

BIO DATA

Name : DR. ARUP KUMAR MUKHERJEE

Designation : Scientist

Father's Name : Sri Kalimohan Mukherjee

Date of Birth : 13-11-1965



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Academic Qualifications:

1. B.Sc(H) in Botany from the University of Visva Bharati in the year 1986.
2. M.Sc. with specialization in **Plant Pathology** from the University of Visva Bharati in the year 1988.
3. Ph.D. with Thesis Title: **COMPONENTS OF SLOW-BLASTING-RESISTANCE IN RICE**. Work done in the **Division of Plant Pathology, Central Rice Research Institute, Cuttack, Orissa, India**. Thesis was submitted on October 1994, viva was held on February 1996. Utkal University, Orissa, India, awarded the degree.
4. PDF in the National Research Centre on Plant Biotechnology, Indian Agriculture Research Institute, New Delhi in the year 1997-1999. Title of the Project: **DNA Fingerprinting, Gene Tagging and Mapping of Economically Important Traits of Indian Mustard by Using Molecular Markers**.
5. **DBT Over Seas Associateship** in the Department of Biology, Israel Institute of Technology, Technion, Haifa 32000, Israel, during the period from 8th March 2006 to 7th March 2007. **Title of the Project: Common pathways to leaf senescence and defence response: proteomic approach**.

Students Guidance:

- (a) **No. of Ph.D. Students Guided:** 1. Miss I. Mattagajasingh was awarded with her Ph.D. degree on the thesis work entitled '**Studies on molecular phylogeny of the genus Mammillaria**' by the Utkal University, Bhubaneswar, Orissa on 21st November 2003.

2. Mr. L.K. Acharya (**Regn. No.06-Botany, 2003--2004, Utkal University**) has been awarded with his Ph.D. on the thesis work on '**Study of the phylogeny of some of leguminous taxa through, taxonomical, biochemical and molecular techniques**' by the Utkal University on March 2007.
3. Mrs. Ajantaa Pal (**Regn. No. 81 Sc.- Botany, 1990-1991, Utkal University**) was awarded with the Ph.D. degree on “ **Genetic Transformation of *Amaranthus* spp. using *Ri* and *Ti* plasmid vectors**” by the Utkal University on 30th August, 2008.

Students working for their Ph.D. degree: At present 4 students are working.

(b) **No. of M.Sc./BS Students Guided:** 12 M.Sc. in Biotechnology and 5 B.Tech Students.

Awards/Honours:

- Qualified the **National Eligibility Test (NET)** conducted by **Agricultural Scientists Recruitment Board (ASRB)**, Indian Council Of Agricultural Research (ICAR), New Delhi, in the Year 1996.
- Got Post Doctoral Fellowship of Department of Biotechnology, Government of India, New Delhi, in the session 1997 – 1999 and placed at National Research Centre on Plant Biotechnology, IARI, and New Delhi.
- Recognized as Research guide in the Discipline of Botany by Utkal University, Bhubaneswar, Orissa.
- Has been awarded with *The Long term DBT Over seas Associateship Award* for the year 2004-2005 and working on “**Common pathways to leaf senescence and defense response in plants: proteomic approach.**” Under the supervision of Prof. S. Gepstein and Prof B.A. Horwitz, Department of Biology, The Technion-Israel Institute of Technology, Haifa, Israel.

Publications in Journals and Proceedings

(a)	Research Papers Published/Accepted:	36
(c)	Review articles/Book Chapters:	5
(d)	Symposium papers/Abstracts:	7

Membership of Professional Societies: Member of (i) Indian Science Congress Association, (ii) Society for Plant Biochemistry and Biotechnology, (iii) Association of Rice Research Workers and (iv) Society of Plant Protection Sciences, India and (iv) founder member of the Genome India International.

Symposia attended: Presented two Poster Papers in international Conference on integrated Plant Disease Management for Sustainable Agriculture. 10-15 Nov.1997, New Delhi, INDIA. And

presented two papers in the Zonal Meeting of Indian Phytopathological Society, O.U.A.T., Bhubaneswar, Orissa, India, on Dec.16-17, 1994.

Research Projects: 4 projects

Research Achievements:

