

MARY F. DAVIS

(801) 422-6207 | MARY_DAVIS@BYU.EDU | 3129 LSB PROVO, UT 84602

EDUCATION

- 2013 Doctor of Philosophy – Human Genetics | Vanderbilt University (Nashville, TN)
2013 Master of Science – Applied Statistics | Vanderbilt University (Nashville, TN)
2008 Bachelor of Science – Clinical Laboratory Science | Brigham Young University (Provo, UT)

EXPERIENCE

Associate Professor 2021 - current
Department of Microbiology and Molecular Biology
Brigham Young University Provo, UT

Tenured faculty appointment with responsibilities in teaching, research, and university service in medical laboratory science and human genetics.

- Teach undergraduate and graduate courses in **Medical Laboratory Science** and **Scientific Literacy**, emphasizing active and experiential learning.
- Direct an **interdisciplinary research laboratory focused on genetics, informatics, and chronic disease outcomes**.
- Mentor **10+ undergraduate and multiple graduate researchers** and support student professional development.
- Publish peer-reviewed research and present findings at national and institutional venues.
- Contribute to administration and strategic planning for the **Medical Laboratory Science Program**, supporting accreditation and curricular development.
- Serve on key university committees, including **Healthcare Leadership, Global Women's Studies**, and the **Faculty Advisory Committee**.

Adjoint Assistant Professor 2019 - current
Department of Biomedical Informatics
Vanderbilt University Nashville, TN

Maintain a collaborative research appointment supporting joint projects in human genetics and biomedical informatics.

- Collaborate with Vanderbilt investigators on large-scale genomic and informatics studies using the **BioVU biobank**.
- Provide annual invited seminars for the Department of Biomedical Informatics.
- Support multi-institutional research and trainee mentorship in medical informatics.

Guest Researcher, National Institutes of Health 2024
National Human Genome Research Institute Bethesda, MD

Conducted collaborative research in human genetics and biomedical informatics during a professional development leave at the NIH.

- Collaborated closely with Dr. Joshua Denny's laboratory on **All of Us** research projects focused on genetic and clinical data integration.
- Mentored and supervised one BYU Ph.D. student and two undergraduate researchers conducting projects within the NIH environment.
- Enhanced skills in large-scale data analysis, genetic association methods, and national biobank resource utilization.
- Contributed to ongoing collaborative research between BYU and NIH investigators in the fields of precision medicine and population genomics.

COVID-19 Technical Supervisor 2021-2023
Student Health Center
Brigham Young University Provo, UT

Directed the design, implementation, and operation of BYU's first high-complexity CLIA-certified molecular diagnostics laboratory for COVID-19 PCR testing.

- Established and directed a **high-complexity CLIA-certified molecular diagnostics laboratory** for SARS-CoV-2 PCR testing—BYU's first on-campus facility of its kind.
- Collaborated with BYU administration and state clinical laboratories to assess institutional needs and design a **high-throughput, evidence-based testing workflow**.
- Led the **selection, acquisition, and implementation** of PCR instrumentation and laboratory infrastructure to support large-scale testing operations.
- Authored all **standard operating procedures (SOPs), training manuals, and regulatory documentation** required for CLIA high-complexity certification.
- Supervised **five medical laboratory scientists/faculty** and **30 undergraduate MLS students**, providing extensive hands-on molecular diagnostics training.
- Coordinated proficiency testing and quality assurance in collaboration with the medical director and pathologist (Dr. Steven Freestone).

- Oversaw processing of approximately **4,000 clinical samples** with an average **turnaround time of <24 hours**, ensuring timely reporting for BYU and missionary populations.

Assistant Professor

*Department of Microbiology and Molecular Biology
Brigham Young University*

2014 - 2021

Provo, UT

Established an active research and teaching program in medical laboratory science, human genetics, and biomedical informatics.

- Taught **nine undergraduate and graduate courses** in microbiology and medical laboratory science, with emphasis on experiential and evidence-based learning.
- Led a major **curricular redesign of the Medical Laboratory Science program**, improving integration, sequencing, and student outcomes.
- Founded and directed BYU's first **genetics and biomedical informatics laboratory**, initiating cross-disciplinary collaborations in precision medicine and disease genomics.
- Mentored undergraduate and graduate researchers, many of whom advanced to professional or doctoral programs.
- Published peer-reviewed research and presented findings at national scientific meetings.

