

BIOGRAPHICAL SKETCH

NAME Narayanan, Sujatha		POSITION TITLE Deputy Director, (Sr Grade) Department of Immunology, Tuberculosis Research Center (TRC)	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Madras, India	P.U.C. with Distinction	1970	Physics, Chemistry and Biology
University of Madras, India	B.Sc.	1973	Chemistry
University of Wisconsin, Madison, WI	M.Sc.	1975	Biochemistry
University of Wisconsin, Madison, WI	Diploma	1977	Cytotechnology
University of Madras, India	Ph.D.	1985	Biochemistry

Positions and Employment

1978	Cytologist, South Bend Medical Foundation, South Bend, Indiana, USA
1979	Cytologist, National Chemical Laboratories, East Lansing, Michigan, USA
1980-1981	Cytologist, Cancer Institute, Madras
1981-1984	Senior Research Fellow, Indian Council of Medical Research (ICMR)
1984-1986	Assistant Research Officer, Department of Immunology, Tuberculosis Research Centre (TRC), Chennai
1986-1991	Research Officer, Department of Immunology, TRC, Chennai
1991-1996	Senior Research Officer, Department of Immunology, TRC, Chennai
1996-2000	Assistant Director, Department of Immunology, TRC, Chennai
2000 –2006	Deputy Director, Department of Immunology, TRC, Chennai
2006- present	Deputy Director (Sr Grade) Dept of Immunology , TRC, Chennai

Awards & fellowship

2002-2005	Principal Investigator for TRC, Indo-French Project (Multi-centric)
2003-present	Principal Investigator (Molecular Biology) AITRP programme with AECOM , USA
2002, 2004	WHO Fellow, Division of Infectious Diseases and Geographic Medicine, Stanford University Medical School, Stanford, California, USA
1995	Indo-UK DFID fellowship, Medical Research Council (MRC)/NIMR-London, UK
1987-1988	WHO Fellow, LVD/NIAID/NIH, Bethesda, Maryland, USA
2004 & 2005	Best poster awards for our work at Indian Immunology Society and at Ethiraj college for Women , Chennai

Professional Memberships

1978 - 1980	American Society of Clinical Pathology
1997 - present	Indian Immunology Society
1998 -2006	Ethical Committee of Veterinary College, Madras University
1999 - 2007	Library Committee of Tuberculosis Research Centre (TRC), Madras
2000 - present	Member of Science City (working for the Advancement of Women Scientists), Madras

Ad hoc Editorial Reviewer

1999	<i>Indian Journal of Medical Research</i>
2000	<i>Current Science</i>
2000-present	<i>Journal of Clinical Biochemistry</i>
2007 -	Infection , Genetics & Evolution

Additional Professional Training Received:

Training in Recombinant DNA Technology, National Institute of Health , USA and National Institute of Singapore

Current interest Molecular Biology , Molecular epidemiology and immunology of tuberculosis

Teaching Experience:

Guidance for PhD students at the University of Madras

Five students have got their **PhD degree** and **eight** more are registered.

Co-guidance for Ph.D. students: Co-mentor for **ten** students registered for the Ph.D. degree at the University of Madras and the Tamil Nadu Dr. MGR Medical University

