Sambhawa Priya

University of Minnesota, MCB 6-182, 420 Washington Avenue SE, Minneapolis, MN 55455
priya030@umn.edu, +1(484) 838-9024

Education

Ph.D. in Bioinformatics and Computational Biology   August, 2016 – Present
University of Minnesota, Minneapolis, MN, USA
Adviser: Dr. Ran Blekhman

M.S. in Computer Science   May 2016
Lehigh University, Bethlehem, PA, USA

B.E. in Computer Science   May 2010
Manipal Institute of Technology, Karnataka, India

Honors and Awards

- Doctoral Dissertation Fellowship, University of Minnesota (August 2019 – May 2020).
- Best Poster award in 10th Annual Bioinformatics Research Symposium, University of Minnesota, Rochester, 2018.
- Microbial and Plant Genomics Institute Travel award ($489), 2018
- Bioinformatics and Computational Biology Graduate Fellowship, University of Minnesota (August, 2016 - May, 2017).
- First prize in the 2012 Semantic Web Challenge (Billion Triples Challenge Track), 2012.
- NSF Travel Grant, International Semantic Web Conference ($1,200), 2012.
- Award for Academic Excellence in Computer Science, Manipal Institute of Technology, 2009.

Research Publications

1. Ruben A. T. Mars, Yi Yang, Tonya Ward, Mo Houtti, **Sambhawa Priya**, Heather R. Lekatz, Xiaojia Tang, Zhifu Sun, Krishna R. Kalari, Tal Korem, Yogesh Bhattarai, Tenghao Zheng, Noam Bar, Gary Frost, Abigail J. Johnson, Will van Treuren, Shuo Han, Tamas Ordog, Madhusudan Grover, Justin Sonnenburg, Mauro D'Amato, Michael Camilleri, Eran Elinav, Eran Segal, Ran Blekhman, Gianrico Farrugia, Jonathan Swann, Dan Knights, Purna C. Kashyap. "Longitudinal multi-omics reveals subset-specific mechanisms underlying irritable bowel syndrome". Cell (*in press*). **2020.**

2. Gargi Dayama*, **Sambhawa Priya***, David E. Niccum, Alexander Khoruts, Ran Blekhman. "Interactions between the gut microbiome and host gene regulation in cystic fibrosis". Genome Medicine, 12:12. https://doi.org/10.1186/s13073-020-0710-2. **2020.** (*these authors contributed equally)**.**

3. **Sambhawa Priya** and Ran Blekhman. "Population dynamics of the human gut microbiome: change is the only constant". Genome Biology, 20:150. https://doi.org/10.1186/s13059-019-1775-3. **2019.**

4. Andrew W. Brooks, **Sambhawa Priya**, Ran Blekhman, Seth R. Bordenstein. "Gut Microbiota Diversity across Ethnicities in the United States". PLoS Biology, 16(12): e2006842. https://doi.org/10.1371/journal.pbio.2006842. **2018**.

5. Michael B. Burns, Emmanuel Montassier, Juan Abrahante, **Sambhawa Priya**, David E. Niccum, Alexander Khoruts, Timothy K. Starr, Dan Knights, Ran Blekhman. "Colorectal cancer mutational profiles correlate with defined microbial communities in the tumor microenvironment", PLoS Genetics, 14(6): e1007376, https://doi.org/10.1371/journal.pgen.1007376. **2018.**

6. Vanessa L. Hale, Patricio Jeraldo, Jun Chen, Michael Mundy, Janet Yao, **Sambhawa Priya**, Gary Keeney, Kelly Lyke, Jason Ridlon, Bryan A. White, Amy J. French, Stephen Thibodeau, Christian Diener, Osbaldo Resendis-Antonio, Jaime Gransee, Tumpa Dutta, Xuan-Mai T. Petterson, Ran Blekhman, Lisa Boardman, David Larson, Heidi Nelson, Nicholas Chia, "Distinct Microbes, Metabolites, and Ecologies Define the Microbiome in Deficient and Proficient Mismatch Repair Colorectal Cancers", Genome Medicine,10(1), https://doi.org/10.1186/s13073-018-0586-6. **2018**.

7. Christopher R. Clark, Makayla Maile, Patrick Blaney, Stefano R. Hellweg, Anna Strauss, Wilaiwan Durose, **Sambhawa Priya**, Juri Habicht, Michael B. Burns, Ran Blekhman, Juan E. Abrahante and Timothy K. Starr, "Transposon mutagenesis screen in mice identifies TM9SF2 as a novel colorectal cancer oncogene", Scientific Reports 8(1), https://doi.org/10.1038/s41598-018-33527-3, **2018**.

8. Joshua Lynch, Karen Tang, **Sambhawa Priya**, Joanna Sands, Margaret Sands, Evan Tang, Sayan Mukherjee, Dan Knights, Ran Blekhman. "HOMINID: A framework for identifying associations between host genetic variation and microbiome composition". GigaScience. 6:12, pp. 1–7. https://doi.org/10.1093/gigascience/gix107. **2017.**

9. **Sambhawa Priya**, Guoqian Jiang, Surendra Dasari, Michael T. Zimmermann, Chen Wang, Jeff Heflin and Christopher G. Chute. "A Semantic Web-based system for mining genetic mutations in cancer clinical trials". AMIA Summits on Translational Science Proceedings. pp.142 –146 (PMID:26306257). **2015**.