UNIVERSITY TEACHING

2025 - current	MMBIO 528	Scientific Literacy	1 section	Brigham Young University
2019 - current	MMBIO 102	Intro to Medical Laboratory Science	5 sections	Brigham Young University
2018 - current	MMBIO 411	Molecular Diagnostics	8 sections	Brigham Young University
2015 - current	MMBIO 407	Clinical Microbiology	11 sections	Brigham Young University
2014 - current	MMBIO 494R/694R	Mentored Research	30 sections	Brigham Young University
2023	GWS 370	Women in Science	1 section	Brigham Young University
2023	GWS 390R	Marie Curie	1 section	Brigham Young University
2023	GWS 395R	GWS Mentored Study Experience	1 section	Brigham Young University
2023	MMBIO 390R	Readings in Molecular Biology	1 section	Brigham Young University
2022 - 2024	HONORS 220	Pandemics, Plagues, and Contagion	3 sections	Brigham Young University
2014 - 2016	MMBIO 422	Clinical Chemistry	3 sections	Brigham Young University
2014 - 2015	MMBIO 424	Clinical Chem Laboratory Techniques	3 sections	Brigham Young University
2014 - 2015	MMBIO 423	Clinical Chem & Molecular Diagnostics	2 sections	Brigham Young University
2014 - 2015	MMBIO 425	Clinical Chem & Mol Diag Techniques	3 sections	Brigham Young University
2014 - 2019	MMBIO 496R	Clinical Experience	12 sections	Brigham Young University

PROFESSIONAL LEADERSHIP AND SERVICE

2014 – current	Member BYU Medical Laboratory Science Program Committee
2021 – current	Member BYU Department of Microbiology and Molecular Biology Graduate Committee
2022 – current	Advisor BYU Internal Healthcare Leadership Board
2022 – current	Life Sciences Representative BYU Faculty Advisory Committee
2023 – current	Member BYU Global Women's Study Executive Committee
2022 – 2024	New Faculty Mentor BYU Department of Microbiology and Molecular Biology
2022	Abstract Reviewer American Medical Informatics Association Informatics Summit
2022	Member BYU General Education Review
2022	Member BYU College of Life Sciences Employee Experience Committee
2017 – 2020	Coordinator American Society of Clinical Laboratory Science Region IX Educators' Network
2017 – 2020	Member BYU Medical Laboratory Science Scholarship Committee
2015, 2021, 2022	Member BYU Department of Microbiology and Molecular Biology Department Faculty Search Committee
2015 – 2018	Member Journal of Biochemical and Molecular Toxicology Editorial Review Board
2014 – 2016	Member BYU College of Life Sciences Mentoring Environment Grant Review Panel
2014 – 2021	Member BYU Department of Microbiology and Molecular Biology Undergraduate Curriculum Committee

