii) Consumable				
iv) Travel				
v)Contingencies	-		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	20,980		19,419	
Equipment	(20,980)		(20,980)	
TOTAL		-		(1,561)

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECTR/P entitled DNA barcoding of *Dalbergia species*

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	45,059		45,059	
Equipment	(191,459)		(191,459)	
<u>Grant- In- Aid for</u>				
i) Equipment				
ii) Manpower				
iii) Consumable				
iv) Travel				
v)Contingencies				
TOTAL		(146,400)		(146,400)

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	-		-	
iii) Consumable	-		-	
iv) Travel	-		-	
v)Contingencies	-		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	45,059		45,059	
Equipment	(191,459)		(191,459)	
TOTAL		(146,400)		(146,400)

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

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 FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
OPENING BALANCE				
With Bank in Saving A/c				
Recurring	-		624,723	
Equipment				
Grant- In- Aid for				
i) Equipment	-			
ii) Manpower	98,833		-	
iii) Consumable	-			
iv) Travel	-			
v)Contingencies	-		-	
TOTAL		98,833		624,723

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	98,833		624,723	
iii) Consumable	-			
iv) Travel	-			
v)Contingencies	-		-	
CLOSING BALANCE				
With Bank in Saving A/c				
Recurring	-		-	
Equipment				
TOTAL		98,833		624,723

For V.K.DHINGRA & co.
 CHARTERED ACCOUNTANTS
 Firm Registration No.:000250N

(RAKESH MOHAN)
 FINANCE OFFICER

(SANDEEP DATTA)
 MANAGER

(Dr. NIRANJAN CHAKRABORTY)
 DIRECTOR

(VIPUL GIROTRA)
 PARTNER
 Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**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 FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	443,120		482,717	
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment				
ii) Manpower	-		221,000	
iii) Consumable				
iv) Travel	-		517,000	
v) Contingencies				
vi) Cash Award	-		100,000	
TOTAL		443,120		1,320,717

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	165,220		116,580	
iii) Consumable				
iv) Travel	277,900		661,017	
v) Contingencies				
vi) Cash Award			100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	-		443,120	
Equipment	-		-	
TOTAL		443,120		1,320,717

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Mapping of Mungbean yellow Mosaic Virus resistance loci in soybean

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,217,281		20,586	
Equipment	(9,883)		(9,883)	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	-		997,000	
iii) Consumable	-		761,000	
iv) Travel	-		20,000	
v) Contingencies	-		74,000	
TOTAL		1,207,398		1,862,703

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	(9,883)		-	
ii) Manpower	670,661		303,508	
iii) Consumable	471,911		305,686	
iv) Travel	24,625		22,111	
v) Contingencies	50,084		24,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	-		1,217,281	
Equipment	-		(9,883)	
TOTAL		1,207,398		1,862,703

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Regulation of root development by auxin and cytokinin mediated signaling

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	321,403		1,165,312	
Equipment	433		433	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	352,000		-	
iii) Consumable	177,000		-	
iv) Travel	-		-	
v) Contingencies	-		-	
TOTAL		850,836		1,165,745

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	97,500		113,970	
iii) Consumable	194,554		680,139	
iv) Travel	8,002		11,230	
v) Contingencies	10,367		38,570	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	539,980		321,403	
Equipment	433		433	
TOTAL		850,836		1,165,745

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Functional Genomics of Nodulation in Chickpea Roots

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	64,691		672,741	
Equipment	-		-	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	1,014,000		-	
iii) Consumable	469,000		-	
iv) Travel	45,000		-	
v) Contingencies	-		-	
TOTAL		1,592,691		672,741

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	713,910		291,361	
iii) Consumable	498,097		316,689	
iv) Travel	2,631		-	
v) Contingencies	9,900		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	368,153		64,691	
Equipment	-		-	
TOTAL		1,592,691		672,741

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Study of the role Mitogen Activated Protein Kinase (MAPK) during rice root development****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	98,969		148,698	
Equipment	-		-	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	695,000		228,000	
iii) Consumable	474,000		237,000	
iv) Travel	-		-	
v) Contingencies	31,000		25,000	
TOTAL		1,298,969		638,698

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	234,000		209,883	
iii) Consumable	484,160		323,715	
iv) Travel	7,671		-	
v) Contingencies	24,732		6,131	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	548,406		98,969	
Equipment	-		-	
TOTAL		1,298,969		638,698

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled To study the role of glucose and its interaction with hormones in controlling Arabidopsis thaliana root directional responses

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	95,769		102,889	
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	57,000		5,000	
iii) Consumable	588,000		345,000	
iv) Travel	-		-	
v) Contingencies	47,000		20,000	
TOTAL		787,769		472,889

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	21,419		10,322	
iii) Consumable	562,967		338,460	
iv) Travel	7,947		6,738	
v) Contingencies	46,733		21,600	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	148,703		95,769	
Equipment	-		-	
TOTAL		787,769		472,889