10. Xingjian Zhang, Dezhao Song, **Sambhawa Priya**, Zachary Daniels, Kelly Reynolds, and Jeff Heflin. "Exploring Linked Data with Contextual Tag Clouds". Journal of Web Semantics: Science, Services and Agents on the World Wide Web. vol. 34, pp. 33-39, https://doi.org/10.1016/j.websem.2013.12.004. **2014.**

11. **Sambhawa Priya**, Yuanbo Guo, Michael Spear and Jeff Heflin. "Partitioning OWL Knowledge Bases for Parallel Reasoning". In: Proc. of Eighth IEEE International Conference on Semantic Computing (ICSC 2014). Newport Beach, CA, pp. 108-115, doi:10.1109/ICSC.2014.34. **2014**.

12. Xingjian Zhang, Dezhao Song, **Sambhawa Priya** and Jeff Heflin. "Infrastructure for Efficient Exploration of Large Scale Linked Data via Contextual Tag Clouds". In: Alani H. et al. (eds) The Semantic Web – ISWC 2013. ISWC 2013. Lecture Notes in Computer Science, vol 8218. Springer, Berlin, Heidelberg, https://doi.org/10.1007/978-3-642-41335-3_43 **2013**.

Professional Experience

Research Assistant (*Machine learning methods for integrative analysis of microbiome and host genomic data.*)	Blekhman Lab, University of Minnesota, Minneapolis, MN, USA	August, 2016 - Present
Graduate Research Intern (*Semantic Web-based system for mining genetic mutations in cancer clinical trials.*)	Mayo Clinic, Rochester, MN, USA	June - August, 2014
Research and Teaching Assistant (*Semantic Web-based reasoning*)	Lehigh University, Bethlehem, PA, USA	August, 2011 - Nov, 2015
Undergraduate Research Intern (*Wireless Sensor Network*)	Carnegie Mellon University, Pittsburgh, PA, USA	June - August, 2009
Undergraduate Research Intern (*Automatic Speech Recognition*)	University of Lodz, Poland	June-August, 2008

Selected Presentations

- **(Poster)** "Common host gene-microbiome interactions across human diseases", Cold Spring Harbor Laboratory meeting on Microbiome, Cold Spring Harbor, New York, 2019.
- **(Talk)** "A Machine Learning Framework Reveals Common Molecular Interactions Between Gut Microbiome And Host Genes Across Human Disease States", 3rd Workshop on Statistical and Algorithmic Challenges in Microbiome Data Analysis, Simons Foundation, New York, April 2019.
- (**Invited Talk**) "Characterizing Host Gene-Microbiome Interactions in Human Diseases Using Machine Learning", Machine Learning Applications to Phenomics and Genomics, Fall Symposium, Microbial and Plant Genomics Institute, University of Minnesota; August 2018.
- (**Talk**) "Characterizing Host Gene-Microbiome Interactions in Human Diseases Using Machine Learning", 5th Midwest Population Genetics Meeting, University of Minnesota; August 2018.
- (**Poster**) "Interactions between the gut microbiome and host gene regulation shed light on the pathogenesis of colorectal cancer in cystic fibrosis patients", 7th Conference on Beneficial Microbes, Madison, Wisconsin; July 2018.
- (**Invited Talk**) "Interactions between the gut microbiome and host gene regulation shed light on the pathogenesis of colorectal cancer in cystic fibrosis patients", 10th Annual Bioinformatics Research Symposium, University of Minnesota Rochester, January 2018.
- (**Talk**) "A Semantic Web-based system for mining genetic mutations in cancer clinical trials", AMIA Joint Summits on Translational Science, San Francisco, March, 2015.

Teaching and Mentoring Experience

- Designed and taught a course module on "Introduction to Machine Learning using R" in *Computation and Biology* (BICB 8510, Spring 2020)
- Mentored graduate rotation student in Blekhman Lab (Fall 2018)

- Teaching Assistant, Lehigh University (2013 – 2015).
  - Courses: *Design and Analysis of Algorithms*, *Introduction to Java*.
  - Managed classes with 50 - 140 undergraduate students.
  - Responsibilities: Conduct labs, maintain and write scripts for collection and processing of homeworks, grade homeworks and exams, design and deliver guest lectures, hold office hours, mentor students.

Science Outreach and Services

- Organized science outreach activity on the topic of Human Microbiome at farmer's market as part of Market Science, in collaboration with Blekhman Lab members. (June, 2019 and June, 2017)
- Reviewer for Cell Host & Microbe, mSystems, Communications Biology – Nature, Scientific Data - Nature, PeerJ, ESWC, IJCAI research track (2016), Biomedical Data Mining, Modeling, and Semantic Integration (BDM2I) workshop at ISWC (2015).
- Served in local organizing committee for International Semantic Web Conference (ISWC) 2015.

Professional and Technical Skills

- Programming: R, Java, Scala, C, C++, JavaScript
- Tools: NGS Analysis tools (FASTQC, HISAT2, DESeq2, etc.), metagenomics tools (QIIME2, DADA2, etc.), Apache Spark, OpenMPI, OWL API, Protege.
- Platforms: Unix and Windows