

Senior Research Fellow

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**About doctoral research work**

**Ph.D. Life Sciences** - Thesis is about to be submitted in four months.

Institution - Central Drug Research Institute, Lucknow, India.

Supervisor - Dr. (Mrs.) P.K. Murthy (Deputy Director), CDRI, Lucknow (U.P.)  
India.

**Thesis Title**

Characterization of antigen molecules of *Brugia malayi* identified by sera of antifilarial treated host in relation to parasitological and immunological responses.

**Thesis work**

During my Ph.D work I was engaged in identification of sero-reactive protein molecules of parasite after treatment with antifilarials. After identification of few molecules the further extension of work is to isolate these molecules to check the prophylactic potential and immunological characterization. The aim is to isolate one or more molecule which are involve in 'elimination' or 'establishment' of infection. For this purpose I have done lymphocyte transformation test ( $H^3$  uptake assay), antibody level, cytokine assays, nitric oxide assay and parasitological observations. I have assessed prophylactic potential of identified and isolated protein molecules with adjuvant in *Mastomys coucha*, challenged against different life stages of parasite and characterize the immune response of the protected animals to see whether the animals received the isolated protein could generate protective or suppressive immune responses.

**Research Experience/ Project Undertaken:**

1. Feb 2005-till date: Characterization of *Brugia malayi* adult parasite molecules that might potentially facilitate reinfection in infected host previously treated with antifilarials.

2. July 2002-Feb 2005: Identification and characterization of *Brugia malayi* antigens of Inflammatory Potential.
3. Feb 2001-Oct 2001: Optimization of wetland treatment system and microbial decolourization of treated distillery effluent.
4. Aug 1999-June 2000: Post Graduate dissertation work  
Biphasic anaerobic digestion process - an alternative for treatment of high strength distillery spent wash.

## Academic Progression

### M.Sc. Microbiology- 2000

SBS (PG) Institute of Bio-Medical Sciences and Research (affiliated to CCS Merrut University), Dehradun, (U.P) India.

This course covered principle and application of microbiology in the field of Immunology, Medical, Virology, Genetics & Genetic Engineering, Food Feed & dairy, Environment and Industries. I also learned about the general and medical Bacteriology, Microbial Metabolism, Parasitology and Mycology.

### B.Sc. (Botany, Zoology, Chemistry) - 1998

Ewing Christian College, (An Autonomous College of Allahabad University) Allahabad.

In addition to a comprehensive study program this course included all aspects of Chemistry Botany and Zoology that are of importance to all fields.

## Research Publication

Paper Published/Accepted

1. S. Dixit, **R. L. Gaur**, M. K. Sahoo, S. K. Joseph, P. S. R. Murthy and P. K. Murthy. (2006). Protection against L<sub>3</sub> induced *Brugia malayi* infection in *Mastomys coucha* pre-immunized with BmAFII fraction of the filarial adult worm. **Vaccine** (In Press).
2. S. Dixit, **R. L. Gaur**, M. A. Khan, J. K. Saxena, P. S. R. Murthy and P. K. Murthy. (2004). Inflammatory antigens of *Brugia malayi* and their effect on rodent host *Mastomys coucha*. **Parasite Immunology**, 26, 397-407.
3. M. A. Khan, **R. L. Gaur**, S. Dixit, M. Saleemuddin and P. K. Murthy (2004). Responses of *Mastomys coucha* that have been infected with *Brugia malayi* and treated with diethylcarbamazine or albendazole, to re-exposure to infection. **Annals. Tropical Medicine and Parasitology**, 98, 8, 817-830.
4. M. A. Khan, S. Dixit, **R. L. Gaur**, J. K. Saxena, P. S. R. Murthy and P. K. Murthy (2005). *Brugia malayi* infection correlation between chronicity of infection and host's lymphoid cell proliferation and DNA damage. **Current science**. 88, 1469.
5. **R. L. Gaur**, M. A. Khan, S. Dixit and P. K. Murthy (2003): Evidences for direct action of diethylcarbamazine on the *Brugia malayi* adult worm: immunoreactivity pattern of adult worms exposed to DEC in vitro and in vivo. *Med. Chem. Res.* Vol. 112, No. 6/7, 339.
6. **R. L. Gaur**, M.K sahuo, S. Dixit, , M. Khanna and P.K. Murthy. (2006). Anti-filarial activity of novel formulations of albendazole against experimental brugian Filariasis. **Parasitology** (Revision).