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

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

DBT PROJECT

R/P entitled Identification of genes involved in regulation of Phosphate utilization by root under Water-Deficit Stress in Rice

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
OPENING BALANCE				
With Bank in Saving A/c				
Recurring	199,592		191,251	
Equipment				
Grant- In- Aid for				
i) Equipment	-		-	
ii) Manpower	581,452		433,000	
iii) Consumable	600,000		615,000	
iv) Travel	-		-	
v) Contingencies	-		30,100	
TOTAL		1,381,044		1,269,351

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	251,700		331,229	
iii) Consumable	576,289		697,458	
iv) Travel	14,542		-	
v) Contingencies	7,127		41,072	
CLOSING BALANCE				
With Bank in Saving A/c				
Recurring	531,386		199,592	
Equipment	-		-	
TOTAL		1,381,044		1,269,351

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Molecular characterization of Variation in Root System Architecture among selected Indica Rice Varieties

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	150,799		322,224	
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment				
ii) Manpower	570,000		314,200	
iii) Consumable	697,000		700,000	
iv) Travel	47,000		-	
v) Contingencies	-		50,000	
TOTAL		1,464,799		1,386,424

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	221,758		227,756	
iii) Consumable	699,470		908,164	
iv) Travel	38,731		52,285	
v) Contingencies	3,500		47,420	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	501,340		150,799	
Equipment	-		-	
TOTAL		1,464,799		1,386,424

For V.K.DHINGRA & co.
 CHARTERED ACCOUNTANTS
 Firm Registration No.:000250N

(RAKESH MOHAN)
 FINANCE OFFICER

(SANDEEP DATTA)
 MANAGER

(Dr. NIRANJAN CHAKRABORTY)
 DIRECTOR

(VIPUL GIROTRA)
 PARTNER
 Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Development of low Glucosinolate V Brassica Juncea transgenic lines using RNAi based down-regulation of glucosinolate pathway genes****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	103,321		702,684	
Equipment	55,317		55,317	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	-		165,802	
iii) Consumable	-		-	
iv) Travel	-		-	
v) Contingencies	-		-	
TOTAL		158,638		923,803

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	55,317		-	
ii) Manpower	53,361		112,439	
iii) Consumable	5,940		629,640	
iv) Travel	39,407		-	
v) Contingencies	4,613		23,086	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	-		103,321	
Equipment	-		55,317	
TOTAL		158,638		923,803

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

DBT-CREST award for the Year 2011-12

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	53,292		(100,188)	
<u>Grant- In- Aid for</u>				
i) Fellowship	-		153,480	
ii) Preparatory Allowance	-		-	
iii) Travel Cost	-		-	
TOTAL		53,292		53,292

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Fellowship	53,292		-	
ii) Preparatory Allowance	-		-	
iii) Travel Cost	-		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	-		53,292	
TOTAL		53,292		53,292

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Functional Proteomic Studies in North-east Rice (Oryza sativa L.) for Dehydration Tolerance****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	12,356		(14,019)	
Equipment			42,979	
<u>Grant- In- Aid for</u>				
i) Equipment	-		(42,979)	
ii) Manpower	555,000		497,000	
iii) Consumable	480,000		500,000	
iv) Travel	50,000		50,000	
v) Contingencies	14,000		49,979	
TOTAL		1,111,356		1,082,960

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	69,767		525,200	
iii) Consumable	454,259		480,139	
iv) Travel	27,569		53,575	
v) Contingencies	-		11,690	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	559,761		-	
Equipment	-		12,356	
TOTAL		1,111,356		1,082,960

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Tissue Specific Engineering of Glucosinolate Content and Profiles in Indian Oilseed Mustard (Brassica Juncea) for Higher Nutritional Value and Uncompromised Defense Response****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	348,740		312,095	
Equipment	11,757		396,239	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	397,000		198,000	
iii) Consumable				
iv) Travel	579,000		597,000	
v) Contingencies				
vi) Cash Award	100,000		100,000	
TOTAL		1,436,497		1,603,334

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		384,482	
ii) Manpower	322,232		187,200	
iii) Consumable				
iv) Travel	487,196		571,155	
v) Contingencies				
vi) Cash Award	100,000		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	515,312		348,740	
Equipment	11,757		11,757	
TOTAL		1,436,497		1,603,334

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled G-Quadruplexes: Prevalence, Functional relevance and Epigenetic Regulation in Plants****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	187,060		402,875	
Equipment	40		71,011	
<u>Grant- In- Aid for</u>				
i) Equipment	-		-	
ii) Manpower	473,000		94,000	
iii) Consumable				
iv) Travel	998,000		353,000	
v) Contingencies				
vi) Cash Award	100,000		100,000	
TOTAL		1,758,100		1,020,886

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		70,971	
ii) Manpower	378,659		173,948	
iii) Consumable				
iv) Travel	943,487		488,867	
v) Contingencies				
vi) Cash Award	100,000		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	335,914		187,060	
Equipment	40		40	
TOTAL		1,758,100		1,020,886

