Kewalin Samart

Computational Biology | Method Development | Machine Learning | Host-directed Drug Repurposing
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Education

University of Colorado Denver, Anschutz Medical Campus (CU Anschutz)   Aurora, CO
Doctor of Philosophy in Computational Bioscience   Aug 2022 – present
- Thesis Advisors: Dr. Janani Ravi and Dr. Arjun Krishnan
- C. Werner and Kitty Hirs Fellowship
- Coursework: Methods and Tools in Biomedical Informatics, Research Methods in Biomedical Informatics, Machine Learning for Biomedical Applications, Statistics for Basic Sciences, Neural Networks and Deep Learning

Michigan State University (MSU)   East Lansing, MI
Bachelor of Science in Computational Mathematics   *Degree Awarded* May 2022
Minor in Computational Math, Science, and Engineering
- High Honor (Summa Cum Laude)
- McCartney Math Award, L.C. Plant Math Award, College of Natural Science Scholar
- Cumulative GPA: 3.98/4.00; Major GPA: 4.00/4.00
- Dean's Honor List: Fall 2018 – Spring 2022
- Royal Thai Government Scholarship Recipient 2017

Skills
- **Programming languages:** R, Python, Shell, C++, TeX
- **Computational Tools:** Git, vi, Terminal, Unix/Linux, High-performance/ Cluster computing, LaTeX

Publications/preprints
- **Kewalin Samart****, Phoebe Tuyishime**, Arjun Krishnan*, Janani Ravi*. Reconciling multiple connectivity scores for drug repurposing. *Briefings in Bioinformatics* (2021) doi.org/10.1093/bib/bbab161. GitHub: https://github.com/jravilab/connectivity_scores Live doc: https://jravilab.github.io/connectivity_scores
- Janani Ravi*, **Kewalin Samart**, Jason Zwolak. Modeling the START transition in the budding yeast cell cycle. *PLOS Computational Biology* (2024) doi.org/10.1371/journal.pcbi.1012048. Online simulator: http://sbmlsimulator.org/simulator/by-start
- **Kewalin Samart**, Landon Buskirk, Amy Tonielli, Arjun Krishnan, Janani Ravi. Integrating multiple transcriptome-based methods for drug repurposing in tuberculosis. *In preparation*.

**co-primary authors; *corresponding authors.

Conferences, meetings, workshops, seminars
<u>Oral presentations</u>

Intramural
- R-Ladies Aurora Spring 2025 Workshop Series. CU Anschutz, Aurora, CO. Feb. 18, 2025. 1.5-hours hands-on workshop. Presentation materials: https://github.com/rladies-aurora/202502-Python-in-R. *Python in R*.
- 2024 CU Department of Biomedical Informatics Annual Retreat. Denver Botanical Gardens, Denver, CO. Aug. 27, 2024. Lightning Talk. *SigMatch: Mechanism-guided drug repurposing in infectious diseases.*

- Computational Bioscience Program Seminars. CU Anschutz, Aurora, CO. May. 6, 2024. Research Updates. *Unraveling disease-specific signatures towards identifying host-directed therapeutics for infectious diseases.*
- CU Department of Biomedical Informatics Seminars. CU Anschutz, Aurora, CO. May. 6, 2024. Lightning Talk. *SigMatch: Mechanism-guided drug repurposing in infectious diseases using machine learning + host-response approaches.*

Extramural
- 2024 Quantitative Cell and Molecular Biology (qCMB) Symposium. Colorado State University, Fort Collins, CO, Jun. 18, 2024. Contributed Talk. *Leveraging transcriptomic disease- and drug signatures towards identifying novel host-directed therapeutics for tuberculosis.*
- R workshop at Global Alliance for Rapid Diagnostics (GARD). Virtual, Mar. 21, 2023. Presentation material: https://github.com/jananiravi/R_intro. *Introduction to R programming*.
- 2nd Latin American Congress of Women in Bioinformatics and Data Science (WBDS LA). Virtual, Sep. 23, 2021. Contributed Talk. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*
- 29th Conference on Intelligent Systems for Molecular Biology and the 20th European Conference on Computational Biology (ISMB/ECCB). Virtual, Jul. 25, 2021. Contributed Talk. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*
- R-Ladies Pune. Virtual, May. 9, 2021. Presentation material: https://github.com/KewalinSamart/Rladies-lightning-talk-distill. Lighting Talk. *Distill-flavoured R Markdown for Scientific Manuscripts.*
- *Repurposing drugs for diseases. The Sci-Files on Impact 89FM Episode 11 Season 6, Aug. 1, 2021.* Podcast: https://impact89fm.org/101365/podcasts/the-sci-files-08-01-2021-kewalin-samart-repurposing-drugs-for-diseases/

