

## BIO-DATA

### Dr. SAGARIKA HALDAR

Assistant Professor  
Department of Experimental Medicine and  
Biotechnology  
Postgraduate Institute of Medical Education  
& Research (PGIMER)  
Sector-12, Chandigarh - 160012

Tel: 9818035435  
Email: [sagarika.haldar@gmail.com](mailto:sagarika.haldar@gmail.com)  
[shaldar8282@gmail.com](mailto:shaldar8282@gmail.com)

---

### **Brief Profile**

Keen researcher with training in Infectious disease diagnostics and bio-design process of innovation having more than 10 years of proven experience in the field of tuberculosis diagnostics. Currently part of 4 industry-academia initiatives to develop kits for improved pulmonary TB, extra pulmonary TB and Drug resistant TB diagnosis which are aimed for integration in national TB programme. Current research interest includes development of new diagnostic modalities for drug resistant and extrapulmonary tuberculosis and exploring exosomes as a biomarker for tuberculosis diagnosis.

### **Previous positions**

- **March 2014-December 2017:** DST INSPIRE Faculty at the Centre for Bio-Design and Diagnostics at the Translational Health Science and Technology Institute (THSTI).
- **July 2011-March 2014:** Innovation Awardee at the Centre for Bio-Design and Diagnostics at the Translational Health Science and Technology Institute (THSTI).

### **Academic Qualifications**

- **Ph.D. in Biotechnology, 2011.**  
**Thesis title: Development and validation of high throughput assays for the rapid diagnosis of tuberculosis.**  
University Attended: **All India Institute of Medical Sciences, New Delhi, India;** (2004 – 2011).
- **M.Sc. in Biotechnology, 2004**  
**Thesis title: PCR based diagnosis of tuberculosis- Comparison of fluorescence based methods with conventional methods.**  
University Attended: **All India Institute of Medical Sciences, New Delhi, India;** (2002 – 2004).  
Percentage -71.7%
- **B.Sc. (H) Microbiology, 2002**  
Name of the University: Institute of Home Economics, Delhi University, New Delhi; (1999- 2002)  
Percentage -70.1%
- **Higher Secondary (10+2 level) Examination, AISSCE, 1999**  
School Attended: Ahlcon Public School, Delhi, India; (1998 - 1999).  
Percentage: 82.6%, PCB-85.6%
- **Secondary (10 level) Examination, AISSE, 1997**  
School Attended: Ahlcon Public School, Delhi, India; (1996 - 1997).  
Percentage: 86.2%

### **Recognitions received**

1. Recipient of the DST INSPIRE Faculty award in Bio-Medical Sciences in January 2014.
2. Recipient of the Innovation Award at the Centre for Bio-design at Translational Health Science and Technology Institute, 2011.
3. Recipient of the prestigious Ranbaxy Science Foundation Young Scientists Scholarship Award for PhD research work in tuberculosis diagnosis, 2008.
4. Received 1st prize in Poster session on Infectious Diseases in the 5th Annual Conference of the Molecular Pathology Association of India (MPAI) and International Symposium “Integration of Genetics and Genomics in Laboratory Medicine” held on March 12-13, 2016 at the PGIMER, Chandigarh. The poster was entitled Rapid detection of multi drug resistance in Mycobacterium tuberculosis directly from smear negative sputum samples by High Resolution Melt curve analysis.
5. Recipient of the ‘The Global Health Travel Award’ funded by the Bill & Melinda Gates Foundation to attend and present awarded research work at the Keystone Symposium: A5, New Developments in Our Basic Understanding of Tuberculosis to be held at the Fairmont Hotel Vancouver in Vancouver, British Columbia, Canada on January 14 – 18, 2017.

### **Other Awards received**

- Senior Research Fellowship from Indian Council of Medical Research, Govt. of India, New Delhi, 2011.
- Senior Research Fellowship from Department of Biotechnology, Govt. of India, New Delhi, 2006.
- Junior Research Fellowship from Department of Biotechnology, Govt. of India, New Delhi, 2004.
- Qualified in CSIR-National Eligibility Test (NET) in Life Sciences conducted by joint UGC-CSIR, New Delhi, 2005.
- Selected amongst the top 20 % awardees in the joint UGC-CSIR test in Life Sciences and was invited for the Shyama Prasad Mukherjee (SPM) Fellowship Test, 2005.
- Received a two-year scholarship from Department of Biotechnology (Govt. of India) during the masters program in Biotechnology at AIIMS.
- Ranked 3<sup>rd</sup> at AIIMS during Post Graduation.
- Ranked 4<sup>th</sup> in the University of Delhi during Graduation.

