CURRICULUM-VITAE

1.	**Name**	Dr. Poonam Gautam
2.	**Designation**	Scientist 'D'
3.	**Present Address (off.)**	Scientist and In-charge, Proteomics Facility, ICMR- National Institute of Pathology (NIP), Post Box No. 4909, Safdarjung Hospital Campus, New Delhi-110029, India
4.	**Telephone (off.)**	Phone (O): 011 -26198402-406, 409, 410 Ext. 406, 407
5.	**Fax**	011 -26198401
6.	**Email address**	gautam.poonam@gmail.com; poonamgautam.nip@gov.in

7. Educational Qualifications

M. Sc., Ph. D.

8. Research Experience

2019- till date	Scientist 'D' at ICMR- National Institute of Pathology, New Delhi,
2015-19	Scientist 'C' at ICMR- National Institute of Pathology, New Delhi,
2012-15	Scientist 'B' at ICMR- National Institute of Pathology, New Delhi,
2007-12	'Research Associate' at Proteomics Research Facility, CSIR- Centre for Cellular and Molecular Biology (CCMB), Hyderabad from July 2007- Jan 2012
2001-07	Ph. D. from CSIR- Institute of Genomics and Integrative Biology (IGIB), Delhi and Department of Biotechnology, University of Pune (2007)
1995-97	M. Sc. (Bio Technology) from Banaras Hindu University (BHU), Varanasi

9. Research interest

- To understand molecular pathophysiology of cancer (gallbladder cancer and gliomas)
- To develop clinical biomarkers for early detection of gallbladder cancer
- Understanding the role of proteases in gallbladder cancer

10. Membership/Fellowship of Professional Societies/Associations:

- Member of Human Proteome Organization (HUPO) organization
- Life Membership of Proteomic Society of India (PSI)
- Life membership of Indian Immunology Society (IIS)
- Member of Indian Association of Cancer Research (IACR)

11. Research Projects

Ongoing projects

As PI

1. Principal Investigator in project entitled Identification of novel therapeutic targets associated with Gonadotropin-Releasing Hormone Signaling in Glioblastoma (ICMR-funded, 2021-24)

2. Principal Investigator in project entitled “Deregulated Proteome Analysis Of Lymph Node Metastatic Gallbladder Carcinoma To Identify Novel Therapeutic Targets” SERB-funded, 2021-24)
3. Principal Investigator in project entitled “Identification Of Extracellular Vesicles-based Circulatory miRNAs for Early Detection of Gallbladder Cancer” (ICMR-funded, 2021-24).

As Co-I

4. Co-Investigator in the project entitled “Proteomic analysis of cardiac tissue of Rheumatic Heart Disease patients with Atrial Fibrillation to understand the pathophysiology and to identify candidate biomarkers for diagnostic and therapeutic applications” [DBT BioCare, 2022-25]
5. Co-Investigator in the project entitled “Role of 2-Hydroxyglutarate as a circulatory biomarker in Gliomas” [ICMR funded, 2019-22]
6. Co-Investigator in the project entitled “Comparative Proteomic analysis to discover novel plasma biomarkers for early detection, surveillance and prognostication of Atrial fibrillation in patients with Rheumatic heart disease” [DST-SERB funded, 2020-23]

Projects completed

As PI

7. Principal Investigator in project entitled “Proteomic Analysis of Plasma Exosomes to Identify Circulatory Biomarkers for Gallbladder Carcinoma” [ICMR funded, 26th March 2017-25th September, 2020].
8. Project Investigator in the project entitled "Autoantibody Response And Identification Of Tumor-Associated Antigens In Gallbladder Carcinoma - Immunoproteomics Approach" [Funded by DST-SERB funded, 4th June, 2016- 3rd September, 2019]

As Co-I

9. Co-investigator in the project entitled “Identification of the factors associated with susceptibility/ resistance to heterosexual HIV transmission among serodiscordant couples using proteomics” [DBT funded, 09th September 2013-March 2017].

12. Publications:

Total Manuscripts- 25; **Total Impact Factor- 103.24; Citations- 626; h-index- 13**), (24 International and 1 National); **Book chapters**- **06**

- Neeraj Saklani, Varnit Chauhan, Javed Akhtar, Santosh Upadhyay, Ravi Sirdeshmukh, Poonam Gautam, In silico analysis to identify novel ceRNA regulatory axes associated with gallbladder cancer. Frontiers in Genetics. 2023 (under revision).
- Vaishali Jain, Javed Akhtar, Ratna Priya, Puja Sakhuja, Surbhi Goyal, Anil Kumar Agarwal, Vivek Ghose, Ravindra Varma Polisetty, Ravi Sirdeshmukh, Fouzia Siraj, Poonam Gautam. Tissue proteome analysis for profiling proteins associated with lymph node metastasis in gallbladder cancer. BMC Cancer. 2023 (under revision).

a) Manuscripts (25)

1. Javed Akhtar, Vaishali Jain, Radhika Kansal, Ratna Priya, Puja Sakhuja, Surbhi Goyal, Anil Kumar Agarwal, Vivek Ghose, Ravindra Varma Polisetty, Ravi Sirdeshmukh, Sudeshna Kar, Poonam Gautam. Quantitative tissue proteome profile reveals neutrophil degranulation and

remodeling of extracellular matrix proteins in early stage gallbladder cancer. Frontiers in Oncology (Accepted). 2022. (IF 5.738).

