

Curriculum Vitae

Name **Natesan MANICKAM**

Date of Birth June 05, 1965

Present Occupation Senior Principal Scientist
Co-ordinator: Environmental Toxicology

Sex Male

Mailing Address Environmental Biotechnology Section,
Industrial Toxicology Research Centre (CSIR),
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Academic qualifications:

Ph.D**	Guru Nanak Dev University, Amritsar.	2009	-----
M.Tech.,*	Centre for Biotechnology, Anna University, Chennai	1990	First
M.Sc.,	University of Madras, Chennai	1988	First
B.Sc.,	University of Madras, Chennai	1986	First
+2 (Hr. Sec)	Tamil Nadu Secondary Education board, Chennai	1983	First

Ph.D** “Isolation and Characterization of Bacterial Strains and their Genes Involved in Degradation of Hexachlorocyclohexane”.

*M.Tech., Dissertation work entitled “Inter-generic protoplast fusion between *Aspergillus oryzae* and *Penicillium crysogenum*”.

Post held:

January 1990-January 1995	Scientist B	Environmental Biotechnology Section, ITRC, (CSIR), Lucknow.
Feb. 1995- January 2000	Scientist C	-do-
Feb. 2000- January 2006	Scientist-EI	-do-
Feb 2006 - January 2011	Principal Scientist	-do-
Feb. 2011 – till now	Sr. Principal Scientist	-do-

Visiting faculty:

Since 1994 –1997, at the Institute of Engineering and Technology, (IET), Govt. of Uttar Pradesh., Part time teaching for M. Tech., Biotechnology course.

Research experience abroad:

Period	Place	Work
Oct. 1998- Sept. 2000	Institute of Microbiology University of Stuttgart, Stuttgart Germany	Molecular cloning and characterization of lindane degradation genes from a <i>Microbacterium</i> sp.
Oct. 2007- Dec.2007	Technical University Bergakademie, Freiberg, Germany	Cloning and expression of a haloalkane dehalogenase from a <i>Sphingomonas</i> sp
July-Aug. 2009.	Washington State University, Pullman, USA	Biosafety of Transgenic Crops. Regulatory Consultation with US-FDA

Patent

N. Manickam and Ashwani Kumar

"A process for the preparation of hexachlorocyclohexane free soil" patent filed to IPMD-CSIR No. NF 173/ 98, filing No. 275 DEL 2000.

Recent publications. (Year 2001 onwards)**Awards / Recognition**

Long term DAAD (Deutscher Akademischer Austauschdienst) CSIR-DAAD fellowship award.

Indian National Science Academy (INSA- GFB) German Research Foundation short-term fellowship award

Scientific Skills / experience

Metagenomics, Microarray, Gene Cloning & Sequencing, Restriction Mapping, PCR, RFLP, Phylogenetic analysis (PCR), Nucleic acid hybridization, pathway engineering and Microarray. GLP Practices

Membership of academic and professional societies:

Life member in,

1. Society of Biological Chemists (**SBC**), India.
2. Society of Toxicology (**STOX**), India
3. Association of Microbiologists India (**AMI**),
4. Indian Network for Soil Contamination and Research (**INSCR**), India.
5. Biotechnology Research Society of India (**BRSI**), India
6. German Association for General and Applied Microbiology (**VAAM**), Germany.

Experience on Good laboratory Practices:

Training received on Good laboratory Practices (GLP) organized by UNDP / World Bank / WHO at Hotel Imperial, New Delhi, December 3-5, 2003.

Major projects undertaken: As Principal Investigator (PI).

1. Genome-wide detection of microbial communities involved in pollutants biodegradation using DNA microarray technology. Cost : Rupees. 22.03 lakhs, Period: April 2005-April 2008, Sponsor: DBT, New Delhi.
2. Development of bioreactors and genetic engineering tools for cleanup of lindane based wastes (A CSIR net work project under "Industrial waste minimization and clean-up – No. CORE- 008) Cost : Rupees 33.00 lakhs, Period, Sept. 2004-Sept.2007, Sponsor : CSIR, New Delhi.
3. Harnessing the microbial diversity for characterization of functional genes for enzyme-based bioremediation of DDT-residues. CSIR Network project. Period : 2007-2012, NWP-006. Cost : Rupees 100.00 lakhs.
4. Detection and Gene Expression Studies using DNA Microarray Technology for Bioremediation of Hazardous Chemicals. CSIR Network project. Period: 2007-2012, NWP-0019. Cost: Rupees 100.00 lakhs.
5. Screening of diverse dehalogenase enzymes from soil metagenome for the bioremediation of toxic chlorinated solvents. Period 2008-2011 Sponsor: DBT, New Delhi. Expected : 34.00 Lakhs

National Responsibilities and Association.

Member: **Genetic Engineering Approval Committee (GEAC)** under the Ministry of Environment and Forests. This committee is responsible for the import and export of GM food, feed and other biologically derived hazardous materials in the country.

Editorial Member:

Member of Editorial Team in *Indian Journal of Microbiology*.

1. **Selected Publications: Publications, if any with details of the impact factor, if any: [Annexure-III](#).**

Patent :

- 1). **N. Manickam** and Ashwani Kumar

"A process for the preparation of hexachlorocyclohexane free soil" patent filed to IPMD- CSIR No. NF 173/ 98, filing No. 275 DEL 2000.

PUBLICATIONS :

List of selected publications in last 8 years.