Total no of Publications 50

Chapter in Book 1

Patent 1

B. Publications (in chronological order)

1. Usha Raghavan U, Ahamed B, **Narayanan S**, Kumaraswami V, Thiruvengadam KV. Urticaria – some abbreviations. *Aspects of Allergy and Applied Immunology* 1985; XVIII: 81-90.
2. **Narayanan S**, Paramasivan CN, Prabhakar R, Narayanan PR. Effect of oral exposure of *Mycobacterium avium intracellulare* on the protective immunity induced by BCG. *Journal of Bioscience* 1986; 10(4):453-460.
3. **Narayanan S**, Paramasivan CN, Ravooof A, Narayanan PR, Prabhakar R. Sensitisation pattern of healthy volunteers and tuberculosis patients to various mycobacterial antigens by ELISA. *Indian Journal of Tuberculosis* 1987; 34:132-135.
4. **Narayanan S**, Paramasivan CN, Narayanan PR, Prabhakar R. CMI response of tuberculosis patients and volunteers to mitogens and mycobacterial antigens by LTT. *Proceedings of the Indo-UK Symposium on Leprosy*, Agra, April 7-10, 1986. Coronation Press, 1987.
5. Das S, **Narayanan S**, Paramasivan CN, Lowrie DB, Narayanan PR. Human tuberculosis sera show prominent antibody responses to particulate fractions of *Mycobacterium tuberculosis*. *J Clin Immunol* 1991; 11:74-77.
6. **Narayanan S**, Sahadevan R, Ramanujam S, Narayanan PR. Development of DNA probes for *Mycobacterium tuberculosis*. *Indian Journal of Tuberculosis* 1992; 40:99-105.
7. Sahadevan R, **Narayanan S**, Paramasivan CN, Prabhakar R, Narayanan PR. Restriction fragment length polymorphism typing of clinical isolates of *Mycobacterium tuberculosis* from patients with pulmonary tuberculosis in Madras, India, by use of direct-repeat probe. *J Clin Microbiol* 1995; 33:3037-3039.
8. **Narayanan S**. PCR in rheumatic diseases. *J Intl Rheumatol Assn* 1996:24.
9. **Narayanan S**. How useful is PCR in diagnosis of tuberculosis? *Proceedings of the Symposium on PCR in Medical Practice (India)* 1997; 30-33.
10. **Narayanan S**, Sahadevan R, Narayanan PR. Isolation and characterization of an insertion element like repetitive sequence specific for *Mycobacterium tuberculosis* complex. *Current Science* 1997; 73:259-266.
11. **Narayanan S**, Sahadevan R, Narayanan PR, Krishnamurthy PV, Paramasivan CN, Prabhakar, R. Restriction fragment length polymorphism of *M. tuberculosis* strains from various regions of India using direct repeat probe. *Indian Journal of Medical Research (India)* 1997; 106: 447-454.
12. **Narayanan S**. PCR in clinical practice. *Journal of Practical Paediatrics* 1998; 6:209-215.
13. Vishwanath V, **Narayanan S**, Narayanan PR. The fate of *Mycobacterium tuberculosis* in activated human macrophages. *Current Science* 1998; 75:942-946.
14. Arvinth Pradheep S, **Narayanan S**, Vasani SK, Narayanan PR. Cloning and expression of aceA gene encoding isocitrate lyase from *Mycobacterium tuberculosis*. *Current Science* 2000; 79:1585-1588.
15. Parandaman V, **Narayanan S**, Narayanan PR. Utility of PCR using two probes for rapid diagnosis of tubercular pleuritis in comparison to conventional methods. *Indian Journal of Medical Research (India)* 2000; 112:47-51.

16. **Narayanan S**, Selvakumar, S, Vasan SK, Aarti R, Narayanan PR. Transcriptional analysis of inducible acetamidase gene of *Mycobacterium smegmatis*. *FEMS Microbiol Lett* 2000; 192:263-268.
17. **Narayanan S**, Parandaman V, Rehman F, Srinivasan C, Gomathy D, Kumaraswami V, Paramasivan CN, Ramanathan VD, Narayanan PR. Comparative evaluation of PCR using IS6110 and a new target in the detection of tuberculous lymphadenitis. *Current Science (India)* 2000; 78:1367-1371.
18. **Narayanan S**, Parandaman V, Mahadevan G, Rajaji S, Narayanan PR. Evaluation of PCR using TRC4 and IS6110 primers in detection of tuberculous meningitis. *J Clin Microbiol* 2001; 39:2006-2008.
19. Mani C, Selvakumar N, **Narayanan S**, Narayanan PR. Mutations in the rpoB gene of multidrug-resistant *Mycobacterium tuberculosis* clinical isolates from India. *J Clin Microbiol* 2001; 39:2987-2990.
20. **Narayanan S**, Vishwanath V, Narayanan PR. Differential expression of a unique protein by intracellular *Mycobacterium tuberculosis* complex. *Current Science* 2001; 81:689-692.
21. Balamurugan K, Rajaram R, Ramasami T, **Narayanan S**. Chromium (III)-induced apoptosis of lymphocytes: death decision by reactive oxygen species and Src-family tyrosine kinases. *Free Radic Biol Med* 2002; 33(12):1622-1640.
22. **Narayanan S**, Das S, Garg R, Hari L, Bhaskara Rao V, Frieden TR, Narayanan PR. Molecular epidemiology of tuberculosis in a rural area of high prevalence in south India: implications for disease control and prevention. *J Clin Microbiol* 2002; 40(12):4785-4788.
23. Kamalakannan, V, Ramachandran G, **Narayanan S**, Vasan SK, Narayanan PR. Identification of a novel mycobacterial transcriptional regulator and its involvement in growth rate dependence and stringent control. *FEMS Microbiol Lett* 2002; 209(2):261-266.
24. Mani C, Selvakumar N, Kumar V, **Narayanan S**, Narayanan PR. Comparison of DNA sequencing, PCR-SSCP Pha-B assays with indirect sensitivity testing for detection of rifampin resistance in *Mycobacterium tuberculosis*. *Int J Tuberc Lung Dis* 2003; 7:1-8.
25. Das S, **Narayanan S**, Hari L, Sundar Mohan N, Somasundaram S, Selvakumar N, Narayanan PR. Simultaneous infectious with multiple strains of *Mycobacterium tuberculosis* identified by restriction fragment length polymorphism analysis. *Int J Tuberc Lung Dis* 2004; 8(2):267-270.
26. **Narayanan S**. Molecular epidemiology of tuberculosis. *Indian J Med Res* 2004; 120(4):233-47.
27. Gopaldaswamy R, Narayanan PR, **Narayanan S**. Cloning, expression, and characterization of a serine/threonine protein kinase pknI from *Mycobacterium tuberculosis* H37Rv. *Protein Expr Purif* 2004; 36:82-9.
28. Swaminathan, S. Rajasekaran, K. Shibichakravarthy, V.A. Amarendran, K. Raja, Lalitha Hari, **Sujatha Narayanan**. Multiple recurrences of tuberculosis in an HIV infected individual. *JAPI, 2004, 52, 513-514*
29. S Das, **Narayanan S**, Hari L, Hoti SL, Thangathurai RK, Charles N, Jaggarajamma K, Narayanan PR. Differentiation of highly prevalent IS6110 single-copy strains of *Mycobacterium tuberculosis* from a rural community in South India with an ongoing DOTS programme. *Infect Genet Evol* 2005;5(1):67-77.
30. **Narayanan S**. Reactivation of tuberculosis as evidenced by finger printing. RANBAXY Publication 2005.
31. Gagneux S, DeRiemer K, Van T, Kato-Maeda M, de Jong BC, **Narayanan S**, Nicol M, Niemann S, Kremer K, Gutierrez MC, Hilty M, Hopewell PC, Small PM. Variable host-pathogen compatibility in *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A*. 2006 Feb 21;103(8):2869-73.
32. Flores L, Van T, **Narayanan S**, DeRiemer K, Kato-Maeda M, Gagneux S. Large sequence polymorphisms classify *Mycobacterium tuberculosis* strains with ancestral spoligotyping patterns. *J Clin Microbiol*. 2007 Oct;45(10):3393-5.
33. **Narayanan S**, Gagneux S, Hari L, Tsolaki AG, Rajasekhar S, Narayanan PR, Small PM, Holmes S, Deriemer K. Genomic interrogation of ancestral *Mycobacterium tuberculosis* from south India. *Infect Genet Evol*. 2007
34. Gopaldaswamy R, **Narayanan S**, Jacobs Jr WR, Av-Gay Y. *Mycobacterium smegmatis* biofilm formation and sliding motility are affected by the serine/threonine protein kinase PknF. *FEMS Microbiology Letters*; 2008; 278; 121-127.