JOURNAL PUBLICATIONS

*undergraduate student, ^graduate student

- 2025 A. H. Beecham, D. P. B McGovern, S. W. Brugger[^], **M. F. Davis**, E. A. Torres, L. Gomez, D. Li, P. Lopez-Martel, M. J. Daly, C. Stevens, S. Yang, S. Sinha, E. Mengesha, J. Leavitt, O.M. Damas, M. A. Quintero, S. R. Targan, S. Rabizadeh, K. Sabic, NIDDK IBD Genetics Consortium, J. H. Cho, M. T. Abreu, J. L. McCauley, T. Haritunians. "Genomic Insights into Inflammatory Bowel Disease in US Hispanic Participants: An Ancestry-Focused Study." *Gastroenterology*. Accept Oct. 2025.
- B. A. Bates*, K. E. Bates*, S. Boris*, C. Wessman*, D. Stone*, J. Bryan*, **M. F. Davis**, M. H. Bailey. "Intersection of rare pathogenic variants from TCGA in the All of Us Research Program v6." *Human Genetics and Genomics Advances*. Jan. 2025.
- 2024 S. W. Brugger[^], J. H. Grose, C. H. Decker*, B. E. Pickett, **M. F. Davis**. "Genomic Analyses of Major SARS-CoV-2 Variants Predicting Multiple Regions of Pathogenic and Transmissible Importance." *Viruses*. Feb. 2024.
- 2023 S. W. Brugger[^], **M. F. Davis**. "Influence of Admixture on Phenotypes." *Current Protocols*. Dec. 2023.
- 2022 E. Nysetvold, T. Mika, W. Elison, D. Garrett, J. Hunt, I. Tsuchiya, S.W. Brugger[^], **M.F. Davis**, S.H. Payne. E.G. Bailey. "Infant Vaccination Does Not Predict Increased Infant Mortality Rate: Correcting Past Misinformation." *PLoS ONE*. Accepted.
- 2021 E. Misicka, **M.F. Davis**, W. Kim, S.W. Brugger[^], J.T. Beales*, S. Loomis, P.G. Bronson, F.B.S. Briggs. "A higher burden of multiple sclerosis genetic risk confers an earlier onset." *Multiple Sclerosis Journal*. Oct. 2021.
- J.M. Miller*, J.T. Beales*, M.D. Montierth*, F.B. Briggs, S.F. Frodsham*, **M.F. Davis**. "The Impact of Multiple Sclerosis Disease Status and Subtype on Hematological Profile." *Int J Environ Res Public Health*. Mar 2021.
- F. M. Wang, **M.F. Davis**, F.B. Briggs. "Predicting self-reported depression after the onset of multiple sclerosis using genetic and non-genetic factors." *Multiple Sclerosis*. 2021.
- D. K. Johnson[^], K. M. Reynolds*, M. D. Montierth*, V. M. Todd, A. Barnado, B. D. Poole, **M. F. Davis**. "Contribution of viral infection to risk for cancer in systemic lupus erythematosus and multiple sclerosis." *PLOS One*. Jan 2021.
- 2020 S. W. Brugger*, M. C. Gardner*, J. T. Beales*, F. B. Briggs, **M. F. Davis**. "Depression in multiple sclerosis patients associated with risk variant near NEGR1." *Multiple Sclerosis and Related Disorders*. Sept. 2020.
- 2019 International Multiple Sclerosis Genetics Consortium. "Multiple sclerosis genomic map implicates peripheral immune cells and microglia in susceptibility." *Science*. Sept. 2019.
- F. B. Briggs, J. C. Yu, **M. F. Davis**, J. Jiangyang, S. Fu, E. Parrotta, D. D. Gunzler, D. Ontaneda. "Multiple sclerosis risk factors contribute to onset heterogeneity." *Multiple Sclerosis and Related Disorders*. Feb. 2019.
- 2018 International Multiple Sclerosis Genetics Consortium. "Low-Frequency and Rare-Coding Variation Contributes to Multiple Sclerosis Risk." *Cell*. Nov. 2018.
- K. Kowalec...**M.F. Davis**, C.J. Ross, H. Tremlett, B.C. Carleton. "Common variation near IRF6 is associated with IFN-beta-induced liver injury in multiple sclerosis." *Nature Genetics*. Aug. 2018.
- R. Barr*, **M. F. Davis**. "Reproducing Clinically Significant Multi-organism Cultures to Improve Clinical Microbiology Education and Practice." *Journal of Microbiology and Biology Education*. Feb. 2018.
- 2015 K. B. Pallister, S. Mason, T. K. Nygaard, B. Liu, S. Griffith, J. Jones, S. Linderman, M. Hughes, D. Erickson, J. M. Voyich, **M. F. Davis**, E. Wilson. "Bovine CCL28 Mediates Chemotaxis via CCR10 and Demonstrates Direct Antimicrobial Activity against Mastitis Causing Bacteria." *PLoS One*. Sep. 2015.
- M. F. Davis**, J. L. Haines. "The intelligent use and clinical benefits of electronic medical records in multiple sclerosis." *Expert Rev Clin Immunol*. Feb. 2015.
- 2013 **M. F. Davis**, S. Sriram, W. S. Bush, J. C. Denny, and J. L. Haines. "Automated extraction of clinical traits of multiple sclerosis in electronic medical records." *JAMIA*. Dec. 2013.

M. F. Davis, A. C. Cummings, L. N. D'Aoust, L. Jiang, D. R. Velez Edwards, R. Laux, L. Reinhart-Mercer, D. Fuzzell, W. K. Scott, M. A. Pericak-Vance, S. L. Lee, and J. L. Haines, "Parkinson disease loci in the mid-western Amish," *Hum. Genet.* Nov. 2013.