Posters

Intramural
- 2023 Department of Biomedical Informatics Annual Retreat. CU Anschutz, Aurora, CO, Aug. 29, 2023. *Integrating multiple transcriptome-based methods to repurpose drugs for infectious diseases.*
- Colorado Immunology and Microbiology conference. Vail, CO, Sep. 24 – 26, 2022. *Integrating multiple transcriptome-based methods to repurpose drugs for infectious diseases.*
- 2021 Mid-Michigan Symposium for Undergraduate Research Experiences (Mid-SURE). Virtual, Jul. 28, 2021. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*
- 2021 University Undergraduate Research and Arts Forum (UURAF). Virtual, Apr. 15 – 19, 2021. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*
- 2020 Mid-Michigan Symposium for Undergraduate Research Experiences (Mid-SURE). Virtual, Aug. 10, 2020. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*

Extramural
- 2024 Computational Systems for Integrative Genomics. Flatiron Institute, New York, NY, Jul. 17–18, 2024. *Leveraging transcriptomic disease- and drug signatures towards identifying novel host-directed therapeutics for tuberculosis.*
- 2023 Genome Informatics Conference. Cold Spring Harbor Laboratory, Woodbury, NY, Dec. 6–9, 2023. *Integrating multiple transcriptome-based methods to repurpose drugs for infectious diseases.*
- Intelligent Systems for Molecular Biology, ISMB 2022, International Society for Computational Biology flagship conference. Virtual, Jul. 11 – 12, 2022. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*
- 2nd Latin American Congress of Women in Bioinformatics and Data Science (WBDS LA). Virtual, Sep. 22 – 24, 2021. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*

- 29th Conference on Intelligent Systems for Molecular Biology and the 20th European Conference on Computational Biology (ISMB/ECCB). Virtual, Jul. 25 – 30, 2021. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*
- 2021 Great Lakes Bioinformatics Conference (GLBIO). Virtual, May 10 – 13, 2021. *Reconciling Multiple Connectivity Scores for Drug Repurposing.*

Peer reviews

Peer-reviewed computational drug repurposing manuscripts for journals such as *PLOS ONE* and *Bioinformatics*.

Fellowships, honors, awards

- Aug 2022   C. Werner and Kitty Hirs Fellowship
University of Colorado Denver, Graduate School
- Mar 2022   Rasmussen Graduate Recruitment Award
Michigan State University *(declined award)*
- Mar 2022   College of Engineering Distinguished Scholarship for Graduate Studies
Michigan State University *(declined award)*
- Mar 2022   The Graham and Braddock awards
Pennsylvania State University *(declined award)*
- May 2022   High Honor (Summa Cum Laude)
Michigan State University
- Apr 2022   McCartney Mathematics Award
Department of Mathematics, Michigan State University
- Oct 2021   Fall 2021 CNS Undergraduate Research Scholarship
College of Natural Science, Michigan State University
- May 2021   Summer Research Scholarship, EnSURE program
College of Engineering, Michigan State University
- Jan 2021   Spring 2021 CNS Undergraduate Research Scholarship
College of Natural Science, Michigan State University
- Oct 2020   Fall 2020 CNS Undergraduate Research Scholarship
College of Natural Science, Michigan State University
- May 2020   Summer 2020 CNS Undergraduate Research Scholarship
College of Natural Science, Michigan State University
- Apr 2020   L.C. Plant Mathematics Award Scholarship
Department of Mathematics, Michigan State University
- Jan 2020   Spring 2020 CNS Undergraduate Research Scholarship
College of Natural Science, Michigan State University
- Mar 2018   Academic Excellence Award (High Honor)
Lawrence Academy, Groton, MA
- Dec 2017   Academic Excellence Award (Honor)
Lawrence Academy, Groton, MA
- May 2017   Full-ride Scholarship for undergraduate and graduate studies in the U.S.
National Center for Genetic Engineering and Biotechnology (BIOTEC),
Royal Thai Government, Bangkok, Thailand

