Raunak Shrestha, Ph.D.

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Current Position(s)

Assistant Professor — 2025 - Current
Uniformed Services University of the Health Sciences (USUHS),

Computational Research Scientist III — 2025 - Current
Center for Prostate Disease Research (CPDR),
Henry M Jackson Foundation for the Advancement of Military Medicine

Education

Ph.D. in Bioinformatics, — 2012 - 2018
University of British Columbia, Vancouver, BC, Canada

B.Tech. in Biotechnology, — 2005 - 2009
Kathmandu University, Dhulikhel, Bagmati, Nepal

Academic Appointments

Assistant Professor — 2025 - Current
Uniformed Services University of the Health Sciences (USUHS), Bethesda, MD

Computational Research Scientist III — 2025 - Current
Center for Prostate Disease Research (CPDR), Bethesda, MD

Assistant Professional Researcher — 2024 - 2025
University of California, San Francisco (UCSF), San Francisco, CA

Post-Doctoral Research Fellow — 2019 - 2024
University of California, San Francisco (UCSF), San Francisco, CA

Post-Doctoral Research Fellow — 2018 - 2019
Vancouver Prostate Center
University of British Columbia (UBC), Vancouver, BC, Canada

Research Associate — 2009 - 2011
Center for Molecular Dynamics Nepal (CMDN), Kathmandu, Bagmati, Nepal

Affiliations

Adjunct Investigator (Faculty) — 2025 - Current
Genitourinary Malignancies Branch (GMB),
Cancer Data Science Laboratory (CDSL),
National Cancer Institute/National Institutes of Health (NCI/NIH),
Bethesda, MD

Adjunct Research Scientist — 2020 - Current
Nepal Applied Mathematics & Informatics Institute for Research (NAAMII),
Lalitpur, Nepal

Awards

Fellowship Awards

Prostate Cancer Foundation (PCF) Young Investigator Award	(USD 225,000)	2022-2025
Mitacs Accelerate Fellowship	(CAD 45,000)	2018-2019
Mitacs Accelerate PhD Fellowship	(CAD 135,000)	2016-2018
Prostate Cancer Foundation - British Columbia (PCF-BC) Research Awards	(CAD 25,000)	2015-2016
Faculty of Science Graduate Award, University of British Columbia	(CAD 10,200)	2014-2016
CIHR Bioinformatics Training Program for Health Research.	(CAD 42,000)	2011-2013

Grants

JIDCUK Trust Funding for Postgraduate Studentship	(PI)	(GBP 32,644)	2024-2026

Travel Awards

UCSF Helen Diller Family Comprehensive Cancer Center (HDFCCC) Travel Award	(USD 1,500)	2024
UBC Translational Cancer Genomics Travel Award	(CAD 2,000)	2018
International Society for Computational Biology (ISCB) Travel Fellowship	(USD 500)	2014

Professional Memberships

Society for Basic Urologic Research (SBUR)	(Member)	2025 - Current
American Association for Cancer Research (AACR)	(Member)	2023 - Current
Biotechnology Society of Nepal (BSN)	(Lifetime Member)	2009 - Current

Professional Service

Vancouver Bioinformatics User Group (VanBUG)	(Development Group Member)	2013 - 2019
Biotechnology Society of Nepal (BSN)	(Executive Board Member)	2009 - 2011

Curriculum Development

B.Sc. in Bioinformatics course structure, Kathmandu University, Nepal	(Reviewer)	2023

Editorial Board Appointments

Nepal Journal of Biotechnology (NJB)	(Editor Board Member)	2014 - Current

Peer Reviews

(number of reviews parenthesized)

Grants: PCF Young Investigator Award (6); PCF Challenge Award (4)

Academic Journals: Nature (2); Science (3); Nature Communications (3); Bioinformatics (3); Bioinformatics Advances (1); Cancer Research (2); Genome Biology (1); Genome Medicine (1); European Urology (1); Urology (1); BMC Genomics (1); BMC Bioinformatics (1); Cancers (1); Neoplasia (1); Frontiers in Oncology (1); Advanced Science (1); The American Journal of Human Genetics (AJHG) (1); Research in Computational Molecular Biology (RECOMB) (3); International Conference on Intelligent Systems for Molecular Biology (ISMB) (1); The Asia Pacific Bioinformatics Conference (APBC) (1); Workshop on Algorithms in Bioinformatics (WABI) (1); International Conference on Computational Advances in Bio and medical Sciences (ICCABS) (1); International Journal of Cancer (IJC) (1); Nepal Journal of Biotechnology (8)