Dr. Arup K. Mukherjee started his research career as an SRF and Ph.D. student in the Division of Plant Pathology, Central Rice Research institute, Cuttack, Orissa, India. He studied the epidemiological aspects of slow-blasting resistance in rice in detail. He submitted his Ph.D. thesis on '**COMPONENTS OF SLOW BLASTING RESISTANCE IN RICE**' in 1994, which was evaluated abroad and was awarded the degree on March 1996. He has developed different techniques to estimate the host tissue damaged during the host pathogen interaction. He is the first person to develop a technique to estimate accurately the lesion area of rice blast disease. His extensive studies on the blast disease epidemiology have resulted in a number of publications in different journals of National and International repute. In his post Ph.D. work he has **studied the isozyme variation pattern in maize inbred lines of India**. He has **tagged and mapped the white rust resistance gene in Indian mustard by using molecular markers**. He has tagged the genes for seed coat colour in *Brassica juncea*. He has also **constructed RAPD linkage map in Brassica juncea**. He has studied **the genetic variations in the local isolates of loose smut pathogen in wheat using RAPD, ISSR and AFLP markers**. Dr. Mukherjee initiated a program to construct fine map of the white rust resistance gene in *B. juncea* by using **AFLP markers** which at present been taken over by other Scientist. Dr. Mukherjee was actively involved in **DNA fingerprinting of Brassica spp.** Recently while working as Scientist in the Regional Plant Resource Centre, Bhubaneswar, Orissa, India, Dr. Mukherjee is engaged on studying molecular phylogeny and characterization of different tree species. Recently while working as Scientist in the Regional Plant Resource Centre, Bhubaneswar, Orissa, India, Dr. Mukherjee is engaged on studying molecular phylogeny and characterization of different tree species. He has already completed the molecular characterization of different groups of mangrove species using RAPD and AFLP markers. He and his group have standardized the isolation of highly mucilaginous plants of the family Cactaceae and also studied the genetic relations among the 31 species of *Mammillaria*. He is actively involved in studying the molecular phylogeny of three tribes like Desmodieae, Millettieae and Cassiineae of the family Leguminosae. His group has justified the differentiation of the Genus *Cassia* to three genera *Cassia*, *Senna* and *Chamaechrista*. His group has characterized different cultivars of ginger, turmeric, *Mussaenda*, *Chrysanthemum*, Rose, *Canna*, Mango and different rare and endangered plants of the Eastern Ghats using molecular markers like RAPD and ISSR markers. **While working as a Visiting Scientist with DBT Overseas Associate ship in the Department of Biology, Israel Institute of Technology, Technion, Haifa 32000, Israel on "Common pathways to leaf senescence and defense response: proteomic approach"** Dr. Mukherjee has identified number of genes which are up regulated both in senescence and defense against pathogen attack in plants. Dr. Mukherjee for the first time identified, cloned and sequenced the genes expressed during the compatible interaction between *Arabidopsis thaliana* and *Alternaria brassicicola*. He also studied for the first time the comparative proteomics of *A. brassicicola* cultured in different host plant (compatible and incompatible interaction) extract and identified number of genes which are expressed in *A. brassicicola* when cultured in incompatible plant extract. The same observation was confirmed using RT-PCR.

Research interest: (i) Studying genetic diversity in less exploited crops and molecular characterization of rare and endangered plant groups.
(ii) Molecular marker assisted selection in less exploited crop plants and identification of economically important genes in them.
(iii) Genomics and Proteomics of stress response especially in host–pathogen interaction in plants.

Date:

Place: Bhubaneswar

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LIST OF IMPORTANT PUBLICATIONS

- Mukherjee, A.K.**, Lev, S., Gepstein, S. and Horwitz., B.A. (2009). A compatible interaction of *Alternaria brassicicola* with *Arabidopsis thaliana* ecotype DiG: evidence for a specific transcriptional signature *BMC Plant Biology* 9:31. doi:10.1186/1471-2229-9-31
- Shaw, R.K., Acharya, L.K. and **Mukherjee, A.K.** (2009). Assessment of Genetic Diversity in a Highly Valuable Medicinal Plant *Catharanthus roseus* Using Molecular Markers. *Crop Breeding and Applied Biotechnology* (Brasil).9:52-59
- Patra B, Acharya L, **Mukherjee AK**, Panda MK and Panda PC (2008). Molecular characterization of ten cultivars of *Canna* lilies (*Canna* Linn.) using PCR based molecular markers (RAPDs and ISSRs). *International Journal of Integrative Biology* 2(2): 129-137.
- Mohapatra, N.K., **Mukherjee, A.K.**, Rao, A.V.S., and Nayak, P. (2008). Disease progress curves in the rice blast pathosystem compared with the logistic and gompertz models. *ARPN Journal of Agricultural and Biological Science* 3(1):28-37.
- Rao, A.V.S., **Mukherjee, A.K.**, Mohapatra, N.K. and Nayak. P. (2007). Spatial Distribution of Rice Blast Disease under Natural Field Epidemics. *Res. J. Agric. & Biol. Sci.*(Pakistan) 3(6): 615-620.
30. Kalita, M.C, Mohapatra, T., Dhandapani, A., Yadava, D.K., Srinivasan, K., **Mukherjee, A.K.** and Sharma, R.P. (2007). Comparative evaluation of RAPD, ISSR and anchored-SSR markers in the assessment of genetic diversity and fingerprinting of oilseed *Brassica* genotypes. *J. Plant Biochem & Biotech.* 16(1) 41-48.
- Barik, D.P., Acharya, L., **Mukherjee, A.K.** and Chand P.K. (2007). Analysis of genetic diversity among the selected grasspea (*Lathyrus sativus* L.) genotypes using RAPD markers. *Z. Naturforsch.* 62c, 869-874.
- Mattagajasingh, I., Acharya, L.K., **Mukherjee, A.K.**, Panda, P.C., and Das, P. (2006). Genetic relationships among nine cultivated taxa of *Calliandra* Benth.(Leguminosae: Mimosoideae) using random amplified polymorphic DNA (RAPD) markers. *Scientia Horticulturae* (Netherlands). 110: 98-103.

