Statement of research achievements, if any, on which any award has already been received by the applicant.

Dr Ritu Gupta integrated research advancements into clinical diagnostics and has fulfilled the vision of bringing bench to the bedside. With each research grant in her portfolio, she established novel cancer diagnostics and prognostication tools for patient care services at AIIMS. Through the research grant on 'Unit of Excellence on Multiple Myeloma (MM)', she established advanced facilities including mutational analysis with next generation sequencing (NGS), copy number aberrations using microarrays, next generation flow cytometry (NGF) based minimal residual disease assessments and nucleic acid-based staging. She established a server-based database of nearly 2000 patients of MM, a repository of valuable clinical research, which she used effectively to establish Indian ethnicity specific cut-offs of prognostic markers, leading to development of novel AI based staging systems effective in risk predictions in Indian patients of MM. Her lab established prognostic significance of chromothripsis, deduced mutational signatures, proteome, and patterns of clonal evolution in MM.

Dr Ritu is a recipient of Smt Kunti Devi Mehrotra award (2005), AIIMS Excellence Award (2017, 2019, 2020 & 2021) and Berend Houwen Award (2021). Dr Ritu Gupta is a competent pathologist and researcher and with her vast experience, dedication, knowledge, and skill set, she is poised to lead the next generation of hematopathologists.

Awards & Honors Received by the Applicant: Prof. Ritu Gupta

1. **Visiting Senior Scientist at Mayo Clinic, Rochester, Minnesota, USA** (March-June 2023)
2. **Visiting Professor at Dana Farber Cancer Institute, Harvard Medical School, Boston, USA** (Sep 26- Oct 23, 2022)
3. **Berend Houwen Travel Award 2022** for "Single cell gene expression analysis of CD34+ enriched leukemic cells reveal intra and inter-patient transcriptional heterogeneity in pediatric Acute myeloid leukemia" at the XXXVth International Symposium on Technological innovations in Laboratory Hematology (Sep 7-10, 2022) organized by International Society for Laboratory Hematology (ISLH).

- **This work has been published:** Thakral D, Singh VK, **Gupta R*,** Jha N, Khan A, Kaur G, Rai S, Kumar V, Supriya M, Bakhshi S, Seth R. Integrated single-cell transcriptome analysis of CD34 + enriched leukemic stem cells revealed intra- and inter-patient transcriptional heterogeneity in pediatric acute myeloid leukemia. Ann Hematol. 2023;102(1):73-87. doi: 10.1007/s00277-022-05021-4. PMID: 36527458.

4. **Admitted as Fellow, Royal College of Pathologists, London, UK (FRCPath)- 2022**
5. **Elected Fellow, National Academy of Sciences, India (FNASc) - 2021**
6. **Berend Houwen Award 2021** for "Evaluation of kinetics and single cell sequencing-based phenotype of Leukemic Stem Cells (LSCs) in Acute Myeloid Leukemia" at the XXXIVth International Symposium on Technological innovations in Laboratory Hematology Virtual Meeting (May 4-7, 2021) organized by International Society for Laboratory Hematology (ISLH)
7. **Oral Paper award at Haematocon 2020** for paper on "Impact of depth of response and MRD status post-transplant on long term survival in multiple myeloma"
    - **This work has been published:** Das N, Dahiya M, **Gupta R*,** Kumar L, Rani L, Gupta A, Farswan A, Sharma A, Sharma OD. Graded Depth of Response and Neoplastic Plasma Cell Index as Indicators of Survival Outcomes in Patients With Multiple Myeloma Following Autologous Stem Cell Transplant. Am J Clin Pathol. 2023 Jan 4;159(1):69-80. doi: 10.1093/ajcp/aqac129. PMID: 36317501
8. Leukemic Stem Cells in AML: **Best two papers invited for oral presentation at ESH virtual conference 2020**
9. **AIIMS Excellence Research Award 2021** (First Prize) for publication titled "Branching clonal evolution patterns predominate mutational landscape in Multiple Myeloma".
    - **This work has been published:** Farswan A, Jena L, Kaur G, Gupta A*, **Gupta R***, Rani L, Sharma A, Kumar L. Branching clonal evolution patterns predominate mutational landscape in Multiple Myeloma. Am J Cancer Res 2021; 11(11):5659-5679. PMID: 34873486
10. **AIIMS Oncology Research Award 2020** (First Prize) for publication titled "RNA-Seq profiling of deregulated miRs in CLL and their impact on clinical outcome".
    - **This work has been published:** Kaur G, Ruhela V, Rani L, Gupta A, Sriram K, Gogia A, Sharma A, Kumar L, **Gupta R***. RNA-Seq profiling of deregulated miRs in CLL and

their impact on clinical outcome. Blood Cancer J. 2020;10(1):6. doi: 10.1038/s41408-019-0272-y. PMID:31932582.

