

Alan P. Boyle

Education

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| 2005–2009 | Doctor of Philosophy , Computational Biology and Bioinformatics Duke University, Durham, NC |
| 2001–2005 | Bachelor of Science , <i>summa cum laude</i> , Biochemistry and Molecular Biology Bachelor of Science , <i>summa cum laude</i> , Computer Science Mississippi State University, Starkville, MS |

Academic Appointments

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| 2025–present | Professor with tenure , Department of Computational Medicine & Bioinformatics Professor , Department of Human Genetics |
| 2023–present | Core Member , Rogel Cancer Center |
| 2020–2023 | Affiliate Member , Rogel Cancer Center |
| 2021–present | Affiliate , Michigan Neuroscience Institute |
| 2016–present | Member , Center for RNA Biomedicine |
| 2020–2025 | Associate Professor with tenure , Department of Computational Medicine & Bioinformatics Associate Professor , Department of Human Genetics |
| 2015–2020 | Assistant Professor , Department of Human Genetics |
| 2014–2020 | Assistant Professor , Department of Computational Medicine & Bioinformatics University of Michigan, Ann Arbor, MI |
| 2010–2014 | Postdoctoral Scholar , Genetics Stanford University, Stanford, CA; Advisor: Dr. Michael Snyder |
| Spring 2010 | Postdoctoral Associate , Computational Biology Duke University, Durham, NC; Advisor: Dr. Terrence S. Furey |

Scholarships, Fellowships, and Honors

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| 2022 | Valuing our Own Award, Michigan Medicine |
| 2019 | Endowment for the Basic Sciences Teaching Award |
| 2018 | First Place in CAGI5 Regulation Saturation Challenge |
| 2017 | NSF CAREER Award |
| 2016 | Institutional nominee for W.M. Keck Foundation Medical Science Research Program |
| 2016 | Institutional nominee for Searle Scholar Award |
| 2015–2017 | Alfred P. Sloan Foundation Fellowship in Computational & Evolutionary Molecular Biology |
| 2013–2014 | NIH Pathway to Independence Award (K99/R00) [1K99HG007356-01] |
| 2012 | AAAS/Science Program for Excellence in Science |
| 2005–2008 | NSF Graduate Research Fellowship |
| 2005–2009 | James B. Duke Fellowship |
| Summer 2004 | Mayo Clinic Summer Undergraduate Research Fellow |
| 2003 | Barry M. Goldwater Memorial Scholarship |
| Summer 2003 | The Institute for Genomic Research (TIGR) Summer Fellow |
| 2001 | Robert C. Byrd Honors Scholarship |
| 2001 | Mississippi State University Presidential Scholarship |
| 2001 | National Merit Scholarship |

Grant Support

Active

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| 2021–2026 | U01 HG011952 NIH/NHGRI Predicting the impact of genomic variation on cellular states This project seeks to develop tools for interpretation of genomic variation on cellular state through modeling single cell data as part of the IGVF consortium. | (PI: Boyle) |
| 2022–2026 | R01 GM144484 NIH/NIGMS Mobile element derived chromatin looping variability in human populations This project seeks to study the impact of polymorphic LTR13 integrations on 3D chromatin conformation. | (PI: Boyle) |
| 2023–2028 | UG3/UH3 NS132084 NIH/OD Molecular and Computational Tools for Identifying Somatic Mosaicism in Human Tissues As part of the SMAHT consortium this project seeks to develop long-read methods to study somatic mosaicism in normal human tissues. | (Multi-PI: Mills, Boyle) |
| 2022–2025 | Taubman Institute Innovation Projects University of Michigan Short Tandem repeats in precision health and human disease The goal of this project is to develop any assay to measure STRs in human genomes and develop bioinformatic tools to predict STR expansions from genotypes. | (co-PI: Todd, Boyle, Mills) |
| 2021–2026 | K08 HL153799 NIH/NHLBI Predisposition for Lung Injury in Sepsis Survival The goal of this project is to understand the biological mechanisms predisposing to these complications in order to prevent and treat them. | (PI: Denstaedt; Consultant) |
| 2021–2026 | R01 NS122165 NIH/NINDS Uncover the role of H3.3-G343R mutation in shaping the DNA damage response, anti-tumor immunity and mechanisms of resistance in glioma This project seeks to study pediatric high-grade gliomas with H3.3-G343R, ATRX, and TP53 inactivating mutations to understand the impact of H3.3-G343R on the tumor immune microenvironment. | (PI: Castro; Co-I with Effort) |
| 2022–2026 | R01 CA260677 NIH/NCI The Biology of Mutant STAT6 in Follicular Lymphoma This project seeks to study STAT6 gene regulation in the context of B cell lymphoma. | (PI: Malek; Co-I with Effort) |
| 2023–2028 | R01 NS099280 NIH/NINDS Hexanucleotide repeat translation in ALS and Frontotemporal Dementia This project seeks to study RAN translation in ALS and FTD at a hexonucleotide expansion in C9orf72. | (PI: Todd; Consultant) |
| 2024–2029 | R01 DE032699 NIH/NIDCR Defining the Role of HPV Integration Structures in HNSCC Molecular Heterogeneity This proposal seeks to determine how the structure of HPV integration events influences chromatin accessibility and adjacent gene expression in HPV-positive oropharyngeal squamous cell carcinoma, with the goal of identifying pivotal driver integrations that can predict treatment outcomes and guide therapy decisions to improve patient survival and reduce morbidity. | (PI: Brenner, Mills, Spector; Co-I with Effort) |

