

RAUNAK SHRESTHA, PhD

Curriculum Vitae [Last Updated: December 14, 2018]

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Publications: [\[Google Scholar\]](#)

POST-SECONDARY EDUCATION

- SEPT 2012 - AUG 2018 Doctor of Philosophy in BIOINFORMATICS, **University of British Columbia**, Canada
under CIHR Bioinformatics Training Program
Advisors: Dr. Colin C. Collins and Dr. S. Cenk Sahinalp
Thesis Title: "[Computational Prioritization of Cancer Driver Genes for Precision Oncology](#)"
- SEPT 2011 - AUG 2012 Master of Science in BIOINFORMATICS, **Simon Fraser University**, Canada
under CIHR Bioinformatics Training Program
(Transferred to PhD program)
- 2005 - 2009 Bachelors of Technology (B.Tech.) in BIOTECHNOLOGY, **Kathmandu University**, Nepal

RESEARCH & TRAINING EXPERIENCE

- SEPT 2018 - Current Post-doctoral Research Fellow, Laboratory for Advanced Genome Analysis,
Vancouver Prostate Centre, Vancouver, BC, Canada
University of British Columbia, Vancouver, BC, Canada
- SEPT 2012 - AUG 2018 PhD Candidate, Laboratory for Advanced Genome Analysis,
Vancouver Prostate Centre, Vancouver, BC, Canada
- MAY - AUG 2012 Graduate Research Student, Laboratory for Advanced Genome Analysis,
Vancouver Prostate Centre, Vancouver, BC, Canada
- SEPT 2011 - MAY 2012 Graduate Research Student,
Simon Fraser University, Burnaby, BC, Canada
- JULY 2009 - JULY 2011 Research Associate, **Center for Molecular Dynamics Nepal**, Kathmandu, Nepal

SELECTED PUBLICATIONS

- [1] **R. Shrestha**, E. Hodzic, T. Sauerwald, P. Dao, K. Wang, J. Yeung, S. Anderson, F. Vandin, G. Haffari, C. C. Collins, and S. C. Sahinalp. *HITⁿDRIVE: patient-specific multidriver gene prioritization for precision oncology*. **Genome Research**, 27(9):1573–1588, sep 2017. ISSN 1549-5469. doi: 10.1101/gr.221218.117. URL <https://www.ncbi.nlm.nih.gov/pubmed/28768687>
- [2] **R. Shrestha**, E. Hodzic, J. Yeung, K. Wang, T. Sauerwald, P. Dao, S. Anderson, H. Beltran, M. A. Rubin, C. C. Collins, G. Haffari, and S. C. Sahinalp. *HITⁿDRIVE: Multi-driver Gene Prioritization Based on Hitting Time*. *Research in Computational Molecular Biology: 18th Annual International Conference, RECOMB 2014, Pittsburgh, PA, USA, April 2-5, 2014, Proceedings*, pages 293–306, 2014. doi: 10.1007/978-3-319-05269-4_23. URL http://dx.doi.org/10.1007/978-3-319-05269-4_23
- [3] **R. Shrestha**, N. Nabavi, Y.-Y. Lin, F. Mo, S. Anderson, S. Volik, H. H. Adomat, D. Lin, H. Xue, X. Dong, R. Shukin, R. H. Bell, B. McConeghy, A. Haegert, S. Brahmbhatt, E. Li, H. Z. Oo, A. Hurtado-Coll, L. Fazli, J. Zhou, Y. McConnell, A. McCart, A. Lowy, G. B. Morin, T. Chen, M. Daugaard, S. C. Sahinalp, F. Hach, S. Le Bihan, M. E. Gleave, Y. Wang, A. Churg, and C. C. Collins. *BAP1 Haploinsufficiency Predicts a Distinct Immunogenic Class of Malignant Peritoneal Mesothelioma*. *bioRxiv preprint*, 2018. doi: 10.1101/243477. URL <https://doi.org/10.1101/243477>. (Submitted)

- [4] E. Hodzic, **R. Shrestha***, K. Zhu, K. Cheng, C. C. Collins, and S. C. Sahinalp. Combinatorial detection of conserved alteration patterns for identifying cancer subnetworks. *bioRxiv preprint*, 2018. doi: 10.1101/369850. URL <https://doi.org/10.1101/369850>. (Submitted) *As joint first author

