Curriculum Vitae

Rama Gullapalli, M.D., Ph.D.

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I. OVERVIEW

My research is focused on hepatobiliary (liver and gallbladder) diseases examining the role of environmental exposures as key drivers underlying these diseases. Significant population, racial and gender disparities exist for hepatobiliary pathology in the state of New Mexico. We study the role of heavy metals (e.g., cadmium), chemical-metal mixtures and micro-/nano-plastics as drivers of hepatobiliary disease etiopathology. I have clinical expertise in laboratory medicine, molecular genetic pathology, clinical informatics and cytogenetics. I am currently a practicing molecular pathologist at UNM. My clinical research interests include - AI ethics, assessment of AI use in pathology, biases in clinical pathology, molecular and digital pathology synergy.

II. FACULTY APPOINTMENTS

- Associate Professor, Department of Pathology (2024 – Current)
  University of New Mexico Health Sciences Center, Albuquerque, NM, USA

- Associate Professor, Department of Pathology (2024 – Current)
  University of New Mexico Health Sciences Center, Albuquerque, NM, USA

- Assistant Professor, Department of Pathology (2013-2024)
  University of New Mexico Health Sciences Center, Albuquerque, NM, USA.

- Assistant Professor, Department of Chemical and Biological Engineering (2013 – 2024)
  University of New Mexico, Albuquerque, NM, USA.

III. MEMBERSHIPS

- Member, Center for Biomedical Engineering
  University of New Mexico, Albuquerque, NM, USA.

- Full Member, UNM Cancer Center
  University of New Mexico Health Sciences Center, Albuquerque, NM, USA.

IV. EDUCATION AND TRAINING

- Fellow, Division of Molecular Diagnostics, Department of Pathology (2011 – 2012)
  University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania USA

- Clinical Pathology Resident, Department of Pathology (2009 – 2011)
  University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania USA

- Anatomic and Clinical Pathology Resident, Department of Pathology (2007 – 2009)
  University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, USA

- Doctor of Philosophy (Ph.D.), Department of Bioengineering (2001 – 2007).
  The Pennsylvania State University, University Park, Pennsylvania, USA
  Dissertation Topic: *Integrated Experimental, Computational and Theoretical Methods to study the Molecular Dynamics of Lipid Membranes*

- Master of Science (M.S.), Department of Electrical Engineering (2001 – 2005).
  The Pennsylvania State University, University Park, Pennsylvania, USA
  Area of Focus: *Optical Electrical Engineering.*

- Bachelor of Medicine, Bachelor of Surgery (M.B; B.S.), (1992 – 1999).
  Armed Forces Medical College, Pune, Maharashtra India

V. MEDICAL BOARD CERTIFICATION AND LICENSES

Board	**Issue Date**	**Expiration**
- American Board of Pathology – Clinical Pathology	07/2011	N/A
- American Board of Pathology - Molecular Genetic Pathology	09/2013	N/A
- American Board of Pathology - Clinical Informatics	12/2015	N/A
- ECFMG Certificate	09/2005	N/A
- New Mexico License (current)	07/2013	07/2025
- Pennsylvania trainee license (lapsed)	07/2007	07/2012

VI. HONORS AND AWARDS

2023 – Digital Pathology Association (DPA) annual meeting, best faculty poster award, Orlando, FL

2018 – Research Recognition Award, New Mexico IDeA Networks for Biomedical Research Excellence

2014 – American Society of Clinical Pathology (ASCP) - 40 under 40 award.

2011 - Paul L. Strandjord Young Investigator award presented by ACLPS, St Louis, MO, June 2011.

2009 - College of American Pathologists resident research award.

2008 - Association of Pathology Informatics (APIII) travel award.

2004 - Biomedical engineering society travel award, October 2004.

2003 - Graduate student exhibition award, Pennsylvania State University.

2001 - Huck Institute of Life Sciences Fellowship, Pennsylvania State University.

1998 - Final M.B.; B.S., AFMC Pune (5th in a class of 130).

1998 - P P Chowdhury silver Medal, First in Preventive medicine, Armed Forces Medical College.

1998 - Col T D Chablani medal, Final Year M.B; B.S, Armed Forces Medical College.

1996 - Inter-batch Athletics, Gold Medalist, Pole Vault, AFMC, Pune

1995 - Inter-batch Athletics, Silver Medalist, Pole Vault, AFMC, Pune

1995 - Chief Student Editor, Annual College Magazine, "Dhanvantari" – AFMC, Pune.

1995 - Second in class, Microbiology, Armed Forces Medical College.

1993 - National Science Talent Scholarship, India.

1990 - State Merit scholarship for academic achievement, India.

VII. RESEARCH GRANT FUNDING

a. Current Funding Support

4) Sponsor – NIH, COBRE Award, Title - *"Molecular Drivers of Elevated Gallbladder Cancer Incidence in New Mexico"*, Grant Number - 1P20GM130422, Dates – June 2020 – July 2025, Direct Costs - $175,000/annum; Calendar Effort – 6.00

3) Sponsor – UNM HSC RAC Award committee, Title – "Racism, ACEs, Allostatic Load and Perinatal Telomeres", Dates – August 1st, 2023 – July 31st 2024, Direct costs - $25,000. Role – co-investigator

2) Sponsor - National Institutes of Health, Title – *"Defining the Harmful Effects of Microplastics on Gastrointestinal Health"*, PI: Castillo, E., Dates - September 2021 – August 2026. Role - Grant consultant

1) New faculty departmental start-up funds, Department of Pathology, University of New Mexico, Primary Investigator, Dates - September 2012 – Present.

b. Completed Funding Support

9) CVMD Pilot Award, Title – *"Mitochondrial Dysfunction in Chronic Cadmium Exposed Hepatocellular Cells as a Model of Fatty Liver Disease in New Mexico"*, Dates – September 2022 – September 2023, Direct costs - $8000

8) NM-INSPIRES P30 Center Pilot Award. Title – *"Examining hyperglycemic synergism of cadmium metal stress on metabolism in a zebrafish larval model"*, Grant Number - 1P30ES032755-01A1, Dates – June 2022 – May 2023, Direct costs - $25,000

7) UNM Department of Pathology Pilot Award – *"Modeling Disruptive Effects of Cadmium Exposures on the Gallbladder Epithelial Barrier"*, Total amount - $5000, Dates - 2019-2020

6) Environmental Health Sciences Signature Program, UNM METALS Superfund Research Program, University of New Mexico, Total amount - $25,000, *Grant Number - P42ES025589;* Dates - 2019-2020

5) AIM COBRE Center Pilot and (2) Voucher Awards – *"Quantifying Salmonella Lipopolysaccharide Induced Metabolomic Responses in Chronic, Low-dose Cadmium Exposed Human Gallbladder Epithelial Cells",* Total amount - $2000 + $2000 + $5000. *Grant # P20GM121176;* Dates - 2019-2020

4) Full grant award, NIH-New Mexico – Idea Networks for Biomedical Research Excellence (NM-INBRE), Title: *"Molecular and Microbiome Analysis of Gallbladder Cancer in New Mexican Populations"*. Dates – 2014 - 2019. Grant Number P20GM103451, Direct costs - $75,000 per annum – 5 years.