Completed

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| 2013–2017 | R00 HG007356 Pathway to Independence Award (K99/R00) NIH/NHGRI Global Discovery and Validation of Functional Regulatory Elements | (PI: Boyle) |
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| | This project seeks to extend current assays demonstrating function of genomic regions into an equivalent genome-wide assay. | |
| 2015–2017 | FG-2015-65465 Alfred P. Sloan Foundation Fellowship in Computational & Evolutionary Molecular Biology | (PI: Boyle) |
| 2016–2020 | R01 HL130705 NIH/NHLBI Large-scale human genetics to understand molecular mechanisms of atrial fibrillation and related traits This project seeks to provide new insights into atrial fibrillation mechanisms through whole-genome screening. | (PI: Willer; Co-I with Effort) |
| 2017–2018 | Eleanor and Larry Jackier U-M/Technion and Weizmann Collaborative Research Grant Michigan - Israel Partnership for Research & Education Identifying novel disease related mutations in the genomic environments around Transcription Factor binding sites The goal of this project is to identify variants in the proximity of TF binding sites that have an indirect effect on their binding. | (co-PI: Boyle, Mandel-Gutfreund) |
| 2017–2024 | R35 HL135824 NIH/NHLBI Using Genetics to Inform Mechanism of Cardiovascular Disease The goal of this project is to uncover novel genetic discoveries and biological mechanisms underlying association with devastating cardiovascular diseases. | (PI: Willer; Co-I with Effort) |
| 2019 | NVIDIA GPU Grant NVIDIA Corporation | (PI: Boyle) |
| 2017–2022 | DBI-1651614 NSF/BIO/DBI CAREER: Conservation of cohesin-containing cis regulatory modules in the human and mouse lineages The goal of this project is the study of the turnover of cohesin binding sites in the human and mouse genomes. | (PI: Boyle) |
| 2022–2022 | R21 HG011493 S1 NIH/NIA New technologies for accurate capture and sequencing of repeat-associated regions (Supplement) This project seeks to map mobile elements in a set of Alzheimer's samples. | (Multi-PI: Boyle, Mills) |
| 2019–2022 | Precision Health Investigators Award University of Michigan Short Tandem repeats in precision health and human disease The goal of this project is to develop any assay to measure STRs in human genomes and develop bioinformatic tools to predict STR expansions from genotypes. | (co-PI: Todd, Boyle, Mills) |
| 2022 | NVIDIA GPU Grant NVIDIA Corporation | (PI: Boyle) |
| 2021–2022 | Cancer Center Discovery University of Michigan Direct capture of complete HPV integration sites using long-read sequencing This project seeks to develop methods to capture of complete HPV integration events in the human genome. | (PI: Boyle) |
| 2020–2023 | W81XWH2010336 DoD/Army Understanding & Enhancing the Regenerative Capacity of Skeletal Muscle to Trauma by Targeting Muscle-Nerve Synergy | (PI: Aguilar; Co-I with Effort) |

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| | This project seeks to study the single cell chromatin and RNA landscape in skeletal muscle repair. | |
| 2020–2023 | R21 HG011493 NIH/NHGRI New technologies for accurate capture and sequencing of repeat-associated regions This project seeks to map mobile elements in a trio of cell lines and develop technologies for improving this mapping. | (Multi-PI: Boyle, Mills) |
| 2018–2024 | R01 HD093570 NIH/NICHD Genetic Diagnosis of Neurodevelopmental Disorders in India This study will establish whole-exome sequencing to study mendelian genetic disorders at the All India Institute of Medical Sciences. | (PI: Bielas; Co-I with Effort) |
| 2022–2024 | Michigan Alzheimer's Disease Center Developmental Project University of Michigan Explore the functional impact of transposable elements in Alzheimer's disease and related dementias This project seeks to explore the connection between the somatic transposable elements in the human genome and Alzheimer's disease and related dementias. | (PI: Zhou; Consultant) |
| 2022–2025 | R21 CA2578964 NIH/NCI High-throughput inverted reporter assay for characterization of silencers and enhancer blockers This project seeks to develop tools for the study of negative regulatory elements in cancer development. | (PI: Boyle) |
| 2021–2025 | R01 HD104680 NIH/NICHD Sperm Chromatin: Implications on organismal development and fertility This project seeks to explore protamine chromatin structure in mouse sperm. | (PI: Hammoud; Co-I with Effort) |
| 2017–2025 | U24 HG009293 NIH/NHGRI RegulomeDB: A Resource for the Human Regulome This project seeks to expand and support a RegulomeDB, a database for prioritizing and predicting functional variants in the human genome. | (Multi-PI: Boyle, Cherry) |