RELEVANT PUBLICATIONS

- [1] M. A. Reyna, D. Haan, M. Paczkowska, L. P. Verbeke, M. Vazquez, A. Kahraman, S. Pulido Tamayo, J. Barenboim, L. Wadi, P. Dhingra, **R. Shrestha**, G. Getz, M. S. Lawrence, J. S. S. Pedersen, M. A. Rubin, D. A. Wheeler, S. Brunak, J. M. Izarzugaza, E. Khurana, K. Marchal, C. von Mering, S. C. Sahinalp, A. Valencia, J. Reimand, J. M. Stuart, B. J. Raphael, and PCAWG. Pathway and network analysis of more than 2,500 whole cancer genomes. *bioRxiv preprint*, 2018. doi: 10.1101/385294. URL <https://doi.org/10.1101/385294>. (Submitted)
- [2] H. Sharifi-Noghabi, Y. Liu, N. Erho, **R. Shrestha**, M. Alshalalfa, E. Davicioni, C. C. Collins, and M. Ester. *Deep Genomic Signature for early metastasis prediction in prostate cancer*. *bioRxiv preprint*, 2018. doi: 10.1101/276055. URL <https://doi.org/10.1101/276055>. (Submitted)
- [3] Y. Feng, **R. Shrestha**, R. H. Bell, S. Volik, N. Erho, Y. Sun, V. Hayes, S. Ren, and C. C. Collins. *Metagenomic and metatranscriptomic analysis of human prostate microbiota from patients with prostate cancer*. (Submitted), 2018
- [4] M. Yamada, J. Tang, J. Lugo-Martinez, E. Hodzic, **R. Shrestha**, H. Ouyang, P. Radivojac, C. Sahinalp, F. Menczer, Y. Chang, A. Saha, H. Mamitsuka, and D. Yin. *Ultra High-Dimensional Nonlinear Feature Selection for Big Biological Data*. *IEEE Transactions on Knowledge and Data Engineering*, 30(7):1352–1365, 2018. ISSN 1041-4347. doi: 10.1109/TKDE.2018.2789451. URL <https://doi.org/10.1109/TKDE.2018.2789451>
- [5] E. E. Gill, L. S. Chan, G. L. Winsor, N. Dobson, R. Lo, S. J. Ho Sui, B. K. Dhillon, P. K. Taylor, **R. Shrestha**, C. Spencer, R. E. W. Hancock, P. J. Unrau, and F. S. L. Brinkman. *High-throughput detection of RNA processing in bacteria*. *BMC Genomics*, 19(1):223, 2018. ISSN 1471-2164. doi: 10.1186/s12864-018-4538-8. URL <http://www.ncbi.nlm.nih.gov/pubmed/29587634>
- [6] I. S. U. Luk, **R. Shrestha**, H. Xue, Y. Wang, F. Zhang, D. Lin, A. Haegert, R. Wu, X. Dong, C. C. Collins, A. Zoubeydi, M. E. Gleave, P. W. Gout, and Y. Wang. *BIRC6 Targeting as Potential Therapy for Advanced, Enzalutamide-Resistant Prostate Cancer*. *Clinical Cancer Research*, 23(6):1542–1551, mar 2017. ISSN 1078-0432. doi: 10.1158/1078-0432.CCR-16-0718. URL <http://www.ncbi.nlm.nih.gov/pubmed/27663589>
- [7] A. W. Wyatt, F. Mo, K. Wang, B. McConeghy, S. Brahmbhatt, L. Jong, D. M. Mitchell, R. L. Johnston, A. Haegert, E. Li, J. Liew, J. Yeung, **R. Shrestha**, A. V. Lapuk, A. McPherson, R. Shukin, R. H. Bell, S. Anderson, J. Bishop, A. Hurtado-Coll, H. Xiao, A. M. Chinnaiyan, R. Mehra, D. Lin, Y. Wang, L. Fazli, M. E. Gleave, S. V. Volik, and C. C. Collins. *Heterogeneity in the inter-tumor transcriptome of high risk prostate cancer*. *Genome Biology*, 15(8):426, Aug 2014. ISSN 1474-760X. doi: 10.1186/s13059-014-0426-y. URL <http://www.ncbi.nlm.nih.gov/pubmed/25155515>
- [8] K. Wang, **R. Shrestha**, A. W. Wyatt, A. Reddy, J. Lehar, Y. Wang, A. Lapuk, and C. C. Collins. *A meta-analysis approach for characterizing pan-cancer mechanisms of drug sensitivity in cell lines*. *PloS One*, 9(7):e103050, 2014. ISSN 1932-6203. doi: 10.1371/journal.pone.0103050. URL <http://www.ncbi.nlm.nih.gov/pubmed/25036042>

THESIS

- **R. Shrestha**. *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

CONFERENCE PRESENTATIONS

Selected Oral Presentations

- *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, UC 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.

AWARDS AND HONORS

2018	UBC Translational Cancer Genomics Travel Award (iMig2018).
2016-2018	Mitacs Accelerate PhD Fellowship.
2015-2016	Prostate Cancer Foundation - British Columbia (PCF-BC) Research Awards - 2015.
2014-2016	Faculty of Science Graduate Award, University of British Columbia.
2014	International Society for Computational Biology (ISCB) Travel Fellowship (RECOMB-2014).
2011-2013	CIHR Bioinformatics Training Program for Health Research.

TECHNICAL SKILLS

Programming Languages	R, perl, python, C, C++
Web Development	php, HTML/5, CSS, JavaScript, R-shiny
Databases & Query Languages	MySQL
Others	CPLEX, GitHub
Molecular Biology	Experienced in routine genomics & proteomics laboratory works

SOFTWARE PACKAGES

- **HIT'nDRIVE** (<https://github.com/sfu-compbio/hitndrive>)
- **cd-CAP** (<https://github.com/ehodzic/cd-CAP>)

STUDENTS MENTORED

- Hossein Sharifi-Noghabi (Ph.D. Student, Computer Science. Simon Fraser University, Canada)
- Jingchao Wei (Ph.D. Candidate, Urology, Central South University, China)

ACADEMIC PAPERS PEER REVIEWED

(number of reviews parenthesized)

Nature Communications	(3)
Bioinformatics	(2)
BMC Genomics	(1)
BMC Bioinformatics	(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)
Nepal Journal of Biotechnology	(8)

PROFESSIONAL MEMBERSHIPS

- Vancouver Bioinformatics User Group (VanBUG): Development Group
- Biotechnology Society of Nepal (BSN): Life time Member and Former Executive Member

REFERENCES

References can be made available upon request

Last Updated: December 14, 2018
http://raunakms.github.io/pdf/cv_shrestha_raunak.pdf