

Nasreen Z. Ehtesham

Name in Full : Nasreen Zafar Ehtesham
Designation : Deputy Director
Date of Birth : March 28, 1959
Nationality : Indian
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Subject : Medical Sciences
Specialization : Gene Regulation
Area(s) of Research : Epidemiology and Immunology of Infectious Diseases, Signalling mechanism of infectious agents,

Educational Qualifications:

Degree/Diplom	University/Institution	Year
B. Sc (Honors)	Magadh University	1978
M. Sc	Aligarh Muslim University	1981
Graduate Program	University of Alberta, Canada	1984
Ph. D	National Institute of Immunology, (NII) Delhi (Registered at JMI)	1991

No. of students working/awarded PhD degree

5 students have been awarded degree so far.
2 will be submitting soon
Three students are working for their PhD

Experience

- Research – 31 years (after Masters); Teaching – About 16 years

- UGC-JRF – University of Delhi (1982)
- Graduate Student, University of Alberta, Canada (1984-1986)
- Research Assistant, Texas A&M University, USA (1986-1987)
- Ph.D. Student/TRF Fellow, National Institute of Immunology, New Delhi (1988 –1991)
- PostDoc Fellow Rockefeller Foundation, ICGEB (1991-1993)
- Research Scientist, International Center for Genetic Engineering and Biotechnology (ICGEB), New Delhi (1994-2000)
- Assistant Director and Head Molecular Biology Unit, National Institute of Nutrition, Hyderabad (2000-2005)
- Deputy Director and Head Molecular Biology Unit, National Institute of Nutrition, Hyderabad (2005-2011)
- Deputy Director, National Institute of Pathology, New Delhi (2011-Continuing)
- Visiting Professor, Institute of Life Sciences, University of Hyderabad Campus, Hyderabad (2009-Continuing)

Participation in meetings/conferences

Delivered lectures at several international meetings held in Canada, U.S.A, Brazil, Germany, Switzerland, Thailand, Indonesia and India.

Invited Talks

- 10th Congress of “**Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB)**” December 2003
- University of La Reunion, France on “**Neurologic, Immunologic and metabolic aspect of chronic diseases**” December 2004
- International Centre for Diarrhoeal Disease Research, Bangladesh October 2005
- Keystone meeting on **PPAR and RXR** (2005), Whistler, BC, Canada
- Indo-Swedish Symposium on “Genomics and proteomics of Diabetes” organized by Madras Diabetes Research Foundation, Chennai. April 2006
- Institut für Molekulare Infektionsbiologie, University of Würzburg, Germany “**Pathogenesis and role of nutrition in infectious diseases**” May 2006
- 25th Biennial Conference of I.A.L. (Indian Association of Leprologists), Kanpur. November 2007
- Invited by DST, Government of Bihar to attend a meeting on “**Bihar Science Congress – 2008**” May 2008.
- **Indo French meeting on “Diabetes and Cardiovascular Disorder” organized by ICMR. January 2007**

- Attended a workshop on “Diversity to Discovery Genetic Epidemiology and Molecular Genetics – The Indian Population Diversity, endogamous Ethnic Communities” February, 2008.
- Attended a symposium on HUGO 2008 – 13th Human Genome Meeting, Hyderabad September 2008.
- Attended a meeting on Indo-German workshop on Molecular Epidemiology of Infectious Diseases with emphasis on Mycobacterium tuberculosis, November, 2008.
- Invited by ICGEB to attend a meeting on “Emerging Trends in Tuberculosis Research : Biomarkers, Drugs and Vaccine” December 2008.
- 3rd **International Congress on Prediabetes and Metabolic Syndrome** Nice, France April, 2009
- Invited talk at **Cell Biology** meeting, Hyderabad University, 2010

Participation in regulatory meetings

- WHO –ICMR meet on Guidelines for management of type 2 diabetes (2003) Chennai, India
- WHO-ICMR meeting on Strategies, prevention and control of diabetes mellitus, 2003 New Delhi
- Served as **Member secretary** of DBT GM Foods Sub-Committee on Biotechnology issues 2002

Awards/Special Recognitions

1. Elected **Fellow, The National Academy of Sciences (FNASc)**, India
2. Elected **Fellow, The Andhra Pradesh Akademi of Sciences**, India
3. **Invited Talk, Robert Koch Institute**, Berlin, Germany, 2009
4. **Invited speaker in the International Workshop on "Neurological, Immunologic and Metabolic Aspects of Chronic Diseases" Université de La Réunion**, Saint-Denis, Réunion-France (December 10-12, 2004).
5. **Faculty in ICGEB-UNIDO WORKSHOP**, Sponsored by The Rockefeller Foundation and IRRI "Genome Analysis of Plants, Pests and pathogen", ICGEB, New Delhi (Feb 8- 27, 1993)