1. Ritu Singh, **Natesan Manickam**, Mohana Krishna Reddy Mudiam, Ramesh Chandra Murthy and Virendra Misra (2013) An Integrated Nano-Bio Technique for Degradation of γ -HCH Contaminated Soil. *Journal of Hazardous Materials*, 258-259C:35-41
2. Mudiam MKR, Ratnasekhar C, Chauhan A, **Manickam N**, Jain R and Murthy (2012) Optimization of UA-DLLME by experimental design methodologies for the simultaneous determination of endosulfan and its metabolites in soil and urine samples by GC-MS. *Analytical Methods*. 4,3855-3863
3. **Natesan Manickam**, Abhay Bajaj, Harvinder S. Saini and Rishi Shanker (2012) Surfactant Mediated Enhanced Biodegradation of Hexachlorocyclohexane (HCH) Isomers by *Sphingomonas* sp NM05. *Biodegradation*.23: 673-682.
4. **Natesan Manickam**, Siddhika Pareek, Ishwinder Kaur, Nitin Kumar Singh and Shanmugam Mayilraj (2012) *Nitratireductor lucknowense* sp. nov., a novel bacterium isolated from a pesticide contaminated soil. *Antonie van Leeuwenhoek* 101: 125-131.
5. Ashutosh Pathak, Rishi Shanker, Satyendra Kumar Garg and **Natesan Manickam** (2011) Profiling of biodegradation and bacterial 16S rRNA genes in diverse contaminated ecosystems using 60-mer oligonucleotide microarray. *Applied Microbiology and Biotechnology*: 90.1739-1754.
6. Bajaj, A., A. Pathak, M.R. Mudiam, S. Mayilraj and **N. Manickam** (2010) Isolation and characterization of a *Pseudomonas* sp. Strain IITR01 capable of degrading α -endosulfan and endosulfan sulphate; *Journal of Applied Microbiology* 109:2135 –2143.
7. Jitendra Nath Tiwari, Mudiam Mohana Krishna Reddy, Devendra Kumar Patel, Sudhir Kumar Jain, Ramesh Chandra Murthy and **Natesan Manickam**. (2010) Isolation of pyrene degrading *Achromobacter xylooxidans* and characterization of metabolic product. *World J Microbiol Biotechnol*. 26:1727–1733
8. **N. Manickam**, A. Pathak, H.S. Saini, S. Mayilraj and R. Shanker (2010) Metabolic profiles and phylogenetic diversity of microbial communities from chlorinated pesticides contaminated sites of different geographical habitats of India. *Journal of Applied Microbiology* 109, 1458–1468.
9. M.S. Baig and **N. Manickam** (2010) Homology modelling and docking studies of *Comamonas testosteroni* B-356 biphenyl-2,3-dioxygenase involved in degradation of polychlorinated biphenyls. *International Journal of Biological Macromolecules* 46:47-53.

10. **N. Manickam**, M. K. Reddy, H. S. Saini and R. Shanker (2008). Isolation of hexachlorocyclohexane-degrading *Sphingomonas* sp. by dehalogenase assay and characterization of genes involved in γ -HCH degradation. *Journal of Applied Microbiology* 104: 952–960.
11. **Manickam, N.**, Ghosh, A., Jain, R. K. and Mayilraj, S (2008). Description of a novel indole oxidizing bacterium *Pseudomonas indoloxydans* sp. nov., isolated from a pesticide contaminated site. *Systematic and Applied Microbiology* 31: 101-107.
12. **N. Manickam** . M. Mau, and M. Schlömann (2006). Characterization of the novel HCH-degrading strain, *Microbacterium* sp. ITRC1. *Appl Microbiol Biotechnol* 69: 580–588;
13. **N. Manickam**, R. Misra and S. Mayilraj (2006). A novel pathway for the biodegradation of γ -hexachlorocyclohexane by a *Xanthomonas* sp. strain ICH12. *Journal of Applied Microbiology* 102: 1468–1478.

Manuscript under Communication / Review:

1. Pathak, Ashutosh, Singh, Saurabh, Pratap, Jagannathan, Garg, Satyendra and **Manickam, Natesan** (2013) Aerobic degradation of 1,2,3-Trichloro, 1,2,4-Trichloro, 1,2-Dichloro and 1,4-Dichlorobenzenes by a *Bordetella* species: Cloning and characterization of chromosome encoded tcb genes, *Journal of Applied Microbiology* Manuscript ID: JAM-2013-0215.
2. Ashutosh Pathak, Rishi Shanker, Satyendra K. Garg and **Natesan Manickam** (2013) Application of 60-mer oligonucleotide ‘BiodegPhyloChip’ microarray for the expression profiling of functional genes from five contaminated sites in India. Under preparation. *Environmental Microbiology*.
3. Abhay Bajaj and **Natesan Manickam** (2013) Development and application of a custom microarray for profiling functional genes and microbial communities from coastal contaminated sites. *Applied Environmental Microbiology*.
4. Abhay Bajaj and **Natesan Manickam** ((2013) Identification and characterization of a glycolipid producing *Rhodococcus indicum* sp. Strain IITR03, a red-pigmented actinobacterium that degrades 1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane (DDT). *Systematic and Applied Microbiology*.
5. Pallavi Tiwari, Abhay Bajaj and **Natesan Manickam** (2013) Isolation and characterization of 5,7-dihydroxyflavone degrading *Kluyvera cryocrescens* and *Pseudomonas plecoglossicida* and their ability to metabolize biphenyl and DDT. *Applied Environmental Microbiology*.
6. Smita Kumari, Abhay Bajaj and **Natesan Manickam** (2013) Characterization of pyrene catabolic genes of *Achromobacter xylosoxidans* and its ability to biodegrade other polyaromatic hydrocarbons. *Journal of Applied Microbiology*.