3) *Title: "Computational Molecular Dynamics of TP53 Oligomerization Domain"*; XSEDE compute time allocation, San Diego Supercomputing Center; Dates - April 2014-April 2015

2) Title - *"Molecular Dynamics Study of Structural HLA Micropolymorphisms as a Basis of Antigenic Recognition";* Compute time allocation, Pittsburgh Supercomputing Center; Dates - 2009-2011

1) Title - *"Surface Enhanced Raman Scattering (SERS) measurements of glycosylated hemoglobin using nanostructured substrates for long term management of diabetes mellitus". Resident research award, $2000.* Granting agency: College of American Pathologists (CAP), Funding period: Dates - December 2009 – July 2011

VIII. PEER REVIEWED JOURNAL PUBLICATIONS

30) "Evaluating Use of Generative Artificial Intelligence in Clinical Pathology Practice: Opportunities and the Way Forward", McCaffrey P*, Jackups R, Seheult J, Zaydman MA, Balis U, Thaker HM, Rashidi H, **Gullapalli RR***. Arch Pathol Lab Med. (2024) doi: 10.5858/arpa.2024-0208-RA. PMID: 39384182

29) "Harnessing the Power of Generative Artificial Intelligence in Pathology Education", Cecchini MJ, Borowitz MJ, Glassy EF, **Gullapalli RR**, Hart SN, Hassell LA, Homer RJ, Jackups R Jr, McNeal JL, Anderson SR. Arch Pathol Lab Med. (2024) doi: 10.5858/arpa.2024-0187-RA. PMID: 39343982

28) "Evaluating combined effects of chronic, low-dose exposures of cadmium (CLEC) and hyperglycemia on insulin signaling dysfunction in a hepatocellular model", Kumar R*, **Gullapalli RR***, Toxicology. 2024 Nov:508:153929. PMID: 39191366

27) "In Vivo Tissue Distribution of Polystyrene or Mixed Polymer Microspheres and Metabolomic Analysis after Oral Exposure in Mice." Garcia MM, Romero AS, Merkley SD, Meyer-Hagen JL, Forbes C, Hayek EE, Sciezka DP, Templeton R, Gonzalez-Estrella J, Jin Y, Gu H, Benavidez A, Hunter RP, Lucas S, Herbert G, Kim KJ, Cui JY, **Gullapalli RR**, In JG, Campen MJ, Castillo EF. Environ Health Perspect. 2024 Apr;132(4):47005. doi: 10.1289/EHP13435. Epub 2024 Apr 10. PMID: 38598326

26) Kumar, R.*****, **Gullapalli, RR*.** High Throughput Screening Assessment of Reactive Oxygen Species (ROS) Generation using Dihydroethidium (DHE) Fluorescence Dye. *J. Vis. Exp.* (203), e66238, doi:10.3791/66238 (2024). PMID: 38314817

25) Decoding the exposome: data science methodologies and implications in exposome-wide association studies (ExWASs). Chung MK, House JS, Akhtari FS, Makris KC, Langston MA, Islam KT, Holmes P, Chadeau-Hyam M, Smirnov AI, Du X, Thessen AE, Cui Y, Zhang K, Manrai AK, Motsinger-Reif A, Patel CJ; Members of the Exposomics Consortium. Exposome. 2024 Jan 17;4(1):osae001. doi: 10.1093/exposome/osae001. eCollection 2024. PMID: 38344436

24) Biomass smoke inhalation promotes neuroinflammatory and metabolomic temporal changes in the hippocampus of female mice. Scieszka D, Jin Y, Noor S, Barr E, Garcia M, Begay J, Herbert G, Hunter RP, Bhaskar K, Kumar R, **Gullapalli R**, Bolt A, McCormick MA, Bleske B, Gu H, Campen MJ. J Neuroinflammation. 2023 Aug 22;20(1):192. doi: 10.1186/s12974-023-02874-y. PMID: 37608305.

23) Mark D Zarella, David S McClintock, Harsh Batra, **Rama R. Gullapalli**, Michael Valante, Vivian O Tan, Shubham Dayal, Kei Shing Oh, Haydee Lara, Chris A Garcia, Esther Abels, "Artificial intelligence and digital pathology: clinical promise and deployment considerations", J Med Imaging (Bellingham). 2023 Sep;10(5):051802. doi: 10.1117/1.JMI.10.5.051802; PMID: 37528811

22) Marcus M Garcia, Aaron S Romero, Seth D Merkley, Jewel L Meyer-Hagen, Charles Forbes, Eliane El Hayek, David P Sciezka, Rachel Templeton, Jorge Gonzalez-Estrella, Yan Jin, Haiwei Gu, Angelica Benavidez, Russell P Hunter, Selita Lucas, Guy Herbert, Kyle Joohyung Kim, Julia Yue Cui, **Rama R. Gullapalli**, Julie G In, Matthew J Campen, Eliseo F Castillo, "In Vivo Tissue Distribution of Microplastics and Systemic Metabolomic Alterations After Gastrointestinal Exposure" bioRxiv. 2023 Jun 3;2023.06.02.542598. doi: 10.1101/2023.06.02.542598. Preprint; PMID: 37398080

21) David Scieszka, Yan Jin, Shahani Noor, Ed Barr, Marcus Garcia, Jessica Begay, Guy Herbert, Russell P Hunter, Kiran Bhaskar, Rahul Kumar, **Rama R. Gullapalli**, Alicia Bolt, Mark A McCormick, Barry Bleske, Haiwei Gu, Matthew Campen, "Neuroinflammatory and Metabolomic Temporal Dynamics Following Wood Smoke Inhalation", Res Sq. 2023 Jun 5;rs.3.rs-3002040. doi: 10.21203/rs.3.rs-3002040/v1. Preprint; PMID: 37333410

20) Hassell L.A., Absar SF, Chauhan C, Dintzis,S, Farver CF, Fathima S, Glassy EF, Goldstein JA, **Gullapalli R.R.**, Ho J, Koch LK, Madory J, Mirza KM, Nguyen PN, Pantanowitz L, Parwani AV, Rojansky R, Seifert RP, Singh R, ElGabry EA, Bui M, "Pathology Education Powered by Virtual and Digital Transformation: Now and the Future", Arch Pathol Lab Med. 2023 Apr 1;147(4):474-491. PMID: 35878400

19) Coleman MJ, Espino LM, Lebensohn H, Zimkute MV, Yaghooti N, Ling CL, Gross JM, Listwan N, Cano S, Garcia V, Lovato DM, Tigert SL, Jones DR, **Gullapalli RR**, Rakov NE, Perez EGT, Castillo EF, "Individuals with Metabolic Syndrome Show Altered Fecal Lipidomic Profiles with No Signs of Intestinal Inflammation or Increased Intestinal Permeability", Metabolites. 2022 May 11;12(5):431; PMID: 35629938

18) Merkley SD, Goodfellow SM, Guo Y, Wilton ZER, Byrum JR, Schwalm KC, Dinwiddie DL, **Gullapalli R.R.**, Deretic V, Jimenez Hernandez A, Bradfute SB, In JG, Castillo EF. Non-autophagy role of Atg5 and NBR1 in unconventional secretion of IL-12 prevents gut dysbiosis and inflammation. J Crohns Colitis. (2021) Aug 10:jjab144. doi: 10.1093/ecco-jcc/jjab144. PMID: 34374750.