2. Priya R, Jain V, Akhtar J, Saklani N, Sakhuja P, Agarwal AK, Polisetty RV, Sirdeshmukh R, Kar S, Gautam P. Proteomic profiling of cell line-derived extracellular vesicles to identify candidate circulatory markers for detection of gallbladder cancer. Front Oncol. 2022 Nov 23;12:1027914. doi: 10.3389/fonc.2022.1027914. (IF 5.738).
3. Tripathi PH, Akhtar J, Arora J, Saran RK, Mishra N, Polisetty RV, Sirdeshmukh R, Gautam P. Quantitative proteomic analysis of GnRH agonist treated GBM cell line LN229 revealed regulatory proteins inhibiting cancer cell proliferation. BMC Cancer. 2022 Feb 2;22(1):133. doi: 10.1186/s12885-022-09218-8. (IF 4.4).
4. Priya R, Jain V, Akhtar J, Chauhan G, Sakhuja P, Goyal S, Agarwal AK, Javed A, Jain AP, Polisetty RV, Sirdeshmukh R, Kar S, Gautam P. Plasma-derived candidate biomarkers for detection of gallbladder carcinoma. Sci Rep. 2021 Dec 7;11(1):23554. doi: 10.1038/s41598-021-02923-7. (IF 4.3).
5. Rana R, Chauhan K, Gautam P, Kulkarni M, Banarjee R, Chugh P, Chhabra SS, Acharya R, Kalra SK, Gupta A, Jain S, Ganguly NK. Plasma-Derived Extracellular Vesicles Reveal Galectin-3 Binding Protein as Potential Biomarker for Early Detection of Glioma. Front Oncol. 2021 Nov 26;11:778754. doi: 10.3389/fonc.2021.778754. (IF 6.244)
6. Verma S, Deep DK, Gautam P, Singh R, Salotra P. Proteomic Analysis of Leishmania donovani Membrane Components Reveals the Role of Activated Protein C Kinase in Host-Parasite Interaction. Pathogens. 2021 Sep 15;10(9):1194. doi: 10.3390/pathogens10091194. (IF- 3.49)
7. Kumari A, Tripathi AH, Gautam P, Gahtori R, Pande A, Singh Y, Madan T, Upadhyay SK. Adhesins in the virulence of opportunistic fungal pathogens of human. Mycology. 2021 Jul 5;12(4):296-324. doi: 10.1080/21501203.2021.1934176. (IF- 3.2)
8. Thakur G, Sathe G, Kundu I, Biswas B, Gautam P, Alkahtani S, Idicula-Thomas S, Sirdeshmukh R, Kishore U, Madan T. Membrane Interactome of a Recombinant Fragment of Human Surfactant Protein D Reveals GRP78 as a Novel Binding Partner in PC3, a Metastatic Prostate Cancer Cell Line. Front Immunol. 2021 Jan 19;11:600660. doi: 10.3389/fimmu.2020.600660. (IF- 6.429)
9. Akhtar J, Priya R, Jain V, Sakhuja P, Agarwal AK, Goyal S, Polisetty RV, Sirdeshmukh R, Kar S, Gautam P. Immunoproteomics approach revealed elevated autoantibody levels against ANXA1 in early stage gallbladder carcinoma. BMC Cancer. 2020 Dec 1;20(1):1175. doi: 10.1186/s12885-020-07676-6. (IF 3.0).
10. Gupta MK, Polisetty RV, Sharma R, Ganesh RA, Gowda H, Purohit AK, Ankathi P, Prasad K, Mariswamappa K, Lakshmikantha A, Uppin MS, Sundaram C, Gautam P*, Sirdeshmukh R*. Altered transcriptional regulatory proteins in glioblastoma and YBX1 as a potential regulator of tumor invasion Sci Rep. 2019 Jul 29;9(1):10986. DOI: 10.1038/s41598-019-47360-9. (IF-4.5)
11. Jayaram S, Gupta MK, Raju R, Gautam P, Sirdeshmukh R. Multi-Omics Data Integration and Mapping of Altered Kinases to Pathways Reveal Gonadotropin Hormone Signaling in Glioblastoma. OMICS. 2016 Dec;20(12):736-746. DOI: 10.1089/omi.2016.0142. IF 2.896
12. Ravindra Varma Polisetty*, Poonam Gautam*, Manoj Kumar Gupta, Rakesh Sharma, Harsha Gowda, Durairaj Renu, Bhadravathi Marigowda Shivakumar, Akhila Lakshmikantha, Kiran Mariswamappa, Praveen Ankathi, Aniruddh K Purohit, Megha S Uppin, Challa Sundaram, Ravi Sirdeshmukh. Microsomal membrane proteome of low grade diffuse astrocytomas: Differentially expressed proteins and candidate surveillance biomarkers. Scientific Reports 2016 Jun 1;6:26882. DOI: 10.1038/srep26882. IF 5.578
13. Gautam P, Mushahary D, Hassan W, Upadhyay SK, Madan T, Sirdeshmukh R, Sundaram CS, Sarma PU. In-depth 2-DE reference map of Aspergillus fumigatus and its proteomic profiling on exposure to itraconazole. Med Mycol. 2016 Feb 11. pii: myv122. DOI: 10.1093/mmy/myv122. (IF 2.26)
14. Mahajan L, Gautam P, Dodagatta-Marri, Madan T, Kishore U. Surfactant protein SP-D modulates activity of immune cells: proteomic profiling of its interaction with eosinophilic

cells. Expert Rev. Proteomics 2014 Jun;11(3):355-69 DOI: 10.1586/14789450.2014.897612. (IF-3.896).

