CURRICULUM VITAE

01/06/2026

Philip J. Freda, M.S., Ph.D.

CURRENT POSITIONS:

2025-present	Research Scientist I, Department of Computational Biomedicine, Cedars-Sinai

PROFESSIONAL CONTACT INFORMATION

Business Address: Cedars-Sinai Medical Center, Computational Biomedicine, 700 N. San Vicente Blvd., Pacific Design Center, Suite G540, West Hollywood, CA, 90069, United States

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Professional Website: philipfreda.com

EDUCATION:

2001-2005	BS - Administration of Justice, Pennsylvania State University, Abington, United States
2012-2014	MS - Biology, Saint Joseph's University, Biology, Philadelphia, PA, United States
2014-2018	PhD - Entomology, Ecological Genomics, Kansas State University, Entomology, Manhattan, KS, United States
2019-2021	T32 Postdoctoral Fellow - Artificial Intelligence, Machine Learning, Clinical Informatics, Artificial Intelligence, Machine Learning, Clinical Informatics, University of Pennsylvania, Biostatistics, Epidemiology, and Informatics, Philadelphia, United States

BOARD CERTIFICATION:

2022	Responsible Conduct of Research (RCR), Cedars-Sinai Medical Center

PREVIOUS POSITIONS:

08/2012-05/2014	Graduate Research Assistant/GK-12 Teaching Fellow, Department of Biology, Saint Joseph's University
08/2014-12/2018	Graduate Research Assistant, Department of Entomology, Kansas State University
05/2019-05/2021	T32 Postdoctoral Fellow, Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania
05/2021-01/2022	Postdoctoral Researcher, Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania
01/2022-12/2023	Postdoctoral Scientist, Department of Computational Biomedicine, Cedars-Sinai Medical Center
01/2024-12/2025	Project Scientist, Department of Computational Biomedicine, Cedars-Sinai Medical Center

PROFESSIONAL ACTIVITIES:

Other Committee Service:

01/2013-08/2013	Member, Northeast Spotted Wing Drosophila Working Group, Northeast Spotted Wing Drosophila Working Group
01/2014-05/2014	Member, Commencement Speaker Committee, Saint Joseph's University
01/2016-12/2016	Member, Lethal Weapons Event Sub-Committee, Kansas State University
08/2016-05/2017	Member, Committee on Governmental Issues, Kansas State University

08/2017-05/2018 Member, Popenoe Entomology Club - Public Relations, Kansas State University

Professional Associations/Society Memberships:

05/2014- Member, Graduate Honors Society, Alpha Epsilon Lambda

05/2016- Member, Golden Key Honour Society

07/2024- Member, K Scholar, UCLA CTSI K Scholars Society

Community Service:

01/2012- Journal Peer Reviewer, AI in Medicine, Biological Control, BMJ Mental Health, Computers in Biology and Medicine, Drug and Alcohol Dependence, Entomologia Experimentalis et Applicata, Frontiers in Public Health, Genetica, Genetics, Heredity, Journal of Medical Internet Research, Journal of Neuroscience Research, Journal of Pest Science, Journal of Thermal Biology, Scientific Reports, Substance Use Research and Treatment

01/2012-12/2014 Columnist, Practical Science with Phil Freda, Patch.com, Upper Moreland-Willow Grove, PA

05/2013-06/2013 Member, Recruitment Representative, Saint Joseph's University

08/2014-08/2017 Chair, Team Manager - Intramural Softball, Kansas State University

01/2023-12/2023 Member, Grant Reviewer, National Science Foundation

MENTORING:

Undergraduate, Medical Student, and Research Intern Mentoring:

08/2014-05/2015 Colin Bailey, Undergraduate, BS - Geography, Research Mentorship, Entomologist, Arizona Department of Agriculture

08/2014-05/2015 Saadia Cleve, Undergraduate, BS - Agricultural Engineering, Research Mentorship

08/2015-05/2016 Ashley Helget-Wedin, Undergraduate, BS - Biology, Research Mentorship

08/2015-05/2016 Oshadhi Athukorala Arachchige, Undergraduate, BS - Biology, Research Mentorship, Scientist, Sri Lanka Institute of Nanotechnology

08/2015-05/2016 Mariah Brown, Undergraduate, BS - Biological Systems Engineering, Research Mentorship, Hazards Analyst, Amentum

08/2015-05/2017 Nicholas Heter, Undergraduate, BS - Biology (Pre-med), Research Mentorship, Family Medicine Physician, UC Health

08/2015-05/2017 Jackson Alex, Undergraduate, BS - Biology, Research Mentorship

08/2015-05/2017 Adam Schieferecke, Undergraduate, BS - Microbiology, Research Mentorship, Co-Founder, Head of Research, Vivere Oncotherapies