11. **AIIMS Oncology Research Award 2019** (Second Prize) for publication titled "Rapid Identification of Key Copy Number Alterations in B- and T-Cell Acute Lymphoblastic Leukemia by Digital Multiplex Ligation-Dependent Probe Amplification."
    - **This work has been published:** Thakral D, Kaur G, **Gupta R*,** Benard-Slagter A, Savola S, Kumar I, Anand R, Rani L, Verma P, Joshi S, Kumar L, Sharma A, Bakhshi S, Seth R, Singh V. Rapid Identification of Key Copy Number Alterations in B- and T-Cell Acute Lymphoblastic Leukemia by Digital Multiplex Ligation-Dependent Probe Amplification. Front Oncol. 2019 Sep 13; 9:871. doi: 10.3389/fonc.2019.00871. PMID: 31572674.
12. **Visiting Professor**, Department of Hematopathology, All India Institute of Medical Sciences (AIIMS), Rishikesh (2019)
13. **Indian Myeloma Congress 2019 Award** (Second Prize) for paper on "Estimation of CNVs In Multiple Myeloma by Next Generation Sequencing Based Digital MLPA" at the 2nd Annual Conference of the Indian Myeloma Academic Groupe (May 11-12, 2019)
14. **AIIMS Oncology Research Award 2018** (Third Prize) for publication titled "Nucleic acid-based risk assessment and staging for clinical practice in multiple myeloma"
    - **This work has been published: Gupta R***, Kaur G, Kumar L, Rani L, Mathur N, Sharma A, Dahiya M, Shekhar V, Khan S, Mookerjee A, Sharma OD. Nucleic acid-based risk assessment and staging for clinical practice in multiple myeloma. Ann Hematol. 2018; 97(12):2447-2454. PMID: 30056581.
15. Nominated to 34th Ernst Klenk Symposium on "Épigenetics: Basic Principals & Clinical Applications", Cologne, Germany (October 2018)
16. **AIIMS Excellence Research Award 2017** (Third Prize) for basic research publication on "Genome-wide DNA methylation profiling integrated with gene expression profiling identifies PAX9 as a novel prognostic marker in chronic lymphocytic leukemia"
    - **This work has been published:** Rani L, Mathur N, **Gupta R***, Gogia A, Kaur G, Dhanjal JK, Sundar D, Kumar L, Sharma A. Genome-wide DNA methylation profiling integrated with gene expression profiling identifies PAX9 as a novel prognostic marker in

chronic lymphocytic leukemia. Clin Epigenetics. 2017; 9:57. doi: 10.1186/s13148-017-0356-0. PMID:28572861.

17. Second prize for poster on 'Novel Level Set Framework for Plasma Cell Segmentation from Microscopic Images of Multiple Myeloma' at the "Multiple Myeloma-State of the Art 2016" conference held at PGIMER, Chandigarh, India
    - Gupta A, Gehlot S, Goswami S, Motwani S, **Gupta R**, Faura ÁG, Štepec D, Martinčič T, Azad R, Merhof D, Bozorgpour A, Azad B, Sulaiman A, Pandey D, Gupta P, Bhattacharya S, Sinha A, Agarwal R, Qiu X, Zhang Y, Fan M, Park Y, Lee D, Park JS, Lee K, Ye J. SegPC-2021: A challenge & dataset on segmentation of Multiple Myeloma plasma cells from microscopic images. Med Image Anal. 2023; 83:102677. doi: 10.1016/j.media.2022.102677. PMID: 36403309.
    - Gehlot S, Gupta A*, **Gupta R*.** A CNN-based unified framework utilizing projection loss in unison with label noise handling for multiple Myeloma cancer diagnosis. Med Image Anal. 2021; 72:102099. doi: 10.1016/j.media.2021.102099. PMID: 34098240.
    - Gupta A, Mallick P, Sharma O, **Gupta R**, Duggal R. PCSeg: Color model driven probabilistic multiphase level set based tool for plasma cell segmentation in multiple myeloma. PLoS One 2018; 13(12):e0207908. PMID: 30540767.
18. Second prize for poster on 'Molecular aberrations in Chronic Lymphocytic Leukemia (CLL) using MLPA' at the 5th Annual Conference of Molecular Pathologists of India (MPAI 2016)
19. 'Markers of angiogenesis in multiple myeloma' was judged in best 20 abstracts presented at the 11thEuroconference on Clinical Cell Analysis (2011) at Dublin, Ireland.
    - Bhaskar A, **Gupta R***, Sreenivas V, Rani L, Kumar L, Sharma A, Sharma OD, Sharma MC, Thakur SC. Synergistic effect of vascular endothelial growth factor and angiopoietin-2 on progression free survival in multiple myeloma. **Leuk Res**. 2013; 37:410-415 (PMID: 23332455)
    - Bhaskar A, **Gupta R***, Sreenivas V, Kumar L, Sharma A, Sharma MC, Prasenjit Das P, Thakur SC. Angiopoietins as biomarker of disease activity and response to therapy in multiple myeloma. Leuk Lymphoma. 2013; 54:1473-8 (PMID: 23113684)
    - Bhaskar A, **Gupta R***, Kumar L, Sharma A, Sharma MC, Kalaivani M, Thakur SC. Circulating endothelial progenitor cells as potential prognostic biomarker in multiple myeloma. Leuk Lymphoma. 2012; 53:635-40. (PMID: 21973309)

20. **Travel Award ASH from American Society of Hematology** (2008)
    - **This work has been published: Gupta R***, Bhaskar A, Kumar L, Sharma A, Jain P. Flow cytometric immunophenotyping and minimal residual disease analysis in multiple myeloma. Am J Clin Pathol 2009;132:728-732 (PMID: 19846814).
21. **'Smt. Kunti Devi Mehrotra award'** (2005) by Indian Association of Pathologists & Microbiologists (IAPM)
    - **This work has been published: Gupta R,** Jain P, Deo SVS, Sharma A. Flow cytometric analysis of CD5 positive B-cells- a frame of reference for minimal residual disease in Chronic lymphocytic leukemia. Am. J Clin Path. 2004; 121:368-372.PMID: 15023041.
22. **Young Investigator award of SERC** (2005-06) for "Immunophenotypic characterization of plasma cells by flow cytometry in health & disease with particular reference to plasma cell myeloma"
23. **Second prize in Inter-College Lecture Competition on Recent advances in medical Sciences, Karnataka** (1998)
24. **Gold Medal in Mathematics, CBSE** (1987)