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Gold nanoparticles based simple, quick and onsite early diagnostic kit for apple scab disease****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	70,713		545,485	
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment				
ii) Manpower	548,400		129,000	
iii) Consumable	400,000		143,000	
iv) Travel	29,000		18,000	
v) Contingencies	50,000		25,000	
TOTAL		1,098,113		860,485

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	237,900		198,900	
iii) Consumable	366,212		512,467	
iv) Travel	526		28,580	
v) Contingencies	44,167		49,825	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	449,308		70,713	
Equipment				
TOTAL		1,098,113		860,485

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Biotechnological approaches to improve nutritional and post-harvest quality, drought tolerance and pathogen resistance in edible crops

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,783,455		1,592,574	
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment				
ii) Manpower	2,106,000		1,045,000	
iii) Consumable	2,612,000		2,884,000	
iv) Travel	37,000		-	
v) Contingencies	100,000		94,000	
TOTAL		6,638,455		5,615,574

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	2,530,966		1,482,125	
iii) Consumable	2,600,686		2,213,002	
iv) Travel	12,633		36,940	
v) Contingencies	100,124		100,052	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,394,046		1,783,455	
Equipment				
TOTAL		6,638,455		5,615,574

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Functional genomics approaches in understanding the regulation of synthesis and accumulation of apocarotenoids in saffron crocus (*Crocus sativus* L.)

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,666,118		1,537,226	
Equipment	-		50,000	
<u>Grant- In- Aid for</u>				
i) Equipment	-		(50,000)	
ii) Manpower	-		126,000	
iii) Consumable	-		1,495,000	
iv) Travel	-		50,000	
v) Contingencies	-		49,000	
TOTAL		1,666,118		3,257,226

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		-	
ii) Manpower	132,756		207,115	
iii) Consumable	1,427,985		1,331,428	
iv) Travel	68,443		12,887	
v) Contingencies	36,934		39,678	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	-		1,666,118	
Equipment	-		-	
TOTAL		1,666,118		3,257,226

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Understanding synergistic response of Arabidopsis plants exposed to drought and bacterial pathogen.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
OPENING BALANCE				
With Bank in Saving A/c				
Recurring	294,602		881,880	
Equipment				
Grant- In- Aid for				
i) Equipment				
ii) Manpower	1,110,000		1,131,667	
iii) Consumable				
iv) Travel	500,000		650,000	
v) Contingencies				
TOTAL		1,904,602		2,663,547

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	1,202,500		1,100,000	
iii) Consumable				
iv) Travel	311,694		1,268,945	
v) Contingencies				
CLOSING BALANCE				
With Bank in Saving A/c				
Recurring	390,408		294,602	
Equipment				
TOTAL		1,904,602		2,663,547

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Analysis of diversity in yield components (seed size and weight) at transcriptome and epigenome levels for association/genetic mapping of selected loci in rice and chickpea.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	19,637,050		14,507,813	
Equipment	9,499,255		17,500,000	
<u>Grant- In- Aid for</u>				
i) Equipment	-		8,706,000	
ii) Manpower	-		2,362,000	
iii) Consumable	-		16,938,000	
iv) Travel	-		19,000	
v) Contingencies	-		200,000	
TOTAL		29,136,305		60,232,813

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	7,516,366		16,706,745	
ii) Manpower	2,019,232		2,050,271	
iii) Consumable	16,236,444		12,038,470	
iv) Travel	38,621		70,330	
v) Contingencies	214,630		230,692	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,128,123		19,637,050	
Equipment	1,982,889		9,499,255	
TOTAL		29,136,305		60,232,813

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

DBT-CREST award for the Year 2011-12

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	317,461		251,903	
<u>Grant- In- Aid for</u>				
i) Fellowship	-		316,836	
ii) Preparatory Allowance	-		5,316	
iii) Travel Cost	-		(35,590)	
TOTAL		317,461		538,465

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Fellowship	317,461		251,903	
ii) Preparatory Allowance	-		-	
iii) Travel Cost	-		(30,899)	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	-		317,461	
TOTAL		317,461		538,465

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Identification and characterization of effectors from necrotrophic blight fungus *Ascochyta rabiei* and their targets from the chickpea.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
OPENING BALANCE				
With Bank in Saving A/c				
Recurring	386,589			
Equipment	508,000			
Grant- In- Aid for				
i) Equipment	-		1,308,000	
ii) Manpower	-		624,000	
iii) Consumable	-		800,000	
iv) Travel	-		40,000	
v) Contingencies	-		50,000	
TOTAL		894,589		2,822,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-		800,000	
ii) Manpower	234,000		403,587	
iii) Consumable	40,300		678,859	
iv) Travel	28,525		-	
v) Contingencies	-		44,965	
CLOSING BALANCE				
With Bank in Saving A/c				
Recurring	83,764		386,589	
Equipment	508,000		508,000	
TOTAL		894,589		2,822,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIOTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Characterization of ubiquitin/26S proteasome pathway-related genes by VIGS in tomato during ToLCNDV infection.****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	528,632			
Equipment	700,000			
<u>Grant- In- Aid for</u>				
i) Equipment	-		700,000	
ii) Manpower	-		561,600	
iii) Consumable	-		700,000	
iv) Travel	-		30,000	
v) Contingencies	-		50,000	
TOTAL		1,228,632		2,041,600