### **Research Articles Published**

#### **Publication as First Author and/or Corresponding Author in indexed journals**

1. Lavania S, Anthwal D, Bhalla M, Singh N, **Haldar S\***, Tyagi JS\* (2017). Direct detection of *Mycobacterium tuberculosis* rifampin resistance in bio-safe stained sputum smears. *PLOS ONE* \*Corresponding author
2. Tyagi S, Sharma N, Tyagi JS, **Haldar S\*** (2017). Challenges in Pleural Tuberculosis diagnosis: Existing reference standards and nucleic acid tests. *Future Microbiology*, 12:1201-18. \*Corresponding author
3. Anthwal D, Gupta RK, Bhatnagar S, Tyagi JS & **Haldar S\*** (2017). Direct detection of Rifampicin and Isoniazid resistance in sputum samples from tuberculosis patients by High Resolution Melt curve analysis. *Journal of Clinical Microbiology*, 55(6):1755-1766 \*Corresponding author.

4. **Haldar S\*** & Tyagi JS\* (2014). Bacterial sediments from CSF are not the optimum sample for PCR-based diagnosis of tuberculous meningitis. Comment to article “Diagnostic Accuracy of Quantitative PCR (Xpert MTB/RIF) for Tuberculous Meningitis in a High Burden Setting: A Prospective Study” *PLOS Medicine* \*Corresponding authors.
5. **Haldar S**, Sankhyan N, Sharma N, Bansal A, Jain V, Gupta VK, Juneja M, Mishra D, Kapil A, Singh UB, Prasad HK, Gulati S, Kalra V, Tyagi JS (2012). Detection of *Mycobacterium tuberculosis* GlcB or HspX antigens or *devR* DNA impacts the rapid diagnosis of tuberculous meningitis in children. e44630 *PLoS ONE*.
6. **Haldar S**, Bose M, Chakrabarti P, Dagainawala HF, Harinath BC, Kashyap RS, Kulkarni S, Majumdar A, Prasad HK, Rodrigues C, Singh S, Srivastava R, Taori GM, Varma-Basil M, Tyagi JS (2011). Improved laboratory diagnosis of tuberculosis – The Indian experience. *Tuberculosis (Edinb)* **91(5)**:414-26.
7. **Haldar S**, Sharma N, Gupta VK, Tyagi JS (2009). Efficient diagnosis of tuberculous meningitis by detection of *Mycobacterium tuberculosis* DNA in cerebrospinal fluid filtrates using PCR. *J Med Microbiol* **58**:616-624.
8. **Haldar S**, Chakravorty S, Bhalla M, Majumdar SD, Tyagi JS (2007). Simplified detection of *Mycobacterium tuberculosis* in sputum using smear microscopy and PCR with molecular beacons. *J Med Microbiol* **56**:1356-62.
9. **Haldar S**, Majumdar SD, Chakravorty S, Tyagi JS, Bhalla M, Sen MK (2005). Detection of acid-fast bacilli in postlysis debris of clinical specimens improves the reliability of PCR. *J Clin Microbiol* **43**:3580-1

#### **Publication as Co-author in indexed journals**

10. Kumar N, Gupta DG, Kumar S, Maurya P, Tiwari A, Mathew B, Banerjee S, **Haldar S**, Pillai J, Bhatnagar S and Chaudhuri S (2016). Exploring packaged microvesicle proteome composition of Chinese Hamster Ovary secretome. *J Bioprocess Biotech.* 6:274.
11. Chakravorty S, Pathak D, Dudeja M, **Haldar S**, Hanif M, Tyagi JS (2006). PCR amplification of shorter fragments from the *devR* (Rv3133c) gene significantly increases the sensitivity of tuberculosis diagnosis. *FEMS Microbiol Lett* **257**:306-11.

