

# Curriculum Vitae

## ***Personal profile***

Name	Neetu Dahiya
Date of Birth	2nd January, 1977
Marital status	Single
Sex	Female
Nationality	Indian
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## **Educational qualifications**

**2006:** Ph.D. in “Production, purification and characterization of *Enterobacter* sp. chitinase and its application in production of N-acetyl D-glucosamine from chitin” from Department of Biotechnology, Panjab University, Chandigarh, India.

**1997-1999:** FIRST CLASS in Masters of Science (Botany), Panjab University, Chandigarh, INDIA.

**1994-1997:** FIRST CLASS in Bachelor of Science from M. D. University, Rohtak, Haryana, INDIA.

## **Research Experience**

Working as a ‘**Project Associate**’ in ‘Genes and Proteins Laboratory’ in National Institute of Immunology, New Delhi in project entitled “**Characterization of testis specific Sperm associated antigen 9 (SPAG9), gene Expression and Humoral response in various Human Cancers**” from January 2006 till date.

Worked as ‘**Project Associate**’ at Genes and Proteins Laboratory, National Institute of Immunology, New Delhi in project entitled ‘**Isolation & Characterization of genes encoding sperm surface antigens by screening human testis expression cDNA LIB-identification of a candidate molecule(s)for development of contraceptive vaccine**’ from June 2005 to December 2005.

Worked as ‘**Senior Research Fellow**’ at Department of Biotechnology, Panjab University, Chandigarh from October 2001 to September 2004.

Worked as a ‘**Junior Research Fellow**’ at the Department of Environmental Biotechnology, Institute of Genomics and Integrative Biology (Centre for Biochemical Technology-CSIR), Delhi, India from September 1999 to July 2001.

## List of publications

### **Research papers published/accepted/communicated:**

1. Rana, R., Jagadish, N., Garg, M., Mishra, D., **Dahiya, N.**, Chaurasiya, D., Suri, A. Immunogenicity study of recombinant human sperm associated antigen 9 (SPAG9) in a bonnet macaque (*Macaca radiata*): assessment of contraceptive effect of sperm based recombinant protein. **Human Reproduction**, Accepted.
2. Rana, R., Jagadish, N., Garg, M., Mishra, D., **Dahiya, N.**, Chaurasiya, D., Suri, A. Small interference RNA (siRNA)-Mediated knockdown of sperm associated antigen 9 (SPAG9) having structural homology with c-Jun N-terminal kinase interacting protein. **Biochem Biophysics Research Communications**, 340, 158-164, 2006.
3. **Dahiya, N.**, Hoondal, G. S. and Tewari, R. Biotechnological aspects of chitinolytic enzymes: a review. **Applied Microbiology and Biotechnology**. Oct. 25, 1-10, 2005.
4. **Dahiya, N.**, Tewari, R., Tiwari, R. P. and Hoondal, G. S. Chitinase production in solid state fermentation by *Enterobacter* sp. NRG4 using statistical experimental design. **Current Microbiology**. Volume 51 (4), 222-228, 2005.
5. **Dahiya, N.**, Tewari, R., Tiwari, R. P. and Hoondal, G. S. Chitinase from *Enterobacter* sp. NRG4: Its purification, characterization and reaction pattern. **Electronic Journal of Biotechnology**. 8, August 15, 134-145, 2005.
6. **Dahiya, N.**, Tewari, R., Tiwari, R. P. and Hoondal, G. S. Production of an antifungal chitinase from *Enterobacter* sp. NRG4 and its application in protoplast production. **World Journal of Microbiology and Biotechnology**. 21, (8-9) 1611 - 1616, 2005.
7. Sekhon, A., **Dahiya, N.**, Tewari, R. P. and Hoondal, G. S. Properties of a thermostable extracellular lipase from *Bacillus megaterium* AKG-1. **Journal of Basic Microbiology**, 45, 147-54, 2005.
8. Sekhon, A., **Dahiya, N.**, Tewari, R. P. and Hoondal, G. S. Production of extracellular lipase by *Bacillus megaterium* AKG-1 in submerged fermentation. **Indian Journal of Biotechnology**. Accepted, 2005.
9. Hoondal, G. S., Tiwari, R. P., Tewari, R., **Dahiya, N.** and Beg, Q. K. Microbial alkaline pectinases and their industrial applications: a review. **Applied Microbiology and Biotechnology**. 59, 409-418, 2002.
10. Sekhon, A., **Dahiya, N.**, Tewari, R. P. and Hoondal, G. S. Production of lipase by *Bacillus megaterium* AKG-1 using wheat bran in solid substrate fermentation. **Indian Journal of Microbiology**, 44 (3), 37-38, 2004.
11. Kaur, S., **Dahiya, N.** and Hoondal, G. S. Synergistic effect on endochitinase production by mixed culture of *Streptomyces* sp. QG-11-3 and *Bacillus* sp. LQG-21 and its role in biobleaching of kraft pulp. **Asian Journal of Microbiology, Biotechnology and Environmental Sciences**, 7(1), 2005, Accepted.
12. Kaur, G., **Dahiya, N.** and Hoondal, G. S. Production of chitinase by *Serratia marcescens* GG5 in solid state fermentation. **Asian Journal of Microbiology, Biotechnology and Environmental Sciences**, 7(1), 2005, Accepted.