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	691,253		-	
ii) Manpower	433,780		151,320	
iii) Consumable	75,169		623,767	
iv) Travel	-		13,417	
v) Contingencies	24,892		24,464	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	(5,209)		528,632	
Equipment	8,747		700,000	
TOTAL		1,228,632		2,041,600

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No..000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Introgression of begomovirus resistance genes in tomato (Solanum lycopersicum L.) using MAS and Genomic approach.****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,766,550			
Equipment	597,000			
<u>Grant- In- Aid for</u>				
i) Equipment	-		597,000	
ii) Manpower	-		780,000	
iii) Consumable	-		1,100,000	
iv) Travel	-		40,000	
v) Contingencies	-		50,000	
TOTAL		2,363,550		2,567,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	405,204		-	
ii) Manpower	599,153		54,553	
iii) Consumable	920,936		148,897	
iv) Travel	35,781		-	
v) Contingencies	47,374		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	163,306		1,766,550	
Equipment	191,796		597,000	
TOTAL		2,363,550		2,567,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Understanding the molecular intricacies of Rice-Rhizoctonia interactions.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	2,598,400			
Equipment	2,500,000			
<u>Grant- In- Aid for</u>				
i) Equipment	-		2,500,000	
ii) Manpower	-		998,400	
iii) Consumable	-		1,500,000	
iv) Travel	-		50,000	
v) Contingencies	-		50,000	
TOTAL		5,098,400		5,098,400

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	999,850			
ii) Manpower	783,690			
iii) Consumable	1,498,296			
iv) Travel	17,157			
v) Contingencies	50,500			
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	248,757		2,598,400	
Equipment	1,500,150		2,500,000	
TOTAL		5,098,400		5,098,400

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Characterization of the versatile role of OsMPK3, a rice mitogen activated protein kinase".****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c	453,530			
<u>Grant- In- Aid for</u> i) Equipment ii) Manpower iii) Consumable iv) Travel v) Contingencies	-		500,000	
TOTAL		453,530		500,000

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment ii) Manpower iii) Consumable iv) Travel v) Contingencies	421,594		46,470	
<u>CLOSING BALANCE</u> With Bank in Saving A/c	31,936		453,530	
TOTAL		453,530		500,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Elucidating immune-related pathostress-responsive ECM reportier in legume and tuber crops by comparative proteomic analysis.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	25,488			
<u>Grant- In- Aid for</u>				
i) Fellowship	300,000		300,000	
ii) Consumable				
iii) Travel	600,000		600,000	
iv) Contingencies				
TOTAL		925,488		900,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Fellowship	300,000		275,000	
ii) Consumable				
iii) Travel	537,151		599,512	
iv) Contingencies				
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	88,337		25,488	
TOTAL		925,488		900,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled Investigation the role of PROTEIN-L-ISOASPARTYL METHYLTRANSFERASE (PIMT) in plant stress adaptation.****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment	530,000			
<u>Grant- In- Aid for</u>				
i) Equipment	-		530,000	
ii) Manpower	657,600		-	
iii) Consumable	900,000		-	
iv) Travel	20,000		-	
v) Contingencies	30,000		-	
TOTAL		2,137,600		530,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	172,267		-	
ii) Manpower	344,146		-	
iii) Consumable	719,999		-	
iv) Travel	9,158		-	
v) Contingencies	28,568		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	505,729		-	
Equipment	357,733		530,000	
TOTAL		2,137,600		530,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT****R/P entitled The role of hypoxia-induced nitric oxide in plant growth and flooding stress survival.****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c				
<u>Grant- In- Aid for</u> i)Research/Contingency grant	1,000,000		-	
TOTAL		1,000,000		-

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i)Research/Contingency grant	995,794		-	
<u>CLOSING BALANCE</u> With Bank in Saving A/c	4,206			
TOTAL		1,000,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Association of transcript polymorphic simple sequence repeats, SNPs and microRNAs with agronomic traits in chickpea.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
<u>Grant- In- Aid for</u>				
i) Fellowship	300,000			
ii) Consumable				
iii) Travel	600,000			
iv) Contingencies				
TOTAL		900,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Fellowship	275,000			
ii) Consumable				
iii) Travel	625,370			
iv) Contingencies				
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	(370)			
TOTAL		900,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT**

DBT's R/P entitled Investigation of molecular and genetic basis of plant development regulation in response to environmental changes.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c				
<u>Grant- In- Aid for</u>				
i) Manpower	1,110,000			
li)Research/Contingency grant	1,000,000		-	
TOTAL		2,110,000		-