- Kalita, M.C, Mohapatra, T., Dhandapani, A., Yadava, D.K., Srinivasan, K., **Mukherjee, A.K.** and Sharma, R.P. (2007). Comparative evaluation of RAPD, ISSR and anchored-SSR markers in the assessment of genetic diversity and fingerprinting of oilseed *Brassica* genotypes. *J. Plant Biochem & Biotech* 16(1) 41-48.
- Mattagajasingh, I., **Mukherjee, A.K.**, and Das, P. (2006). Genomic Relations Among 31 Species of *Mammillaria* Haworth (Cactaceae) Using Random Amplified Polymorphic DNA. *Zeitschrift fur Naturforsch* (Germany) 61c:583-591.
- Mukherjee, A. K.**, Acharya, L.K., Panda, P.C., Mohapatra, T. (2006). Assessment of Genetic Diversity in 31 Species of Mangroves and their Associates through RAPD and AFLP Markers. *Zeitschrift fur Naturforsch* (Germany) 61c:413-420.
- Mukherjee, A.K.**, Mohapatra, N.K., Suriya Rao, A.V., and Nayak, P. (2005). Effect of nitrogen fertilization on the expression of slow- blasting- resistance in rice. *The Journal of Agricultural Science*. (UK). 143: 385-393.
- Mattagajasingh, I., Acharya, L.K., **Mukherjee, A.K.**, and Das, P. (2005). Genomic relationship among 25 species of *Mammillaria* Haw. as revealed by isozyme and protein polymorphism. *J. Plant Biotech*.(Korea). 7(2): 105-112.
- Acharya, L.K., **Mukherjee, A.K.**, Panda, P.C. and Das, P. (2005). Molecular characterization of five medicinally important species of *Typhonium* (Araceae) through random amplified polymorphic DNA (RAPD). *Zeitschrift fur Naturforsch* (Germany) 60C: 600-604.
- Nayak, S., Naik, P. K., Acharya, L.K., **Mukherjee, A.K.**, Panda, P.C. and Das, P. (2005). Assessment of of genetic diversity among 16 promising cultivars of ginger using cytological and molecular markers. *Zeitschrift fur Naturforsch* (Germany) 60C: 485-492.
- Acharya, L.K., **Mukherjee, A.K.** and Panda, P.C. (2004). Genomic relations among nine species of Millettieae (Leguminosae: Papilionoideae) based on random amplified polymorphic DNA (RAPD). *Zeitschrift fur Naturforsch* (Germany) 59C: 868-873.
- Mukherjee, A. K.**, Acharya, L.K., Panda, P.C., Mohapatra, T. and Das, P. (2004). Genomic relations among two non- mangroves and nine mangroves species of Indian Rhizophoraceae. *Zeitschrift fur Naturforsch* (Germany) 59 C: 572-578.
- Mukherjee, A. K.**, Acharya, L.K., Mattagajasingh, I., Panda, P.C., Mohapatra, T. and Das, P. (2003). Molecular characterization of three *Heritiera* species using AFLP markers. *Biologia Plantarum* (Netherlands) 47(3): 445-448.
- Karwasara, S.S., **Mukherjee, A.K.**, Swain, S., Mohapatra, T and Sharma, R.P. (2002). Evaluation of RAPD, ISSR and AFLP markers for characterization of the loose smut fungus *Ustilago tritici*. *J. Plant Biochemistry & Biotechnology* 11:99-103.
- Mukherjee, A. K.**, Mohapatra, T., Varshney, A., Sharma, R., and Sharma, R. P. (2001) Molecular mapping of a locus controlling resistance to *Albugo candida* in Indian mustard. *Plant Breeding* (Germany) 20 (6): 483-487.

- Das, A. B., **Mukherjee, A. K.** and Das, P. (2001). Molecular phylogeny of *Heritiera* Aiton (Sterculiaceae), a tree mangrove: variations in RAPD markers and nuclear DNA content. *Botanical Journal of the Linnean Society* (U.K.) 136:221-229.
- Mauria, S., Singh, N. N., **Mukherjee, A. K.**, and Bhat, K. V. (2000). Isozyme characterisation of Indian maize inbreds. *Euphytica* (Netherlands) 112:253-259.
- Sharma, R., Mohapatra, T., **Mukherjee, A. K.**, Singh, K. P. and Sharma, R. P.(1999). Molecular markers for oil content in Indian mustard. *J. Plant Biochemistry & Biotechnology* 8: 99 - 102.

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