## Abstracts published

1. “Kinetics of proinflammatory cytokines and NO production in RAW 264.7 cell line in response to various life stages of *Brugia malayi*”. S. Dixit, **R. L. Gaur**, M. A. Khan and P. K. Murthy. 29<sup>th</sup> annual meeting of the Indian immunology society and symposium on immunoparasitology at Bhubaneswar. (27 - 29 November 2002).
2. “Enhanced establishment and survival of *Brugia malayi* infection in *Mastomys coucha* after immunization with a fractionated adult worm extract”. S. Dixit, **R. L. Gaur**, M. A. Khan and P. K. Murthy. 30<sup>th</sup> annual meeting of the Indian immunology society at Lucknow (23 – 25 November 2003).
3. “Responses of *Brugia malayi* infected *Mastomys coucha* treated with diethylcarbamazine and *albendazole* to re-exposure to infection”. **R. L. Gaur**, M. A. Khan, S. Dixit, M. Saleemuddin and P. K. Murthy 31<sup>st</sup> annual meeting of the Indian immunology society at Chennai (15 – 18 December 2004).
4. “Antifilarial induced alteration of *Brugia malayi* adult worm antigen recognition and its relevance to reinfection in *B. malayi*-*Mastomys coucha* model of filariasis”. M. A. Khan, **R. L. Gaur**, S. Dixit and P. K. Murthy. Third Global Meet on parasitic diseases, Jan 12 – 16 2004, Bangalore University, Bangalore.
5. “Evidence for direct action of Diethylcarbamazine on the *Brugia malayi* adult worm: Immuno reactivity pattern of adult worm exposed to DEC in-vitro and in-vivo”. **R. L. Gaur**, M. A. Khan, S. Dixit and P. K. Murthy. Current trends in Drug Discovery research. 17 – 20 Feb 2004. CDRI Lucknow.
6. “Inflammatory antigens of *Brugia malayi* and their effect on rodent host *Mastomys coucha*”. S. Dixit, **R. L. Gaur**, M. A. Khan, J. K. Saxena, P. S. R. Murthy and P. K. Murthy. 31<sup>st</sup> annual meeting of the Indian immunology society at Chennai (15 – 18 December 2004).
7. “Immunofluorescent localization of octopamine in adult worm of *Brugia malayi*”. S. Dixit, **R. L. Gaur**, L. M. Tripathi, V. M. L. Srivastava P.S.R. Murthy and P.K. Murthy. 9<sup>th</sup> National conference on Bioactive Heterocycles and Drug Discovery Paradigm, 8 – 10 January, 2005, Saurashtra University, Rajkot, Gujrat.
8. “Effect of Filarial infection on the progression of experimental *Leishmania donovani* infection in Hamsters”. P.K. Murthy, S. Dixit, Ramesh, **R. L. Gaur** and Suman Gupta. 7<sup>th</sup> International symposium on Vector and Vector borne Diseases, Punjab University, Patiala, 18 – 20 Feb. 2005.
9. “Immunization against experimental visceral leishmaniasis with fraction of adult *Brugia malayi* extract in hamsters”. Suman Gupta, S. Dixit, **R. L. Gaur**, Ramesh, and P.K. Murthy. World Leish III, Italy, 15-19 April. 2005.
10. “Anti-filarial activity of novel formulations of albendazole against experimental brugian filariasis”. P.K. Murthy, **R. L. Gaur**, S. Dixit, M.K sahu, M. Khanna and S. Singh. XVII National Congress of Parasitology, Dibrugarh, Assam, 24-26 – 20 October. 2005.
11. “Cytokine release-stimulating potential of *Brugia malayi* adult worm molecules and their effect on host’s mast cells”, M.K sahu, S. Dixit, **R. L. Gaur**, P.S.R. Murthy