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Manpower	1,094,583		-	
li)Research/Contingency grant	1,000,299			
<u>CLOSING BALANCE</u> With Bank in Saving A/c	15,118			
TOTAL		2,110,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Functional characterization of sugar and auxin regulated DUF581 domain containing genes encoding expressed proteins of unknown function in model plant system Arabidopsis thaliana

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment	1,839,500			
ii) Manpower	681,600			
iii) Consumable	800,000			
iv) Travel	20,000			
v) Contingencies	30,000			
TOTAL		3,371,100		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment			-	
ii) Manpower	10,000		-	
iii) Consumable	403,284		-	
iv) Travel	-		-	
v) Contingencies	27,500		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	1,090,816		-	
Equipment	1,839,500		-	
TOTAL		3,371,100		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Challenge Programme on Chickpea Functional Genomics.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment	10,000,000			
ii) Manpower	5,220,000			
iii) Consumable	7,500,000			
iv) Travel	250,000			
v) Contingencies	250,000			
vi)Overheads	300,000			
TOTAL		23,520,000		-

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment			-	
ii) Manpower	455,807		-	
iii) Consumable	1,872,165		-	
iv) Travel	-		-	
v) Contingencies	70,424		-	
vi)Overheads	300,000			
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	10,821,604		-	
Equipment	10,000,000		-	
TOTAL		23,520,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Functional analysis of a Mediator subunit gene, Med17, in rice and Arabidopsis.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment	-			
ii) Manpower	624,000			
iii) Consumable	2,000,000			
iv) Travel	30,000			
v) Contingencies	50,000			
TOTAL		2,704,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	-			
iii) Consumable	-			
iv) Travel	-			
v) Contingencies	-			
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	2,704,000			
Equipment	-			
TOTAL		2,704,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Hypoxia-induced nitric oxide as a tool in protection of plants under flooding and pathogen attack.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
OPENING BALANCE With Bank in Saving A/c Recurring Equipment				
Grant- In- Aid for i) Equipment ii) Manpower iii) Consumable iv) Travel v) Contingencies vi) Cash Award	1,000,000			
TOTAL		1,000,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment ii) Manpower iii) Consumable iv) Travel v) Contingencies vi) Cash Award	- - - - -			
CLOSING BALANCE With Bank in Saving A/c Recurring Equipment	- 1,000,000			
TOTAL		1,000,000		-

For V.K.DHINGRA & co.
CHARTERED ACCOUNTANTS
Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P entitled Functional Characterization of Genetic and Epigenetic Regulatory Networks Involved in the Reproductive Development in Rice.

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment	4,000,000			
ii) Manpower	1,194,000			
iii) Consumable	1,500,000			
iv) Travel	50,000			
v) Contingencies	50,000			
vi)Overheads	300,000			
TOTAL		7,094,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment			-	
ii) Manpower	-		-	
iii) Consumable	267,100		-	
iv) Travel	-		-	
v) Contingencies	-		-	
vi)Overheads	300,000			
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	2,526,900		-	
Equipment	4,000,000		-	
TOTAL		7,094,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DBT PROJECT**

R/P entitled Towards identification, isolation and characterization of Exobasidium vexans strains and their pathogenic determinants/effectors from Blister blight infested tea plantations of Assam and development of a future road-map for effective management practices

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant- In- Aid for</u>				
i) Equipment	202,000			
ii) Manpower	562,000			
iii) Consumable	500,000			
iv) Travel	50,000			
v) Contingencies	50,000			
TOTAL		1,364,000		-

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment			-	
ii) Manpower	357,793		-	
iii) Consumable	440,130		-	
iv) Travel	-		-	
v) Contingencies	52,356		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	311,721		-	
Equipment	202,000		-	
TOTAL		1,364,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DBT PROJECT

R/P Organizing Scientific events to commemorate DBT's 30 years of contribution to Biotechnology

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c				
<u>Grant - In - Aid for</u> i) Travel, Lunch/Refereshments andContingencies	400,000			
TOTAL		400,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Travel, Lunch/Refereshments andContingencies	41,275			
ii) Refund to DBT	358,725			
<u>CLOSING BALANCE</u> With Bank in Saving A/c	-			
TOTAL		400,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No..000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

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

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	446,289		119,251	
<u>Grant - In - Aid for</u>				
i) Fellowship	300,000		300,000	
ii) Consumable				
iii) Travel	540,000		900,000	
iv)Contingencies				
v)Overheads	60,000		60,000	
TOTAL		1,346,289		1,379,251

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Fellowship	300,000		300,000	
ii) Consumable				
iii) Travel	852,341		572,962	
iv)Contingencies				
v)Overheads	60,000		60,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	133,948		446,289	
TOTAL		1,346,289		1,379,251

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled Genomic Approaches for Stress Tolerant Chickpea