17) Chauhan C.C*., **Gullapalli R.R.*,** "Ethics of AI in Pathology: Current Paradigms and Emerging Issues", Am J Pathol. 2021 Jul 9;S0002-9440(21)00303-5. PMID: 34252382

16) Franklin MM, Schultz FA, Tafoya MA, Kerwin AA, Broehm CJ, Fischer EG, **Gullapalli RR**, Clark DP, Hanson JA, Martin DR "A Deep Learning Convolutional Neural Network Can Differentiate Between Helicobacter Pylori Gastritis and Autoimmune Gastritis With Results Comparable to Gastrointestinal Pathologists" Arch Pathol Lab Med, 2021 Apr 15, doi: 10.5858/arpa.2020-0520-OA; PMID: 33861314

15) Sharma P*, Caldwell TS, Rivera MN, **Gullapalli RR*.** Cadmium exposure activates Akt/ERK Signaling and pro-inflammatory COX-2 expression in human gallbladder epithelial cells via a ROS dependent mechanism. Toxicol In Vitro. 2020 Jun 6;:104912. doi: 10.1016/j.tiv.2020.104912; PMID: 32512147

14) “Evaluation of Commercial Next-Generation Sequencing Bioinformatics Software Solutions”, **Gullapalli, R. R.,** J Mol Diagn. 2020 Feb; 22(2):147-158; PMID: 31751676

13) Martin, D.R., Hanson, J.A., **Gullapalli, R.R.,** Schultz, F.A., Sethi, A., Clark,D.P. “A Deep Learning Convolutional Neural Network Can Recognize Common Patterns of Injury in Gastric Pathology”, Arch Pathol Lab Med. doi: 10.5858/arpa.2019-0004-OA, (2019); PMID: 31246112

12) Nemunaitis JM, Brown-Glaberman U, Soares H, Belmonte J, Liem B, Nir I, Phuoc V, **Gullapalli R.R.,** “Gallbladder Cancer: Review of a Rare Orphan Gastrointestinal Cancer with a focus on Populations of New Mexico, BMC Cancer, 18,1, (2018), DOI: 10.1186/s12885-018-4575-3; PMID: 29914418

11) Martin DR, LaBauve E, Pomo JM, Chiu VK, Hanson JA, **Gullapalli RR**, Site-Specific Genomic Alterations in a Well-Differentiated Pancreatic Neuroendocrine Tumor With High-Grade Progression. Pancreas. 2018 Apr; 47(4):502-510; PMID: 29521944

10) Pomo J.M., Taylor R.M., **Gullapalli R.R.,** “Influence of TP53 and CDH1 genes in hepatocellular cancer spheroid formation and culture: a model system to understand cancer cell growth mechanics”, Cancer Cell International, 2016, **16**:44, PMID: 27303212; PMCID: PMC4907104

9) Broehm C.J., Wu, J., **Gullapalli R.R.,** Bocklage T., “First Case Report of an Extraskeletal Myxoid Chondrosarcoma with a t(9;16)(q22;p11.2) Resulting in Fusion of FUS and NR4A3”, Cancer Genetics, 2014. Jun; 207(6):276-80. PMID: 25130955.

8) Berry R.S., **Gullapalli R.R.,** Wu J., Morris K.T., Hanson J.A., “Diffuse Glutamine Synthetase Overexpression Restricted to Areas of Peliosis in a β-Catenin Activated Hepatocellular Adenoma: A Potential Pitfall in Glutamine Synthetase Interpretation”, Virchows Arch. 2014 Aug;465(2):241-5. PMID: 24997695.

7) Taylor R.M., Monson T.C., **Gullapalli R.R.,** “Influence of carbon chain length on the synthesis of fatty amine-coated iron-platinum nanoparticles”. Nanoscale Research Letters 2014, 9:306 PMID: 25006334; PMCID: PMC4078006.

6) Carter AB, **Gullapalli R.R.**, Hagenkord JM, Kang HP, Monzon FA, Williams TM. “A tribute to Jeffrey A. Kant, MD, PhD.” J Pathol Inform 2012;3:47; PMID: 23372988

5) ***Gullapalli R.R.,** *Desai K.V., Santana-Santos L, Kant J.A., Becich M.J., “Next Generation Sequencing in Clinical Medicine: Challenges and Lessons for Pathology and Biomedical Informatics”, J Pathol Inform 2012;3:40 PMID: 23248761; PMCID: PMC3519097

4) Muddana H.S., **Gullapalli R.R.,** Manias E, Butler P.J., "Atomistic simulation of lipid and DiI dynamics in membrane bilayers under tension", Phys Chem Chem Phys. 2011 Jan 28;13(4):1368-78. PMID: 21152516; PMCID: PMC3267629.

3) **Gullapalli R.R.,** Demirel, M., Butler, P.J., "Molecular dynamics simulations of DiI-C18(3) in a DPPC lipid bilayer", Phys Chem Chem Phys., 2008 Jun 28;10(24):3548-60. PMID: 18548161; PMCID: PMC3251217.

2) ***Gullapalli R.R., ***Tabouillot, T., Mathura, R., Dangaria, J., Butler, P.J., "Integrated multimodal microscopy, time resolved fluorescence, and optical-trap rheometry: toward single molecule mechanobiology", J Biomed Opt. 2007 Jan-Feb; 12(1):014012. PubMed PMID: 17343487; PMCID: PMC3251961.

1) Tabouillot, T., **Gullapalli R.R.,** Butler, P.J., "Monitoring cellular mechanosensing using time- correlated single-photon counting", Proceedings of SPIE Volume:6732, Advanced Photon Counting Techniques, Nov 2006, ISBN: 0-8194-6470-8.

*Equal contribution

IX. BOOK CHAPTERS

3) Molecular Oncology, Amirsys Publications, Editors: Dr Mohammad Vasef and Dr Aaron Auerbach

Contributed three chapters in the book - a) High-throughput methods in Molecular Pathology b) Hepatocellular Carcinoma c) Cholangiocarcinoma. 1st (2017), 2nd (2020) editions and 3rd edition (2024)

2) **R.R.Gullapalli**, M. Lyons, P. Petrosko, R. Dhir, M.J. Becich, W.A. LaFramboise, "Clinical Integration of Next Generation Sequencing Technology", Clin Lab Med. 2012 Dec;32(4):585-99. doi: 10.1016/j.cll.2012.07.005.