Trainees Mentored

Trainee Name	Year	Position	Present Position
Sameer Dongol	2025-Current	Research Assistant	Masters student, Kathmandu University

Rasal Shakya	2025-Current	Research Intern	Research Intern, KRIBS
Monika Chaudhary	2025-Current	Research Intern	Research Assistant, KRIBS
Saramshika Dhakal	2025	Research Intern	Practicing medicine in Nepal
Himanshu Bhandary	2025-Current	Research Intern	Research Intern, NAAMII
Durga Karki	2024-2025	Research Intern	TA, Kathmandu University
Rasik Dhakal	2024	Research Intern	Maaters student, University of Texas, Dallas
Peshal Regmi	2023-Current	Research Intern	Research Intern, NAAMII
Aayush Ojha	2023-2025	Research Intern	PhD student, University of Maine
Sanyukta Chapagain	2023-2024	Research Intern	Masters student, Indiana University Bloomington
Riya Lamichhane	2023	Research Assistant	Masters student, Kathmandu University
Parikshit Prasai	2021-2022	Research Assistant	AI/ML engineer in a tech industry in Nepal
Aroj Hada	2020	Research Intern	Staff scientist, University of Heidelberg
Rajesh Timilsina	2020	Research Intern	Masters student, Georgia State University
Hossein Sharifi-Noghabi	2017-2019	PhD Student	AI/ML researcher, BorealisAI, Canada

- **Parikshit Prasai** - NIHR Early Career Grant, The Royal Society of Tropical Medicine and Hygiene (RSTMH), UK (2021)

Software Packages & Data Analytics

- **HIT'nDRIVE** (https://github.com/sfu-compbio/hitndrive)
- **cd-CAP** (https://github.com/ehodzic/cd-CAP)
- **CONETT** (https://github.com/ehodzic/CONETT)
- **West Coast Dream Team ATAC-seq analysis of mCRPC:** *Accessible chromatin landscape of metastatic prostate cancer* (https://github.com/DavidQuigley/WCDT_ATAC_mCRPC)

Publications

[1] Li, H., Melnyk, J. E., Fu, B. X. H., **Shrestha, R.**, Zhang, M., Sjostrom, M., Feng, S., Anderson, J. A., Han, Wanting Chesner, L. N., Shin, H. J., Farsh, T., Suarez, H. J., Nath, S., Chou, J., Das, R., Egusa, E. A., Calvert, M., Kishishita, A., Barpanda, A., Zhu, J., Maheshwari, A., Chen, W. S., Alshalalfa, M., Winters, A., Hua, J. T., Liu, T., Davicioni, E., Wiita, A. P., Stohr, B. A., Siddiqui, J., Huang, B., Small, E. J., Shokat, K. M., Nelson, P., Quigley, D. A., Wasmuth, E. V., Gilbert, L. A., and Feng, F. Y. *Genome-scale CRISPR screens identify PTGES3 as a direct modulator of androgen receptor function in advanced prostate cancer.* ***Nature Genetics***, 2025. doi: 10.1038/s41588-025-02388-8. URL https://pubmed.ncbi.nlm.nih.gov/41193657

[2] Ye, C., Ma, Y., **Shrestha, R.**, Cai, J., Liu, Y., Peng, L., Yu, J., and Cai, H. *Extracellular vesicles-mediated delivery of CRISPR machinery silences androgen receptor in castration-resistant prostate cancer cells*. ***Molecular Therapy***, 10 2025. doi: 10.1016/j.ymthe.2025.09.045. URL https://pubmed.ncbi.nlm.nih.gov/41017153

[3] Chesner, L. N., Polesso, F., Graff, J. N., Hawley, J. E., Smith, A. K., Lundberg, A., Das, R., Shenoy, T., Sjöström, M., Zhao, F., Hu, Y.-M., Linder, S., Chen, W. S., Hawkins, R. M., **Shrestha, R.**, Zhu, X., Foye, A., Li, H., Kim, L. M., Bhalla, M., O'loughlin, T., Kuzuoglu-Ozturk, D., Hua, J. T., Badura, M. L., Wilkinson, S., Trostel, S. Y., Bergman, A. M., Ruggero, D., Drake, C. G., Sowalsky, A. G., Fong, L., Cooperberg, M. R., Zwart, W., Guan, X., Ashworth, A., Xia, Z., Quigley, D. A., Gilbert, L. A., Feng, F. Y., and Moran, A. E. *Androgen receptor inhibition increases MHC Class I expression and improves immune response in prostate cancer*. ***Cancer Discovery***, 12 2024. ISSN 2159-8274. doi: 10.1158/2159-8290.CD-24-0559. URL https://pubmed.ncbi.nlm.nih.gov/39652470