Research experience

Graduate Research Assistant   Jul 2023–

JRavi and Krishnan Labs; PIs: Dr. Janani Ravi and Dr. Arjun Krishnan

Department of Biomedical Informatics, CU Anschutz

Current projects:

- Integrating multiple transcriptome-based methods for drug repurposing in tuberculosis. [NIH R35 GM128765]
- Mechanism-guided drug repurposing for host-directed therapy of infectious diseases using interpretable and integrative ML. [NIH R21 AI169301]

PhD Rotation Student   Mar 2023–May 2023

Zhang Lab; PI: Dr. Fan Zhang

Department of Biomedical Informatics, CU Anschutz

- Predicting drug response pathway-driven cell phenotypes in Rheumatoid arthritis using large single-cell transcriptomics.

PhD Rotation Student   Jan 2023–Mar 2023

Kechris Lab; PI: Dr. Katerina Kechris

Department of Biostatistics and Informatics, CU Anschutz

- Identification of enriched pathways associated with multiple Chronic Obstructive Pulmonary Disease phenotypes.

Undergraduate Research Assistant   Mar 2021–May 2022

Krishnan Lab; PI Dr. Arjun Krishnan

Department of Computational Mathematics, Science, and Engineering, MSU

- Research focus: methods and applications of transcriptome-based drug repurposing.

Undergraduate Research Assistant   Dec 2019–May 2022

JRavi Lab; PI: Dr. Janani Ravi

Department of Pathobiology and Diagnostic Investigation, MSU

- Research focus: methods and applications of transcriptome-based drug repurposing and mathematical modeling.

Teaching experience

Educational Assistant   Spring 2024

Computational Bioscience Graduate Program, CU Anschutz

CPBS 7712: Research Methods in Biomedical Informatics

Supported student learning by assisting in classes, hosting office hours, and facilitating class discussions to promote engagement and understanding of course material.

Course director: Dr. Anne Thessen

Private English Tutor   Summer 2022

Conducted weekly one-on-one online tutoring sessions titled "English for Communication" for a college student in Thailand, focusing on improving conversational skills and effective communication.d

Undergraduate Teaching Assistant   Jan 2022–Apr 2022

Department of Computational Mathematics, Science, and Engineering, MSU

CMSE 202: Computational Modeling and Data Analysis II

Lead instructor: Dr. Luciano Silvestri

Mentoring

<u>Undergraduates</u>
- Oct 2023–   Landon Buskirk
                     Data Science, Michigan State University
- Summer 2024   Kritika Verma
                     IT and Mathematical Innovations, University of Delhi
- Spring 2022   Amy Tonielli
                     Biomedical Laboratory Science, Michigan State University

<u>PhD rotation students</u>
- Sep 2024–Nov 2024 Michael Opoku Ntrakwa
                     Human Medical Genetics and Genomics Program, CU Anschutz.
- Dec 2024–   Yichi Chen
                     Human Genetics and Genomics Program, CU Anschutz.

Professional services
- 2024   Computational Bioscience Program Admissions Committee
- 2023   Computational Bioscience Program Retreat Committee
- 2021–2022   the University Academic Grievance Hearing Board
                the University Academic Integrity Hearing Board
                the University Academic Appeal Board

Outreach
- Aug 2023–   Co-organizer of R-Ladies Aurora
                Plan and organize events for R-Ladies Aurora: meetup.com/rladies-aurora/.
- Jul 2023   2023 Summer Academy, SACNAS CU Anschutz Chapter
                Helped set up program activities.
- Jul 2021   useR! 2021 The R Conference
                MaRmot. Helped provide program information to participants.
- Mar 2018   The Arc of Opportunity in North Central Massachusetts
                Cared for people with disabilities.

Professional membership
- 2021–   International Society for Computational Biology (ISCB), Bethesda, MD
- 2021–   Association for Women in Mathematics (AWM), Providence, RI
- 2021–2022   MSU Women in STEM, Member East Lansing, MI
- 2020–2022   Women + Data Science, Member East Lansing, MI
- 2019–2022   R-Ladies East Lansing, Member East Lansing, MI
- 2018–2022   MSU Thai Student Association (ThaiSA), Member East Lansing, MI

Personal interests, hobbies
Swimming | Singing (soprano) | Cooking/baking