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	46,058		1,328,875	
Equipment				
<u>Grant - In - Aid for</u>				
i) Equipment				
ii) Manpower	753,000		-	
iii) Consumable	3,655,240		-	
iv)Contingencies	-		-	
v)Overheads	268,160		-	
TOTAL		4,722,458		1,328,875

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	776,885		249,080	
iii) Consumable	3,677,413		1,033,737	
iv)Contingencies	-		-	
v)Overheads	268,160		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	-		46,058	
Equipment				
TOTAL		4,722,458		1,328,875

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled Investigation of cross talk between MAP Kinase and light signaling pathways in Arabidopsis thaliana

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	620,558		211,094	
Equipment	119,793		119,793	
<u>Grant - In - Aid for</u>				
i) Equipment	-		-	
ii) Manpower	-		240,000	
iii) Consumable	-		600,000	
iv) Travel	-		30,000	
v)Contingencies	-		30,000	
vi)Overheads	-		100,000	
TOTAL		740,351		1,330,887

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	119,793		-	
ii) Manpower	204,742		109,200	
iii) Consumable	340,128		338,422	
iv) Travel	37,466		22,534	
v)Contingencies	38,222		20,380	
vi)Overheads	-		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	-		620,558	
Equipment	-		119,793	
TOTAL		740,351		1,330,887

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DST PROJECT****R/P entitled Innovation in Science Pursuit for Inspired Research (INSPIRE)****Faculty Award to Dr. Rohini Garg****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	809,898		762,126	
Equipment	188,964		334,966	
<u>Grant - In - Aid for</u>				
i) Equipment	76,260		198,061	
ii) Manpower	541,462		1,024,404	
iii) Consumable				
iv) Travel	130,730		339,534	
v)Contingencies				
vi)Overheads	10,894		28,294	
TOTAL		1,758,208		2,687,385

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	249,156		344,063	
ii) Manpower	1,049,757		1,016,223	
iii) Consumable				
iv) Travel	435,066		299,943	
v)Contingencies				
vi)Overheads	10,894		28,294	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	(2,733)		809,898	
Equipment	16,068		188,964	
TOTAL		1,758,208		2,687,385

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled SERB Woman Excellence Award to Dr. Gitanjali Yadav

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	54,175		114,392	
<u>Grant - In - Aid for</u>				
i) Equipment				
ii) Manpower				
iii) Consumable	450,000		400,000	
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		100,000	
TOTAL		604,175		614,392

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower				
iii) Consumable	232,795		460,217	
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	271,380		54,175	
TOTAL		604,175		614,392

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled SERB Woman Excellence Award to Dr. Saloni Mathur

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	154,764			
<u>Grant - In - Aid for</u>				
i) Equipment				
ii) Manpower				
iii) Consumable	350,000		500,000	
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		100,000	
TOTAL		604,764		600,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower				
iii) Consumable	504,298		345,236	
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	466		154,764	
TOTAL		604,764		600,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled SERB Woman Excellence Award to Dr.Pinky Agarwal

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	426,005			
<u>Grant - In - Aid for</u>				
i) Equipment				
ii) Manpower				
iii) Consumable	100,000		500,000	
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		100,000	
TOTAL		626,005		600,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower				
iii) Consumable	525,668		73,995	
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	337		426,005	
TOTAL		626,005		600,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled Dissecting physiological and molecular responses adapted by chickpea plants exposed to concurrent drought stress and bacterial pathogen infection by using transcript profiling and VIGS

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	631,092			
Equipment				
<u>Grant - In - Aid for</u>				
i) Equipment	-		-	
ii) Manpower	813,548		420,000	
iii) Consumable				
iv) Travel	86,452		630,000	
v)Contingencies				
vi)Overheads	100,000		100,000	
TOTAL		1,631,092		1,150,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower	780,000		361,290	
iii) Consumable				
iv) Travel	632,933		57,618	
v)Contingencies				
vi)Overheads	100,000		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	118,159		631,092	
Equipment	-		-	
TOTAL		1,631,092		1,150,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled Uncovering the unique stress tolerance mechanisms of contrasting chickpea genotypes against simultaneous drought stress and pathogen infection: An approach based on miRNA-induced gene silencing

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring	927,000			
Equipment	73,000			
<u>Grant - In - Aid for</u>				
i) Equipment	-		73,000	
ii) Manpower	-		660,000	
iii) Consumable				
iv) Travel	-		267,000	
v)Contingencies				
vi)Overheads	-		100,000	
TOTAL		1,000,000		1,100,000