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10.1172/JCI178604. URL https://pubmed.ncbi.nlm.nih.gov/39352383

[5] **Shrestha, R.**, Chesner, L. N., Zhang, M., Zhou, S., Foye, A., Lundberg, A., Weinstein, A. S., Sjostrom, M., Zhu, X., Moreno-Rodriguez, T., Li, H., SU2C/PCF West Coast Prostate Cancer Dream Team, Alumkal, J. J., Aggarwal, R., Small, E. J., Lupien, M., Quigley, D. A., and Feng, F. Y. *An Atlas of Accessible Chromatin in Advanced Prostate Cancer Reveals the Epigenetic Evolution during Tumor Progression*. ***Cancer Research***, 07 2024. ISSN 0008-5472. doi: 10.1158/0008-5472.CAN-24-0890. URL https://pubmed.ncbi.nlm.nih.gov/38990734

[6] Zhao, S. G., Bootsma, M., Zhou, S., **Shrestha, R.**, Moreno-Rodriguez, T., Lundberg, A., Pan, C., Arlidge, C., Hawley, J. R., Foye, A., Weinstein, A. S., Sjöström, M., Zhang, M., Li, H., Chesner, L. N., Rydzewski, N. R., Helzer, K. T., Shi, Y., Bailey, A. M., Zhang, L., Beer, T. M., Thomas, G., Chi, K. N., Gleave, M., Zoubeidi, A., Reiter, R. E., Rettig, M. B., Witte, O., Bose, R., Huang, F. W., Fong, L., Lara, P. N., Evans, C. P., Huang, J., Lynch, M., Dehm, S. M., Lang, J. M., Alumkal, J. J., He, H. H., Wyatt, A. W., Aggarwal, R., Zwart, W., Small, E. J., Quigley, D. A., Lupien, M., Feng, F. Y., and Consortium, W. C. D. T. *Integrated analyses highlight interactions between the three-dimensional genome and DNA, RNA and epigenomic alterations in metastatic prostate cancer*. ***Nature Genetics***, 07 2024. ISSN 1546-1718. doi: 10.1038/s41588-024-01826-3. URL https://pubmed.ncbi.nlm.nih.gov/39020220

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[8] Lundberg, A., Zhang, M., Aggarwal, R., Li, H., Zhang, L., Foye, A., Sjostrom, M., Chou, J., Chang, K., Moreno-Rodriguez, T., **Shrestha, R.**, Baskin, A., Zhu, X., Weinstein, A., Younger, N., Alumkal, J., Beer, T., Chi, K., Evans, C., Gleave, M., Lara, P., Reiter, R., Rettig, M., Witte, O., Wyatt, A., Feng, F., Small, E., and Quigley, D. *The genomic and epigenomic landscape of double-negative metastatic prostate cancer*. ***Cancer Research***, 2023. ISSN 0008-5472. doi: 10.1158/0008-5472.CAN-23-0593. URL https://pubmed.ncbi.nlm.nih.gov/37289025

[9] Sjostrom, M., Zhao, S. G., Levy, S., Zhang, M., Ning, Y., **Shrestha, R.**, Lundberg, A., Herberts, C., Foye, A., Aggarwal, R. R., Hua, J. T., Li, H., Bergamaschi, A., Maurice-Dror, C., Maheshwari, A., Chen, S., Ng, S., Ye, W., Petricca, J., Fraser, M., Chesner, L., Perry, M., Moreno-Rodriguez, T., Chen, W. S., Alumkal, J. J., Chou, J., Beer, T. M., Gleave, M., Lloyd, P., Phillips, T., McCarthy, E., Haffner, M. C., Zoubeidi, A., Reiter, R. E., Rettig, M. B., Witte, O., Fong, L., Bose, R., Huang, F., Bjartell, A., Lang, J. M., Mahajan, N., Lara, P. N., Evans, C. P., Tran, P., Posadas, E. M., He, C., Cui, X., Huang, J., Zwart, W., Gilbert, L. A., Maher, C. A., Boutros, P. C., Chi, K. N., Ashworth, A., Small, E. J., H, H. H., Wyatt, A. W., Quigley, D. A., and Feng, F. Y. *The 5-Hydroxymethylcytosine Landscape of Prostate Cancer.* ***Cancer Research***, 2022. doi: 10.1158/0008-5472.CAN-22-1123. URL http://www.ncbi.nlm.nih.gov/pubmed/36251389