1) Butler P.J., **Gullapalli R.R.,** Tabouillot, T., Ferko, M., "Fluorescence methods in cellular and molecular mechanobiology", The Annual Reviews in Fluorescence, Editor: Chris Geddes and Joseph Lakowicz, Springer press (2010)

X. POPULAR PRESS/WHITE PAPERS/NON-PEER REVIEWED/BLOG ARTICLES

6) We Need to Better Understand the Role of the Environment in Cancer Causation" Op-Med, www.doximity.com, **Gullapalli, R.R**, Leeman-Neill, R.,

Link - https://www.doximity.com/articles/0065caad-7b0f-48ed-878d-2a05c23b2d75

5) "Serious Caveats in Screening for Pancreatic Cancer", Cancer Commons (2019), **Gullapalli, R.R.** Online link - https://bit.ly/2LWtOit

4) "Cost-Benefit Analysis: Comparing the Cray® Urika®-GX System with Public Cloud Implementations for Life Sciences", White Paper sponsored by Cray Supercomputing, Asthana A., Chari S., **Gullapalli R.R.,**

3) Gullapalli, R. R., & George, T. I. (2016). The Saga of Theranos: Crucial Lessons for Clinicians and Pathologists. The Hematologist, 13(5).

2) Carter AB, Gullapalli R.R., Hagenkord JM, Kang HP, Monzon FA, Williams TM. "A tribute to Jeffrey A. Kant, MD, PhD." J Pathol Inform 2012;3:47.

1) "Pathology in the Genome Era", Rama R. Gullapalli and Michael J. Becich, ADVANCE For Administrators of Laboratory, September 1, 2012 – Volume 21, Number 9£.

XI. INVITED TALKS

17) "AI Ethics of Pathology and Generative AI: A Brave New World", Gullapalli, R.R., Invited Talk, United States and Canadian Academy of Pathology, Baltimore, MD, (2024)

16) "AI Ethics of Pathology in a World of Large Language Models and ChatGPT: Key Roles of Pathologists in Shaping Future Diagnostic Workflows", Gullapalli, R.R., Parwani, A.V., Invited Talk, Digital Pathology Visions, Orlando, FL, (2023)

15) “AI Ethics in Pathology”, Online virtual presentation, BrainXAI, www.brainxai.org, https://www.youtube.com/watch?v=18nTY16-Jyw, May 2023

14) “AI Ethics: Healthcare Lessons to Guide Pathology Practice”, Digital Pathology Association Virtual Symposium, May 2022

13) “Molecular Features of Gallbladder Cancer in New Mexico”, Invited talk, Division of Cancer Epidemiology and Genetics, National Cancer Institute, May 2022

12) “The Cutting Edge in Digital Pathology and Artificial Intelligence: The Future of Pathology Learning”, Digital Pathology Association Virtual Symposium – September 1st 2021

11) “Cadmium Exposure Leads to Dysregulated PI3K-Akt Signaling in Gallbladder Epithelium”, Gullapalli R.R., 10th Metal Toxicity and Carcinogenesis Conference, Albuquerque, NM (2018)

10) “Gallbladder Cancer Molecular Profiles of New Mexican Populations”, Gullapalli R.R., New Mexico INBRE retreat, Albuquerque, New Mexico (2018).

9) “16s Metagenomic Sequencing Analysis of Gallbladder Cancer Patients in New Mexico”, Rama Gullapalli, Katherine Sanchez, Jin Wu, Association of Molecular Pathology Meeting, Austin, Texas, November 5th to 7th, 2015 **–** *Invited Podium Presentation. 4 Podium presentations were chosen out of 80+ posters submitted.*

8) “Personalized Medicine: The future of Cancer Treatment”, 27th Cancer Survivorship Conference and Celebration, People Living through Cancer, JCC, Albuquerque, NM, June 28th 2014.

7) “Clinical Applications of Magnetic Nanoparticles”, Invited guest lecturer, Colloidal Nanocrystals for Biomedical Applications Course, ECE 581, March 31st, 2014.

6) “The role of Next Gen Sequencing in the Clinic”, MD PhD Student Annual Seminar, Invited talk, UNMHSC, Albuquerque, NM, December 2013.

5) “Clinical Next Generation Sequencing” Invited seminar talk, Department of Biology, New Mexico Tech Institute, Socorro, NM, August 2013.

4) "The Future of Pathology: Imaging, Genomics and Beyond”, New Mexico Biotechnology and Biomedical Association, NM Bio meeting, Albuquerque, NM, May 14th 2013.

3) “Next Generation Sequencing in the Clinic”, DAMSIG meeting, Spatio-temporal modeling center (STMC), UNM, May 2013.

2) “Next Generation Sequencing in the Clinic”, Dept. of Biochemistry Department Monthly Seminar, UNM, March 2013.

1) “The Role of Microstructural Polymorphisms in Class I HLA-B Peptide Binding: A Computational Molecular Dynamics Study”, ACLPS meeting, June 2011, St. Louis, Missouri.

XXII. CONFERENCE PRESENTATIONS

47. “Cadmium Induce Oxidative Stress and Mitochondrial Damage: Understanding Mechanisms of Long-Term Hepatic Dysfunction”, Rahul Kumar, Ashwin R Chinala, Rama Gullapalli, CVMD signature program annual day, UNM (Nov 2024)

46. “Insulin Signaling Dysfunction in a Chronic Cadmium Exposure Model: Understanding the Role of Heavy Metal Toxicity in NAFLD”. R. Kumar, A. Mishra, and **R.R. Gullapalli**, Annual meeting and ToxExpo, Society of Toxicology 2024.

45. “Hyperglycemia and Cadmium Exposures as a Driver of Oxidative DNA Damage and Reduced Anti-Oxidant reserves in an in-vitro Hepatocellular Model”.R. Kumar, A. Mishra, and **R.R. Gullapalli**, Annual meeting and Toxexpo, Society of Toxicology 2024.

44. "Hepatobiliary Cancers in New Mexico: Exploring the Role of Chronic, Low-Dose Exposure of Cadmium (CLEC) as a Model Metabolic Driver of Cancer Disparities". Kumar R., Mishra, A., **Gullapalli, R.R.,** NIEHS EHSCC Annual Meeting, Houston, TX, 2023.

