Raag Agrawal

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Education

M.D.-Ph.D. UCLA–Caltech Medical Scientist Training Program 2020–2027 (est.)
Dissertation title: Identifying molecular subtypes of high-risk prostate cancer
Thesis advisor: Dr. Paul Boutros

B.A. Biology, *Cum Laude*, Columbia College, Columbia University 2020
Part II Genetics, University of Cambridge, 2018–2019
GPA: 3.88, I.I. Rabi Scholar, Honors in Biology, Dean's List

Research Interests

Translational Oncology, Cancer Genomics, Health Disparities

Honors and Awards

UCLA Jonsson Comprehensive Cancer Center Fellowship Award 2024–2025
Annual fellowship for most promising cancer research.

Leon D. & Leah E. Rivenburg Fellowship 2022–2023
Annual fellowship offered to graduate students doing exceptional research on cancer.

Columbia Innovation and Enhancement Prize 2020
Columbia University's highest award for undergraduate innovation.

George William Curtis Speech Prize 2020
Recognition for best oration by an undergraduate, given by Columbia University.

Columbia College Oxbridge Scholars Fellowship 2018
Competitive fellowship for Columbia College students to study at Oxford or Cambridge.

I. I. Rabi Scholar 2016–2020
Fellowship given to the top 0.5% undergraduates at Columbia College.

Columbia Summer Undergraduate Research Fellowship 2017, 2018, 2019
Competitive fellowship for Columbia College students to conduct research over the summer.

Leadership and Service

UCLA–Caltech MSTP Social Committee, Chair 2024–2025

North Westwood Council Representative (Elected Representative) 2023–2025

UCLA–Caltech MSTP Council, President 2023–2025

American Physician Scientists Association, Mentor 2020–Present

Medmentors, Mentor 2020–2025

UCLA–Caltech MSTP Admissions Committee, Chair	2020–2024
American Medical Association MSS Region 1 Policy Chair	2021–2022
California Medical Association Delegate to the American Medical Association	2020–2022
UCLA Delegate to the American Medical Association	2020–2022

Experience

Research

Graduate Student Researcher, **University of California, Los Angeles**, CA June 2022–December 2025
Mentor: Paul Boutros, Ph.D., MBA. Department of Human Genetics.

Quantified missing subtypes in prostate cancer model systems using whole-genome sequencing.

Discovered biomarkers for neoadjuvant androgen deprivation therapy in prostate cancer.

Research Assistant, **Columbia University**, NY October 2016–May 2020
Mentor: Harmen Bussemaker, Ph.D. Department of Biology.

Developed a computational model to quantify transcription factor activity by integrating ChIP-seq and RNA-seq data using R and Python.

Superimposed single-cell data with cell morphology to study tissue heterogeneity.

Research Assistant, **Wellcome Sanger Institute**, Cambridgeshire, UK January–August 2019
Mentor: Sarah Teichmann, D.Phil., FMedSci. Head of Cellular Genetics.

Used single-cell RNA sequencing as part of the flagship Human Cell Atlas international collaboration.

Led project discovering cell-type differences between Crohn's disease and ulcerative colitis.

Research Assistant, **Columbia University**, NY November 2016–May 2018
Mentor: Charles Hailey, Ph.D. Department of Physics.

Member of the GAPS team, an international project identifying dark matter via airborne detectors in Antarctica.

Built and co-designed silicon detectors using nanofabrication techniques.

Research Assistant, **Memorial Sloan Kettering Cancer Center**, NY June–August 2015
Mentor: Ahmet Dogan, M.D., Ph.D. Department of Hematopathology.

Imaged and prepared computational data to develop digital tools for automated diagnosis.

Research Assistant, **SUNY Downstate Medical Center**, NY Summers 2013–2019
Mentor: Haseeb Siddiqi, Ph.D. Department of Medicine.

Studied a targeted treatment for pancreatic cancer in combination with irradiation.

Examined the pathogenesis of schistosomiasis infection in mice, presented at CAP'13 and published in *Acta Parasitologica*.

Clinical and Entrepreneurial

Business Associate, **COTA**, NY June–September 2018

Built analytics tools to digitize electronic medical records for the clinical data team using Excel and R in this healthcare startup.

Clinical Volunteer, **Weill Cornell Medical Center**, NY June–September 2018

Supported patient care as a liaison between patients and nursing staff, advocating for patient needs.