A. H. Beecham, N. A. Patsopoulos, D. K. Xifara, **M. F. Davis**, A. Kemppinen, C. Cotsapas, T. S. Shah, C. Spencer, D. Booth, A. Goris, A. Oturai, J. Saarela, B. Fontaine, B. Hemmer, C. Martin, F. Zipp, S. D'Alfonso, F. Martinelli-Boneschi, B. Taylor, H. F. Harbo, I. Kockum, J. Hillert, T. Olsson, M. Ban, J. R. Oksenberg, R. Hintzen, L. F. Barcellos, C. Agliardi, L. Alfredsson, M. Alizadeh, C. Anderson, R. Andrews, H. B. Sondergaard, A. Baker, G. Band, S. E. Baranzini, N. Barizzone, J. Barrett, C. Bellenguez, L. Bergamaschi, L. Bernardinelli, A. Berthele, V. Biberacher, T. M. Binder, H. Blackburn, I. L. Bomfim, P. Brambilla, S. Broadley, B. Brochet, L. Brundin, D. Buck, H. Butzkueven, S. J. Caillier, W. Camu, W. Carpentier, P. Cavalla, E. G. Celius, I. Coman, G. Comi, L. Corrado, L. Cosemans, I. Cournu-Rebeix, B. A. Cree, D. Cusi, V. Damotte, G. Defer, S. R. Delgado, P. Deloukas, S. A. di, A. T. Dilthey, P. Donnelly, B. Dubois, M. Duddy, S. Edkins, I. Elovaara, F. Esposito, N. Evangelou, B. Fiddes, J. Field, A. Franke, C. Freeman, I. Y. Frohlich, D. Galimberti, C. Gieger, P. A. Gourraud, C. Graetz, A. Graham, V. Grummel, C. Guaschino, A. Hadjixenofontos, H. Hakonarson, C. Halfpenny, G. Hall, P. Hall, A. Hamsten, J. Harley, T. Harrower, C. Hawkins, G. Hellenthal, C. Hillier, J. Hobart, M. Hoshi, S. E. Hunt, M. Jagodic, I. Jelcic, A. Jochim, B. Kendall, A. Kermode, T. Kilpatrick, K. Koivisto, I. Konidari, T. Korn, H. Kronsbein, C. Langford, M. Larsson, M. Lathrop, C. Lebrun-Frenay, J. Lechner-Scott, M. H. Lee, M. A. Leone, V. Leppa, G. Liberatore, B. A. Lie, C. M. Lill, M. Linden, J. Link, F. Luessi, J. Lycke, F. Macciardi, S. Mannisto, C. P. Manrique, R. Martin, V. Martinelli, D. Mason, G. Mazibrada, C. McCabe, I. L. Mero, J. Mescheriakova, L. Moutsianas, K. M. Myhr, G. Nagels, R. Nicholas, P. Nilsson, F. Piehl, M. Pirinen, S. E. Price, H. Quach, M. Reunanen, W. Robberecht, N. P. Robertson, M. Rodegher, D. Rog, M. Salvetti, N. C. Schnetz-Boutaud, F. Sellebjerg, R. C. Selter, C. Schaefer, S. Shaunak, L. Shen, S. Shields, V. Siffrin, M. Slee, P. S. Sorensen, M. Sorosina, M. Sospedra, A. Spurkland, A. Strange, E. Sundqvist, V. Thijs, J. Thorpe, A. Ticca, P. Tienari, D. C. van, E. M. Visser, S. Vucic, H. Westerlind, J. S. Wiley, A. Wilkins, J. F. Wilson, J. Winkelmann, J. Zajicek, E. Zindler, J. L. Haines, M. A. Pericak-Vance, A. J. Ivinson, G. Stewart, D. Hafler, S. L. Hauser, A. Compston, G. McVean, J. P. De, S. J. Sawcer, and J. L. McCauley, "Analysis of immune-related loci identifies 48 new susceptibility variants for multiple sclerosis," *Nat. Genet.*, Nov. 2013.

A. C. Cummings, E. Torstenson, **M. F. Davis**, L. N. D'Aoust, W. K. Scott, M. A. Pericak-Vance, W. S. Bush, and J. L. Haines, "Evaluating power and type 1 error in large pedigree analyses of binary traits," *PLoS. One.* May 2013.

Imminent Publications

2025 B. Forstrom*, J. Grose, J. Denny, T. Pollin, **M. F. Davis**. "Real-world data analysis reveals high penetrance and suboptimal treatment rates of monogenic diabetes." *New England Journal of Medicine*. Submission November 2025.

INVITED SEMINARS AND CONFERENCE PRESENTATION (TALKS)

2025 "Predicting multiple sclerosis: a genetic and phenotypic risk score model for disease." University of Utah Neuroimmunology Division Seminar Virtual. May 22, 2025.

"Analyzing real-world data for neurological diseases: phenotypes and genotypes." Vanderbilt University Department of Biomedical Informatics Seminar Nashville, TN. April 30, 2025.