- 35 Selvakumar S, **Narayanan S**. Identification and characterization of the regulatory elements of the inducible acetamidase operon from *Mycobacterium smegmatis*. *Canadian Journal of Microbiology*; 2007; 53; 599-606.
36. Natarajan P, **Narayanan S**. *Mycobacterium tuberculosis* H37Rv induces monocytic release of interleukin-6 via activation of mitogen-activated protein kinases: inhibition by N-acetyl-L-cysteine. *FEMS Immunol Med Microbiol*. 2007; *FEMS Immunology and Medical Microbiology*; 2007; 50; 309–318.
37. Sulochana S, **Narayanan S**, Paramasivan CN, Suganthi C, Narayanan PR. Analysis of Fluoroquinolone resistance in clinical isolates of *Mycobacterium tuberculosis* from India. *Journal of Chemotherapy*; 2007; 19; 166-171.
38. Gutierrez MC, Ahmed N, Willery E, **Narayanan S**, Hasnain SE, Chauhan DS, Katoch VM, Vincent V, Locht C, Supply P. Predominance of ancestral lineages of *Mycobacterium tuberculosis* in India. *Emerging and Infectious Diseases*; 2006; 12; 1367-1374.
- 39 Nusrath Unissa A, Selvakumar N, **Narayanan S**, Narayanan PR. Molecular analysis of isoniazidresistant clinical isolates of *Mycobacterium tuberculosis* from India. *Int J Antimicrob Agents*.2008;31(1):71–75.
40. Jayakumar D, Jacobs WR Jr, **Narayanan S**. Protein kinase E of *Mycobacterium tuberculosis* has a role in the nitric oxide stress response and apoptosis in a human macrophage model of infection. *Cell Microbiol*.2008;10(2):365–374.
- 41 Aravindhana V, Sulochana S, **Narayanan S**, Paramasivam CN, Narayanan PR. Identification & differentiation of *Mycobacterium avium* & *M. intracellulare* by PCR- RFLP assay using the *groES* gene. *Indian J Med Res*.2008;126(6):575-579.
- 42 Harini L , **Sujatha Narayanan**, Horacio Bach, K G Papavinas Sundaram, Av-Gay Y Molecular cloning and biochemical characterization of a serine threonine protein kinase, PknL, from *Mycobacterium tuberculosis* *Protein Expr Purif* (in Press)