Community Activist and Intern, **Brooklyn Health Disparities Center**, NY June–August 2016

Conducted community health outreach in East Flatbush, Brooklyn, rebuilding trust with healthcare providers.

Produced public health research on New York City health disparities presented at the 2017 National Medical Association Annual Meeting.

Peer-Reviewed Publications

Journal Articles

Agrawal, R.*, Albers, P.*, Lima, J.F.*, Huang, G., Mookerji, N., Pfanner, T., Hui, A., Mittal, R., Broomfield, S., Dean, L., St. Martin, B., Jacobsen, N.-E., Evans, H., Patel, Y., Yamaguchi, T.N., Livingstone, J.M., Haas, R., Wu, S., Pashminehazar, K., Hugh-White, R., Gonzalez, A., Gamallat, Y., Seyedi, S., Gao, Y., Hung, R., Abele, J., Dromparis, P., Michelakis, E., Sutendra, G., Wuest, F., Tu, W., Adam, B.A., Fung, C., Tamm, A., Bismar, T.A., Boutros, P.C., and Kinnaird, A. (2026). Molecular Hallmarks of PSMA PET Visibility in Prostate Cancer: A Secondary Analysis of The Phase 2 Next Generation Trial. *In submission.*

Bernard, M.J., Gallardo, A., Ruiz, A., Diaz, J.A., Nunley, N.M., Dove, R.N., Zhang, S., Lee, E., Heering, K.Y., Varuzhanyan, G., Bopardikar, S., Hashimoto, T., **Agrawal, R.**, Smith, C.M., Wilde, B.R., Matulionis, N., Richards, H.M., Lee, S.C.S., Sharifi, M.N., Lang, J.M., Zhao, S.G., Witte, O.N., Haffner, M.C., Shackelford, D.B., Boutros, P.C., Christofk, H.R., and Goldstein, A.S. (2026). OGDHL promotes prostate cancer progression and regulates neuroendocrine marker expression and nucleotide abundance. *Mol Cancer Res.* https://doi.org/10.1158/1541-7786.MCR-25-0913.

Patel, Y., Zhu, C., Yamaguchi, T.N., Wang, N.K., Wiltsie, N., Zeltser, N., Gonzalez, A.E., Winata, H.K., Pan, Y., Mootor, M.F.E., Sanders, T., Fitz-Gibbon, S.T., Kandoth, C., Livingstone, J., Liu, L.Y., Carlin, B., Holmes, A., Oh, J., Sahrmann, J., Tao, S., Eng, S., Hugh-White, R., Pashminehazar, K., Park, A., Beshlikyan, A., Jordan, M., Wu, S., Tian, M., Arbet, J., Neilsen, B., Haas, R., Bugh, Y.Z., Kim, G., Salmingo, J., Zhang, W., Anand, A., Hwang, E., Neiman-Golden, A., Steinberg, P., Zhao, W., Anand, P., **Agrawal, R.**, Tsai, B.L., and Boutros, P.C. (2026). metapipeline-DNA: A Comprehensive Germline & Somatic Genomics Nextflow Pipeline. *Cell Reports Methods.* https://doi.org/10.1101/2024.09.04.611267.

Agrawal, R., Weiner, A.B., Livingstone, J., Pooli, A., Huang, R.R., Ye, H., Sisk, A., Elashoff, D.A., Boutros, P.C., Rettig, M.B., and Reiter, R.E. (2025). Neoadjuvant Antiandrogen Therapy With or Without MEK or SRC Inhibition for Unfavorable-risk Prostate Cancer: A Phase 2 Randomized Clinical Trial. *Eur Urol Oncol.* S2588-9311(25)00287-1. PMID: 41207813. https://doi.org/10.1016/j.euo.2025.10.013.

Arbet, J., Yamaguchi, T.N., Shiah, Y.-J., Hugh-White, R., Wiggins, A., Oh, J., Gebo, T., Foucal, A., Lesurf, R., Jung, C.-H., Dang, R.M.A., **Agrawal, R.**, Livingstone, J., Salcedo, A., Yao, C.Q., Espiritu, S.M.G., Houlahan, K.E., Yousif, F., Heisler, L.E., et al. (2025). The Landscape of Prostate Tumour Methylation. *bioRxiv.* https://doi.org/10.1101/2025.02.07.637178.