08/2016-05/2018 Zainab Ali, Undergraduate, BS - Molecular and Cellular Biology, Genetics, Research Mentorship, Senior Global Product Manager, Software and Bioinformatics, Bio-Rad Laboratories

05/2022-08/2022 Elizabeth Zhang, Undergraduate, BS - Statistics, Research Mentorship, Health Policy Research Assistant, Center on Budget and Policy Priorities

05/2022-08/2022 Tianhao Luo, Undergraduate, BA, Research Mentorship, PhD Researcher, Harvard University

08/2024-05/2025 Yufei Meng, Undergraduate, BS, Research Mentorship, PhD Student, New York University

05/2025-08/2025 Kia Kazemi-Nia, Research Intern, MS, Research Mentorship, Research Associate Data Scientist, Cedars-Sinai Medical Center

HONORS AND SPECIAL AWARDS:

2012	GK-12 Teaching Fellowship, National Science Foundation, Howard Hughes Medical Institute
2012	Graduate Assistant Scholarship, National Science Foundation, Howard Hughes Medical Institute
2014	Biology Graduate Student Award, Saint Joseph's University
2014	Travel Award, American Genetics Association
2014	Timothy R. Donahue Graduate Scholarship, Kansas State University
2015	Reginald H. Painter Memorial Scholarship, Kansas State University - Department of Entomology
2015	Grants in Aid of Research (GIAR), Sigma Xi: Kansas State University
2016	Travel Award, Kansas State University - Department of Entomology
2016	Don C. Warren Genetics Scholarship, Kansas State University - Department of Entomology
2017	Travel Award, Kansas State University - Department of Entomology
2017	Roger C. Smith Scholarship in Entomology, Kansas State University - Department of Entomology
2019	Ruth L. Kirschstein Institutional National Research Service Award, University of Pennsylvania
2022	Cedars-Sinai Clinical Scholars Program, Cedars-Sinai Medical Center

RESEARCH AWARDS AND GRANTS:

Current Grants:

8/1/2025 - 7/31/2030
Improving the prediction of opioid outcomes via automated EHR data processing
National Institute Drug Abuse #1K01DA063751-01
Principal Investigator: **Philip J. Freda, M.S., Ph.D.**
USD 958,500

Past Grants:

5/15/2019 - 5/15/2021
Ruth L. Kirschstein National T32 - Research Service Award: Institutional Research Training Grant
National Human Genome Research Institute #T32 HG009495
Senior/key personnel: **Philip J. Freda, M.S., Ph.D.**
USD 120,000

INVITED LECTURES AND PRESENTATIONS:

International Presentations

1. Decoupling of physiology across metamorphosis, SICB Annual Meeting, Society for Integrative and Comparative Biology, Portland, Oregon, 1/2016
2. Identifying mechanisms of cold hardiness across metamorphosis in Drosophila melanogaster, International Symposium of the Environmental Physiology of Ectotherms and Plants, Estonian University of Life Sciences, Tartu, Estonia, 7/2017
3. Cluster analysis reveals socioeconomic disparities among elective spine surgery patients, PSB 2024, Pacific Symposium on Biocomputing, Kona, Hawaii, 1/2024

National Presentations

1. Genomic regions responsible for altered reproductive characteristics of Arabidopsis thaliana grown at elevated [CO2], Plant Biology 2012, American Society of Plant Biologists, Austin, Texas, 7/2012
2. Temporal variation at microsatellite loci in wild-caught Drosophila simulans, Arthropod Genomics Research Symposium, Kansas State University, Manhattan, Kansas, 6/2015
3. Phenotypic and genetic decoupling of thermal hardiness across metamorphosis, 59th Annual Drosophila Research Conference, Genetics Society of America, Philadelphia, Pennsylvania, 4/2018
4. A practical user's guide for ChatGPT, Health Language Processing Annual Symposium 2024, Cedars-Sinai Medical Center, West Hollywood, California, 10/2024

Regional and Extramural Local Presentations

1. Ontogenetic constraint in the thermal physiology of Drosophila melanogaster, Ecological Genomics Summer Research Forum, Kansas State University, Manhattan, Kansas, 11/2015