Professional Service

Service

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| 2014–2018, 2025–current | DCM&B Admissions Committee [Chair 2025–current] |
| 2015, 2016, 2025 | DCM&B Retreat Planning Committee Chair (including 1st annual) |
| 2024–current | DHG Faculty Development Committee |
| 2023–current | R01 Bootcamp Medical School Cohort Coach |
| 2023–current | Somatic Mosaicism across Human Tissues (SMaHT) Consortium Steering Committee |
| 2021–current | Impact of Genomic Variation on Function (IGVF) Consortium Steering Committee |
| 2022–current | University of Michigan Biomedical Research Council (BMRC) (Standing Member) |
| 2020–2022 | DHG M.S. Admissions Committee |
| 2018–current | Lab Safety Liaison for DCM&B |
| 2017–2024 | DCM&B Preliminary Exam Abstract Review Committee (PARC) [Chair 2018–2022] |
| 2019–2020 | DHG Ph.D. Admissions Committee |
| 2017–2020 | DHG Faculty Recruitment and Promotions Committee |
| 2016–2020 | DCM&B Seminar Series Committee [Chair] |
| 2018–2019 | Cellular and Molecular Biology Admissions Committee |
| 2017–2019 | EBS Faculty IT Committee |
| 2016–2019 | DCM&B Faculty Recruitment Committee |
| 2015–2017 | DHG Computational Support Committee |
| 2008–2009 | Duke Computational Biology & Bioinformatics student committee |

Memberships

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| 2018–current | Member, American Society of Human Genetics (ASHG) |
| 2013–current | Member, International Society for Computational Biology (ISCB) |
| 2012–current | Member, American Association for the Advancement of Science (AAAS) |
| 2005–current | Member, Gamma Sigma Delta Agricultural Honor Society |

Manuscript Reviewing Activity

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| Since 2009 | Ad hoc reviewer (>100 verified reviews) for the journals: <i>Science</i> , <i>Nature Biotechnology</i> , <i>Nature Genetics</i> , <i>Genome Research</i> , <i>Genome Biology</i> , <i>Nature Neuroscience</i> , <i>Nature Communications</i> , <i>Nature Protocols</i> , <i>Bioinformatics</i> , <i>Nucleic Acids Research</i> , <i>BMC Biology</i> , <i>BMC Bioinformatics</i> , <i>PLOS Computational Biology</i> , <i>Oncotarget</i> , <i>Scientific Reports</i> , <i>Atherosclerosis</i> , <i>BioEssays</i> , <i>Gene</i> |
| 2023 | Program Committee, Genome Sequence Analysis, ISMB/ECCB |
| 2023 | Program Committee, Biomedical Informatics, ISMB/ECCB |
| 2018, 2020 | Program Committee, Comparative and Functional Genomics, ISMB/ECCB |
| 2018, 2019 | Program Committee, Studies of Phenotypes and Clinical Applications, ISMB/ECCB |
| 2019 | Program Committee, General Computational Biology, ISMB/ECCB |
| 2017 | Program Committee, Regulatory Genomics Special Interest Group Meeting (RegGenSIG), ISMB/ECCB |
| 2015–2018 | Program Committee, Great Lakes Bioinformatics and Canadian Computational Biology Conference (GLBIO/CCBC) |
| 2015–2016 | Program Committee, Algorithms for Computational Biology (ALCOB) |
| 2013–2016 | Program Committee, Gene Regulation and Transcriptomics, ISMB/ECCB |
| 2012–2015 | DNA Day Essay Contest Detailed Review Judge for ASHG |
| 2012 | Distinguished contributor as a leading reviewer for the journal <i>Bioinformatics</i> |

Grant Reviewing Activity

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| 2025 | NIH Study Section ZRG1 IIDB Z (70) - Stage I New Innovator Award Program (Mail-in) |
| 2025 | NIH Study Section ZRG1 MGG-F (90) S - Special Topics in Genomics, Genetic Evolution, and Technology Development (Ad Hoc) |
| 2025 | NIH Study Section BDMA - Biodata Management and Analysis Study Section (Ad Hoc) |
| 2024 | NIH Study Section ZRG1 BBBT-D (50) - PAR Panel: Biodata Management and Common Fund Data Sets (Ad Hoc and co-Chair) |
| 2024 | NIH Study Section BDMA - Biodata Management and Analysis Study Section (Ad Hoc) |
| 2023 | NSF Review Panel - Molecular and Cellular Biosciences (MCB) - Genetic Mechanisms (Ad Hoc) |
| 2023 | NIH Study Section - Multi-Omics of Health and Disease – Data Analysis and Coordination Center |
| 2023 | NIH Study Section GVE - Genetic Variation and Evolution Study Section (Ad Hoc) |
| 2022 | NIH Study Section ZRG1 ISB-S (57) - Academic-Industrial Partnerships for Translation of Technologies for Diagnosis and Treatment |
| 2022 | NASA Study Section E.11 Space Biology: Animal Studies - Omics Systems [21SBAS-OmisSys] (Ad Hoc) |
| 2020 | NIH/NIMH Study Section ZMH1 ERB-C (08) - Fine-Mapping Genome-Wide Associated Loci to Identify Proximate Causal Mechanisms of Serious Mental Illness |
| 2019 | NIH/NIMH Study Section ZMH1 ERB-C (01) - PsychENCODE: Non-Coding Functional Elements in the Human Brain and Their Role in the Development of Psychiatric Disorders |
| 2018–2019 | University of Michigan internal review for Searle Scholars Program |
| 2015 | UK Medical Research Council (RCUK MRC) - Methodology Research Panel (Ad Hoc) |
| 2015 | UK Biotechnology and Biological Sciences Research Council (RCUK BBSRC) (Ad Hoc) |
| 2015 | Michigan Institute for Clinical & Health Research (MICHR) Postdoctoral Translational Scholars Program (Ad Hoc) |