43) “Understanding the Recent Evolution of Med-AI Research Activity in Pathology and Other Specialties Using a Text Mining Approach”, **Rama Gullapalli,** Raghav Awasthi, Shreya Mishra, Piyush Mathur, Digital Pathology Visions, Orlando, FL (2023) – **Won best poster award in faculty category**

42) “Structured Evaluation of Large Language Model (LLM) Outputs as a Tool for Pathology Education: An Emerging Novel AI Paradigm”, Martika Percy, Alanah Hosford, Shweta Agarwal, Jain Zhou, Devon Chabot-Richards, Nancy Joste, **Rama Gullapalli,** Digital Pathology Visions, Orlando, FL (2023)

41) "Synergistic effects of chronic low-dose exposures of cadmium (CLEC) and hyperglycemia on insulin resistance in an invitro hepatocellular model", Kumar, R.S., **Gullapalli, R.R.**, Society of Toxicology Meeting, Nashville, TN (2023)

40) "Assessing effects of simultaneous hyperglycemia and cadmium exposures in a zebrafish larval model using the GUTS TKTD modeling framework", **Gullapalli, R.R.,** Garcia, B., Mishra, A., Kumar, R.S., Desai, S., Salinas, I., Society of Toxicology Meeting, Nashville, TN (2023)

39) “Biases and AI-enabled Digital Pathology Workflows: Surveying the Current Landscape” Poster Presentation, **Gullapalli, R.R**., Parwani, A.V. Digital Pathology Visions (Oct 2022), Las Vegas, NV.

38) “Trustworthy AI Frameworks in Digital Pathology: The Path Forward”, Poster Presentation, **Gullapalli, R.R.**, Laharwani, H., Parwani, A.V. Digital Pathology Visions (Oct 2022), Las Vegas, NV.

37) “Developing a Centrifugal Hydrogel Method of Liver Spheroid Formation for Hepatotoxicity Assays”, Belmares-Ortega D., Kumar R., **Gullapalli, R.R**, Poster Presentation, Society of Toxicology Annual Meeting, San Diego, California (March 2022)

36) “Hydrogel Microdroplet Production using Centrifugal Forces to Assay Hepatotoxicity in 3D Cellular Spheroid Models” Symposium Presentation, Belmares-Ortega D., Kumar R., **Gullapalli, R.R.**, 4th Annual Maximizing Access to Research Careers (MARC) Research Symposium, University of New Mexico (Aug 2021)

35) “Hydrogel Microdroplet Production using Centrifugal Forces to Assay Hepatotoxicity in 3D Cellular Spheroid Models”, Belmares-Ortega D., **Gullapalli R.R.**, SACNAS Conference, Sept 2021

34) “Synergistic Cytotoxic Effects of Heavy Metals and Hyperglycemia in an invitro Liver cell model” UPN Symposium, University of New Mexico (2021)

33) “Cadmium and Copper Exposure Cause Decreased Hepatocellular Cancer Cell Viability in 2D and 3D invitro model” Nickel A., Mukherjee T., Belmares-Ortega J., **Gullapalli R.R.,** SACNAS Conference, Sept 2021

32) “Building a Low-Cost Whole Slide Imaging (WSI) System in a Basic Research Lab: Lessons and Successes”, **Gullapalli R.R,** Aparna R.G, Mubeen, A., Parwani, A.V., Digital Pathology Association, Online Virtual Conference (Oct, 2020)

31) “Cadmium Metal Exposures as a Driver of Gallbladder Epithelial Signaling Dysfunction and Chronic Inflammation in Gallbladder Cancers”, **Gullapalli, R. R.,** T. Caldwell, M. Rivera, and P. Sharma, Society of Toxicology Annual Meeting, Anaheim, CA (2020)

30) “A deep learning convolutional neural network can differentiate between helicobacter pylori gastritis and autoimmune gastritis with results comparable to expert pathologists”, Digestive Diseases Week, Chicago (2020)

29) “Gallbladder Cancer Disparities in New Mexico: Examining the role of Environmental Heavy Metal Exposures as a driver of Gallbladder Epithelial Signaling Dysfunction” AACR Special Conference of Environmental Carcinogenesis, **Gullapalli, R.R.,** Trevar Caldwell, Megan Rivera, Priyanka Sharma, Charlotte, North Carolina (2019)

28) “Clinical Laboratory Data Analytics for Identification and Progression of Non-alcoholic Fatty Liver Disease in New Mexico”, Borunda, T., Swanson, K., Feddersen, P., Deming, A., Mwithi, M., Koenig, M., **Gullapalli, R. R.,** AACC meeting, August 2019 (Selected for AACC New Student Abstract Recognition Award)

27) “Deep Learning Can Recognize Common Patterns of Gastritis”, Martin D.M., Hanson J.A., **Gullapalli, R.R.,** Schultz, F., Sethi, A., Clark, D. P., USCAP, Mar 16-21, 2019, Baltimore

26) “Cadmium Exposure Leads to Dysregulated PI3K-Akt Signaling in Gallbladder Epithelium”, Sharma, P., Caldwell, T.M., Rivera, M.N., **Gullapalli, R.R.,** 10th Metal Toxicity and Carcinogenesis Conference, Albuquerque, NM (2018)

25) “Cadmium Exposure Effects on AKT/MAPK Signaling Pathway Activation in Gallbladder Cancer” Sharma, P., Caldwell, T.M., Rivera, M.N., **Gullapalli, R.R.,** NM-INBRE symposium, Albuquerque, NM (2018)

24) “Gallbladder Cancer Molecular Profiles of New Mexican Populations”, **Gullapalli R.R.**, Elisa LaBauve, Tracy Bogle, David .R. Martin, NISBRE National Conference, Washington DC (2018).

23) “Actionable genomic biomarkers in a low socioeconomic status (SES) population with gastrointestinal (GI) cancers”, Vi Kien Chiu, Diaa Osman, Jessica Belmonte, Joshua K Routh, Heloisa P Soares, David R. Martin, Joshua A Hanson, **Gullapalli R.R.,** Anita Kinney, Mohammad Vasef, Anne-France Le Rolle; 2018 ASCO Annual Meeting (June 1-5, 2018)

22) “Effect of Tumor Progression on Colon Cancer Stem Cell Plasticity”, Vi Chiu, **Gullapalli R.R,** Diaa Osman, Jinru Shia, Philip Paty, Anne-France Le Rolle, ASCO GI Meeting (2018), J Clin Oncol 36, 2018 (suppl 4S; abstr 688)

21) “Analysis of Cell Pellets Using the Cytoscan Dx Chromosomal Microarray”, Cory Broehm, Gwyneth Olson, and **Rama Gullapalli,** Annual Association of Molecular Pathology Meeting, Nov 15-17, 2017, Salt Lake City, UT, USA.

20) “Molecular Profiling of Gallbladder Cancer Tumors of New Mexico Populations”, Annual Association of Molecular Pathology Meeting, Nov 15-17, 2017, Salt Lake City, UT, USA.

19) “16s Microbiome Patterns of Gallbladder Cancer Patients in New Mexico”, 10th AACR conference of the science of cancer health disparities. American Association of Cancer Research, Sept 25-28, 2017, Atlanta, GA, USA.