Cedars-Sinai/Institutional Presentation

1. Automated quantitative trait locus analysis, CBM Research Day, Cedars-Sinai Medical Center - Department of Computational Biomedicine, West Hollywood, California, 8/2022
2. Predicting spine surgery outcomes and post-operative dosage from electronic health records, CBM Research Day, Cedars-Sinai Medical Center - Department of Computational Biomedicine, West Hollywood, California, 8/2022
3. Electronic health record (EHR) data challenges and solutions, CBM Science Cafe, Cedars-Sinai Medical Center - Department of Computational Biomedicine, West Hollywood, California, 9/2024
4. From data to decisions: AI in preoperative risk assessment for spinal fusion, Division of Informatics Grand Rounds, Cedars-Sinai Medical Center - Division of Informatics, West Hollywood, California, 3/2025
5. StarBASE-GP: biologically-guided automated machine learning for genotype-to-phenotype association analysis, CBM Grand Rounds, Cedars-Sinai Medical Center - Department of Computational Biomedicine, West Hollywood, California, 9/2025

TEACHING ACTIVITIES:

01/2026-04/2026	Course developed, Artificial Intelligence (HAI 100B), PhD in Health Artificial Intelligence, Cedars-Sinai Medical Center, Health Sciences University, Los Angeles, United States
01/2026-04/2026	Course taught, Artificial Intelligence (HAI 100B), PhD in Health Artificial Intelligence, Cedars-Sinai Medical Center, Health Sciences University, Los Angeles, United States

Non-Clinical Teaching

01/2010-05/2010	Teaching Assistant - Cellular Biology, Saint Joseph's University
05/2010-08/2010	Teaching Intern - Noyce Scholarship Program, The School District of Philadelphia
08/2012-05/2014	Teaching Fellow - GeoKids LINKS GK-12 Program, Saint Joseph's University and the Wagner Free Institute of Science
01/2015-12/2015	Lecturer and Coordinator - R User Group, Kansas State University
08/2015-12/2015	Teaching Assistant - Insects and People (ENTOM 301), Kansas State University
12/2019-12/2019	Guest Lecturer - Using R in your Research, Saint Joseph's University
08/2023-05/2025	Invited Lecturer - Inferring opioid use disorder severity from clinical notes: an annotation study, University of Pennsylvania

BIBLIOGRAPHY/PUBLICATIONS:

Research Papers – Peer-Reviewed (Published)

1. Freda PJ, Braverman JM. *Drosophila suzukii*, or Spotted Wing Drosophila, Recorded in Southeastern Pennsylvania, U.S.A. Entomological News, May 01, 2013; 123, (1): (71-75). doi: 10.3157/021.123.0116
2. Leung, W, Shaffer, CD, Reed, LK, Smith, S.T., Barshop, W., Dirkes, W., […], Freda, P.J., […], Eglin, S.C.R. Drosophila Muller F Elements maintain a distinct set of genomic properties over 40 million years of evolution. G3: Genes, Genomes, Genetics, May 01, 2015; 5, (5): (719-740) doi: 10:1534/g3.114.015966. PubMed PMID: 25740935
3. Freda PJ, Alex JT, Morgan TJ, Ragland GJ. Genetic Decoupling of Thermal Hardiness across Metamorphosis in Drosophila melanogaster. Integrative and comparative biology, Nov 01, 2017; 57, (5): (999-1009). doi: 10.1093/icb/icx102. PubMed PMID: 29045669
4. Everman ER, Freda PJ, Brown M, Schieferecke AJ, Ragland GJ, Morgan TJ. Ovary Development and Cold Tolerance of the Invasive Pest Drosophila suzukii (Matsumura) in the Central Plains of Kansas, United States. Environmental entomology, Aug 01, 2018; 47, (4): (1013-1023). doi: 10.1093/ee/nvy074. PubMed PMID: 29846535
5. Freda PJ, Ali ZM, Heter N, Ragland GJ, Morgan TJ. Stage-specific genotype-by-environment interactions for cold and heat hardiness in Drosophila melanogaster. Heredity, Oct 01, 2019; 123, (4): (479-491). doi: 10.1038/s41437-019-0236-9. PubMed PMID: 31164731
6. Kennedy EE, Davoudi A, Hwang S, Freda PJ, Urbanowicz R, Bowles KH, Mowery DL. Identifying Barriers to Post-Acute Care Referral and Characterizing Negative Patient Preferences Among Hospitalized Older Adults Using Natural Language Processing. AMIA ... Annual Symposium proceedings. AMIA Symposium, Jan 01, 2022; 2022, : (606-615). PubMed PMID: 37128417
7. Poulsen MN, Freda PJ, Troiani V, Davoudi A, Mowery DL. Classifying Characteristics of Opioid Use Disorder From Hospital Discharge Summaries Using Natural Language Processing. Frontiers in public health, Jan 01, 2022; 10, : (850619). doi: 10.3389/fpubh.2022.850619. PubMed PMID: 35615042. **Equal First Authorship.**
8. Freda PJ, Toxopeus J, Dowle EJ, Ali ZM, Heter N, Collier RL, Sower I, Tucker JC, Morgan TJ, Ragland GJ. Transcriptomic and functional genetic evidence for distinct ecophysiological responses across complex life cycle stages. The Journal of experimental biology, Jun 01, 2022; 225, (11): (jeb244063). doi: 10.1242/jeb.244063. PubMed PMID: 35578907
9. Freda PJ, Ghosh A, Zhang E, Luo T, Chitre AS, Polesskaya O, St. Pierre CL, Gao J, Martin CD, Chen H, Garcia-Martinez AG, Wang T, Han W, Ishiwari K, Meyer P, Lamparelli A, King CP, Palmer AA, Li R, Moore JH. Automated quantitative trait locus analysis (AutoQTL). BIODATA MINING, Apr 10, 2023; 16, (1)doi: 10.1186/s13040-023-00331-3. PubMed PMID: 37038201
10. Orlenko A, Freda PJ, Ghosh A, Choi H, Matsumoto N, Bright TJ, Walker CT, Obafemi-Ajayi T, Moore JH. Cluster Analysis reveals Socioeconomic Disparities among Elective Spine Surgery Patients. Pacific Symposium on Biocomputing, Jan 01, 2024; 29, : (359-373). doi: 10.1142/9789811286421_0028. PubMed PMID: 38160292. **Equal First Authorship.**
11. Orlenko A, Freda P, Ghosh A, Choi H, Matsumoto N, Bright T, Walker C, Obafemi-Ajayi T, Moore J. Cluster Analysis reveals Socioeconomic Disparities among Elective Spine Surgery Patients. Jan 05, 2024; **Equal First Authorship.**
12. Poulsen MN, Freda PJ, Troiani V, Mowery DL. Developing a Framework to Infer Opioid Use Disorder Severity From Clinical Notes to Inform Natural Language Processing Methods: Characterization Study. JMIR mental health, Jan 01, 2024; 11, : (e53366). doi: 10.2196/53366. PubMed PMID: 38224481. **Equal First Authorship.**
13. Batista S, Madar VS, Freda PJ, Bhandary P, Ghosh A, Matsumoto N, Chitre AS, Palmer AA, Moore JH. Interaction models matter: an efficient, flexible computational framework for model-specific investigation of epistasis. BioData mining, Feb 01, 2024; 17, (1): (7). doi: 10.1186/s13040-024-00358-0. PubMed PMID: 38419006. **Equal First Authorship.**