Teaching and Mentorship

Training Programs

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| 2024–present | Member, Systems & Integrative Biology Training Grant (SIB) |
| 2021–present | Member, Biomedical Informatics and Data Science Training Program (BIDS-TP) |
| 2017–present | Member, Cellular and Molecular Biology Program |

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| 2015–present | Member , Genome Science Training Program (GSTP) |
| 2015–present | Member , Michigan Predoctoral Training Program in Genetics (GTP) |
| 2014–present | Member , Program in Biomedical Sciences |
| 2014–present | Member , Bioinformatics Training Program |

Teaching (F = Fall Term, W = Winter Term, S = Summer Term)

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| W19, W20, W21, W22, W23, W24, W25 | Bioinformatics Concepts and Algorithms (BIOINF 529) [Course Director] |
| F15, F16, F17, F18, F19, F20, F21 | Gene Structure and Regulation (HUMGEN 541) [3 lectures + 2 discussions / yr.] |
| F19, F22 F21, W22, F24, W25 | Research Responsibility and Ethics (PIBS 503) [1 discussion / yr.] Genetics Student Seminar (HUMGEN 821/822) [Mentor] |
| F17, F18 F15, W16, F16, W17, F17, W18, F18 | Experimental Genetics Systems (HUMGEN 632) [Course Director] Bioinformatics Journal Club (BIOINF 602/603) [Course Director F18] |
| S17, S18 F15, F16, F17 S15, S16, S17 F03 | Introduction to Biocomputing Bootcamp (BIOSTAT/BIOINF/HUMGEN 606) [2 full days / yr.] Introduction to Bioinformatics & Computational Biology (BIOINF 527) [2 lectures + 3 labs / yr.] Basic Biology for Graduate Students with Quantitative Training (BIOINF 523) [2 lectures / yr.] Lab TA for Isotopes Tech I (MS. State, BCH 4414) |

Guest Lectures / Panels

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| 2018–2019 | Lecturer, REU Site: Mathematical and Theoretical Biology Institute (MTBI), Arizona State University (NSF1757968) [2 days] |
| 2017 | Panel member, U. Michigan “New Faculty Orientation to Corporate & Foundation Relations” [70 attendees] |
| 2016 | Experimental Genetics Systems (HUMGEN 632) [1 discussion] |
| 2014 | Panel member, BIOINF 527 “Challenges in Biology, Biomedicine, Data & Analysis” |
| 2010 | Co-taught Cold Spring Harbor Systems Biology Pre-meeting Workshop |
| 2009 | Duke student panelist for “How to prepare for and get into graduate school” |
| 2008 | Taught Duke mini-course on Genome Browsers & Databases |

Mentorship**Graduate Students (n=25)**

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|--------------|---|
| 2025– | Christine Geng (M.S. Student, Bioinformatics, University of Michigan) |
| 2024–current | Ingrid Flaspohler (Ph.D. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (pre-candidate)</i> |
| 2024–current | Steve Losh (Ph.D. Student, Bioinformatics, University of Michigan) |
| 2024–current | Sowmya Srinivasan (Ph.D. Student, Genetics and Genomics, University of Michigan) |
| 2023–2023 | Hawra Aljawad (M.S. Student, Chemical Engineering, University of Michigan) <i>Rackham Graduate Student Research Grant (pre-candidate)</i> |
| 2023–2023 | Xinyi Liu (M.S. Student, Bioinformatics, University of Michigan) |
| 2022–2023 | Emily Pogson (M.S. Student, Genetics and Genomics, University of Michigan) |
| 2022–current | Katarina Pavlovic (Ph.D. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2022–current | Rintsen Sherpa (Ph.D. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2021–2025 | Kinsey Van Deynze (Ph.D. Student, Bioinformatics, University of Michigan) <i>NIH Genome Science Training Program (T32)</i> <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> |