18) “16s Metagenomic Sequencing Method Using Archived FFPE Tissue: An Untapped Resource to Study the Cancer Microbiome.” Katherine Sanchez, Jin Wu, Joseph Pomo, **Gullapalli R.R,** Poster presentation, Association of Molecular Pathology Meeting, Austin, Texas, Nov 5th to7th.

17) Pomo, J.M., Taylor, R.M., Wu, J., **Gullapalli R.R.,** “TP53 isoform expression in hepatocellular carcinomas” UNM Undergraduate Pipeline Network (UPN) Research Day. Albuquerque, NM. July 30th, 2014**.**

16) Taylor R.M., and **Gullapalli R.R.,**. Influence of Carbon Chain Length on the Synthesis of Fatty Amine-Coated Iron-Platinum Nanoparticles. UNM CNTC Nanoparticle Synthesis and Applications to Cancer Imaging and Treatment Symposium. Albuquerque, NM. August 16, 2013

15) Lauren A. Marek, Taylor R.M., and **Gullapalli R.R.,**. Synthesis of UV-polymerized Iron Platinum nanoparticles as probes for circulating tumor cells. UNM CNTC Nanoparticle Synthesis and Applications to Cancer Imaging and Treatment Symposium. Albuquerque, NM. August 16, 2013

14) Veleta M., Taylor R.M.,, and **Gullapalli R.R.,**. Silica-Encapsulated Superparamagnetic Iron Platinum Nanoparticles: Synthesis, Characterization, and Fluorescence Incorporation. UNM Undergraduate Pipeline Network (UPN) Research Day. Albuquerque, NM. August 1, 2013.

13) Marek L.A., Taylor R.M., and **Gullapalli R.R.,**. Synthesis of UV-polymerized Iron Platinum nanoparticles as probes for circulating tumor cells. UNM Undergraduate Pipeline Network (UPN) Research Day. Albuquerque, NM. August 1, 2013.

12) Taylor R.M., and **Gullapalli R.R.,** Influence of Carbon Chain Length on the Synthesis of Fatty Amine-Coated Iron-Platinum Nanoparticles. Annual IRACDA Conference. Atlanta, GA. June 2013

11) **Gullapalli R.R.,** Muddana, H.S. "The Role of Microstructural Polymorphisms in Class I HLA-B Peptide Binding: A Computational Molecular Dynamics Study", Podium presentation, Academy of Clinical Laboratorians and Physicians annual meeting. St. Louis, MO, June 9 – 11.

10) Muddana, H.S., **Gullapalli R.R.,** Tabouillot, T., Butler, P.J., "Physiological Membrane Tension Causes an Increase in Lipid Diffusion: A Single Molecule Fluorescence Study", Biophysical Society Annual Meeting, Boston MA, 2009.

9) Muddana, H.S., **Gullapalli R.R.,** Butler, P.J., "Tension causes direct changes in lipid dynamics that can play a role in mechanotransduction", Mechanotransduction in Physiology and Disease, Taos NM, 2009.

8) **Gullapalli R.R.,** Carter, A.B., Kant, J.A., "Automated Data Analysis of Real-Time PCR Data Using a Modular Programming Approach (Poster)", AMP Annual Meeting, Grapevine, TX, 2008.

7) **Gullapalli R.R.,** Demirel, M., Butler, P.J., "Molecular Dynamics Simulations of DialkylCarbocyanine Dyes in a DPPC Bilayer: Atomistic Insights into Single Molecule Fluorescence", ASME BED Summer Meeting, 2007.

6) **Gullapalli R.R.,** Demirel, M., Butler, P.J., "Molecular dynamics simulation of DiI in a lipid bilayer: Development of a membrane hydration sensor (Poster)", Biomedical Engineering Society, Annual fall meeting, University of Chicago IL, 2006.

5) **Gullapalli R.R.,** Tabouillot, T., Butler, P.J., "Tracking molecules in stressed cells: multimodal microscopy and single molecule spectroscopy for mechanotransduction (Poster)", 5th World congress of biomechanics, 2006.

4) **Gullapalli R.R**., Demirel, M., Butler, P.J., "Molecular dynamics simulations of Dialkylcarbocyanine dyes in a lipid bilayer (Poster)", Biomedical Engineering Society, Annual Fall Meeting, Johns Hopkins University, MD, 2005.

3) **Gullapalli R.R.,** Tabouillot, T., Butler, P.J., "Fluorescence-based molecular dynamics of stressed model membranes (Poster)", Biomedical Engineering Society, Annual Fall Meeting, Johns Hopkins University, MD, 2005.

2) **Gullapalli R.R.,** Tabouillot, T., Butler, P.J., "Time-Resolved Fluorescence Analysis of Stressed Membranes (Poster)", Biomedical Engineering Society, Annual fall meeting, Philadelphia, PA, 2004.

1) Bae, C., Dangaria, J**., Gullapalli R.R.,** Tabouillot, T., "Techniques to Study Endothelial Cell Mechanics & Molecular Dynamics (Poster)", Penn State University Graduate student exhibition, 2003.

XXIII. CURRENT RESEARCH ACTIVITIES (60% work-time allocation)

Associate Professor (2024 – current)

Department of Pathology

Department of Chemical and Biological Engineering, University of New Mexico.

My lab is currently focused on two major research themes in hepatobiliary diseases - The role of heavy metals, environmental exposures and dietary factors as drivers of hepatobiliary diseases such as a) metabolic dysfunction associated liver disease (MAFLD) and b) hepatobiliary cancers

a) Metabolic Dysfunction Associated Fatty Liver Disease (MAFLD): New Mexico is the state with the highest burden of chronic liver disease burden in the United States (26/100,000 – 2019). While alcohol is a major driver, the role of environmental exposures in chronic liver disease remains entirely unexplored. Additionally, the burden of liver cancer and disease is increasing the United States and here in New Mexico. There is an increasing appreciation of the role pre-neoplastic factors such as metabolic dysfunction associated fatty liver disease (MAFLD) and metabolic dysfunction associated steatohepatitis (MASH) as drivers of this deadly cancer. We are focused on understanding the role of environmental exposures in driving the elevated incidence of MAFLD and MASH here in NM. We use methods of bioengineering, epidemiology, molecular biology, toxicology and computational biology to study MAFLD in New Mexico.

b) Hepatobiliary carcinogenesis: The state of New Mexico in USA is a global hotspot for gallbladder cancer (GBC) incidence and have high rates of liver cancers as well. Native American populations of New Mexico have a 5-8 fold higher incidence of GBC compared to Caucasian populations for currently unknown reasons. The clinical outcomes in hepatobiliary cancer are very poor, with only ~8-10% of patients alive at the end of 5 years (Stage III and above). The Gullapalli lab aims to understanding the role of environmental pollutants (heavy metal exposures specifically) as drivers of elevated incidence of hepatobiliary cancers among the Native American and Hispanic minority populations of NM. We aim to understand the role of environmental pollutants (e.g., cadmium, polycyclic aromatic hydrocarbons and nano-/microplastic pollution) in hepatobiliary carcinogenesis.

c) Translational Pathology: We have extensive experience in the implementation of NGS methods for our research. We have implemented bioinformatics pipelines on a linux platform to analyze DNA-seq, RNA-seq and 16s Metagenomics data in the lab. Additionally, we are interested in the emerging paradigms of digital pathology techniques, ethics in pathology practice, AI and deep learning. Multiple small projects are currently underway in the lab with these different domains of translational pathology.