14. Freda PJ, Ye S, Zhang R, Moore JH, Urbanowicz RJ. Assessing the limitations of relief-based algorithms in detecting higher-order interactions. BioData mining, Oct 01, 2024; 17, (1): (37). doi: 10.1186/s13040-024-00390-0. PubMed PMID: 39354639
15. Freda PJ, Ghosh A, Bhandary P, Matsumoto N, Chitre AS, Zhou J, Hall MA, Palmer AA, Obafemi-Ajayi T, Moore JH. PAGER: A novel genotype encoding strategy for modeling deviations from additivity in complex trait association studies. BioData mining, Oct 01, 2024; 17, (1): (41). doi: 10.1186/s13040-024-00393-x. PubMed PMID: 39394173
16. Sha Z, Freda PJ, Bhandary P, Ghosh A, Matsumoto N, Moore JH, Hu T. Distinct network patterns emerge from Cartesian and XOR epistasis models: a comparative network science analysis. BioData mining, Dec 01, 2024; 17, (1): (61). doi: 10.1186/s13040-024-00413-w. PubMed PMID: 39732697. **Equal First Authorship.**
17. Ghosh A, Freda PJ, Shahrestani S, Boyke AE, Orlenko A, Choi H, Matsumoto N, Obafemi-Ajayi T, Moore JH, Walker CT. Preoperative anemia is an unsuspecting driver of machine learning prediction of adverse outcomes after lumbar spinal fusion. The spine journal: official journal of the North American Spine Society, Aug 01, 2025; 25, (8): (1596-1607). doi: 10.1016/j.spinee.2025.01.031. PubMed PMID: 39892713. **Equal First Authorship.**
18. Ghosh A, Freda PJ, Shahrestani S, Orlenko A, Scheer JK, Obafemi-Ajayi T, Moore JH, Walker CT Leveraging automated machine learning to benchmark, deconstruct, and compare frailty indices for Predicting adverse spinal surgery outcomes. Scientific Reports, 2026. In Press. **Equal First Authorship.**