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| 2020–2025 | Andrea Valenzuela (Ph.D. Student, Chemical Biology, University of Michigan) <i>NIH Cellular Biotechnology Training Program (T32)</i> |
| 2020–current | Breanna McBean (Ph.D. Student, Genetics and Genomics, University of Michigan) <i>Joint M.S. in Bioinformatics, University of Michigan</i> <i>NIH Genome Science Training Program (T32)</i> <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2019–2020 | Monica Holmes (M.S. Student, Bioinformatics, University of Michigan) |
| 2020–2025 | Camille Mumm (Ph.D. Student, Genetics and Genomics, University of Michigan) <i>Joint M.S. in Bioinformatics, University of Michigan</i> <i>NIH Genome Science Training Program (T32)</i> <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> <i>Rackham Pre-doctoral Fellowship</i> |
| 2018–2024 | Bradley Crone (Ph.D. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2017–2023 | Melissa Englund (Ph.D. Student, Genetics and Genomics, University of Michigan) <i>NIH Human Genetics Training Program (T32)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2018–2023 | Nanxiang (Samuel) Zhao (Ph.D. Student, Bioinformatics, University of Michigan) |
| 2017–2018 | Nanxiang (Samuel) Zhao (M.S. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2016–2018 | Haley Amemiya (Ph.D. Student, Cellular and Molecular Biology, University of Michigan) <i>Joint M.S. in Bioinformatics, University of Michigan</i> <i>NIH Cellular & Molecular Biology Training Program (T32)</i> <i>NIH Cellular Biotechnology Training Program (T32) (Declined)</i> <i>PIBS Excellence in Service Award</i> <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> <i>Maas Professional Development Award</i> <i>Rackham Graduate School Scholar-Activist Award</i> |
| 2016–2020 | Shriya Sethuraman (Ph.D. Student, Bioinformatics, University of Michigan) |
| 2016–2023 | Christopher Castro (Ph.D. Student, Bioinformatics, University of Michigan) <i>NIH Bioinformatics Training Program (T32)</i> <i>Rackham Merit Fellow</i> <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> <i>Global Research Engagement Opportunity Fellowship</i> |
| 2017–2022 | Ningxin Ouyang (Ph.D. Student, Bioinformatics, University of Michigan) |
| 2015–2017 | Ningxin Ouyang (M.S. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2016–2021 | Shengcheng Dong (Ph.D. Student, Bioinformatics, University of Michigan) <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2015–2021 | Torrin McDonald (Ph.D. Student, Genetics and Genomics, University of Michigan) <i>NIH Human Genetics Training Program (T32)</i> <i>Rackham Graduate Student Research Grant (pre-candidate)</i> <i>Rackham Graduate Student Research Grant (candidate)</i> |
| 2015–2017 | Greg Farnum (Ph.D. Student, Cellular and Molecular Biology, University of Michigan) |
| 2015–2020 | Sierra Nishizaki (Ph.D. Student, Genetics and Genomics, University of Michigan) |

*Joint M.S. in Bioinformatics, University of Michigan
 NIH Genome Science Training Program (T32)
 Rackham Merit Fellow
 Rackham Summer Award
 Rackham Graduate Student Research Grant (candidate)*

Additional Graduate Rotation Students (n=17)

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| 2024 | Karan Smith (Rotation Student, Cellular and Molecular Biology, University of Michigan) |
| 2024 | Jun Sik Yun (Rotation Student, Genetics and Genomics, University of Michigan) |
| 2024 | Jeremy Chen (Rotation Student, Bioinformatics, University of Michigan) |
| 2023 | Rosina Carr (Rotation Student, Bioinformatics, University of Michigan) |
| 2023 | Connor Ward (Rotation Student, Medical Science Training Program, University of Michigan) |
| 2022 | Brandt Bessell (Rotation Student, Bioinformatics, University of Michigan) |
| 2022 | Xiaomeng Du (Rotation Student, Bioinformatics, University of Michigan) |
| 2022 | Mahnoor Gondal (Rotation Student, Bioinformatics, University of Michigan) |
| 2022 | Xin Li (Rotation Student, Biological Chemistry, University of Michigan) |
| 2022 | Bohan Chen (Rotation Student, Cell and Developmental Biology, University of Michigan) |
| 2021 | Amelia Lauth (Rotation Student, Cellular and Molecular Biology, University of Michigan) |
| 2019 | Margarita Brovkina (Rotation Student, Cellular and Molecular Biology, University of Michigan) |
| 2018 | Steve Ho (Rotation Student, Human Genetics, University of Michigan) |
| 2018 | Matthew Pun (Rotation Student, Medical Science Training Program, University of Michigan) |
| 2017 | Amanda Moccia (Rotation Student, Human Genetics, University of Michigan) |
| 2017 | Stephen Carney (Rotation Student, Human Genetics, University of Michigan) |
| 2016 | Tingyang Li (Rotation Student, Bioinformatics, University of Michigan) |

Postdoctoral Fellows (n=3)

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| 2023–2025 | Melissa Englund (University of Michigan) |
| 2022–2025 | Torrin McDonald (University of Michigan) |
| 2021–2022 | Shengcheng Dong (University of Michigan) |

Non-student Lab Volunteers (n=2)

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| 2019–2021 | Greg Farnum (University of Michigan) |
| 2018–2019 | Monica Holmes (Postbac, University of Michigan) |

Undergraduate and High School Students (n=21)

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| 2025–current | Krrish Thakker (Undergraduate, Biochemistry, University of Michigan) |
| 2023–2024 | Kateri Darr (Undergraduate, Computer Science, University of Michigan) |
| 2023–2023 | Mason Miller (Undergraduate, Computer Science, University of Michigan) |
| 2022–2024 | Summer Ann (Undergraduate, Neuroscience, University of Michigan) |
| 2022–current | Kobe Howcroft (Undergraduate, Computer Science, University of Michigan) |
| 2021–2024 | Preston Parana (Undergraduate, UROP Molecular, Cellular, and Developmental Biology, University of Michigan) |
| | <i>UROP Blue Ribbon Award</i> |
| 2021–2022 | Julia Tweadey (Undergraduate, LSA Honors Program, Life Science Informatics, University of Michigan) |
| 2021 | Aryn Booker (Undergraduate, UROP Molecular, Cellular, and Developmental Biology, University of Michigan) |
| | <i>UROP Blue Ribbon Award</i> |
| 2020 | Marcela Alcaide Aligio (Undergraduate, SROP, Hunter College CUNY) |
| 2019–2020 | David Wang (Undergraduate, UROP Computer Science, University of Michigan) |
| 2019–2020 | Jack Lu (Undergraduate, UROP Computer Science, University of Michigan) |
| 2019–2020 | Diana Davis (Undergraduate, Neuroscience and German, University of Michigan) |
| 2019 | Sheila Rasouli (Undergraduate, Neuroscience, University of Toronto) |
| 2019 | Vibhasri Davuluri (High School, Girls Who Code Summer Intern) |