15. Mahajan L, Pandit H, Madan T, Gautam P, Yadav AK, Warke H, Sundaram CS, Sirdeshmukh R, Sarma PU, Kishore U, Surolia A. Human surfactant protein D alters oxidative stress and HMGA1 expression to induce p53 apoptotic pathway in eosinophil leukemic cell line. PLoS One. 2013 Dec 31;8(12):e85046 DOI: 10.1371/journal.pone.0085046. (IF 3.730).
16. *Gautam P, Nair SC, Ramamoorthy K, Swamy CV, Nagaraj R. Analysis of human blood plasma proteome from ten healthy volunteers from Indian population. PLoS One. 2013 Aug 20;8(8):e72584 DOI: 10.1371/journal.pone.0072584. (IF 4.09).
17. Polisetty RV, Gautam P, Gupta MK, Sharma R, Uppin MS, Challa S, Ankathi P, Purohit AK, Renu D, Harsha HC, Pandey A, Sirdeshmukh R. Heterogeneous Nuclear Ribonucleoproteins and Their Interactors Are a Major Class of Deregulated Proteins in Anaplastic Astrocytoma: A Grade III Malignant Glioma. J Proteome Res. 2013 Jul 5;12(7):3128-38. DOI: 10.1021/pr400339h. (IF 5.1).
18. Mushahary D, *Gautam P, Sundaram CS, Sirdeshmukh R. Expanded protein expression profile of human placenta using two-dimensional gel electrophoresis. Placenta. 2013 Feb;34(2):193-6. DOI: 10.1016/j.placenta.2012.11.015 (IF 3.65).
19. Gautam P*, Nair SC*, Gupta MK, Sharma R, Polisetty RV, Uppin MS, Sundaram C, Puligopu AK, Ankathi P, Purohit AK, Chandak GR, Harsha HC, Sirdeshmukh R. Proteins with altered levels in plasma from glioblastoma patients as revealed by iTRAQ-based quantitative proteomic analysis. PLoS One. 2012;7(9):e46153. DOI: 10.1371/journal.pone.0046153 (IF 4.4).
20. Polisetty RV*, Gautam P*, Sharma R, Harsha HC, Nair SC, Gupta MK, Uppin MS,Challa S, Puligopu AK, Ankathi P, Purohit AK, Chandak GR, Pandey A, Sirdeshmukh R. LC-MS/MS analysis of differentially expressed glioblastoma membrane proteome reveals altered calcium signaling and other protein groups of regulatory functions. Mol Cell Proteomics. 2012 Jun;11(6):M111.013565. DOI: 10.1074/mcp.M111.013565. (IF 8.8).
21. Upadhyay SK, Gautam P, Pandit H, Singh Y, Basir SF, Madan T. Identification of fibrinogen-binding proteins of *Aspergillus fumigatus* using proteomic approach. Mycopathologia. 2012 Mar;173(2-3):73-82. DOI: 10.1007/s11046-011-9465-z. (IF 1.8).
22. Gautam P, Upadhyay SK, Hassan W, Madan T, Sirdeshmukh R, Sundaram CS, Gade WN,Basir SF, Singh Y, Sarma PU. Transcriptomic and proteomic profile of Aspergillus fumigatus on exposure to artemisinin. Mycopathologia. 2011 Nov;172(5):331-46. DOI: 10.1007/s11046-011-9445-3. (IF 1.8).
23. Gautam P, Shankar J, Madan T, Sirdeshmukh R, Sundaram CS, Gade WN, Basir SF,Sarma PU. Proteomic and transcriptomic analysis of *Aspergillus fumigatus* on exposure to amphotericin B. Antimicrob Agents Chemother. 2008 Dec;52(12):4220-7. DOI: 10.1128/AAC.01431-07 (IF 4.7).
24. Gautam P, Sundaram CS, Madan T, Gade WN, Shah A, Sirdeshmukh R, Sarma PU. Identification of novel allergens of Aspergillus fumigatus using immunoproteomics approach. Clin Exp Allergy. 2007 Aug;37(8):1239-49. DOI: 10.1111/j.1365-2222.2007.02765.x (IF 3.5).
25. Gautam P, Madan T, Gade WN, Sarma PU. Immunoproteomic analysis of secretory proteins of *Aspergillus fumiga*tus with specific IGE immunoreactivity. Indian J Clin Biochem. 2006 Sep;21(2):12-9. DOI: 10.1007/BF02912905

b) Book Chapter (06)

1. Book chapter entitled “Human fungal pathogens and drug resistance against azole drugs”. Authors: Preetida J. Bhetariya, Neha Sharma, Pragati Singh, Priyanka H. Tripathi, Santosh K. Upadhyay and *Poonam Gautam (2017) in a Book entitled “Drug Resistance in Bacteria, Fungi, Malaria, and Cancer” Editors- Andaleeb Sajid, Gunjan Arora, V. C. Kalia. Publisher-Springer, P. 387-428. DOI: 10.1007/978-3-319-48683-3_18