"Real-world data for neurological diseases: phenotypes and genotypes." BYU Neuroscience Seminar Provo, UT. March 20, 2025.

"Walking your own path." BYU Women's Leadership Lecture Provo, UT. March 12, 2025.

"Genotype and phenotype risk score analyses of genetically admixed multiple sclerosis patients in All of Us." AMIA Informatics Summit Pittsburgh, PA. March 11, 2025.

"Precision Medicine at the National Institutes of Health." BYU Department of Microbiology and Molecular Biology Seminar Provo, UT. March 6, 2025.

"Predicting multiple sclerosis: genetic and phenotypic risks core model for disease." Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) West Palm Beach, FL. February 28, 2025.

2024 "Exploring phenotypic and genomic variability of multiple sclerosis." International Conference on Intelligent Biology and Medicine (ICIBM) Houston, TX. October 11, 2024.

“Genetics in All of Us.” Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) Consortium Meeting. Denver, CO. May 24, 2024.

“Multiple Sclerosis.” Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) Consortium Meeting. Denver, CO. May 22, 2024.

“Finding Direction in Uncertainty.” Brigham Young University Devotional. Provo, UT. April 9, 2024.

2023 “Investigating the regulation of central metabolism as key to human health and disorders.” AMIA Genetics Working Group Meeting. Virtual. March 31, 2023.

“Multiple Sclerosis through the stages of life: a female perspective.” BYU Global Women’s Studies Colloquium. Provo, UT. October 13, 2023.

“Investigating the regulation of central metabolism as key to human health and disorders.” All of Us Researchers Convention. Virtual. March 31, 2023.

2022 “COVID-19 testing at BYU: A molecular solution.” Brigham Young University Student Health Center. Provo, UT. January 27, 2022.

2020 “Pharmacogenomics of Multiple Sclerosis in an EHR Dataset.” University of Colorado Anschutz Medical Campus. Aurora, CO. October 7, 2020.

2019 “Practical Guide to Cancer Diagnosis and Treatment Coding in Cancer Risk and Treatment Outcome Studies Using Administrative Claims and EHRs.” International Conference of Pharmacoepidemiology. Philadelphia, PA. August 24, 2019.

2016 “Genetic Associations to Microphenotypes in Electronic Health Records: Identifying Causes of Multiple Sclerosis Progression.” University of Utah Department of Biomedical Informatics Invited Seminar. Salt Lake City, UT. March 2, 2016.

2015 “Microphenotypes in Electronic Health Records: Mining the Way for Personalized Medicine.” BYU Department of Plant and Wildlife Science Seminar. Provo, UT. October 22, 2015.

2013 “Extraction and analysis of clinical traits of multiple sclerosis using electronic medical records.” American Society for Human Genetics Annual Meeting. October 23, 2013.

“Genetic analysis of MS using EMR and BioVU—A template for clinical research.” Vanderbilt Neurology Grand Rounds. October 4, 2013.

2010 “Family-specific linkage analysis of multiple sclerosis.” Vanderbilt University Graduate Student Research Symposium. March 26, 2010.

CONFERENCE PRESENTATIONS (POSTERS)

**undergraduate student, ^graduate student*

2025 S. W. Brugger[^], **M. F. Davis**, Joshua C. Denny, ARHMS Consortium, A. Beecham, J. L. McCauley. “Local ancestry informed genetic risk scoring of multiple sclerosis patients in All of Us.” Annual Meeting of the American Society of Human Genetics. Boston, MA. October 2025.

Q. Beames*, S. W. Brugger[^], H. Whittier*, A. Linderud*, D. Reich, G. Arismendi, J. Denny, **M. F. Davis**.

“Application of phenotype risk scoring in multiple sclerosis via genome-wide association.” Annual Meeting of the American Society of Human Genetics. Boston, MA. October 2025.

A. Linderud*, S. W. Brugger[^], H. Snarr*, E. Everest, D. Reich, J. Denny, **M. F. Davis**. “Comparing disease prediction models for multiple sclerosis across genetic risk score methods and genetic ancestry populations.” Annual Meeting of the American Society of Human Genetics. Boston, MA. October 2025.

Q. Beames*, H. Whittier*, A. Linderud*, S. W. Brugger[^], J. Denny, **M. F. Davis**. “Clinician-derived phenotypic risk scores (PheRS): Removing time to diagnosis for multiple sclerosis patients.” Red Rock Data Science Conference. St. George, UT. May 2025.

B. Forstrom*, J. Grose, J. Denny, **M. F. Davis**. “Observational analysis of monogenic diabetes cases in the All of Us database.” Midsouth Computational Biology & Bioinformatics Society. Salt Lake City, UT. March 2025.