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[12] **Shrestha, R.**, Fernandez, M. L., Dawson, A., Hoenisch, J., Volik, S., Lin, Y.-Y., Anderson, S., Kim, H.,

Haegert, A., Colborne, S., Wong, N., McConeghy, B., Bell, R. H., Brahmbhatt, S., Lee, C.-H., DiMattia, G. E., Le Bihan, S., Morin, G. B., Collins, C. C., and Carey, M. S. *Multiomics Characterization of Low-grade Serous Ovarian Carcinoma Identifies Potential Biomarkers of MEK-inhibitor Sensitivity and Therapeutic Vulnerability.* ***Cancer Research***, 2021. ISSN 0008-5472. doi: 10.1158/0008-5472.CAN-20-2222. URL https://pubmed.ncbi.nlm.nih.gov/33441310

[13] **Shrestha, R.**, Nabavi, N., Volik, S., Anderson, S., Haegert, A., McConeghy, B., Sar, F., Brahmbhatt, S., Bell, R. H., Le Bihan, S., Wang, Y., Collins, C. C., and Churg, A. *Well-Differentiated Papillary Mesothelioma of the Peritoneum is Genetically Distinct from Malignant Mesothelioma.* ***Cancers***, 12(6), 06 2020. doi: 10.3390/cancers12061568. URL https://pubmed.ncbi.nlm.nih.gov/32545767

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[16] ICGC/TCGA Pan-Cancer Analysis of Whole Genomes Consortium. Analyses of non-coding somatic drivers in 2,658 cancer whole genomes. ***Nature***, 578:102–111, feb 2020a. doi: 10.1038/s41586-020-1965-x. URL https://pubmed.ncbi.nlm.nih.gov/32025015

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[18] Chen, W. S., Haynes, W. A., Waitz, R., Kamath, K., Vega-Crespo, A., **Shrestha, R.**, Zhang, M., Foye, A., Carretero, I. B., Perez, I. G., Zhang, M., Zhao, S. G., Sjöström, M., Quigley, D. A., Chou, J., Beer, T. M., Rettig, M., Gleave, M., Evans, C. P., Lara, P., Chi, K. N., Reiter, R. E., Alumkal, J. J., Aggarwal, R., Small, E. J., Daugherty, P. S., Ribas, A., Oh, D. Y., Shon, J. C., and Feng, F. Y. Autoantibody landscape in patients with advanced prostate cancer. ***Clinical Cancer Research***, 2020. doi: 10.1158/1078-0432.CCR-20-1966. URL https://pubmed.ncbi.nlm.nih.gov/32967941

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[21] **Shrestha, R.**, Nabavi, N., Lin, Y.-Y., Mo, F., Anderson, S., Volik, S., Adomat, H. H., Lin, D., Xue, H., Dong, X., Shukin, R., Bell, R. H., McConeghy, B., Haegert, A., Brahmbhatt, S., Li, E., Oo, H. Z., Hurtado-Coll, A., Fazli, L., Zhou, J., McConnell, Y., McCart, A., Lowy, A., Morin, G. B., Chen, T., Daugaard, M., Sahinalp, S. C., Hach, F., Le Bihan, S., Gleave, M. E., Wang, Y., Churg, A., and Collins, C. C. *BAP1 Haploinsufficiency Predicts a Distinct Immunogenic Class of Malignant Peritoneal Mesothelioma.* ***Genome Medicine***,

2019. doi: 10.1186/s13073-019-0620-3. URL https://pubmed.ncbi.nlm.nih.gov/30777124

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Thesis

- **Shrestha, R.** *Computational Prioritization of Cancer Driver Genes for Precision Oncology*. PhD thesis,

The University of British Columbia, 2018. URL https://open.library.ubc.ca/cIRcle/collections/24/items/1.0370936. Advisors: Dr. Colin C. Collins & Dr. S. Cenk Sahinalp

Presentations

Selected Oral Talks

- *Inactivation of BAP1 Predicts a Distinct Immunogenic Class of Malignant Peritoneal Mesothelioma*. **Terry Fox Seminar, Vancouver Prostate Centre**. September 28, 2018, Vancouver General Hospital, Vancouver, Canada.