2. Book chapter entitled “Drug Resistance in Cancer”. Authors- Santosh K. Upadhyay, Ramesh C. Rai, Rekha Gehtori, Ashutosh Paliwal, Poonam Gautam, Penny Joshi. (2017) in a Book entitled “Drug Resistance in Bacteria, Fungi, Malaria, and Cancer” Editors- Andaleeb Sajid, Gunjan Arora, V. C. Kalia. Publisher- Springer, P. 449-473. Link- https://www.scribd.com/document/385806325/Drug-Resistance-in-Bacteria-Fungi-Malaria-pdf (DOI not available)
3. Book chapter entitled "Human pathogenic fungi and their survival mechanisms in the host”. Authors- Tapish Dogra, Lakshna Mahajan, Santosh K. Upadhyay, Poonam Gautam (2016) in Book “Applied Microbiology: Microbes in Action” Editors- Neelam Garg and Abhinav Aeron and Publisher**- Nova Scien**ce (Book chapter 14; ISBN: 978-1-63484-520-5). Link- https://novapublishers.com/shop/microbes-in-action/(DOI not available)
4. Book chapter entitled “Use of microbes in the production of vaccines”. Authors- Rini Joshi, Tara Singh Bisht, Lakshna Mahajan, Poonam Gautam, Alissa Verone-Boyle, Santosh Kumar Upadhyay (2016) in Book “Applied Microbiology: Microbes in Action” Editors- Neelam Garg and Abhinav Aeron and Publisher**- Nova Science (**Book chapter 12; ISBN: 978-1-63484-520-5**).** Link- https://novapublishers.com/shop/microbes-in-action/(DOI not available)
5. Book chapter entitled “Gut Microbiota and human health”. Authors- Lakshna Mahajan, Santosh K. Upadhyay, A. Archana, Poonam Gautam (2016) in Book “Applied Microbiology: Microbes in Action” Editors- Neelam Garg and Abhinav Aeron and Publisher**- Nova Science (**Book chapter 10; ISBN: 978-1-63484-520-5**).** Link- https://novapublishers.com/shop/microbes-in-action/(DOI not available)
6. Book Chapter entitled “Allergens/antigens of *Aspergillus fumigatus*” Authors- Poonam Gautam, P. Usha Sarma and Taruna Madan (2005) in a book “Mold Allergy, Biology and Pathogenesis” edited by Dr. V. P. Kurup. Page No. 176-186. (DOI not available)
   Link- https://www.cabdirect.org/cabdirect/abstract/20063126780

13. Awards and Honours

Reviewer for the following journals

- Oncology letters
- Therapeutic Advances in Chronic Disease
- BMC Gastroenterology
- Metabolic Brain Disease

Examiner for

1. Ph.D. Thesis (CSIR-IICT, Hyderabad)
2. Ph.D. Thesis (CSIR-NCL, Pune)
3. SRAC (Jamia Hamdard)

Awards

1. Selected for “Pre-Congress Training course HUPO 2013” on “Modern Techniques in Proteomics” from 11^{th} -13^{th} September 2013 at Yokohama, JAPAN. HUPO provided the partial financial support.
2. Travel award (full travel support) from DST and partial financial Support from INSA to attend HUPO 2013 at Yokohama, JAPAN from 14^{th}-18^{th} September, 2014.
3. HUPO Young Investigator award 2009
4. Travel award (full travel support) from DST to attend HUPO 2009 at Toronto, Canada.
5. Travel Award from the World Allergy Organization to attend World Allergy Congress 2007, held from 2-6th December 2007 at Bangkok, Thailand
6. Roche Travel Award (full travel support) from HUPO organizers to attend HUPO 5^{th} Annual World Congress at Long Beach in 2006
7. CSIR-NET Senior Research Fellowship 2003-2006

8. CSIR-NET Junior Research Fellowship 2001-2003

14. Recognitions

a) Recognized as Adjunct Faculty at Manipal Academy of Higher Education (MAHE), Manipal, Mangalore, Karnataka, India
b) Recognized as Research Co-Guide at Jamia Hamdard (Deemed), Delhi, India
c) Recognized as Research Co-Guide at Symbiosys International Uninversity, Pune, India

15. Research Guidance

a) Ph.D. students

i. Ms. Priyanka Tripathi, DBT-SRF (2015-2018)
ii. Dr. Javed Akhtar, CSIR-SRF/NIP-SRF *(Registered for Ph.D. at Jamia Hamdard, New Delhi)*
iii. Ms. Ratna Priya, DST-Inspire SRF *(Registered for Ph.D. at Jamia Hamdard, New Delhi)- Thesis submitted*
iv. Ms. Vaishali Jain, CSIR-JRF *(Registered for Ph.D. at MAHE, Manipal, Karnataka)*

b) Other research staff supervised

i. Ms. Jyoti Arora (under ICMR project) (2017-2018)
ii. Ms. Shivani Gautam, ICMR Project JRF (2018-2020)
iii. Mr. Neeraj Saklani, ICMR Project JRF (2021- cont.)
iv. Ms. Radhika Kansal, SERB Project JRF (2021- 2022)
v. Ms. Nidhi Bhasin, SERB Project JRF (2022- Cont.)