Agrawal, R., Al-Hiyari, S., Hugh-White, R., Hromas, R., Patel, Y., Williamson, E. A., Mootor, M. F. E., Gonzalez, A. E., Fu, J., Haas, R., Jordan, M., Wickes, B. L., Mohammed, G., Tian, M., Jobin, C., Yamaguchi, T. N., Herzon, S. B., Boutros, P. C., and Liss, M. A. (2025). Colibactin Exerts Androgen-Dependent and -Independent Effects on Prostate Cancer. *European Urology Oncology.*

Haas, R., Patel, Y., Liu, L.Y., Huang, R.R., Weiner, A., Yamaguchi, T.N., **Agrawal, R.**, Boutros, P.C., and Reiter, R.E. (2024). Divergent Evolution in Bilateral Prostate Cancer: a Case Study. *medRxiv.* https://doi.org/10.1101/2024.08.22.24312320.

Wang, N.K., Wiltsie, N., Winata, H.K., Fitz-Gibbon, S., Gonzalez, A.E., Zeltser, N., **Agrawal, R.**, Oh, J., Arbet, J., Patel, Y., et al. (2024). StableLift: Optimized Germline and Somatic Variant Detection Across Genome Builds. Preprint at bioRxiv, https://doi.org/10.1101/2024.10.31.621401.

Weiner, A.B., **Agrawal, R.**, Wang, N.K., Sonni, I., Li, E.V., Arbet, J., Zhang, J.J.H., Proudfoot, J.A., Hong, B.H., Davicioni, E., et al. (2024). Molecular Hallmarks of Prostate-specific Membrane Antigen in Treatment-naïve Prostate Cancer. *Eur Urol* S0302-2838(24)02597-1. https://doi.org/10.1016/j.eururo.2024.09.005.

Weiner, A.B., **Agrawal, R.**, Valle, L.F., Sonni, I., Kishan, A.U., Rettig, M.B., Raman, S.S., Calais, J., Boutros, P.C., and Reiter, R.E. (2024). Impact of PSMA PET on Prostate Cancer Management. *Curr Treat Options Oncol.* https://doi.org/10.1007/s11864-024-01181-9.

Crowell, P.D., Giafaglione, J.M., Jones, A.E., Nunley, N.M., Hashimoto, T., Delcourt, A.M.L., Petcherski, A., **Agrawal, R.**, Bernard, M.J., Diaz, J.A., et al. (2023). MYC is a regulator of androgen receptor inhibition-induced metabolic requirements in prostate cancer. *Cell Reports* 42. https://doi.org/10.1016/j.celrep.2023.113221.

Wang, D., **Agrawal, R.**, Zou, S., Haseeb, M.A., and Gupta, R. (2022). Anatomic location of colorectal cancer presents a new paradigm for its prognosis in African American patients. *PLoS ONE* 17, 1-14. https://doi.org/10.1371/journal.pone.0271629.

Gupta, R., **Agrawal, R.**, Bukhari, Z., Jabbar, A., Wang, D., Diks, J., Alshal, M., Emechebe, D.Y., Brunicardi, F.C., Lazar, J.M., et al. (2021). Higher comorbidities and early death in hospitalized African-American patients with Covid-19. *BMC Infectious Diseases* 21, 78. https://doi.org/10.1186/s12879-021-05782-9.

Mendoza, R.P., Haidary, T., Gabutan, E., Zhou, Y.Y., Bukhari, Z., Connelly, C., Lee, W.-C., Lee, Y.-C., Wadgaonkar, R., **Agrawal, R.**, et al. (2021). Mixed and nonvaccine high risk HPV types are associated with higher mortality in Black women with cervical cancer. *Sci Rep* 11, 14064. https://doi.org/10.1038/s41598-021-93485-1.

Agrawal, R., and Prabakaran, S. (2020). Big data in digital healthcare: lessons learnt and recommendations for general practice. *Heredity* 124, 525-534. https://doi.org/10.1038/s41437-020-0303-2.

Agrawal, R., Chen, M., Bukhari, Z., Ogunwobi, O.O., Haseeb, M.A., and Martello, L.A. (2020). EZH2 Downregulation Augments the Effect of Irradiation in Reducing Pancreatic Cancer Cell Proliferation in vitro. *Ann. Clin. Lab. Sci.* 50, 45-56.

Xia, R., Boroujeni, A.M., Shea, S., Pan, Y., **Agrawal, R.**, Yousefi, E., Fiel, M.I., Haseeb, M.A., and Gupta, R. (2019). Diagnosis of Liver Neoplasms by Computational and Statistical Image Analysis. *Gastroenterology Res* 12, 288-298. https://doi.org/10.14740/gr1210.