Reviews

1. Freda PJ, Moore JH, Kranzler HR. The phenomics and genetics of addictive and affective comorbidity in opioid use disorder. DRUG AND ALCOHOL DEPENDENCE, Apr 01, 2021; 221, doi: 10.1016/j.drugalcdep.2021.108602. PubMed PMID: 33652377
2. Freda PJ, Kranzler HR, Moore JH. Novel digital approaches to the assessment of problematic opioid use. BIODATA MINING, Jul 15, 2022; 15, (1): (1). doi: 10.1186/s13040-022-00301-1. PubMed PMID: 35840990
3. Li C, Mowery DL, Ma X, Yang R, Vurgun U, Hwang S, Donnelly HK, Bandhey H, Senathirajah Y, Visweswaran S, Sadhu EM, Akhtar Z, Getzen E, Freda PJ, Long Q, Becich MJ. Realizing the potential of social determinants data in EHR systems: A scoping review of approaches for screening, linkage, extraction, analysis, and interventions. Journal of clinical and translational science, Jan 01, 2024; 8, (1): (e147). doi: 10.1017/cts.2024.571. PubMed PMID: 39478779

Abstracts

1. Walker C, Freda P, Ghosh A, Matsumoto N, Orlenko A, Choi H, Obafemai-Ajayi T, Moore J. Machine learning models predict outcomes of hospital re-admission, prolonged length of stay and adverse discharge disposition after elective spinal fusion surgery. AANS/CNS Joint Section of Spine and Peripheral Nerves Annual Meeting, Mar 19, 2023;
2. Ghosh A, Freda P, Moore J, Walker C. Automated Novel Machine Learning Algorithms Outperform Electronic Frailty Indices in Predicting Adverse Outcomes after Lumbar Spinal Fusion. AANS/CNS Spine Section Annual Meeting, Feb 23, 2025;

Posters

1. "Computational study of flowering time genetics in *Arabidopsis thaliana* with QTL Cartographer." Sigma Xi Research Symposium. Philadelphia, Pennsylvania, 2011.
2. "Drosophila biodiversity on the campus of Saint Joseph's University." Sigma Xi Research Symposium. Philadelphia, Pennsylvania, 2012.
3. "Drosophila biodiversity on the campus of Saint Joseph's University." Sigma Xi Research Symposium. Philadelphia, Pennsylvania, 2013.
4. "Estimating phage genome sizes by pulsed-field gel electrophoresis for preliminary cluster identification." 5th Annual SEA-PHAGES Symposium. Janelia Farm Research Campus, Ashburn, Virginia, 2013.

5. “Temporal variation at microsatellite loci in wild-caught *Drosophila simulans*.” Sigma Xi Research Symposium. Philadelphia, Pennsylvania, 2014.
6. “Temporal variation at microsatellite loci in wild-caught *Drosophila simulans*.” Sigma Xi Research Symposium. Manhattan, Kansas, 2015.
7. “Evolution of complex life cycles: Is performance constrained across metamorphosis?” 13th Annual Ecological Genomics Symposium Poster Session. Manhattan, Kansas, 2015.
8. “Decoupling of physiology across metamorphosis.” Kansas State University Department of Entomology Seminar Series. Manhattan, Kansas, 2015.
9. “Ontogenetic constraint in the thermal physiology of *Drosophila melanogaster*: A genomic assessment of the adaptive decoupling hypothesis.” Kansas State University Department of Biology Ecological Genomics Summer Research Forum. Manhattan, Kansas, 2015.
10. “Phenotypic plasticity promotes persistence of an invasive pest following environmental stress.” Sigma Xi Research Symposium. Manhattan, Kansas, 2016.
11. “Decoupling of physiology across metamorphosis.” Kansas State University Department of Entomology Seminar Series. Manhattan, Kansas, 2016.
12. “Phenotypic and genetic decoupling of thermal hardiness across metamorphosis.” 59th Annual *Drosophila* Research Conference Poster Session. Philadelphia, Pennsylvania, 2018.
13. “Automated quantitative trait locus analysis (AutoQTL).” Cedars-Sinai Research Day Poster Session. West Hollywood, California, 2022.
14. “Predicting spine surgery outcomes and post-operative opioid dosage from electronic health records.” Cedars-Sinai Research Day Poster Session. West Hollywood, California, 2022.
15. “Cluster analysis reveals socioeconomic disparities among elective spine surgery patients.” Pacific Symposium for Biocomputing Poster Session. Kona, Hawaii, 2024.
16. “An endogenous opioid system in the Pacific Hagfish, a vertebrate-invertebrate species, analogous to the Mammalian opioid system.” Society of Neuroscience Conference. San Diego, California, 2025.