c) M. Sc. Trainees/ Summer trainees

M. Sc. Dissertation

i. Mr. Rehan Ali, Ms. Shruti Kahol (2014)
ii. Ms. Renu Bisht, Ms. Neha Sharma (2015)
iii. Ms. Eram Khan (2016)
iv. Ms. Julieana Durai (2017)
v. Mr. Zeeshan Hyderi (2018)
vi. Ms. Nida Khalid, Mr. Faliq Iqbal Bhat (2019)
vii. Mr. Nirdosh, Ms. Shivika Hundoo (2020)
viii. Mr. Neelansh, Ms. Deepanshi Koul, Ms. Radhika Kansal (2021)
ix. Mr. Varnit Chauhan (2022)

B. Tech, Summer internship

x. Mr. Tapish Dogra (2014)
xi. Ms. Simran Kaur (2016)

16. Workshops/Conferences/Symposiums

<u>Invited lectures</u>

1. Invited Speaker in "14th Annual Meeting of the Proteomics Society of India and International Conference on Proteins & Proteomics (PSI-ICPP 2022)" hosted by the CSIR-Indian Institute of Chemical Biology (IICB), Kolkata, India, held from 3rd-5th November, 2022.

2. Invited Speaker for "Clinical Proteomics: Biomarker Discovery in Cancer" on Education Day at Omics-2021, the 13th annual meeting of Proteomics Society of India (PSI) from October 20 to 23.
3. Guest Lecture at National Workshop on "Next-Generation Sequencing Data Analysis: Integrating genomics, transcriptomics and proteomics data for potential therapeutic target discovery" held at National Institute of Pathology, New Delhi from 26th Feb-1st March, 2018.
4. Presented a Talk on "WHO: **श्रमिक स्वास्थ्य पर वैश्विक कार्य योजना** (2008-2017)" in two day workshop "2nd National Scientific Hindi Sangoshthi" held from 21st-22nd March 2017 at NIOH, Ahmedabad.
5. Invited talk entitled "Proteomic Approaches in Disease Biomarker Discovery –Applications and Challenges" An Update on Advances in Cancer Research and Hands-on Workshop on Molecular Biology Techniques held from 10th -12th September, 2015 at Dr. B. Borooah Cancer Institute, Guwahati.
6. Invited for a talk under session "Infectious diseases- Genomics and Proteomics" at ACBICON 2014 held from 10th-13th December, 2014 at AIIMS, Jodhpur.
7. Invited lecture entitled "Transcriptomic and proteomic profile of *Aspergillus fumigatus* on exposure to artemisinin" in the Indo-French Symposium "Host-Pathogen interactions in respiratory Infectious Diseases" in Bangalore on October 11-13, 2010.

Conferences organized

1. Member of the Local Scientific Organizing Committee for 8th Annual meeting of Proteomics Society, India (PSI) alongwith 3rd meeting of Asia Oceanica Agricultural Proteomics Organization (AOAPO) organized by NIPGR, Delhi at Hotel The Grand from 14th -17th Dec 2016.
2. Organizing Secretary for "Proteomics- Hands On Training Workshop" held at NIP, Delhi from 6th-9th April 2015 [Partially supported by ICMR].
3. Member of Scientific Organizing Committee for "SAFHeR foundation workshop on Clinical and Laboratory Medicine Research" held at NIP, Delhi from 9th-12th February, 2015 [Supported by ICMR/DHR].
4. Involved in organizing a Workshop on "Research Methodologies for Medical Scientists" at National Institute of Pathology (ICMR), Delhi from 9th -12th Oct 2012.
5. Involved in organization of 5th AOHUPO conference to be held from 21st-25th Feb 2010 and one of the Resource Faculty for Hands on Training Course on advanced Quantitative proteomics being held from 26th Feb-12th March 2010 at CCMB, Hyderabad.
6. Involved in organizing of a conference on "New Perspectives in proteomics research and brainstorming discussion on Plasma Proteomics" held from 17th-18th Feb 2008 at CCMB, Hyderabad.

International conference/Workshop attended

1. Attended HUPO Connect 2020, virtual conference from 19th -22nd October, 2020.
2. Attended 11th Annual Meeting of Proteomics Society, India, 2019 and International Conference on Proteomics for System Integrated Bio-Omics, One Health and Food Safety to be held from 2nd - 4th Dec 2019 at ICAR-NDRI, Karnal, Haryana
3. Attended Regional Young Investigators meeting (RYIM-Delhi NCR) organized by National Institute of Plant Genome Research (NIPGR), New Delhi, on 6th and 7th August, 2019.
4. Poster presentation on "Deregulated Nuclear Proteome in Astrocytomas" in "6th world congress on Nanomedical Sciences-ISNSCON-2018", "Chemistry-Biology Interface 2019" and "Conference on "Science and Technology for the Future of Mankind" from 7th- 10th January, 2019 at Vigyan Bhawan, New Delhi
5. Poster presentation at 16th Human Proteome Organisation World Congress (HUPO2017), held in Dublin, Ireland, from 17th - 21st September 2017 *(Travel Grant from ICMR)*.