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| 2016–2019 | Cody Morterud (Undergraduate, UROP Computer Science / Honors Capstone, University of Michigan) |
| 2016–2017 | Colten Williams (Undergraduate, UROP Computer Science, University of Michigan) |
| 2016–2017 | Courtney Asman (Undergraduate, Neuroscience, University of Michigan) |
| 2014–2017 | Maxwell Spadafore (Undergraduate, LS&A Honors Informatics, University of Michigan) |
| 2013–2014 | Natalie Ng (High School, Stanford Institutes of Medicine Summer Research) |
| 2013–2014 | Dana Wyman (Undergraduate, Biology, Stanford University) |
| 2013 | Justin Young (High School, Stanford Institutes of Medicine Summer Research) |
| 2012 | Melanie Connick (Undergraduate, Biology, University of New Mexico) |
| 2012 | Edward Dai (Undergraduate, Computer Science, Stanford University) |

Doctoral Thesis Committees (n=50)

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| 2025–current | Brandt Bessell (Bioinformatics, University of Michigan, Committee Member) |
| 2024–current | Weizhou Qian (Bioinformatics, University of Michigan, Committee Member) |
| 2024–current | Lingrui Cai (Bioinformatics, University of Michigan, Committee Member) |
| 2024–current | Jinhao Wang (Bioinformatics, University of Michigan, Committee Member) |
| 2024–current | Brandon Klein (Medicinal Chemistry, University of Michigan, Committee Member) |
| 2024–current | Bohan Chen (Bioinformatics, University of Michigan, Committee Member) |
| 2024–current | Sowmya Srinivasan (Genetics and Genomics, University of Michigan, co-Chair) |
| 2024–current | Ingrid Flaspohler (Bioinformatics, University of Michigan, Chair) |
| 2024–current | Steve Losh (Bioinformatics, University of Michigan, Chair) |
| 2024–current | Matthew Hodgman (Bioinformatics, University of Michigan, Committee Member) |
| 2024–current | Lu Lu (Bioinformatics, University of Michigan, Committee Member) |
| 2023–current | Linghua Jiang (Bioinformatics, University of Michigan, Committee Member) |
| 2023–current | Elysia Chou (Bioinformatics, University of Michigan, Committee Member) |
| 2023–current | Rebecca McAvoy (Molecular, Cellular, and Developmental Biology, University of Michigan, Committee Member) |
| 2023–current | Chinmay Raut (Bioinformatics, University of Michigan, Committee Member) |
| 2022–current | Katarina Pavlovic (Bioinformatics, University of Michigan, Chair) |
| 2022–current | Rintsen Sherpa (Bioinformatics, University of Michigan, Chair) |
| 2022–current | Emily Peirent (Neuroscience, University of Michigan, Committee Member) |
| 2021–current | Mashiat Rabbani (Genetics and Genomics, University of Michigan, Committee Member) |
| 2020–current | Breanna McBean (Genetics and Genomics, University of Michigan, co-Chair) |
| 2021–2025 | Kinsey Van Deynze (Bioinformatics, University of Michigan, Chair) <i>Sequence Analysis of Tandem Repeats Utilizing 3rd Generation Sequencing Technologies</i> |
| 2020–2025 | Andrea Valenzuela (Chemical Biology, University of Michigan, co-Chair) <i>AI-Driven Workflows Integrating Strain Diversity and Host Metabolic-Genetic Variation for Tuberculosis Treatment Prioritization</i> |
| 2021–2025 | Zhenhao Zhang (Bioinformatics, University of Michigan, Committee Member) <i>Decoding Genome Regulation through Deep Learning Models</i> |
| 2020–2025 | Steve Ho (Genetics and Genomics, University of Michigan, Committee Member) <i>Applied Machine Learning for Big Data Genomics</i> |
| 2020–2025 | Camille Mumm (Genetics and Genomics, University of Michigan, Chair) <i>Exploring Repetitive Elements in Neurodegenerative Disease Using Targeted Long-Read Sequencing</i> |
| 2022–2025 | Kaiwen Deng (Bioinformatics, University of Michigan, Committee Member) <i>Advancing Computational Models and Algorithms for the Analysis of Single-Cell and Neural Data</i> |
| 2022–2024 | Franco Tavella (Biophysics, University of Michigan, Committee Member) <i>Robustness and Tunability of Biological Oscillations</i> |
| 2018–2024 | Bradley Crone (Bioinformatics, University of Michigan, Chair) <i>Computational Methods in Functional Prioritization of Polygenic Risk Score Models</i> |
| 2021–2024 | Wenjin Gu (Bioinformatics, University of Michigan, Committee Member) <i>Development of Viral Integration Analysis Technologies for Virus-Associated Cancer Research</i> |
| 2018–2023 | Rucheng Diao (Bioinformatics, University of Michigan, Committee Member) <i>Local Chromatin Environments Shape Transcription and Adaptive Immunity in Bacteria</i> |
| 2021–2023 | Zijun Gao (Bioinformatics, University of Michigan, Committee Member) |