6. **RESEARCH FELLOW**, Talwar Research Foundation, New Delhi, India,(Jan1988-July 1991)
7. **OUTSTANDING WORK OF THE YEAR AWARD**, NII, New Delhi (1990)
8. **RESEARCH ASSISTANT**, Department of Medicine, University of Alberta, Edmonton, Canada, (Jan 1984-March 1986)
9. **JUNIOR RESEARCH FELLOW**, UGC Project, Department of Botany, University of Delhi, New Delhi, (Jan 1982-Sept 1982)
10. **Merit Scholarship**, Govt. of Bihar, Bihar (1974-1976)

Editorial Board Member of

Molecular and Cellular Biochemistry (Springer, Netherlands)
International Journal of Biosciences and Technology (IJBST)
International Journal of Medical Sc. and Technology (IJMST)
International Journal of Life Science and Technology (IJLST)
Gut Pathogens (Biomed Central, London)

List of membership in Scientific Institutions/Committees:

1. Life Member, **Nutritional Society of India**
2. Life Member, **Society of Biological Chemists**
3. Life Member of **Society of Cell Biology**, India
4. **Member Secretary of “GM Foods Sub-committee on Biotechnology Issues” 2002**
5. Member, DBT Task Force on **“Biotechnological approaches on food and nutritional security”**, **Ministry of Science and Technology, Govt of India**
6. Member, ICMR Task Force on **“Molecular Cardiology and Diabetes”**. **Ministry of Health, Govt of India**

List of Projects Handled (COMPLETED/ONGOING)

1. PPAR mediated regulation of Glucose metabolism and coronary Heart Disease: understanding the mechanism of action
Funded by ICMR

2. Development of PCR Method for detection of genetically modified foods
Funded by DBT
3. Genetic basis of resistance type II diabetes in the raica community of Rajasthan
Funded by ICMR
4. Biomedical Informatics Centre of ICMR
5. Transcriptome and proteome analyses of ALR2 and its involvement in the pathogenesis of diabetic retinopathy
Funded by DST
6. Anti inflammatory potential of n-3 polyunsaturated fatty acids in experimental ulcerative colitis : Biochemical and molecular mechanisms
Funded by DBT
7. Understanding the role of T cells in obesity and diabetes
Funded by DST
8. Virtual **Centre of Excellence** on multidisciplinary approaches aimed at interventions against Mycobacterium tuberculosis.
Center of Excellence DBT
9. Understanding the functional role of PHLPP1 in IFN γ -mediated innate immune responses of macrophages.
Funded by DBT.
- 10.

PUBLICATION LIST YEAR WISE

2012

- 50 Kohli S, Singh Y, Sharma K, Mittal A, **Ehtesham NZ**, Hasnain SE.(2012) Comparative genomic and proteomic analyses of PE/PPE multigene family of Mycobacterium tuberculosis H37Rv and H37Ra reveal novel and interesting differences with implications in virulence. *Nucleic Acids Res. (In press)*
- 49 Tyagi A, Kumar U, Reddy S, Santosh VS, Mohammed SB, **Ehtesham NZ**, Ibrahim A. (2012) Attenuation of colonic inflammation by partial replacement of dietary linoleic acid with α -linolenic acid in a rat model of inflammatory bowel disease. *Br J Nutr. (In press)*

2011

- 48 Suragani M, Rasheedi S, Hasnain SE, **Ehtesham NZ**.(2011) The translation initiation factor, PeIF5B, from Pisum sativum displays chaperone activity. *Biochem Biophys Res Commun.* 414:390-6.
- 47 **Ehtesham NZ**, Nasiruddin M, Alvi A, Kumar BK, Ahmed N, Peri S, Murthy KJ, Hasnain SE. (2011) Treatment end point determinants for pulmonary

- tuberculosis: human resistin as a surrogate biomarker. **Tuberculosis** (Edinb). 91:293-9. Epub
- 46 Banerjee S, Farhana A, **Ehtesham NZ**, Hasnain SE. (2011) Iron acquisition, assimilation and regulation in mycobacteria. **Infect Genet Evol.** 11:825-38.
- 45 Ayesha Alvi, Suhail A. Ansari, **Nasreen Z. Ehtesham**, Mohammed Rizwan, Savita Devi, Leonardo A. Sechi, Insaf A. Qureshi, Seyed E. Hasnain, Niyaz Ahmed (2011) Concurrent Proinflammatory and Apoptotic Activity of a *Helicobacter pylori* Protein (HP986) Points to Its Role in Chronic Persistence PLoS One. 6:e22530.
- 44 Bannerji S, **Ehtesham NZ** and Hasnain SE. (2011) Translating advances in genomic research to clinical practice: Challenges ahead. **Medical Principles and Practice.** 20:392-4.