#### **Publications under review/communication**

12. Dhiman A, Tripathi K, **Haldar S**, Mishra S, Sharma N, Bansal A, Ethayathulla A, Ahmad Y, Kumar A, Sharma TK, Tyagi JS. Generation, characterization and post-SELEX optimization of HspX biomarker-specific high affinity aptamer for the diagnosis of tuberculous meningitis Manuscript under review in *Biosensors and Bioelectronics*. Manuscript ID BIOS-D-17-03579
13. Priya Pathak P, Tyagi S, Sharma N, Rath D, Kumari P, Lavania S, Tyagi JS, Sharma T, **Haldar S\***. Utility of *Mycobacterium tuberculosis* antigens derived from serum and serum derived exosomes for the diagnosis of extrapulmonary tuberculosis. \*Corresponding author (manuscript under preparation)

14. Kumari P, Lavania S, Tyagi S, Anthwal D, Sharma N, Gadpayle A, Rath D, Dhiman A, Sharma T, Tyagi JS, **Haldar S\***. Evaluation of real-time polymerase chain reaction and antigen detection for the efficient diagnosis of pleural tuberculosis. **\*Corresponding author** (manuscript under preparation)

#### **Invited oral talks in conference's**

- Invited as a speaker on the topic "Diagnosis of Tubercular Meningitis" at NATCON 2016, 71st National Conference of Tuberculosis and Chest Diseases, from 16-18 December 2016, Chandigarh.
- Invited as a speaker on the topic "Direct detection of Rifampicin and Isoniazid resistance in sputum samples from tuberculosis patients by High Resolution Melt curve analysis" in the session 'Oral presentations by Young Investigators' at conference on Recent Trends in Cell & Molecular Biology Research (RTCMBR), National conference organized by Dept. of Life Sciences, School of Natural Sciences, Shiv Nadar University from 27 -28th Oct 2017.

#### **Papers in Conference Proceedings**

1. Lavania S, Anthwal D, Bhalla M, Singh N, **Haldar S\***, Tyagi JS\* Direct detection of *Mycobacterium tuberculosis* rifampin resistance in bio-safe stained sputum smears at 'Microbiology in the New Millennium from Molecules to Communities', Bose Institute, Kolkata, October 27 – 29, 2017 **\*as corresponding author.**
2. Anthwal D, Lavania S, Myneedu VP, Sarin R, Verma A, Sharma PP, Malhotra V, Verma H, Gupta A, Gupta NK, Tyagi JS, **Haldar S**, Development and evaluation of a novel sputum processing and transport method for the diagnosis of TB and drug resistant TB by molecular methods at the 'Women Scientists and Entrepreneurs Conclave of 'India International Science Festival' (IISF-2017), Chennai, October 13 – 16, 2017 **\*as corresponding author.**
3. Lavania S, Anthwal D, Bhalla M, Singh N, **Haldar S\***, Tyagi JS\* Direct detection of *Mycobacterium tuberculosis* rifampin resistance in bio-safe stained sputum smears at the Scientific program on Foundation Day of Translational Health Science and Technology Institute, July 14-15 2017, organized by THSTI (An Autonomous Institute of Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India). **\* as corresponding author**
4. Pathak P, Tyagi S, Sharma N, Rath D, Kumari P, Lavania S, Kumar N, Chaudhari S, Sharma C, Dhiman A, Tyagi JS, Sharma TK, **Haldar S\***, Utility of Mycobacterium tuberculosis antigens derived exosomes for the diagnosis of Extrapulmonary Tuberculosis at "New Developments in Our Basic Understanding of Tuberculosis", Keystone Symposia, Vancouver, British Columbia, Canada on January 14 – 18, 2017 ('The Global Health Travel Award' funded by the Bill & Melinda Gates Foundation received for this conference'). **\*as corresponding author.**
5. Lavania S, Anthwal D, Bhalla M, Singh N, **Haldar S\***, Tyagi JS\*, Direct detection of rifampicin resistance from Ziehl-Neelson-stained slides by bio-safe sputum processing method