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| | <i>Advance Machine Learning and Image Analysis Methods for Clinical Decision Support in Cardiovascular and Pulmonary Diseases</i> |
| 2018–2023 | Nanxiang (Samuel) Zhao (Bioinformatics, University of Michigan, Chair) <i>Decoding Regulatory Variants with Computational Methods in Non-coding Regions of the Human Genome</i> |
| 2020–2023 | Ashley Melnick (Cellular and Molecular Biology, University of Michigan, Committee Member) <i>Cdc73 Protects Notch-Induced Leukemia Cells From DNA Damage and Mitochondrial Stress</i> |
| 2016–2023 | Christopher Castro (Bioinformatics, University of Michigan, Chair) <i>Investigating the Role of Noncoding De Novo Single-Nucleotide Variants in Autism Spectrum Disorder</i> |
| 2017–2023 | Melissa Englund (Genetics and Genomics, University of Michigan, Chair) <i>Identification and Characterization of Cis-Regulatory Elements in the Human Genome</i> |
| 2018–2023 | Stephen Carney (Cancer Biology, University of Michigan, Committee Member) <i>Epigenetic reprogramming in mutant IDH1 glioma influences radiosensitivity and neural lineage differentiation</i> |
| 2019–2023 | Benjamin Yang (Biomedical Engineering, University of Michigan, Committee Member) <i>Towards Defining Principles of Cell Fate Plasticity</i> |
| 2018–2022 | Marcus Sherman (Bioinformatics, University of Michigan, Committee Member) <i>Cultivation of enhanced bioinformatic-specific pedagogical manipulatives, interventions, and professional development</i> |
| 2021–2022 | Kuan-Han Hank Wu (Bioinformatics, University of Michigan, Committee Member) <i>Integrating Electronic Health Records with Genetic Information to Advance Precision Medicine Approaches in Cardiovascular Disease</i> |
| 2017–2022 | Amanda Moccia (Genetics and Genomics, University of Michigan, Committee Member) <i>Investigation of Developmental Disorders: Genetic Discovery and Functional Validation</i> |
| 2017–2022 | Ningxin Ouyang (Bioinformatics, University of Michigan, Chair) <i>Deciphering Transcriptional Regulatory Circuits: Transcription Factor Binding and Regulatory Variants Identification</i> |
| 2015–2021 | Torrin McDonald (Genetics and Genomics, University of Michigan, Chair) <i>Leveraging New Technologies to Explore Regulatory and Structural Elements of the Human Genome</i> |
| 2018–2021 | Heming Yao (Bioinformatics, University of Michigan, Committee Member) <i>Machine Learning and Image Processing for Clinical Outcome Prediction: Applications in Medical Data from Patients with Traumatic Brain Injury, Ulcerative Colitis, and Heart Failure</i> |
| 2016–2021 | Mohd Hafiz Bin Mohd Rothi (Molecular, Cellular, and Developmental Biology, University of Michigan, Committee Member) <i>Control of Chromatin by RNA-mediated Transcriptional Silencing</i> |
| 2016–2021 | Shengcheng Dong (Bioinformatics, University of Michigan, Chair) <i>Computational Methods to Identify Regulatory Variants in the Non-coding Regions of the Human Genome</i> |
| 2017–2021 | Steven Romanelli (Molecular & Integrative Physiology, University of Michigan, Committee Member) <i>Viral CRISPR/Cas9 Gene Transfer for Somatic Knockout in Brown Adipose Tissue</i> |
| 2018–2021 | Negar Farzaneh (Bioinformatics, University of Michigan, Committee Member) <i>Automated Decision Support System for Traumatic Injuries</i> |
| 2016–2020 | Shriya Sethuraman (Bioinformatics, University of Michigan, co-Chair) <i>Genome-wide Identification of Non-coding Transcription by RNA Polymerase V and Its Involvement in Transcriptional Gene Silencing</i> |
| 2015–2020 | Sierra Nishizaki (Genetics and Genomics, University of Michigan, Chair) <i>Decoding the Non-coding Genome: Novel Technologies for the Characterization of Non-coding Elements and Variation</i> |
| 2017–2020 | Christopher Lee (Biostatistics, University of Michigan, Committee Member) <i>Improvements and Developments in Gene Regulation and Single-Cell Gene Expression Data Analysis</i> |
| 2018–2019 | Christine Ziegler (Biological Chemistry, University of Michigan, Committee Member) |
| 2015–2018 | Ari Allyn-Feuer (Bioinformatics, University of Michigan, Committee Member) |

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| | <i>The Pharmacoepigenomics Informatics Pipeline and H-GREEN Hi-C Compiler: Discovering Pharmacogenomic Variants and Pathways with the Epigenome and Spatial Genome</i> |
| 2015–2017 | Raymond Cavalcante (Bioinformatics, University of Michigan, Committee Member) |
| | <i>Beyond the Transcriptome: Facilitating Interpretation of Epigenomics and Metabolomics Data</i> |
| 2015–2017 | Zhengting Zou (Bioinformatics, University of Michigan, Committee Member) |
| | <i>Model-based genomic studies of protein sequence evolution: convergence, epistasis, and amino acid acceptance rates</i> |

Preliminary Exam Committees (n=45)