2010

- 43 Rasheedi S, Suragani M, Haq SK, Sachchidanand, Bhardwaj R, Hasnain SE and **Ehtesham NZ**. Expression, purification and ligand binding properties of the recombinant translation initiation factor (PeIF5B) from *Pisum sativum* **Molecular Cellular Biochemistry** 344:33-41
42. Singh AK, Battu A, Mohareer K, Hasnain SE and **Ehtesham NZ** (2010) Transcription of human resistin gene involves an interaction of Sp1 with PPAR γ . **PLoS One** 5: e9912.
41. Rasheedi S., Suragani M., Haq S.K., Ghosh S., **Ehtesham N.Z. and** Hasnain S.E. Characterization of LEF4 binding property and its role as part of baculoviral transcription machinery. **Molecular Cellular Biochemistry** 331:83-9.

2009

40. Haseeb, M. Ilyas, S. Chakrabarti, A.A. Farooqui, SR. Naik, S. Ghosh, M.Suragani, **Ehtesham NZ** (2009) Single nucleotide polymorphisms in peroxisome proliferator-activated receptor γ and their association with plasma levels of resistin and metabolic syndrome in a South Indian population. **Journal of Biosciences** 34:405-14.
39. Rasheedi S, Suragani M, Haq SK, Ghosh S, **Ehtesham NZ**, Hasnain SE. (2009) Biophysical characterization and unfolding of LEF4 factor of RNA polymerase from AcNPV. **Biopolymers** 91:574-82.
38. Ibrahim A, Ghafoorunissa, Basak S and **Ehtesham NZ**. 2009 Impact of maternal dietary fatty acid composition on glucose and lipid metabolism in male

- rat offspring aged 105 d. **British Journal of Nutrition** 102:233-41.
37. Ahmad N., **Ehtesham NZ.** and Hasnain SE., (2009) Ancestral *Mycobacterium tuberculosis* genotypes in India; implications for Tbcontrol programmes **Infection Genetics and Evolution** 9:141-146.
- 2008**
36. Tundup S., Pathak N., Ramanadham M., Mukhopadhyay S., Murthy KJR., **Ehtesham NZ.** and Hasnain SE. (2008) The co-operonic PE25/PPE41 Protein complex of *Mycobacterium tuberculosis* elicits increase humoral and cell mediated immune response. **PloS One** 3: e3586.
35. Aruna B., Islam A., Ghosh S., Singh AK., Vijayalakshmi M., Ahmad F. and **Ehtesham NZ.** (2008) Biophysical analyses of human resistin: oligomer formation suggests novel biological function. **Biochemistry** 47:12457-12466.
34. Farhana A., Kumar S., Rathore SS., Ghosh P.C., **Ehtesham NZ.**, Tyagi AK. and Hasnain SE. (2008) Mechanistic Insights into a Novel Exporter-Importer System of *Mycobacterium tuberculosis* Unravel its Role in Trafficking of Iron. **PloS One** 3: e 2087.
- 2007**
33. Rasheedi S., Ramachandran A., **Ehtesham NZ.** and Hasnain SE. (2007) Biochemical Characterization of Sf9 Sp-family-like protein factors reveals interesting features. **Archives of Virology** 152:1819-1828.
32. Rasheedi S., Ghosh S., Suragani M., Tuteja N., Sopory SK., Hasnain SE. and **Ehtesham NZ.** (2007) *Pisum sativum* contains a factor with strong homology to eIF5B. **Gene** 399: 144-151.
31. Boddupalli C, Ghosh S, Rahim SS., Nair S **Ehtesham NZ,** Hasnain, SE. and Mukhopadhyay, S (2007) Nitric oxide inhibits interleukin-12 p40 through p38 MAPK-mediated regulation of calmodulin and c-rel . **Free Radical Biology & Medicine** 42:686-697.
- 2006**
30. Suragani R., Ghosh S., **Ehtesham NZ.** and Ramaiah KVA. (2006) Expression and purification of subunit of human translation initiation factor 2 (eIF2): Phosphorylation of eIF2 α and eIF2 β . **Protein Expression and Purification** 47:225-233.
- 2005**
29. Suragani R., Komindla R., **Ehtesham NZ.** and Ramaiah KVA. (2005) Interaction of recombinant human eIF2 subunit with eIF2 α and eIF2 β kinases.