A. Linderud*, S. W. Brugger[^], H. Snarr*, J. Denny, **M. F. Davis**. “Investigating increased risk of postpartum depression (PPD) in inflammatory autoimmune disease.” Midsouth Computational Biology & Bioinformatics Society. Salt Lake City, UT. March 2025.

Q. Beames*, H. Whittier*, A. Linderud*, S. W. Brugger[^], J. Denny, **M. F. Davis**. “Clinician-derived phenotypic risk scores (PheRS): Removing time to diagnosis for multiple sclerosis patients.” Midsouth Computational Biology & Bioinformatics Society. Salt Lake City, UT. March 2025.

S. W. Brugger[^], A. Linderud*, J. Denny, **M. F. Davis**. “Genotype and phenotype risk score analyse of genetically admixed multiple sclerosis patients in All of Us.” Midsouth Computational Biology & Bioinformatics Society. Salt Lake City, UT. March 2025.

2024 S. W. Brugger[^], A. Linderud*, J. Denny, **M. F. Davis**. “Ancestry-aware genome-wide association study of African American multiple sclerosis patients in All of Us.” American Society of Human Genetics. Denver, CO. Nov. 2024.

A. Linderud*, J. Denny, **M. F. Davis** “Genome wide association study investigating increased risk of postpartum depression among women affected by immune-mediated inflammatory conditions.” American Society of Human Genetics. Denver, CO. Nov. 2024.

B. Forstrom*, J. Denny, J. H. Grose, **M. F. Davis**. “Analysis of maturity-onset diabetes of the young pathogenic gene variants indicate potential oversight in diagnosis.” American Society of Human Genetics. Denver, CO. Nov. 2024.

M. F. Davis, C. Silva*, S. W. Brugger[^]. “Impact of global and local ancestry on pharmacogenetics in African American persons with multiple sclerosis.” Annual Meeting of the American Committee for Treatment and Research in Multiple Sclerosis. West Palm Beach, FL. March 2024.

2023 K. Bates*, L. Howell[^], A. Bates*, D. Stone*, J. Bryan*, C. Betteridge*, M. H. Bailey, J. H. Grose, **M. F. Davis**. “Genomics study in *All of Us* reveals *ATXM2* variants are associated with varying risk of hypothyroidism.” Annual Meeting of the American Society of Human Genetics. Washington D.C. November 2023.

S. W. Brugger[^], C. Silva*, **M. F. Davis**. “Impact of global and local ancestry on pharmacogenetics in African American persons with multiple sclerosis.” Annual Meeting of the American Society of Human Genetics. Washington D.C. November 2023.

L. J. Howell[^], **M. F. Davis**. “The long shadow of infection: A PheWAS of HSV infection in the *All of Us* database.” Annual Meeting of the American Society of Human Genetics. Washington D.C. November 2023.

S. W. Brugger[^], C. Silva*, **M. F. Davis**. “Impact of global and local ancestry on pharmacogenetics in African American persons with multiple sclerosis.” Annual Meeting of the American Committee for Treatment and Research in Multiple Sclerosis. San Diego, CA. March 2023.

2022 A. Hernandez*, **M. F. Davis**. “Quantifying Polygenic Risk Scores for Multiple sclerosis in African American Cohorts.” Life Sciences CURA posters. Provo, UT. December 2022.

C. Silva*, S. W. Brugger[^], **M. F. Davis**. “Impact of global and local ancestry on pharmacogenetics in African American persons with multiple sclerosis.” Life Sciences CURA posters. Provo, UT. December 2022.

A. Hernandez*, **M. F. Davis**. “Quantifying Polygenic Risk Scores for Multiple sclerosis in African American Cohorts.” Annual Meeting of the American Society of Human Genetics. Los Angeles, CA. October 2022.

M. F. Davis, C. Silva*, S. W. Brugger[^]. “Impact of global and local ancestry on pharmacogenetics in African American persons with multiple sclerosis.” Annual Meeting of the American Society of Human Genetics. Los Angeles, CA. October 2022.