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| 2025 | Xinyi Deng (Bioinformatics, University of Michigan) |
| 2025 | Mitchell Witt (Bioinformatics, University of Michigan) |
| 2024 | Luke Gohmann (Cellular and Molecular Biology, University of Michigan) |
| 2024 | Benjamin Li (Bioinformatics, University of Michigan) |
| 2024 | Tiffany Wan (Bioinformatics, University of Michigan) |
| 2024 | Zhiyuan Yu (Bioinformatics, University of Michigan) |
| 2024 | Rebecca McAvoy (Molecular, Cellular, and Developmental Biology, University of Michigan) |
| 2024 | Bonje Obua (Cellular and Molecular Biology, University of Michigan) |
| 2024 | Abigail Vallie (Cellular and Molecular Biology, University of Michigan) |
| 2023 | Jinhao Wang (Bioinformatics, University of Michigan) |
| 2023 | Lishi Yin (Bioinformatics, University of Michigan) |
| 2023 | Matthew Hodgman (Bioinformatics, University of Michigan) |
| 2023 | Ilakkiya Venkatachalam (Genetics and Genomics, University of Michigan) |
| 2023 | Jianhui Gong (Bioinformatics, University of Michigan) |
| 2023 | Mahnoor Gondal (Bioinformatics, University of Michigan) |
| 2023 | Elysia Chou (Bioinformatics, University of Michigan) |
| 2022 | Sean Moran (Bioinformatics, University of Michigan) |
| 2022 | Lu Lu (Bioinformatics, University of Michigan) |
| 2022 | Linghua Jiang (Bioinformatics, University of Michigan) |
| 2022 | Kaiwen Deng (Bioinformatics, University of Michigan) |
| 2022 | Yufeng Zhang (Bioinformatics, University of Michigan) |
| 2021 | Anthony Nguyen (Human Genetics, University of Michigan) |
| 2021 | Hanbyul Cho (Bioinformatics, University of Michigan) |
| 2021 | Charles Ryan (Cellular and Molecular Biology, University of Michigan) |
| 2021 | Kuan-Han Wu (Bioinformatics, University of Michigan) |
| 2021 | Wenjin Gu (Bioinformatics, University of Michigan) |
| 2020 | Jie Cao (Bioinformatics, University of Michigan) |
| 2020 | Zijun Gao (Bioinformatics, University of Michigan) |
| 2020 | Ashley Melnick (Cellular and Molecular Biology, University of Michigan) |
| 2019 | Benjamin Yang (Biomedical Engineering, University of Michigan) |
| 2019 | Maria Virgilio (Cellular and Molecular Biology, University of Michigan) |
| 2018 | Zhi Carrie Li (Bioinformatics, University of Michigan) |
| 2018 | Kevin Hu (Bioinformatics, University of Michigan) |
| 2018 | Siyu Liu (Bioinformatics, University of Michigan) |
| 2018 | Alexandra Weber (Bioinformatics, University of Michigan) |
| 2018 | Mitch Fernandez (Bioinformatics, University of Michigan) |
| 2017 | Tingyang Li (Bioinformatics, University of Michigan) |
| 2017 | Marcus Sherman (Bioinformatics, University of Michigan) |
| 2017 | Adrienne Shami (Human Genetics, University of Michigan) |
| 2017 | Trenton Frisbie (Human Genetics, University of Michigan) |
| 2017 | Melissa Englund (Human Genetics, University of Michigan) |
| 2017 | Peter Orchard (Bioinformatics, University of Michigan) |
| 2017 | Li Guan (Bioinformatics, University of Michigan) |
| 2016 | Shriya Sethuraman (Bioinformatics, University of Michigan) |
| 2016 | Jed Carlson (Bioinformatics, University of Michigan) |

Industry Experience

2013–2014 | Consultant, Color Genomics
Personalized medicine / genomics startup

Publications

* Indicates co-first authorship † Indicates co-senior authorship
underline indicates lab members

- [1] The Somatic Mosaicism across Human Tissues Network (SMaHT). “Comprehensive benchmarking of somatic mutation detection by the smaht network.” ***submitted*** 2025.
- [2] *Wang S, *Bae M, *Wang J, Zhao B, Nguyen K, Mallett S, Switzenberg JA, Losh SJ, Sexton CE, Miao B, Dong S, Zeng X, Wang Z, McDonald TL, Mumm C, Gadde RK, Tariq AM, Chen Z, Feng WC, Burn A, Park J, Chu C, Shen H, Wang T, Urban AE, Zhu X, Li H, Burns KH, Chun HJE, Park PJ, Group SMW, †**Boyle AP**, †Mills RE, †Zhou W, †Lee EA. “Multi-platform framework for mapping somatic retrotransposition in human tissues.” ***bioRxiv*** 2025.
- [3] Miller SL, Green KM, Crone B, Switzenberg JA, Tank EMH, Krans A, Jansen-West K, Wieland CM, Ji EW, Petrucci L, Barmada SJ, **Boyle AP**, Todd PK. “Cryptic intronic transcriptional initiation generates efficient endogenous mRNA templates for c9orf72-associated ran translation.” ***Proceedings of the National Academy of Sciences*** 2025, 122(32):e2507334122. PMID: 40758885.
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- [8] *Van Deynze K, *Mumm C, Maltby CJ, Switzenberg JA, Todd P, **Boyle AP**. “Enhanced detection and genotyping of disease-associated tandem repeats using HMMSTR and targeted long-read sequencing.” ***Nucleic Acids Research*** 2025, 53(2):gkae1202. PMID: 39676678.
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Patents

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