**Biochemistry Biophysics Research
Communication** 338:1766-1772.

28. Kumar A., Haseeb A., Suryanarayana P., **Ehtesham NZ.** and Reddy GB. (2005) Elevated expression of α A and α B crystallins in Streptozotocin- induced diabetic rat. **Archives Biochemistry Biophysics** 444:77-83.
27. Silswal N, Singh AK., Aruna B., Mukhopadhyay S., Ghosh S. and **Ehtesham NZ.** (2005) Human resistin stimulates the pro-inflammatory cytokines TNF- α and IL-12 in macrophages by NF κ -B dependent pathway **Biochemical Biophysical Research Communication** 334:1092-1101.
26. Saravanan N., Haseeb A., **Ehtesham, NZ.** and Ghafoorunissa (2005) Differential effects of dietary saturated and *trans* fatty acids on expression of genes associated with insulin sensitivity in rat adipose tissue. **European J. Endocrinology** 15:159-165.
25. Nasirudin KM., **Ehtesham NZ.**, Tuteja R., Sopory SK. and Tuteja N. (2005) The Gly-Arg-rich C-terminal domain of pea nucleolin is a DNA helicase that catalytically translocates in the 5'- to 3'-direction. **Archives Biochemistry Biophysics** 434:306-311.

2004

24. Ghosh S., Rasheedi, S., Rahim, SS., Banerjee, S. Choudhary, RK. Prachee, **Ehtesham NZ.**, Mukhopadhyay, S., and Hasnain, SE. (2004) Method for enhancing solubility of expressed recombinant proteins in *E. coli*. **BioTechniques** 37:418-423.
23. Choudhary, RK., Raghu, P., **Ehtesham, NZ** and Hasnain, SE. (2004) Expression and characterization of RV2430 a novel immunodominant antigen of *M. tuberculosis*. **Protein Expression and Purification** 36:249-253.
22. Raghu, P., Ghosh, S., Soundarya, K., Haseeb, A., Aruna, B. and **Ehtesham, NZ.**, (2004) Dimerization of human recombinant resistin involves covalent and noncovalent interactions. **Biochememical Biophysical Research Communication** 313:642-646.

2003

21. Aruna, B., Ghosh, S., Singh, AK., Mande, SC., Srinivas, V., Chauhan, R. and **Ehtesham, NZ.** (2003) Human recombinant resistin protein displays a tendency to aggregate by forming intermolecular disulfide linkages. **Biochemistry** 42:10554-10559.
20. Phan TN., **Ehtesham NZ.**, Tuteja R. and Tuteja N. (2003) A novel nuclear DNA helicase with high

specific activity from *Pisum sativum* catalytically translocates in the 3'-5' direction ***European Journal of Biochemistry*** 270:1735-1745.

19. Ghosh, S., Singh, AK., Aruna, B, Mukhopadhyay, S. and **Ehtesham, NZ.** (2003) The genomic organization of mouse resistin reveals major differences from the human resistin: Functional Implications ***Gene*** 305:27-34.

2002

18. **Ehtesham, NZ.** (2002) Does resistin resist insulin? ***Current Science*** 83:1190-1091.

2001

17. **Ehtesham, NZ.** (2001) Molecular link between diabetes and obesity: The resistin story. ***Current Science*** 80:1369-1371.
16. Gaikwad, A., **Ehtesham, NZ.**, Hop, DV., Chen, S. and Mukherjee, SK (2001) Functional analyses of pea chloroplast DNA polymerase and its accessory proteins. In: ***Signal Transduction in Plants: Current Advances***, S.K Sopory, R.Oelmueller, S.C. Maheshwari, eds, Kluwer Academic/Plenum Publisher, New York, London 309.

2000

15. Pham, XH., Reddy, MK., **Ehtesham, NZ.**, Matta, B. and Tuteja, N. (2000) A multifunctional DNA helicase from *Pisum sativum* stimulates topoisomerase I activity. ***Plant Journal*** 24:219-229.

1999

14. **Ehtesham, NZ.**, Tuan-Nghia, P., Gaikwad, A., Sopory, SK. and Tuteja, N. (1999). Calnexin from *Pisum sativum*: Molecular cloning of the cDNA and characterization of the encoded protein. ***DNA & Cell Biology*** 18:853-862.

1998

13. Ali, S., Ansari, S., **Ehtesham, NZ.**, Azfer, MA., Homkar, U., Gopal, R. and Hasnain, SE. (1998) Analysis of the evolutionarily conserved repeat motifs in the genome of the highly endangered central Indian barasingha *Cervus duvauceli branderi*. ***Gene*** 223:361-367.