6. Attended 8th Annual meeting of Proteomics Society, India (PSI) alongwith 3rd meeting of Asia Oceanica Agricultural Proteomics Organization (AOAPO) organized by NIPGR, Delhi at Hotel The Grand from 14th -17th Dec. 2016.
7. Attended the conference and Poster presentation in "Cancer In Asia: Bridging the Gaps" organized under 12th International conference of the Asian Clinical Oncology Society (ACOS), 35th Annual Convention of Indian Association for Cancer Research (IACR) and mid-Term Conf. On IASO to be held from 8th-10th April, 2016 at The Ashok Hotel, New Delhi.
8. Attended Sciex NextGen Proteomics Workshop held from 15th - 16th December, 2015 at Centre of Excellence, Sciex, Gurgaon, India.
9. Attended Workshop on Protein Microarrays under 6th Proteomics Society, India (PSI) and attended Attended 6th Proteomics Society, India (PSI) meeting held at IIT, Mumbai, from 7th-11th December, 2014
10. Attended 5th International Conference on Translational Cancer Research- Multi- Targeted Approach to Treatment of Cancer, held at Vigyan Bhawan, New Delhi from February 6th – 9th, 2014.
11. Attended "Pre-Congress Training course HUPO 2013" on "Modern Techniques in Proteomics" from 11th -13th September 2013 at Yokohama, JAPAN and Presented a poster at HUPO Congress 2013 held from 14th -18th September, 2013.
12. Poster presentation on "Plasma-Based Markers for Glioblastoma – An Integrated Resource for Targeted Exploration" at International Symposium on "Proteomics beyond IDs and 4th Annual meeting of Proteomics Society (INDIA)" held from 22nd- 24th Nov 2012 at NCL, Pune.
13. Poster presentation of research work on "Studies on molecular mechanisms of amphotericin B and artemisinin against *Aspergillus fumigatus* using transcriptomic and proteomic approach" in 5th AOHUPO conference to be held from 21st-25th Feb 2010 at Hyderabad, India.
14. Poster presentation of research work on "Proteomic Analysis of *Aspergillus fumigatus* to Identify Molecular Targets of Artemisinin" in "HUPO 2009" held from 26-30th September 2009 at Toronto, Canada.
15. Oral presentation on "Immunoproteomic approach for identification of novel allergens of *Aspergillus fumigatus*" at World Allergy Congress 2007, held from 2-6th December 2007 at Bangkok, Thailand. Received Travel Award from the World Allergy Organization.
16. Presented poster on "Differential protein ex-pression profile of Aspergillus fumigatus on exposure to amphotericin B" at HUPO 5th Annual World Congress, Long Beach, 2006 held from October 28th to November 1st, 2006 at Long Beach, California. Roche Travel Award from HUPO organizers.
17. Presented poster on "Immunoproteomic approach identifies novel proteins of *Aspergillus fumigatus* with specific IgE immunoreactivity" in an international conference "FEBS-IUBMB 2005: Proteins and peptides: Structure function and organization" held from 2nd-7th July 2005 at Budapest, Hungary. Full travel support by CSIR

National Conference attended

i. Poster presentation on "Deregulated Nuclear Proteome in Astrocytomas" in "6th world congress on Nanomedical Sciences-ISNSCON-2018", "Chemistry-Biology Interface 2019" and "Conference on "Science and Technology for the Future of Mankind" from 7th- 10th January, 2019 at Vigyan Bhawan, New Delhi.
ii. Health Technology Acceleration and Commercialization (HTAC) Program for commercialization of ICMR technologies to be held from 11th-16th November, 2018, at Goa
iii. Attended one day symposium on 'Biomedical Communication and the Menace of Predatory Journals: Lessons for Scientists' on 27th March, 2018 at ICMR Hqrs, New Delhi.

iv. Attended 9th Annual Meeting of Proteomics Society, India (PSI) International Conference on Proteomics in Health and Disease held at ILS, Bhubaneshwar, from 30th November- 2nd December, 2017.

v. Presented Poster on "Proteomic and transcriptomic analysis of *Aspergillus fumigatus* on exposure to amphotericin B" in "Current Trends in Proteomics and Brainstorming Discussion on Plasma Proteomics" meeting from 17-18th February, 2008.

vi. Presented poster and oral on "Identification of major and minor allergens of *Aspergillus fumigatus* based on the sensitization profile in allergic bronchopulmonary aspergillosis patients" in "33rd Indian Immunology Society" meeting from 28th-31st January 2007.

Dr. Poonam Gautam

(Laboratory of Molecular Oncology, ICMR-NIP)

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RESEARCH ACTIVITIES

As per WHO, ***Cancer*** *is the second leading cause of death globally and approximately 70% of deaths from cancer occur in low- and middle-income countries. Late-stage presentation and inaccessible treatment are common. The economic burden of cancer is substantial in all countries and reflects health care spending as well as lost productivity due to morbidity and premature death from cancer. The cancer burden (30-50%) can be reduced by avoiding risk factors and through* ***early detection of cancer*** *and management of patients who develop cancer.*