13. Singh, G., **Dahiya, N.** and Hoondal, G. S. Optimization of chitinase production by *Serratia marcescens* GG5. *Asian Journal of Microbiology, Biotechnology and Environmental Sciences*, 7(2), 2005, Accepted.
14. **Dahiya, N.**, Tewari, R and Hoondal G. S. Commercial applications of microbial chitinases. *Biotechnology Bulletin*, RCS, July 2003.
15. **Dahiya, N.**, Tewari, R., Tiwari, R. P. and Hoondal, G. S. Statistical optimization of media components for chitinase production by *Enterobacter* sp. NRG. *Microbial Research*, Communicated.
16. **Dahiya, N.**, Tewari, R. and Hoondal, G. S. Importance of chitin and its derivatives. *Everyman's Science*, Communicated.

**Book chapter:**

1. **Dahiya, N.** "Fungal chitinases – An overview on regulation and cloning" in "Mycotechnology: Present status and future prospects". Accepted

## Awards and distinctions

UGC-CSIR-NET-1999 qualified (National Level test). Council of Scientific and Industrial Research conducts this test to award PhD. fellowship.

GATE -1999 (Graduate Aptitude Test of Engineering) qualified with 95.74 percentile.

## Research article reviewed

Reviewed a research article for the journal "Current Microbiology".

## Research work presentations

1. N. Jagadish, R. Rana, M. Garg, D. Mishra, **N. Dahiya**, D. Chaurasiya, A. Hasegawa, K. Koyama, A. Suri. Characterization of a haploid germ cell specific Sperm Associated Antigen 9 (SPAG9) in non-human primate. International Congress on Gamete Biology: Emerging Frontiers in Fertility and Contraceptive Development. Feb 22-25, 2006, New Delhi, India.
2. R. Rana, N. Jagadish, M.Garg, D. Mishra, **N. Dahiya**,D. Chaurasiya, A. Suri. Small interference RNA (siRNA)- mediated knockdown of Sperm Associated Antigen 9 (SPAG9) having structural homology with c-Jun-terminal kinase interacting protein. International Congress on Gamete Biology: Emerging Frontiers in Fertility and Contraceptive Development. Feb 22-25, 2006, New Delhi, India.
3. Jagadish, N., Rana, R., Mishra, D., Garg, M., Chaurasiya, D., **Dahiya, N.**, Selvi, R., Hasegawa, A., Koyama, K. and Suri, A. Characterization of immune response in mice to plasmid DNA encoding human sperm associated antigen 9 (SPAG9). Accepted for publication in Third European Congress of Reproductive Immunology (held jointly with the 6th ESRADI Congress and 10th AASIR Congress), Aug., 12-15,2005, University of Essex, Colchester, England.