1996

12. Raina, A., Sulaiman, IM., **Ehtesham, NZ.**, Das, P., Ali, S., Dogra TD. and Hasnain, SE. (1996) Characterization of a human alphoid satellite DNA sequence: Potential use in assessing genetic diversity in Indian populations. ***Gene*** 173: 247-250.

1995

11. **Ehtesham, NZ.**, Bentur, JS. and Bennett, J. (1995) Highly repetitive DNA sequence elements from *Orseolia oryzae* (Wood Mason) discriminate between the Indian isolates of the Asian rice gall midge and the paspalem midge. ***Electrophoresis*** 16: 1762-1765.
 10. Sulaiman, IM., **Ehtesham, NZ.** and Hasnain, SE. (1995) A multicopy DNA sequence from *M. simplicifolia* discriminates between the different species of this endangered Himalayan poppy. ***Gene*** 156:223-227.
 9. **Ehtesham, NZ.**, Bentur, JS. and Bennett, J. (1995) Characterization of DNA sequence that detects repetitive DNA elements in the Asian rice gall midge (*Orseolia oryzae*) genome: potential use in DNA fingerprinting of biotypes. ***Gene*** 153: 179-183.
- 1994**
8. Hasnain, SE., Nakhai, B., **Ehtesham, NZ.**, Sridhar, P., Ranjan, A., Talwar, GP. and Jha, PK. (1994) β subunit of hCG hormone and firefly luciferase simultaneously synthesized in insect cells using a recombinant baculovirus are differentially expressed and transported. ***DNA & Cell Biology*** 13:275-282.
- 1992**
7. **Ehtesham, NZ.** and Hasnain, SE. (1992) A multilocus probe for DNA fingerprinting based on chi-like sequences. ***Advances in Forensic Haemogenetics*** 4:137-140.
 6. **Ehtesham, NZ.**, Das, AK. and Hasnain, SE. (1992) A novel probe for human DNA fingerprinting based on chi-like sequences. ***Gene*** 111:261-263
- 1991**
5. **Ehtesham, NZ.**, Ma, DP. and Hasnain, SE. (1991) Complete nucleotide sequence of a human satellite DNA useful in DNA fingerprinting. ***Gene*** 98:301-302
 4. **Ehtesham, NZ.** and Hasnain, SE. (1991) Direct in-gel hybridization without blotting, using nick-translated cloned DNA probe. ***BioTechniques*** 11:718-722
 3. Jha, PK., **Ehtesham, NZ.**, Dhar, R. and Hasnain, SE. (1991) Intracellular trafficking of proteins in insect cells and larvae infected with recombinant baculovirus. ***Journal of Cellular Biochemistry*** 15:197.
- 1990**
2. **Ehtesham, NZ.**, Talwar, GP., Ali, A. and Hasnain, SE. (1990) Molecular cloning of human satellite DNA sequences and their use in detecting DNA

polymorphism. *Indian Journal of Biochemistry & Biophysics* 27:275-279

1988

1. Guiltinan, MJ., Schelling, ME., **Ehtesham, NZ.**, Thomas JC. and Christensen, ME. (1988) The nucleolar RNA binding protein B-36 is highly conserved among plants. *European Journal of Cell Biology* 46:547-553.

Research Highlights

- Developed a probe for DNA fingerprinting, **the first from India**, using a novel strategy.
- Developed a technique for **direct in-gel hybridization** without blotting onto membrane. This report has been extensively cited by other workers internationally.
- Developed **for the first time** a method for genetic typing of the Asian rice gall midge based on DNA isolated from a single insect. This report has applications in the management of the gall midge problem.
- Elucidated the genetic basis of extinction of endangered plant and animal species.
- Was part of the team that used, **for the first time**, human satellite DNA sequences to assess the extent of biodiversity in the Indian population.
- Described the cloning and characterization of a molecular chaperone, calnexin and its involvement in protein folding in plants.
- Dissected the functional components of the baculovirus very late gene transcription machinery.
- Identified the basis of differential regulation of human resistin, an important hormone considered as a link between obesity and insulin resistance and dissected the transcriptional regulation of resistin.
- Showed the impact of maternal dietary fatty acids on glucose and lipid metabolism in animal models.
- Contributed to an understanding of the functional roles of the *Mycobacterium tuberculosis* PE/PPE family of Proteins.
- Showed **for the first time** the pro-inflammatory action of human resistin. This work which was accepted within a day in **BBRC** has become a **citation classic with in five years of publication** by getting ~200 citations.
- Showed the presence of SNPs in the PPAR-gamma gene and their association with metabolic syndrome.
- Developed a host biomarker for TB disease staging in a clinical environment.