- at NATCON 2016, 71<sup>st</sup> National Conference of Tuberculosis and Chest Diseases, from 16-18 December 2016, Chandigarh. **\*as co-corresponding author.**
6. Tyagi S, Kumari P, Lavania S, Sharma N, Gadpayle AK, Rath D, Sharma T, Dhiman A, Anthwal D, Tyagi JS, **Haldar S\***, Utility of qPCR, Gene Xpert and Antigen detection tests for the diagnosis of Pleural TB at NATCON 2016, 71<sup>st</sup> National Conference of Tuberculosis and Chest Diseases, from 16-18 December 2016, Chandigarh. **\* as corresponding author.**
  7. Anthwal D, Gupta RK, Bhalla M, Tyagi JS. **Haldar S\***, Direct detection of MDR-TB in sputum samples by High Resolution Melt curve analysis at NATCON 2016, 71<sup>st</sup> National Conference of Tuberculosis and Chest Diseases, from 16-18 December 2016, Chandigarh. **\* as corresponding author.**
  8. **Haldar S\***, Anthwal D, Gupta RK, Bhalla M, Tyagi JS. Rapid detection of multi drug resistance in Mycobacterium tuberculosis from direct smear-negative sputum samples by High Resolution Melt curve analysis at the 47th Union World Conference on Lung Health, from 26 October to 29 October 2016 held in Liverpool, UK. **\* as corresponding author**
  9. Kumari P, Lavania S, Tyagi S, Sharma N, Gadpayle A, Kumar D, Dhiman A, Sharma T, Tyagi JS, **Haldar S\***. Evaluation of real-time polymerase chain reaction and antigen detection for the efficient diagnosis of pleural tuberculosis at the Scientific program on Foundation Day of Translational Health Science and Technology Institute, July 18 2016, organized by THSTI (An Autonomous Institute of Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India). **\* as corresponding author**
  10. Anthwal D, Gupta RK, Bhalla M, Tyagi JS, **Haldar S\***. Direct detection of MDR-TB in sputum samples by High Resolution Melt Curve analysis. at the Scientific program on Foundation Day of Translational Health Science and Technology Institute, July 18 2016, organized by THSTI (An Autonomous Institute of Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India). **\* as corresponding author**
  11. **Haldar S\***, Anthwal D, Gupta RK, Bhalla M, Tyagi JS. Rapid detection of multi drug resistance in Mycobacterium tuberculosis directly from smear negative sputum samples by High Resolution Melt curve analysis, at World TB day symposium 2016, organized by Division of Clinical Microbiology & Molecular Medicine, Department of Laboratory Medicine, All India Institute of Medical Sciences on 30th March, 2016 **\* as corresponding author**
  12. **Haldar S\***, Anthwal D, Gupta RK, Bhalla M, Tyagi JS. Rapid detection of multi drug resistance in Mycobacterium tuberculosis directly from smear negative sputum samples by High Resolution Melt curve analysis. at 5th Annual Conference of the Molecular Pathology Association of India (MPAI) and International Symposium “Integration of Genetics and Genomics in Laboratory Medicine”, March 12-13, 2016 at the Postgraduate Institute of

Medical Education & Research, Chandigarh, India. (**Ist PRIZE winning poster**) \*as corresponding author

13. Sharma TK, Dhiman A, Datta I, Tripathi K, Chawla R, **Haldar S** and Tyagi JS. Nucleic acid aptamer-based novel diagnostic tool for tuberculous meningitis. Biosangam, An International Conference on Translational Biotechnology, MNNIT Allahabad, 4-6 February, 2016
14. Sharma TK, Dhiman A, **Haldar S**, Sharma N, Gupta VK, Bansal A, Sankhyan N, Kalra V, Gulati S, Juneja M, Devendra Mishra D, Kapil A, Singh UB and Tyagi JS. Nucleic acid aptamer-based novel diagnostic tool for tuberculous meningitis., Tuberculous meningitis meeting, DaLat, Vietnam 20-23 May, 2015.
15. Lavania S, **Haldar S**, Myneedu VP, Verma AK and Tyagi JS. Development of a novel bio-safe filtration methodology for sputum smear microscopy for diagnosis of Tuberculosis. at the Foundation Day of Translational Health Science and Technology Institute, July 15 2014, organized by THSTI (An Autonomous Institute of Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India).
16. **Haldar S**, Lavania S, Myneedu VP, Verma AK and Tyagi JS. Development of a novel Molecular drug-susceptibility testing assay for Drug Resistant Tuberculosis. at the Foundation Day of Translational Health Science and Technology Institute, July 15 2014, organized by THSTI (An Autonomous Institute of Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India).
17. **Haldar S**, Sankhyan N, Sharma N, Bansal A, Jain V, Gupta VK, Juneja M, Mishra D, Kapil A, Singh UB, Prasad HK, Gulati S, Kalra V, Tyagi JS. Detection of *Mycobacterium tuberculosis* GlcB or HspX antigens or *devR* DNA impacts the rapid diagnosis of tuberculous meningitis in children. at the **National Conference on 'Zoonotic Mycobacterial Infections and their Impact on Public Health'** February 25-27, 2013, organized by Department of Biotechnology, AIIMS, India.
18. **Haldar S**, Sankhyan N, Sharma N, Bansal A, Jain V, Gupta VK, Juneja M, Mishra D, Kapil A, Singh UB, Prasad HK, Gulati S, Kalra V, Tyagi JS. Quantitative Mycobacterium tuberculosis antigen or DNA detection has a significant 'impact' on the diagnosis of tuberculous meningitis. at the **International Conference on Technological Challenges in Developing Affordable In-Vitro Molecular Diagnostics**, March 11-14, 2012, organized by Yashraj Research Foundation, at Navi Mumbai, India.
19. **Haldar S**, Sankhyan N, Sharma N, Bansal A, Jain V, Gupta VK, Juneja M, Mishra D, Kapil A, Singh UB, Prasad HK, Gulati S, Kalra V, Tyagi JS. Quantitation of *Mycobacterium tuberculosis* antigens or DNA facilitates rapid and efficient diagnosis of childhood tuberculous meningitis. at the **International Tuberculosis Symposium (ITBS-2010) on Tuberculosis Diagnostics: Innovating to Make an Impact**, Dec 16-17, 2010, at International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India.
20. **Haldar S**, Sankhyan N, Juneja M, Mishra D, Sharma N, Gupta VK, Singh U B, Gulati S, Kalra V, Tyagi JS. Comparative Evaluation of antigen versus DNA detection for the diagnosis of the diagnosis of childhood tuberculous meningitis. at the **International Conference on**