XIV. CURRENT CLINICAL ACTIVITIES (30% work-time allocation)

Clinical Attending, Division of Molecular Pathology, TriCore Reference Laboratories (2013-current)

Medical Director, Center for Cellular and Molecular Diagnostics, University of New Mexico (2022-current)

a) Clinical sign out responsibilities: I am currently an attending physician in the molecular pathology division of TriCore Reference Laboratories (TRL) and UNM. As an attending physician, I am responsible for the review and sign out of a wide variety of clinical molecular pathology cases. I have extensive experience

in the interpretation and sign out of constitutional, cancer related sequencing assays (NGS and Sanger), various RNA and DNA based clinical molecular assays, pharmacogenetics assays, and other forms of clinical molecular assays. I was part of a team that oversaw the development and implementation of a clinical NGS assay at TRL and UNM. I am also experienced in the sign out of FISH based clinical assays, co-signed constitutional and solid tumor cancer cytogenetic assays and chromosomal microarray cases here at TRL. I participate in regular clinical review meetings of the division to provide inputs as necessary for molecular assay development. I am board certified by the American Board of Pathology in Clinical Pathology and Molecular Genetic Pathology.

b) Clinical Bioinformatics: As the Medical Director of Biomedical Informatics, I was involved in the development, implementation and oversight of the bioinformatics component of clinical NGS assay at TRL. I have extensive expertise (20+ years) in issues related to bioinformatics. I also consult from time to time on issues related to translational research bioinformatics as required for NGS and microarray assays. I have experience in the implementation, systems administration and oversight of bioinformatics pipelines on a Linux platform in a clinical and research setting. I have developed informatics pipelines related to DNA-seq, Microbiome analysis, RNA-seq analysis and metabolomic analysis using high-throughput analysis methods. The role of AI in the practice of pathology and digital pathology is also a current interest of mine. I am interested in the areas of 1) AI ethics 2) biostatistical assessment of AI outcomes 3) digital pathology methods and 4) signal detection theory in AI. I am board certified by American Board of Pathology in Clinical Informatics. I have evaluated multiple vendors for clinical NGS solutions.

XV. CURRENT EDUCATIONAL ACTIVITIES (10% work-time allocation)

I. Associate Program Director, Molecular Genetic Pathology Fellowship (Jan 2024 – current)

University of New Mexico Health Sciences Center

Description – I currently serve as the associate program director for the molecular genetic pathology program fellowship. This is a one-year program at University of New Mexico focused on teaching clinical fellows' various aspects of molecular pathology. The program prepares fellows for an independent career as a clinical molecular pathologist. I also serve as the chair of the clinical competency committee (CCC) for the program.

II. Course Director, BIOM555, Responsible Conduct of Research (RCR; Fall 2021 - Current)

University of New Mexico

Course Description – I currently serve as the course director of BIOM555, a problem-based learning course focused on the responsible conduct of research (RCR). The course is offered twice in a year (Fall and Spring). The course is focused on various ethical aspects of conducting research in an academic setting. The course is an NIH mandated course for graduate students, post-doctoral fellows and junior faculty members aspiring to careers in research. I served as the co-director for Fall 2021, Spring 2022 and Fall 2022 and as the primary director starting in Spring 2023, Fall 2023, and Spring 2024.

III. Steering Committee Member, MD-PhD Program

University of New Mexico Health Sciences Center

Description – I currently serve as a steering member of the MD-PhD program at UNM. As a member of the committee, we are tasked with directing the overall agenda of the MD-PhD Program which is an NIH

funded T32 program recruiting up to 5 candidates into the program annually. The committee meets on a monthly basis to oversee the program activities and the progress of the students within the program.

XVI. PATENTS

2) Title: "*A Multiparametric Device to Measure Dynamic Respiratory States in Living Cells and Organelles Using Combined Fluorescence and Electrochemical Sensing Approaches"* (STC Ref No – 2023-075) – Gullapalli R.R., Campen M. (provisional patent claim submission currently underway)

1) *Title: "A method to analyze the composition of the human tissue microbiome using retrospective, archived, formalin-fixed, paraffin embedded tissues and the technique of next generation sequencing"* (STC Ref. 2016-015) developed by Ramachandra Rao Gullapalli and Jin Wu.

Provisional Application No. 62/251,780 titled *"Methods for Analyzing Microbiome of Paraffin Embedded Formalin Fixed Cancer Samples*" filed on Nov 6, 2015. Provisional Patent Expired. Not followed-up.

XVII. UNIVERSITY AND DEPARTMENTAL COMMITTEES – UNM (2013- current)

7) UNM Health Science Research IT Advisory Committee (2024 – current)

6) UNM MD-PhD Program, Steering Committee (2024 – current)

5) UNM Conflict of Interest Committee (2022-current)

4) UNM Comprehensive Cancer Center GI Translational Scientist Recruitment Committee – 2016

3) UNM Comprehensive Cancer Center GI Oncology Recruitment committee – 2016

2) Clinical Informatics Research Fellow selection committee, UNM, 2015-2016

1) Department of Pathology Seminar Committee – 2014

XVIII. PROFESSIONAL ORGANIZATION COMMITTEES

4) AI Ethics working sub-group, College of American Pathologists (CAP) – (2022 - current)

3) DPA Education Sub-committee, Digital Pathology Association (DPA), Carmel, IN, Term – 2020 - Current

2) Digital and Computational Pathology Committee (DCPC), College of American Pathology – (2022-2023)

1) Hepatobiliary Special Interest Group – Communications Subcommittee, American Association for the Study of Liver Diseases (AASLD) – Term – 1/1/2018 to 12/31/2020

XIX. INDUSTRY CONSULTING

1) Clinical Bioinformatics Solutions – Roche Sequencing Informatics, NGS software focus group (2017)