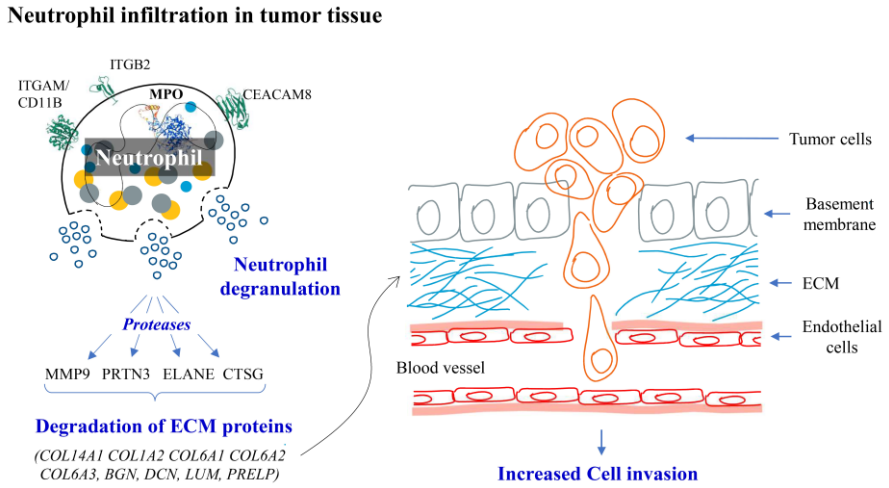
Gallbladder carcinoma (GBC) is a common malignancy in Indian subcontinent, with high prevalence in **northern and northeast India** among the **Asian countries.** It is generally presented at the advanced stages due to its anatomic position and non-specificity of symptoms at early stages and lack of effective screening approaches for early diagnosis. Delayed detection of cancer makes treatment difficult because of progressive advancement in disease stage and metastasis leading to poor survival outcome. Therefore, early detection of GBC is critical to reduced morbidity and

mortality. As there is no effective method available for early detection of GBC, there is an urgent need for a highly sensitive and specific panel of biomarkers for this purpose.

Tissue proteome analysis of early stage GBC

Gallbladder carcinoma (GBC) is an aggressive malignancy with a very poor survival rate at advance stages. Understanding the molecular processes associated with the pathogenesis of early stage GBC is important and may lead to the identification of 'tumor associated proteins' useful for diagnostic and therapeutic strategies. Detection of autoantibodies against 'tumor associated protein/ antigens (TAAs) in the blood plasma of the patients have the potential to develop assays for early detection of GBC.

We used iTRAQ-based labelling and LC-MS/MS analysis to analyze proteome profile between early stage gallbladder carcinoma (GBC) tissues and non-tumor control tissues. We found 'Neutrophil degranulation' and 'ECM organization' as the most affected pathway. we hypothesize that there is an increased neutrophil infiltration in tumor tissue and neutrophil degranulation leading to degradation of extracellular matrix (ECM) proteins promoting cancer cell invasion in the early stage GBC(Frontiers in Oncology, 2022).



Hypothesis

Lymph node metastasis in GBC

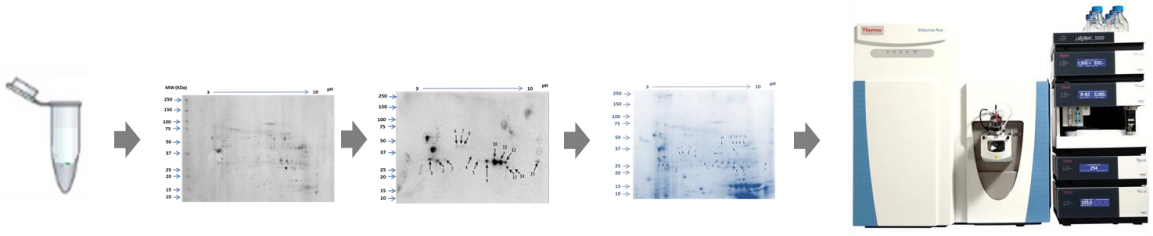
Lymph node (LN) metastasis is the earliest sign of metastatic spread and is one of the strongest and established predictors of poor outcome in GBC patients. The patients with LN metastasis (node positive) have a significantly worse survival (median survival of 7.3 months) than patients with node-negative disease (median survival of 22.7 months) inspite of standard treatment. Therefore, effective targeted therapy for LN metastatic GBC is an urgent need for the improved treatment and survival of these patients. We are analyzing the proteins associated with lymph node metastasis (LNM) in gallbladder cancer (GBC). Some of these proteins may have a potential as new potential targets for the intervention in GBC.

Autoantibody response in GBC

Early diagnosis is important for the timely treatment of gallbladder carcinoma (GBC) patients and may lead to increased survival outcomes. We are applying serological proteome analysis (SERPA), an immunoproteomics approach, for detection of 'tumor-associated antigens (TAAs) that elicit

humoral response' in early stage GBC patients. The tumor-associated antigens identified in the study may be useful for achieving a comprehensive panel of biomarkers for early detection of GBC.

We performed an autoantibody response study using serological proteome analysis to find out tumor-associated antigens where clinical verification study revealed an elevated autoantibody level against ANXA1 with a sensitivity of 41% at a specificity of ~90% for the detection of GBC at early stages. The study suggests that the ANXA1 autoantibody levels against ANXA1 may be potentially employed for early stage detection of GBC patients (BMC cancer, 2020).



Differential proteome in blood plasma and plasma-derived EVs in GBC

Extracellular vesicles (EVs) are microvesicles, secreted by all cell types and contain various bioactive molecules - miRNA, mRNA, DNA, proteins, lipids. They are also reported to be remarkably stable in biological fluids such as blood plasma, urine etc. and considered to be an excellent source for biomarkers for cancer detection. We have analyzed GBC cell line-derived EVs and plasma-derived EVs with an aim to identify protein and miRNA-based molecular signatures as circulatory biomarkers for early detection of GBC.