- and P.K. Murthy. 74<sup>th</sup> Annual Meeting of Society of Biological Chemists (India) CDRI, Lucknow, November 7-10, 2005.
12. “Immune responses of *Mastomys coucha* immunized with BmAFII fraction of *Brugia malayi* adult extract and exposed to infection”. S. Dixit, **R. L. Gaur**, M.K sahuo, P.S.R. Murthy and P.K. Murthy. 32<sup>nd</sup> Annual Meeting of the Indian immunology society at Chandigarh (25 – 27 November 2005) PGIMER.
  13. “Antigen recognition pattern of sera of *Brugia malayi* infected *Mastomys coucha* treated with diethylcarbamazine or albendazole and reexposed to infection”. **R. L. Gaur**, S. Dixit, M.K sahuo, P.S.R. Murthy and P.K. Murthy. 32<sup>nd</sup> Annual Meeting of the Indian immunology society at Chandigarh (25 – 27 November 2005) PGIMER.

### **Honors And Awards**

1. Feb 2005-till date: Senior Research fellowship, Indian Council of Medical Research, New Delhi. India.
2. July 2002-Feb 2005: Research Scholar, Department of Science and Technology, New Delhi. India.
3. Feb 2001-Oct 2001: Project Assistant, Industrial Toxicology Research Center (CSIR), Lucknow.
4. July 2001: CSIR-UGC, National Eligibility Test (NET)-LS.
5. October 2001: Qualified Indian Council of Agriculture Research –National Eligibility Test (NET)-2001
6. M. Sc. 1998-2000: Received prizes and merit certificate for two consecutive years (2000 & 1999) for holding first rank (final year) and third rank (previous year) in merit during the Master’s degree program C.C.S. University, Meerut, India.

### **Symposium/ Conference attained**

- 2<sup>nd</sup> International Symposium “Current Trends in Drug Discovery Research” at Central Drug Research Institute, Lucknow. India. 17 – 20 Feb. 2004.
- “31<sup>st</sup> Annual Conference of Indian Immunology Society” at center for Biotechnology, Anna University, Chennai. India. 15 – 18 Dec. 2004.

### **Techniques Known**

#### ➤ **Culture Techniques**

Macrophage cell culture and cell line culture -Mouse cell line (J-774, R.A.W. 264.7), Human cell line (THP-1). Splenocyte and lymphocyte culture of rodents.

Bio evaluation of different synthetic and natural antilfilarial compounds for the drug development programme. Maintenance of *Brugia malayi* infection in *M. coucha* and in mosquitoes.

#### ➤ **Immunological**

Antibody (IgG) detections by Indirect ELISA.

Estimation of inflammatory cytokines (IL-6/TNF- $\alpha$ /IFN- $\gamma$ ) and anti-inflammatory cytokines (IL-10) in cell culture supernatants against parasite antigen and bacterial LPS by Sandwich ELISA.

Cell mediated immune responses by thymidine ( $H^3$ ) (Lymphocyte transformation test) uptake, MTT assay for viability of cell and parasite, and Nitric Oxide estimation.

➤ **Molecular Biology**

SDS-PAGE, Identification and characterization of purified parasite proteins against different test sera by Western blotting and Immunoblotting. Peptide elution from PAGE. DNA isolation and comet assay.

➤ **Microbiology**

Isolation of bacteria and fungi from different natural sources and its identification and characterization. Pure culture isolation and maintenance, Consortium preparation, Mutant isolation by replica plating, Antibiotic sensitivity test (both well and disc method). Virus culture in chick egg embryo. Culture, Characterization and identification of Bacteria and Fungus.

➤ **Analytical Sciences**

Protein sample preparation of parasite and cell. Purification of crude homogenate of parasite by Sephadex G-200 column chromatography and estimation of protein.

➤ **Animal handling**

Hamster, Mice, Rabbit and Rat.

### **Knowledge of Computer**

Working ability in WINDOW XP & 2000 like MS OFFICE, MS WORD etc. Experience in database search viz. MEDLINE, BLAST both through Internet and CD. Experience in statistical analysis by GraphPad Prism®.

### **Personal Details**

Date of Birth	:	23 December, 1976
Father's Name	:	Late Shri. R. J. Gaur
Mother's Name	:	Smt. S. Gaur
Nationality	:	Indian
Marital Status	:	Unmarried
Gender	:	Male
Languages Known	:	Hindi & English

## References

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