- 2021 S.W. Brugger[^], M. Grose*, J. Grose, M.F. Davis. “Codon bias analysis of wildtype SARS-CoV-2 and prevalent variants indicates a mutational trajectory independent of human pulmonary tissue and genomic bias.” Annual Meeting of the American Society of Human Genetics. Virtual. October 2021.
- A. Hernandez*, F.B.B. Briggs, M.F. Davis. “Assessing the difference in multiple sclerosis age of onset amongst different racial populations through the use of electronic health records.” Annual Meeting of the American Society of Human Genetics. Virtual. October 2021.
- 2020 J. T. Beales*, M. R. Rimmasch*, K. M. Reynolds*, **M. F. Davis**. “Automated extraction of multiple sclerosis treatment timelines: preparing free-text electronic health record data for use in pharmacogenomics analyses.” 8th Joint ACTRIMS-ECTRIMS Meeting. Virtual. September 2020.
- 2019 K. M. Reynolds*, J. T. Beales*, M. Rimmasch*, J. C. Denny, **M. F. Davis**. “Pharmacogenetic analysis of rs2205986 associated with glatiramer acetate-induced liver injury in multiple sclerosis patients.” Annual Meeting of the American Society of Human Genetics. Houston, TX. October 2019.
- S. W. Brugger*, X. Niu, J. C. Denny, **M. F. Davis**. “Pharmacogenetic analysis of known variant associated with IFN- β -induced liver injury replicated in African Americans with multiple sclerosis.” Annual Meeting of the American Society of Human Genetics. Houston, TX. October 2019.
- M. Rimmasch*, J. T. Beales*, J. C. Denny, **M. F. Davis**. “Automating the extraction of Multiple Sclerosis treatment data for future pharmacogenetic studies.” Americans Committee for Treatment and Research in Multiple Sclerosis Forum. Dallas, TX. February 2019.
- M. F. Davis**, M. D. Montierth*, J. C. Denny. “The Role of Uric Acid in Multiple Sclerosis Risk.” Americans Committee for Treatment and Research in Multiple Sclerosis Forum. Dallas, TX. February 2019.

STUDENTS MENTORED

Undergraduate students

1. Matthew Bagley
2. Lily Wickham
3. Blaine Zindel
4. Elijah Thompson
5. Josh Hoagland
6. Matt Bevington
7. Quinn Beames
8. Hailey Whittier
9. Kylee Bates
10. Hannah Snarr
11. Meiling Jiang
12. Alyks Odell Linerud
13. Kayden Hadlock
14. Breckin Forstrom
15. Christian Betteridge
16. Laura Duplaix
17. Jacob Gwilliam
18. Lily Robinson
19. Emili Hartwell
20. Ryan Colby
21. Isaiah Graham
22. Madelyn Grose
23. Caitlin Silva
24. Spencer Yeates
25. Kristin Durrant
26. Tyler Daley
27. Rebecca Koch
28. Joel Masopeh
29. Amy Hernandez
30. Matthew Porter
31. Kristen Watabe
32. Sumin Hwang

33. Kaylia Reynolds
34. Braden Eberhard
35. Renee Koth
36. Jacob Miller
37. Megan Rimmasch
38. Steven Brugger
39. Jeremy Beales
40. Caisa Blau
41. Mekeli Nelson
42. Jesse Norris
43. Joshua Adams
44. Celeste Dunn
45. Matthew Montierth
46. Shayla Draper
47. Benjamin Rowland
48. Megan Soelberg
49. Holly Jensen
50. Dylan Rowe
51. Alex Gosch
52. Cannon Gardner
53. Rebecca Barr
54. Scott Frodsham
55. Mackenzie Olsen
56. Virginia Rodriguez
57. Spencer Sutton
58. Benjamin Peaden
59. Matt Durrant
60. Tielle Gallion
61. Derek Nielsen

Graduate students

1. Lydia Howell (MS)
2. Steven W Brugger (PhD)

Graduate student committee member

1. Hannah Tran (MS)
2. Rajesh Bogati (PhD)
3. Ying Cheh Chou (PhD)
4. Christian Rich (MS)
5. Bailey Calder (PhD)
6. Charity Conlin (PhD)
7. Madison Duffy (MS)
8. Daniel Arens (PhD)
9. John Carter (PhD)
10. Alex Erikson (MS)
11. Jeralyn Franson (MS)
12. Ann-Aubrey Reid (MS)

CONFERENCE COMMITTEES

2019 – 2021	Member BYU Healthcare Industry Network Conference Committee
2018 – 2019	Organizer American Society of Clinical Laboratory Science Region IX Educators' Network Symposium
2020	Abstract Reviewer American Society of Human Genetics Annual Meeting
2019	Abstract Reviewer American Medical Informatics Association Informatics Summit