In this study, we have done high throughput quantitative proteomic analysis of extracellular vesicles derived from two different GBC cell lines and blood plasma of GBC patients (early and advanced stage) to identify candidate biomarkers for the diagnosis and prognosis of the disease. Proteomic analysis of two GBC cell lines (NOZ and OCUG-1) identified a total of 110 proteins detected in both the cell lines and in at least two experimental and technical replicates. Further, the quantitative proteomic analysis of the plasma EV proteins, using three types of controls and various stages of the disease, led to the identification of 86 proteins with altered abundance in GBC. Based on fold changes and/or tumor association. we selected four of the proteins (HP, NT5E, ANPEP and MME) for the clinical verifications in individual blood plasma. We observed significantly increased levels of MME in early stage, NT5E in the advanced stage, and HP and ANPEP in both early and advanced stage GBC cases in comparison to all controls. These and other proteins identified in the study may be potentially useful for developing new diagnostics for GBC.

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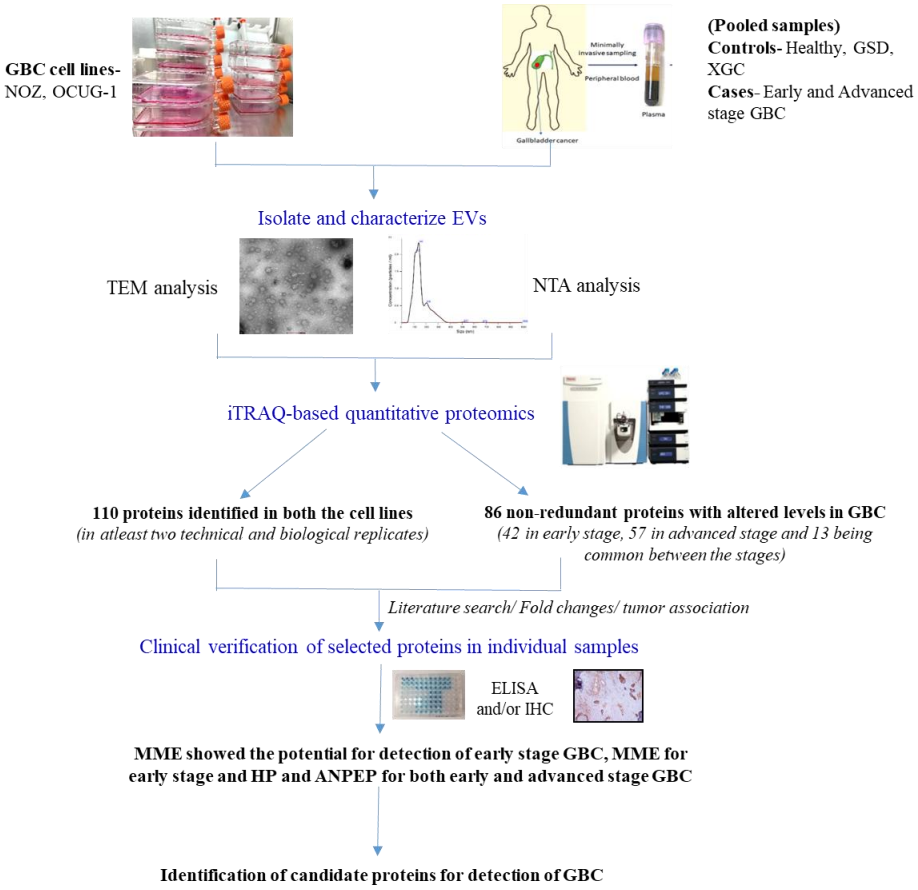
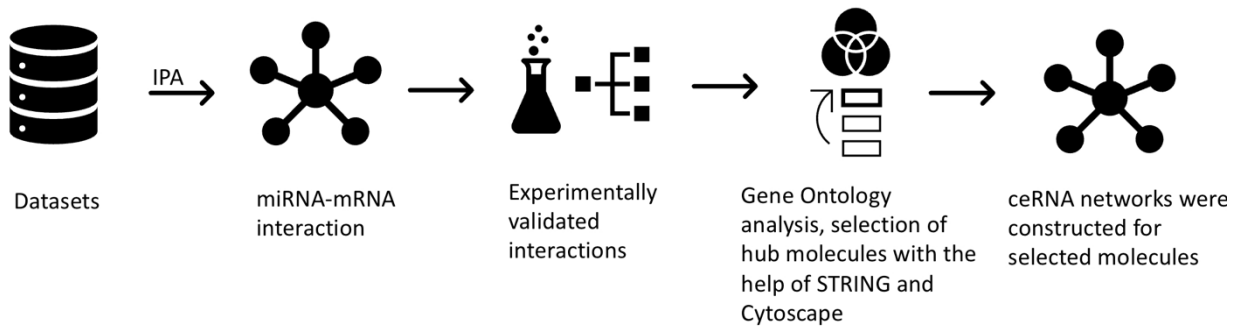


Differential miRNAome profiling in GBC

We have used multi-omics datasets available in GBC to identify novel lncRNA-miRNA-mRNA regulatory networks which may be explored for their therapeutic applications in GBC. Here, we have constructed 11 novel ceRNA networks in GBC using bioinformatics tools



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a) Understanding molecular pathogenesis of early stage gallbladder cancer
b) Autoantibody response analysis in gallbladder cancer patients

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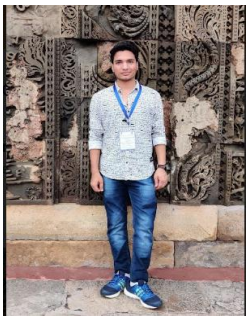
Area of Research: Understanding molecular pathogenesis of lymph node metastasis in gallbladder carcinoma



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