XX. TEACHING/MENTORING/THESIS COMMITTEE ACTIVITIES

a. Post-doctoral fellow mentorship

- None currently

b. Graduate research mentorship

- Rahul Surout – Biomedical Engineering Graduate Program, PhD student. (2021- current)

c. Undergraduate research mentorship

- Ashwin Chinala, UNM Department of Chemical Engineering, Sophomore (2023 – current)

d. Medical student mentorship

- None currently

e) Clinical Residents and Fellow mentorship

- None currently

f) Laboratory Sciences Program

- None currently

g) Research Assistants

- None currently

h) High school students

- Dhruv Grandhe, Albuquerque Academy, Junior, (2023 – current)

i) Lab Alumni

- Martika Percy, PGY3, Department of Pathology (2023 – 2024)
- Alanah Hosford, PGY2, Department of Pathology (2023 – 2024)
- Anshika Mishra – Biomedical Engineering Graduate Program, (2022- 2023)
- Dr. Elizabeth Garchar, Clinical Fellow, Department of Obstetrics Gynecology (2022-2023)
- Daisy Belmares-Ortega – UNM MARC Program Student (2021-2023)
- Aditi Yellu – University of Georgia BA/MD Program (2021-2022)
- Audra J. Nickel – UPN summer program student (2021)
- Dr. Tanmoy Mukherjee, PhD, Post-doctoral fellow, (2021)
- Jessica Belmares-Ortega, UNM PREP program scholar (2020-2021)
- Michael Franklin, PGY4, Department of Pathology (2019)
- Priyanka Sharma, B.Tech, M.Tech, Punjab University, India. (2017-2020)
- Trevar Silva Caldwell, Junior, BS Program, (2018 – 2020)
- Megan Rivera, BA/MD Program, (2018-2020)
- Jacklyn Nemunaitis – Clinical Fellow, UNM Department of Hematology Oncology, (2018)
- Tenzin Tsewang, MS-4, (2014 – 2018)
- Stephanie Bennett, MS, (Laboratory Sciences Program), Committee Chair (2018)
- Joseph M. Pomo, UNM, Major in Chemistry, (2013 – 2017)

- Elisa LaBauve, UNM, Research Assistant, (2016)
- Nehemiah Wilson, UNM, Honors thesis In Biochemistry, (2015- 2016)
- Katherine Sanchez, Medical Student, (2013 – 2015)
- Dr. Robert M. Taylor, ASERT post-doctoral fellow, (2012 – 2015)
- Lauren A. Marek, UNM, Major in Biochemistry, (2013)
- Veleta Moises, UPN network summer student, (2013)
- Anusha Tejomurtula, Visiting research student, (2012 – 2013)

j) PhD Thesis Committees

- Rahul Surout, UNM PhD Biomedical Engineering, Role – Thesis supervisor
- Randy Ko, MD, PhD, UNM BSGP MD PhD Program – Mentor – Dr. Eric Prossnitz, UNM
- Russell Hunter, PhD, BSGP Program – Mentor – Dr. Mathew Campen, UNM (2023)
- Ryoto Shimada, MD PhD program – Mentor – Dr Jeremy Edwards, UNM (2022)
- Rohan Choraghe, PhD, BME program – Mentor – Dr Aaron Neumann, UNM (2020)
- Ishtiaque Rashid, PhD, BSGP program – Mentor – Dr. Alan Tomkinson, UNM (2020)

XXI. PAST RESEARCH EXPERIENCE

3) Department of Pathology, University of New Mexico, Albuquerque, NM, USA, *Medical Director*, Translational Pathology Research Laboratory (October 2012 – October 2015)

- Oversaw multiple molecular and NGS translational research projects for departmental faculty.
- Involved in the design and oversight of molecular assays of RT-PCR and FISH.

2) The Pennsylvania State University, University Park, Pennsylvania, USA; Department of Bioengineering, *Graduate Research Assistant,* (August 2001 - June 2007).

Advisor: Dr. Peter J Butler, PhD

- Expertise in ultrasensitive single molecule fluorescence microscopy imaging techniques (FCS, FLIM, FRET).
- Implemented and validated time-correlated single molecule spectroscopy (TCSPC) instrumentation.
- Developed a statistical mechanical theory to predict diffusion of lipid molecules under lateral stress.

1) The Pennsylvania State University, University Park, Pennsylvania, USA; Department of Engineering Science and Mechanics, *Graduate Research Assistant,* (December 2004 - June 2007).

Advisor: Dr. Melik C. Demirel, PhD

- Computational MD to simulate diffusion of fluorescence molecules in a model lipid bilayer.
- I used high performance computing modeling techniques (GROMACS) to model lipid molecules.
- Wrote custom scripts and programs in Python to analyze data from the molecular dynamics simulations.

XXII. PAST CLINICAL WORK EXPERIENCE

2) Yashoda Super Specialty Medical Hospital, Hyderabad, Andhra Pradesh, India; Intensive Coronary Care Unit, Department of Cardiology, *Resident Medical Officer* (June 1999 - June 2001)

- Worked as a medical officer responsible for the admission and care of acute cardiac patients.
- Experienced in the emergency management of cardiac patients in an ICU setting.

1) Central Railway Hospital, Secunderabad, Andhra Pradesh, India;

Rotating clinical intern, (January 1997 - February 1998)

- Worked as a rotating resident intern responsible for the admissions, workup and clinical management of patients in the internal medicine, surgery, and obstetrics and gynecology departments.

XXIII. PAST TEACHING EXPERIENCE

The Pennsylvania State University, University Park, Pennsylvania, USA;
Department of Biobehavioral Health. *Teaching Assistant* August 2002 - May 2003
BBH 101 - Introduction to Biobehavioral Health.
Instructor: Dr. Jordan Finkelstein.

XXIV. EDITORIAL EXPERIENCE

1) Associate Editor, BMC Cancer, (2016-2020)
Publisher – Springer Nature (Impact Factor – 3.362), Open Access.
Translational Oncology, Systems Biology, Post-genomic Analysis and Emerging Technologies sub-group

2) Editorial Board Member, BMC Biomedical Engineering (2018-2021)
Publisher – Springer Nature, Open Access.
Computational and Systems Biology sub-group

XXV. AD-HOC JOURNAL REVIEWER:

- Cancer Cell International
- Scientific Reports (Nature Journal)
- Journal of Pathology Informatics
- Journal of Molecular Diagnostics
- PlosONE
- Toxicological reviews
- Toxicology Letters

- Critical reviews in Toxicology

XXVI. COMPUTATIONAL SKILLS

Programming Languages:	**Python, R, MATLAB, Bash Shell Programming**
Applications:	GROMACS, VMD, Origin, MS-Office
NGS Software	**DNA-seq Analysis**- Bowtie, SAMtools, BWA, Freebayes, VarScan, Annovar, GATK, Picard, IGV, NextGene, VariantCaller **16s Microbiome Analysis** – Mothur, QIIME, PICRUSt.
Operating Systems:	Linux (Expert), Windows (Expert)

XXVII. SPOKEN LANGUAGES

Fluent in English, Hindi and Telugu. Limited linguistic skills in French.

XXVIII. PROFESSIONAL SOCIETY MEMBERSHIPS

Society of Toxicology	- member (2018- current)
Association of Molecular Pathology	- member (2009-current)
Digital Pathology Association	- member (2019-current)
Association of Pathology Informatics	- member (2008-2012; 2020-currrent)
American Association of Liver Diseases	- member (2018-2023)
College of American Pathology	- member (2021-current)
Society of Molecular Biology and Evolution	- past member