CONFERENCE ATTENDANCE

Last five years

2025 American Society of Human Genetics Annual Meeting—Boston, MA

Red Rock Data Science Conference. St. George, UT. May 2025.
Midsouth Computational Biology & Bioinformatics Society—Salt Lake City, UT
American Medical Informatics Association Informatics Summit—Pittsburgh, PA
American Committee for Treatment and Research of Multiple Sclerosis Annual Meeting—West Palm Beach, FL

- 2024 American Society of Human Genetics Annual Meeting—Denver, CO
International Conference on Intelligent Biology and Medicine—Houston, TX
Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) Consortium Meeting—Denver, CO
American Medical Informatics Association Informatics Summit—San Francisco, CA
Annual Meeting of the American Committee for Treatment and Research in Multiple Sclerosis—West Palm Beach, FL
- 2023 Annual Meeting of the American Society of Human Genetics—Washington D.C.
American Medical Informatics Association Informatics Summit—Seattle, WA
Annual Meeting of the American Committee for Treatment and Research in Multiple Sclerosis—San Diego, CA
- 2022 Life Sciences College Undergraduate Research Conference—Provo, UT
Annual Meeting of the American Society of Human Genetics—Los Angeles, CA
Clinical Laboratory Educators Conference—Virtual
- 2021 Annual Meeting of the American Society of Human Genetics—Virtual
- 2020 8th Joint Meeting American and European Committees for the Treatment and Research in Multiple Sclerosis (ACTRIMS-ECTRIMS)—Virtual

PROFESSIONAL MEMBERSHIPS & LICENSES

Medical Laboratory Scientist MLS(ASCP)^{CM}
American Medical Informatics Association (AMIA)
American Society of Clinical Pathology (ASCP)
American Society for Clinical Laboratory Science (ASCLS)
American Society of Human Genetics (ASHG)

FUNDING

External funding

- 2024-2027 National Institutes of Health R15. Genetic predispositions and misdiagnosis of cancer in All of Us participants. Co-investigator. \$220,000
- 2022-2024 National Institutes of Health R15. Investigating the partitioning of glucose to lipids versus respiration, an undergraduate-based approach to dissect a pivotal point of metabolic control. Co-investigator. \$110,000
- 2017-2018 National Multiple Sclerosis Society. Quantifying the genetic burden of multiple sclerosis age of onset. Co-investigator. \$60,000
- 2009-2011 National Institutes of Health. Pre-doctoral Training Grant T32. Fellow.

Internal funding

- 2024 Sam & Aline Skaggs Distinguished Mentoring Fellowship. Principal investigator. \$20,000
- 2022 Emmaline B. Wells Grant. Multiple sclerosis effects postpartum and in minorities. Principal investigator. \$25,000
- 2020-2021 Gerontology. Identification and characterization of PAS kinase alleles associated with diabetes and neurodegenerative disease. \$10,000
- 2016 College of Life Sciences Teaching Enhancement Grant. Technology improvements in a laboratory setting students in active learning. Principal investigator. \$9,600

2015 College of Life Sciences Teaching Enhancement Grant. Develop of mixed bacterial cultures to mimic clinical specimens for a teaching laboratory and student iPads for a BSL-2 lab to enhance learning. Principal investigator. \$9,300

AWARDS & RECOGNITIONS

2024 Outstanding Teaching Award | BYU College of Life Sciences
Sam & Aline Skaggs Distinguished Mentoring Fellowship | BYU College of Life Sciences

2021 Alcuin Fellowship | BYU General Education

2015 Teaching Enhancement Grant | BYU College of Life Sciences
Early Career Faculty Travel Award | American Society of Microbiology Conference for Undergraduate Educators

2014 Teaching Enhancement Grant | BYU College of Life Sciences

2013 Travel Grant | Vanderbilt University Graduate School

2008 Magna Cum Laude | BYU

2008 Emil von Behring Scholarship | Dade Behring

2007 National Student Honor Award | American Society of Clinical Pathology
Garth L. Lee Teaching Assistant Award | BYU Department of Chemistry and Biochemistry

2006 Garth L. Lee Teaching Assistant Award | BYU Department of Chemistry and Biochemistry

2004-06 Dean's Honor Roll | BYU College of Life Sciences

2004-08 Heritage Scholarship | BYU

2005, '07 Summer Scholarship | BYU

2004 Scholarship | Walmart
Scholarship | ELKS Lodge Utah State

ADDITIONAL TRAINING

2019 – 2020	STEM Faculty Institute	Brigham Young University
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INTERESTS

Reading, hiking, playing the piano, board games