*Understanding and Managing Pathogenic Microbes*, 22-24 January, 2010, at Institute of Microbial Technology (IMTECH), Chandigarh, India.

21. **Haldar S**, Sharma N, Gupta VK, Tyagi JS. Detection of *Mycobacterium tuberculosis* DNA from lysed bacteria in CSF facilitates efficient diagnosis of tuberculous meningitis. at *Molecular Medicine Update -2008*, March 28-29, 2008, at Maulana Azad Medical College (MAMC), New Delhi, India.
22. **Haldar S**, Sharma N, Gupta VK, Tyagi JS. Improved diagnosis of tuberculous meningitis by PCR. at *International Symposium on New Frontiers in Tuberculosis Research*, December 4-6, 2006, at International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India.
23. **Haldar S**, Chakravorty S, Bhalla M, Majumdar SD, Tyagi JS. Molecular Beacon-Based Fluorescence PCR Assay for the detection of *Mycobacterium tuberculosis*. at *International Symposium on Emerging Trends in Tuberculosis Research*, November 15-17, 2004, at International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India.

### Patents

1. Inventors: Kumar N, Sharma C, Chaudhuri S, Rathore DK, Kumar S, **Haldar S**, Pillai J, Bhatnagar S.  
Title: Flow-cytometry based rapid method of testing antimicrobial drug susceptibility and resistance in biological fluids  
Status: Under Institutional patent filling process  
Description: Enabling development of rapid, affordable and reliable test for anti-microbial susceptibility and resistance diagnosis
2. Inventors: **Haldar S**, Anthwal D, Lavania S, Tyagi JS, Gupta NK, Sarin R, Myneedu VP, Verma A, Verma H, Malhotra V, Gupta A.  
Title: Novel sample processing for rapid diagnosis of TB and safe transport of bacteria.  
Status: Under patent filling process  
Description: Kits developed for the rapid diagnosis of TB and drug resistance

### Workshops

1. Selected for the intensive course on Tuberculosis Diagnostic Research – from basics to advanced techniques organized at the Tuberculosis Research Centre, Chennai, from December 13th -15th, 2010. This course was organized as part of the centenary celebrations of the ICMR, in collaboration with TDR, European Commission, EDCTP, McGill University, Stop TB Partnerships New Diagnostics Working Group & Foundation for Innovative New Diagnostics.
2. Selected for the workshop under Clinical Investigator Development Program on ‘Discovery Development and Commercialization of Biologicals’ from 11th to 15th March 2013 at Indian Institute of Technology, New Delhi. This workshop imparted knowledge about discovery, development, and commercialization of biologicals with emphasis on therapeutics.
3. Invited to attend the ‘Advanced TB diagnostics’ Research Course held at McGill University, Montreal, Canada from June 20<sup>th</sup> -June 24<sup>th</sup>, 2016.
4. Invited to attend the ‘Introduction to Genomic Epidemiology in infectious diseases’ Research Course held at McGill University, Montreal, Canada from June 19<sup>th</sup> -June 23<sup>rd</sup>, 2017.