- *BAP1 Loss Predicts Therapeutic Vulnerability in Malignant Peritoneal Mesothelioma*. **14th International Conference of the International Mesothelioma Interest Group (iMig2018)**. May 2-5, 2018, Ottawa, Canada

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization for Precision Oncology*. **8th Annual Scientific Meeting, Terry Fox Research Institute**. November 4, 2017, Vancouver, Canada

- *Translating Big-Data to Precision Oncology*. **Terry Fox Seminar, Vancouver Prostate Centre**. February 17, 2017, Vancouver General Hospital, Vancouver, Canada.

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization for Precision Oncology*. **Vancouver Bioinformatics User Group (VanBUG)**. November 3, 2016, Vancouver, Canada

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization for Precision Oncology*. **10th Annual Lorne D. Sullivan Lectureship & Research Day**. June 21, 2016, Vancouver General Hospital, Vancouver, Canada.

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization to Guide Precision Cancer Medicine*. **Workshop on Network Biology (Algorithmic Challenges in Genomics)**. April 11-15, 2016, Simons Institute for the Theory of Computing, University of California Berkeley, Berkeley, CA, USA. https://simons.berkeley.edu/talks/raunak-shrestha-04-12-16

- *Computational Detection and Prioritization of Driver Alterations in Cancer*. **Terry Fox Seminar, Vancouver Prostate Centre**. November 3, 2014, Vancouver General Hospital, Vancouver, Canada.

- *HIT'nDRIVE: Multi-Driver Gene Prioritization based on Hitting Time*. **18th Annual International Conference on Research in Computational Molecular Biology (RECOMB)**. April 2-5, 2014, Pittsburgh, PA, USA.

Invited Talks

- *An Atlas of Accessible Chromatin in Advanced Prostate Cancer Reveals the Epigenetic Evolution during Tumor Progression*. **UroToday - GU Oncology Today**. September 17, 2024 (Video Link)

Selected Poster Presentations

- *An Atlas of Accessible Chromatin in Advanced Prostate Cancer Reveals the Epigenetic Evolution during Tumor Progression*. **31st Prostate Cancer Foundation (PCF) Annual Scientific Retreat**. October 24–26, 2024, San Diego, CA, USA.

- *An Atlas of Accessible Chromatin in Advanced Prostate Cancer*. **American Association for Cancer Research (AACR) Annual Meeting 2024**. April 5–10, 2024, San Diego, CA, USA.

- *An Atlas of Accessible Chromatin in Advanced Prostate Cancer*. **2023 Gordon Research Conference on Hormone-Dependent Cancers**. August 5–11, 2023, Newry, ME, USA.

- *An Atlas of Accessible Chromatin in Advanced Prostate Cancer*. **30th Prostate Cancer Foundation (PCF) Annual Scientific Retreat**. October 26–28, 2023, San Diego, CA, USA.

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization for Precision Oncology.*. **4th Canadian Cancer Research Conference**. November 4-7, 2017, Vancouver, BC, Canada.

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization for Precision Oncology*. **Genome Informatics**. November 1-4, 2017, Cold Spring Harbor Laboratory, NY, USA.

- *HIT'nDRIVE: Patient-Specific Multi-Driver Gene Prioritization for Precision Oncology*. **The 27th International Conference on Genome Informatics**. October 3-5, 2016, Fudan University, Shanghai, China.

- *Characterization of intertumor heterogeneity in Malignant Mesothelioma*. **13th International Conference of the International Mesothelioma Interest Group (iMIG 2016)**. May 1-4, 2016, Birmingham, UK.

- *Computational Detection and Prioritization of Driver Alterations in Prostate Cancer from Multi-Omics Data*. **Eighth Annual Prostate Cancer Program Retreat (SPORE)**. March 15-17, 2015, Fort Lauderdale, Florida, USA. **(Selected among the top-eight poster of the conference.)**

- *Exploring the Biology of Prostate Cancer Progression using Systems Biology Approach*. **The Eleventh Asia Pacific Bioinformatics Conference**. January 21-23, 2013, Vancouver, Canada.