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	70,455			
ii) Manpower	660,000			
iii) Consumable				
iv) Travel				
v)Contingencies	250,475			
vi)Overheads	-		100,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	16,525		927,000	
Equipment	2,545		73,000	
TOTAL		1,000,000		1,100,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DST PROJECT****R/P entitled Max Plank Fellowship****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c	17,640			
<u>Grant - In - Aid for</u> i) Travel	75,000		75,000	
TOTAL		92,640		75,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Travel	88,212		57,360	
<u>CLOSING BALANCE</u> With Bank in Saving A/c	4,428		17,640	
TOTAL		92,640		75,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DST PROJECT****R/P entitled Development of Genetic Transformation System in C4 Setaria Models (Setaria italica and S.viridis).****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant - In - Aid for</u>				
i) Equipment	150,000			
ii) Manpower	660,000			
iii) Consumable	270,000			
iv) Travel	10,000			
v)Contingencies	10,000			
vi)Overheads	100,000			
TOTAL		1,200,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-			
ii) Manpower	193,387			
iii) Consumable	101,778			
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	654,835		-	
Equipment	150,000		-	
TOTAL		1,200,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**DST PROJECT****R/P entitled Whole genome bisulfite sequencing for methylation analysis in two foxtail millet cultivars with contrasting response to abiotic stress****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
Recurring				
Equipment				
<u>Grant - In - Aid for</u>				
i) Equipment	100,000			
ii) Manpower	660,000			
iii) Consumable	270,000			
iv) Travel	10,000			
v)Contingencies	10,000			
vi)Overheads	100,000			
TOTAL		1,150,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment	-			
ii) Manpower	134,839			
iii) Consumable	-			
iv) Travel				
v)Contingencies				
vi)Overheads	100,000		-	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c				
Recurring	815,161		-	
Equipment	100,000		-	
TOTAL		1,150,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER**(SANDEEP DATTA)**
MANAGER**(Dr. NIRANJAN CHAKRABORTY)**
DIRECTOR**(VIPUL GIROTRA)**
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled A partnership to maximize nitrogen use efficiency in crops by understanding a NO-mediated modulatory switch

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
<u>Grant - In - Aid for</u>				
i) Consumable	125,000			
ii) Mobility of scientist	312,000			
iii)Contingencies	20,000			
TOTAL		457,000		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Consumable	124,984			
ii) Mobility of scientist	171,340			
iii)Contingencies	20,000			
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	140,676			
TOTAL		457,000		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P entitled Calcum regulated plant defense strategies upon insect pest attack

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c				
<u>Grant - In - Aid for</u>				
i) Equipment				
ii) Manpower				
iii) Consumable	1,385,001			
iv) Travel				
v)Contingencies				
TOTAL		1,385,001		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Equipment				
ii) Manpower				
iii) Consumable	760,381			
iv) Travel				
v)Contingencies				
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	624,620			
TOTAL		1,385,001		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

DST PROJECT

R/P Indo German Workshop Novel approaches to investigate signals and defense in plant biotic interactions

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u> With Bank in Saving A/c				
<u>Grant - In - Aid for</u> i) Contingencies for Workshop	937,402			
TOTAL		937,402		-

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Contingencies for Workshop	802,960			
ii) Refund to Max Planck Institute for Chemical Ecology, Germany	134,442			
<u>CLOSING BALANCE</u> With Bank in Saving A/c	-			
TOTAL		937,402		-

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

NASI PLATINUM JUBILEE CHAIR

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	45,783		7,126	
<u>Grant - In - Aid for</u>				
i) Salary	2,077,335		1,752,074	
ii) Contingencies	165,250		277,926	
TOTAL		2,288,368		2,037,126

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Salary	1,928,571		1,748,800	
ii) Contingencies	199,865		242,543	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	159,932		45,783	
TOTAL		2,288,368		2,037,126

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

INSA Project

R/P entitled Comparative Analysis of Plant Organellar Genes with their Nuclear and free-living counterparts to understand genome organization, gene content and Evolutionary Patterns of origin and continuity

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	52,313			
<u>Grant - In - Aid for</u>				
i) Manpower	84,000		84,000	
ii) Travel	39,800		22,700	
iii) Contingencies	234,387		133,300	
iv) Overheads	89,500		60,000	
TOTAL		500,000		300,000

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
i) Manpower	84,000		42,000	
ii) Travel	2,622		20,945	
iii) Contingencies	137,530		124,742	
iv) Overheads	89,500		60,000	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	186,348		52,313	
TOTAL		500,000		300,000

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER

(SANDEEP DATTA)
MANAGER

(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR

(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**FELLOWSHIP GRANT CSIR****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	1,313,581		618,997	
Amt.received from CSIR for Research Fellowships & Associatships	7,694,988		13,597,385	
TOTAL		9,008,569		14,216,382

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
Amount paid for Research Fellowships & Associatships	8,371,836		12,902,801	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	636,733		1,313,581	
TOTAL		9,008,569		14,216,382

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**FELLOWSHIP GRANT UGC****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	182,810		458,924	
Amt.received from UGC for Research Fellowships & Associatships	9,820,481		5,485,392	
TOTAL		10,003,291		5,944,316

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
Amount paid for Research Fellowships & Associatships	9,960,122		5,761,506	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	43,169		182,810	
TOTAL		10,003,291		5,944,316