5. Nominated to represent Translational Health Science and Technology Institute (THSTI, current institute) at the 'Women Scientists and Entrepreneurs Conclave of 'India International Science Festival' (IISF-2017), Chennai

### **Research Projects Sanctioned**

#### **(i) Projects completed**

1. Title of grant: Novel sample processing for the simple and rapid diagnosis of TB, MDR-TB and XDR-TB. as PI (Industry-academia collaboration)  
Duration: 2.5 years (2015-2017)  
Funding Agency: BIRAC under SBIRI scheme, DBT  
Amount: Rs. 346.34 lakhs (total grant), Sanctioned to THSTI: Rs. 33.98 lakhs

#### **(ii) Projects ongoing**

2. Title of grant: Dynamic Molecular Platform for the rapid detection of Drug Resistant TB.  
Duration: 5 years (2014-2019) as PI  
Funding Agency: DST  
Amount: Rs. 35 lakhs
3. Title of grant: Mycobacterium tuberculosis antigen-detection based point-of-care test using aptamer technology for tuberculous meningitis (TB meningitis)- as Co-PI (Industry-academia collaboration)  
Duration: 1.5 years (2016-2019)  
Funding Agency: BIRAC under BIG scheme  
Amount: Rs. 50 lakhs
4. Title of grant: Aptamer-based Tuberculosis Diagnostics Toolbox as PI  
Duration: 3 years (2017-2020)  
Funding Agency: DBT  
Amount: Rs. 65 lakhs
5. Title of grant: Multi-centric validation of 'TB-Detect' and 'TB Concentration and Transport' kit and 'DNA extraction' kit for the diagnosis of TB and drug resistant TB  
Duration: 9 months (2017-2018)  
Funding Agency: ICMR under TB Consortium  
Amount: ~76 lakhs (total Grant for all institutions), to self at THSTI: 15 lakhs

### **Students Supervised**

Currently supervising 4 Junior Research Fellows, 1 Ph. D. (as Doctoral committee member) for research work.

### **Laboratory development/Teaching experience**



- Involved in setting up of the Center for Bio-design and Diagnostics laboratories at THSTI.
- Active teaching participation in laboratory sessions of post graduate students in M.Sc. Biotechnology course at AIIMS, New Delhi

#### **Academic honors received**

- Received Certificate of merit from CBSE for outstanding academic performance and for being among the top 0.1 percent of successful candidates of AISSE 1997 in Mathematics.
- Received merit award for securing highest percentage in Science at AISSE (1996-1997)
- Received scholarship from Ahlcon Public School for meritorious performance in the AISSE examination.
- Received special merit certificate for securing second position in B.Sc. (Hons.) Microbiology I<sup>st</sup> year (1999-2000).
- Received special merit certificate for securing distinction in 2 subjects, 'Algae, Fungi and Protozoa' and 'Genetics' subjects in B.Sc. (Hons.) Microbiology II<sup>nd</sup> year (2000-2001).
- Received special merit certificate for securing second position in B.Sc. (Hons.) Microbiology III<sup>rd</sup> year (2001-2002).
- Received special merit certificate for securing distinction in 3 subjects, 'Medical Microbiology', 'Industrial Microbiology' and 'Applied Microbiology' subjects in B.Sc. (Hons.) Microbiology III<sup>rd</sup> year (2001-2002).

#### **Other honors received**

- Received Certificate of merit from Government of India, Directorate of Field Publicity, Ministry of Information and Broadcasting for securing the first position in the AIDS quiz held at Institute of Home Economics in B.Sc. (Hons.) Microbiology III<sup>rd</sup> year (2001-2002).
- Received special merit certificate for securing distinction second position in General Knowledge Quiz in B.Sc. (Hons.) Microbiology II<sup>nd</sup> year (2000-2001).
- Received certificate of merit for securing distinction second position in Quiz Competition in B.Sc. (Hons.) Microbiology III<sup>rd</sup> year (2001-2002).
- Involved in organizing cultural activities at current institute.