Haseeb, M.A., **Agrawal, R.**, and Fried, B. (2017). Reduced [14C]-methionine uptake and fecundity in Schistosoma mansoni females treated with recombinant tumor necrosis factor α in vitro. *Acta Parasitologica* 62, 164-170. https://doi.org/10.1515/ap-2017-0019.

Conference Articles

Weiner, A.B., **Agrawal, R.**, Wang, N., Sonni, I., Li, E., Zhang, J.J., Davicioni, E., Valle, L.F., Rettig, M.B., Ross, A.E., et al. (2024). PD42-05 Correlating Prostate-Specific Membrane Antigen with Molecular Pathways in Treatment Naive Prostate Cancer. *Journal of Urology* 211, e894. https://doi.org/10.1097/01.JU.0001008560.54103.65.05

Weiner, A.B., Wang, N., **Agrawal, R.**, Sonni, I., Valle, L., Kishan, A., Shen, J., Rettig, M., Calais, J., Boutros, P., et al. (2024). Molecular Correlates with PSMA Expression In Primary Prostate Cancer *Urologic Oncology: Seminars and Original Investigations* 42, S85. https://doi.org/10.1016/j.urolonc.2024.01.238.

Wang, D., Alawad, M., **Agrawal, R.**, Haseeb, M., and Gupta, R. (2019). KRAS Mutation, But Not Mismatch Repair Deficiency, Occurs with Increased Frequency in African American Patients with Colorectal Cancer and Predicts Poor Disease-Free Survival. *Modern Pathology* 32, 1-164.

Mendoza, R., Zhou, Y., **Agrawal, R.**, Gabutan, E., Haidary, T., Lee, W., Lee, Y., and Gupta, R. (2019).

PD-L1, PD-1 Expression and DNA Mismatch Repair Genes in Cervical Squamous Cell Carcinoma, and Their Prognostic Significance. *Modern Pathology* 32, 1-140.

Gupta, R., **Agrawal, R.**, and Haseeb, M.A. (2013). Myeloid-Related Protein (MRP-18 and MRP-14) expressing cells in hepatic circumoval granulomata in murine Schistosomiasis. *Archives of Pathology and Laboratory Medicine* 137, 1514.

Posters

Attia, H., Yakut, E., Kazmi, A., Tariq, H., **Agrawal, R.**, Gupta, R. Higher Grade Cutaneous Lesions in Afro-Caribbean Patients Yet Divergent Outcomes in Acute ATLL Compared to Japanese Cohort. Annual Meeting of the College of American Pathologists. September 13–16, 2025, Orlando, FL.

Agrawal, R., Al-Hiyari, S., Patel, Y., Xu, X., Zhu, C., Her, P., Yamaguchi, T.N., Ci, X., Wang, N.K., Teng, M., Gonzalez, A.E., Ng, C., Holmes, A., Arbet, J., Winata, H., Mootor, M.F.E., Hugh-White, R., He, H.H., Liu, S.K., Boutros, P.C. Genomic Markers of Aggression in Prostate Cancer Model Systems. JCCC Symposium, May 2024.

Wang, N., Yamaguchi, T.N., Patel, Y., Zeltser, N., Winata, H., **Agrawal, R.**, Boutros, P.C. LiftOver Consequences: Mapping artifacts and their impact on variant calling, RSGDREAM, November 2023.

Agrawal, R., Al-Hiyari, S., Patel, Y., Xu, X., Zhu, C., Her, P., Yamaguchi, T.N., Ci, X., Wang, N.K., Teng, M., Gonzalez, A.E., Ng, C., Holmes, A., Arbet, J., Winata, H., Mootor, M.F.E., Hugh-White, R., He, H.H., Liu, S.K., Boutros, P.C. Genomic Markers of Aggression in Prostate Cancer Model Systems. RSGDREAM, November 2023.

Agrawal, R., Al-Hiyari, S., Patel, Y., Xu, X., Zhu, C., Her, P., Yamaguchi, T.N., Ci, X., Wang, N.K., Teng, M., Gonzalez, A.E., Ng, C., Holmes, A., Arbet, J., Winata, H., Mootor, M.F.E., Hugh-White, R., He, H.H., Liu, S.K., Boutros, P.C. Genomic Markers of Aggression in Prostate Cancer Model Systems. QCBio, September 2023.