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No..000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER
Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**FELLOWSHIP GRANT DBT****RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	1,494,362		602,492	
Amt.received from DBT for Research Fellowships & Associatships	15,225,876		7,254,723	
TOTAL		16,720,238		7,857,215

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
Amount paid for Research Fellowships & Associatships	14,649,004		6,362,853	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	2,071,234		1,494,362	
TOTAL		16,720,238		7,857,215

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI

FELLOWSHIP GRANT ICMR

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD FROM 1st APRIL 2015 TO 31st MARCH 2016

RECEIPTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
With Bank in Saving A/c	283,827		155,099	
Amt.received from ICMR for Research Fellowships & Associatships	209,786		354,000	
TOTAL		493,613		509,099

PAYMENTS			AMOUNT-IN-RUPEES	
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
Amount paid for Research Fellowships & Associatships	220,465		225,272	
<u>CLOSING BALANCE</u>				
With Bank in Saving A/c	273,148		283,827	
TOTAL		493,613		509,099

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

NATIONAL INSTITUTE OF PLANT GENOME RESEARCH

(Formerly National Centre for Plant Genome Research)

NEW DELHI**RECEIPT AND PAYMENT ACCOUNT OF NIPGR EMPLOYEES CONTRIBUTORY PROVIDENT FUND ACCOUNT****FOR THE PERIOD 1st APRIL 2015 TO 31st MARCH 2016**

RECEIPTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
<u>OPENING BALANCE</u>				
In Savings Account	476,849		728,754	
In Fixed Deposit	35,300,000		27,400,000	
<u>SUBSCRIPTIONS</u>				
(i) Amount of Regular Subscription	5,560,382		4,296,000	
(ii) Refund of advances received from Subscribers	500,850		441,000	
Amount received from NIPGR Core grant to meet Institute's liability towards Contribution & Deficit of Interest	1,013,538		440,903	
<u>INTEREST EARNED</u>				
Savings Account	3,012,575		2,970,192	
TOTAL		45,864,194		36,276,849

PAYMENTS		AMOUNT-IN-RUPEES		
PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
Advances paid to Subscribers	660,000		500,000	
Part final withdrawal	1,750,000			
Full & Final payment of Subscribers	805,933		-	
	-		-	
<u>CLOSING BALANCE</u>				
In Savings Account	2,204,623		476,849	
In Fixed Deposit	40,443,638		35,300,000	
TOTAL		45,864,194		36,276,849

For V.K.DHINGRA & co.

CHARTERED ACCOUNTANTS

Firm Registration No.:000250N

(RAKESH MOHAN)
FINANCE OFFICER(SANDEEP DATTA)
MANAGER(Dr. NIRANJAN CHAKRABORTY)
DIRECTOR(VIPUL GIROTRA)
PARTNER

Membership No.084312

**COMMENTS ON AUDITOR'S REPORT ON ACCOUNTS FOR THE YEAR ENDED
MARCH 31, 2016**

Para

1. Provision for gratuity and leave encashment has been made based on actuarial valuation by an actuarial for the first time. After considering the ad hoc provision outstanding in the books of the NIPGR prior to this valuation a sum of ₹3,04,57,164/- has been charged to Income & Expenditure Account in this year. This includes certain amount pertaining to previous years also. In the absence of any working, the amount pertaining to prior years cannot be worked out.
2. Pending approval of final cost of construction by Building Committee, Phase-II of the building has not been capitalized. Also no depreciation has been charged on the same. In the absence of working/information, we are not in a position to ascertain and quantify the impact thereof on the financial statements (Also refer point no.6 (b) of schedule no.24 to the financial statement).

Reply

1. The provision for gratuity and leave encashment in respect of NIPGR Employees has been made on the basis of actuarial valuation during the year 2015-16. The working of amount pertaining to prior years separately would not have any actual affect, as the total amount is required to be debited to Establishment Expenses and credited to Provision for Retirement Benefits, as per extent accounting principles.
2. The final cost of phase-II buildings of the Institute will be capitalized after vetting of final cost by the Building Committee and approval by the Governing Body as per Institutional norms. Since, the final bill of the construction cost has not been received from the Project Management Consultants (M/s RITES Ltd), the cost of phase-II buildings could not be finalized during the year, hence, no depreciation has been charged during the year 2015-16, though the building have been put to use. The matter is being actively pursued with M/s RITES Ltd, and it is expected that the requisite information/details will be received in the current fiscal and capitalization of the building cost will be effected in the Annual Accounts for the Financial Year 2016-17.

(Rakesh Mohan)
Finance Officer

(Sandeep Datta)
Manager

(Dr. Niranjana Chakraborty)
Director



National Institute of Plant Genome Research

Aruna Asaf Ali Marg, JNU Campus, P.O. Box 10531, New Delhi-110 067

Tel. : 26735169, 26735170, Fax : 91-11-26741658

E-mail: nipgr@nipgr.ac.in, Website : www.nipgr.ac.in