4. Jagadish N., Rana R., Garg M., Mishra D., **Dahiya N.**, Chaurasiya D., Suri A. Molecular cloning and Characterization of Testis specific sperm associated antigen 9 (SPAG9), presented at "BIOTECH 2005" from Dec. 22-24, 2005, Manesar, India.
5. Jagadish N., Rana R., Garg M., Mishra D., **Dahiya N.**, Chaurasiya D., Hasegawa, A., Koyama, K., Anil Suri. Characterization of a Haploid Germ Cell Specific Sperm Associated Antigen 9 (SPAG9) in non-human primate, at International conference on male reproduction and infertility, Sep16-18, 2005, at IISc, Bangalore, India.
6. **Dahiya, N.**, Tewari, R and Hoondal G. S. Isolation of chitinolytic bacteria for production of N-acetyl D-glucosamine. In "Proceedings in 91st Indian Science Congress Association, January 1st-7th, 2003.
7. Kachroo, D., **Dahiya, N.**, Singh, R. and Kumar, R. Tapping the unexplored microbial wealth for tackling pulp and paper waste. In Proceedings: "Treatwaste-2001" Recent trends in industrial waste treatment, challenges for the new millennium. January 13th-14th, Nagpur, India.
8. **Dahiya, N.**, Kachroo, D., Singh, R., Sharma, A. and Kumar, R. An insight into the presence of various bacterial isolates in pulp mill effluent and their applicability. In: 41st annual conference of AMI "Microbiotech 2000", November 25th-27th, BISR, Jaipur, India.
9. Singh, R., Kachroo, D., **Dahiya, N.**, Sharma, A. and Kumar, R. Designing tailor made package-An alternate to conventional treatment methods for pulp and paper industry waste-water. In proceedings: "Water Asia, 2000" International Conference on Asian Waste Industry, September 18th-20th, New Delhi, India.

## Techniques Versed With

**Molecular Biology/Biochemistry Techniques:** Cloning of DNA fragment, Gene expression in *E. coli*, PCR cloning, RT-PCR, mRNA isolation from tissues and cancer cell lines, Basic molecular biology methods like restriction digestion, DNA extraction from gel, preparation of competent cells, bacterial transformation (electroporation / calcium chloride), Maintenance of mammalian cell lines, Transfection studies in normal as well as cancer cell lines, Immuno-fluorescence, ELISA, protein purification (Ion-exchange chromatography and gel filtration) and characterization, Immunohistochemistry studies, Isolation of chromosomal and plasmid DNA, Acrylamide and agarose gel electrophoresis, basic enzymology techniques, antibiotic activity testing of microbial, plants and insect extracts, Techniques involved in physiochemical estimation of parameters such as reducing sugars, total nitrogen, BOD, COD, spectroscopic methods, HPLC methods.

**Microbiology Techniques:** Cultivation of bacteria and fungi, Basic methods in microbial growth kinetics study, Maintenance of bacterial and fungal cultures, Tissue culture techniques involved in spawn preparation and mushroom cultivation

### **Software knowledge:**

One year diploma in computer applications. Knowledge of operating systems such as DOS, Windows and UNIX. Knowledge of high level programming languages BASIC and C, routine

software such as Microsoft word, Microsoft excel, DBase and Lotus, Sigma, Origin, Adobe Photoshop, BLAST etc.

## **Extra-curricular activities**

Member of 'Society for Environment Consciousness (ENVICON)' at Hindu Girls College, Sonapat, for the session 1995-96 and 1996-97.

Member of 'Discipline Committee' in hostel Mata Gujari Hall, Panjab University, Chandigarh, for the session 2002-2003.

## **Current assignment**

Presently I am working on sperm associated antigen 9(SPAG9). SPAG9 has been found to be expressed in haploid round spermatids and is reported to be involved in sperm egg interaction. SPAG9 is classified as a new member of JNK interacting protein because of its structural homology with JIP proteins. It has a JNK binding domain, leucine zipper, two coiled coil domain and a transmembrane domain. It is suggested that SPAG9 may function as a scaffold protein in JNK cascade. Though SPAG9 is testis specific gene it has nucleotide sequence similarities with EST's from various cancerous tissues and cancer cell lines. So it can be a valuable target for studying its role in tumor biology.

We have constructed deleted mutants of SPAG9 in prokaryotic \_expression vectors for production of SPAG9 protein which will be used for detection of antibody detection in cancer patient serum and for generation of antibodies for studying SPAG9 localization in cancer tissues. We have also constructed eukaryotic \_expression vectors which would be used for transfection studies in normal and cancer cell lines and for generation of stabilized cell lines which would be used for studying the role of SPAG9 in tumor biology. We are also exploring the potential of SPAG9 directed siRNA in the suppression of SPAG9 gene in cancer cell lines in vitro. For this we are cloning chimeric constructs expressing SPAG9 fused with green fluorescent reporter protein.

For cloning and expressing various constructs, I am handling different vectors like pBlue Script, pET, pBSU6, TOPO, PLV, IRES DsRed Express, DsRedN2 and pEGFPN<sub>2</sub>.

## References

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