Sidhu, G.I., Deutsch, E., **Agrawal, R.**, Chamberlain, R.F., Wlody, D., Gupta, R., Burza, A. Ventilatory Ratio with Proning in COVID-19 ARDS Patients, a New Tool for an Old Strategy. 2021 Virtual Critical Care Congress, October 23, 2020.

Mendoza, R., Gabutan, E., Haidary, T., Alawad, M., **Agrawal, R.**, Haseeb, M.A., Gupta, R. African-American Women with Cervical Cancer have a Predominance of Non-Vaccine Targeted HPV Type 35 which is Associated with Their Poor Survival. 109th Annual Meeting of United States & Canadian Academy of Pathology, March 2020. Los Angeles, CA.

Wang, D., Alawad, M., **Agrawal, R.**, Haseeb, M.A., Gupta, R. African Americans have Increased Tumor Budding in Colorectal Carcinoma—A Predictor of Poor Prognosis. 109th Annual Meeting of United States & Canadian Academy of Pathology, March 2020. Los Angeles, CA.

Wang, D., Alawad, M., **Agrawal, R.**, Haseeb, M.A., Gupta, R. KRAS Mutation, But Not Mismatch Repair Deficiency, Occurs with Increased Frequency in African American Patients with Colorectal Cancer and Predicts Poor Disease-Free Survival. 107th Annual Meeting of United States & Canadian Academy of Pathology, March 2019. Maryland.

Mendoza, R.P., Zhou, Y.Y., **Agrawal, R.**, Gabutan, E., Haidary, T., Lee, W., Lee, Y., Gupta, R. PD-L1, PD-1 Expression and DNA Mismatch Repair Genes in Cervical Squamous Cell Carcinoma, and Their Prognostic Significance. 107th Annual Meeting of United States & Canadian Academy of Pathology, March 2019. Maryland.

Agrawal, R., Hemberg, M. Single Cell Transcriptomics of Crohn's Disease and Ulcerative Colitis Uncovers Differential Gene Expression Patterns and Cellular Outgroup. Summer Undergraduate Research Symposium at Columbia University 2019, New York, NY.

Agrawal, R., H.J. Bussemaker. Inferring Gene and Transcription Factor Regulatory Mechanisms through Differential Gene Expression Analysis. Summer Undergraduate Research Symposium at Columbia

University 2017, New York, NY.

Agrawal, R., Higher Incidence of Genital Carcinosarcoma (MMMT) in African American Females in New York City. National Medical Association Annual Meeting 2017, Philadelphia, PA.

Gupta, R., **Agrawal, R.**, Martello, L.M., Haseeb, M.A. Synergistic effects of EZH2 knockdown and irradiation against pancreatic cancer cells. United States & Canadian Academy of Pathology, 104th Annual Meeting, March 2015. Boston, MA.

Qin, J., **Agrawal, R.**, Martello, L.M., Gupta, R. Enhancer of Zeste homolog 2 (EZH2) expression and proliferation index (Ki-67) in neuroendocrine tumors of gastrointestinal tract and pancreas. American Association of Cancer Research, Annual Meeting, 2015. Philadelphia, PA.

Invited Presentations

Agrawal, R. "Genomic Markers of Aggression in Prostate Cancer Model Systems." Jonsson Comprehensive Cancer Center (JCCC) Symposium, Los Angeles, CA. May 2025.

Agrawal, R. "Dissecting Prostate Cancer Heterogeneity." Prostate Cancer SPORE Meeting, Los Angeles, CA. February 2025.

Agrawal, R. "The Role of the Microbiome in Prostate Cancer." Department of Human Genetics Works in Progress Series, UCLA, Los Angeles, CA. November 2024.

Professional Memberships

American Medical Association	2020–Present
American Physician Scientists Association	2020–Present
American Society of Human Genetics	2022–Present
American Urological Association	2023–Present

Service to Profession

Review Activities

JNCI Cancer Spectrum

Laparoscopic, Endoscopic and Robotic Surgery

Yale Journal of Biology and Medicine

Mentoring

Tarini Basireddy, Undergraduate Student, APSA Mentoring Program

Rachel Dang, Staff Researcher, UCLA. Now a PhD student at UW

Maxwell Yao, Undergraduate Student, APSA Mentoring Program

Aida Razavilar, Undergraduate Student

Avanthika Drithi, Undergraduate Student, APSA Mentoring Program

Alexander Armstead, Undergraduate Student, Richard Morgan Summer Fellowship Program

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