

Drew Hughes

Academic Positions & Employment

2024–
Present **Medical Director**, *Pairidex, Inc.*, St. Louis, MO.

2023–
Present **Assistant Professor, Section of Molecular Oncology, Division of Genomic and Molecular Pathology, Department of Pathology & Immunology**, *Washington University School of Medicine*, St. Louis, MO.

Board Certification

2023 **Molecular Genetic Pathology**, *American Board of Pathology*.

2022 **Clinical Pathology**, *American Board of Pathology*.

Post-Graduate Training

2022–2023 **Clinical Fellow, Molecular Genetic Pathology**, *Washington University School of Medicine*, St. Louis, MO.

2019–2022 **Resident, Clinical Pathology**, *Barnes-Jewish Hospital*, St. Louis, MO.

Education

2009–2019 **MD/PhD, Molecular Genetics and Genomics**, *Washington University School of Medicine* St. Louis, MO.

2004–2008 **BS (*summa cum laude*)**, **Mathematics**, *College of William & Mary*, Williamsburg, VA.

Honors and Awards

2023 Clinical Pathology Fellow Educator of the Year, Department of Pathology & Immunology, Washington University School of Medicine.

2021 Richard Marshall Education Award, American Association for Clinical Chemistry.

2021 Best Abstract (Clinical and Diagnostic Immunology), American Association for Clinical Chemistry.

2021 Most Innovative Abstract, American Society for Histocompatibility and Immunogenetics.

2020 Abstract Achievement Award, American Society of Hematology.

2020 Paul E. Strandjord Young Investigator Award, Academy of Clinical Laboratory Physicians and Scientists.

2020 Best Laboratory and Genomic Medicine Grand Rounds Presentation, Department of Pathology & Immunology, Washington University School of Medicine.

2019 Dr. Philip Rosenblatt Award, Department of Pathology & Immunology, Washington University School of Medicine.

2008 Phi Beta Kappa, College of William & Mary.

2008 Cissy Patterson Prize, Department of Mathematics, College of William & Mary.

2008 Honors, Department of Biology, College of William & Mary.

Peer-Reviewed Publications

- 2025 Sun L, Krigman HR, Rohatgi A, Ansstas G, **Hughes AEO**. A pulmonary nodule with an unexpected mutation profile. *Clinical Chemistry. In Press*.
- 2025 Valentine MC, Wong A, Chen L, Du F, **Hughes AEO**, Spencer DH, Duncavage EJ, Sun L. A fully next-generation sequencing-based method of classifying molecular sub-types of endometrial cancer retains prognostic value and expands biomarker targets. *Int J Gynecol Cancer*. 2025 Feb 2;35(2):100060. doi: 10.1016/j.ijgc.2024.100060.
- 2025 Polonis K, Blommel JH, **Hughes AEO**, Spencer D, Thompson JA, Schroeder MC. Innovations in short-read sequencing technologies and their applications to clinical genomics. *Clin Chem*. 2025 Jan 3;71(1):97-108. PMID: 39749506. doi: 10.1093/clinchem/hvae173.
- 2023 **Hughes AEO**, Forbriger A, May AM, Scott MG, Char D, Farnsworth CW. Implementation of high-sensitivity troponin with a rapid diagnostic algorithm reduces emergency department length of stay for discharged patients. *Clinical Biochemistry*. 2023 Jun;116:87–93. PMID: 37054770. doi: 10.1016/j.clinbiochem.2023.04.003.
- 2022 **Hughes AEO** and Jackups R Jr. Clinical Decision Support for Laboratory Testing. *Clinical Chemistry*, 68(3), 402–412. PMID: 34871351. doi: 10.1093/clinchem/hvab201.
- 2021 Duncavage EJ, Schroeder MC, O’Laughlin M, Wilson R, MacMillan S, Bohannon A, Krukowski S, Garza J, Du F, **Hughes AEO**, Robinson J, Hughes E, Heath SE, Baty JD, Neidich J, Christopher MJ, Jacoby MA, Uy GL, Fulton RS, Miller CA, Payton JE, Link DC, Walter MJ, Westervelt P, DiPersio JF, Ley TJ, and Spencer DH. Genome Sequencing as an Alternative to Cytogenetic Analysis in Myeloid Cancers. *The New England Journal of Medicine*, 384(10), 924–935. PMID: 33704937. doi: 10.1056/NEJMoa2024534.
- 2020 Perez-Cervantes C, Smith LA, Nadadur RD, **Hughes AEO**, Wang S, Corbo JC, Cepko C, Lonfat N, and Moskowitz IP. Enhancer Transcription Identifies *cis*-Regulatory Elements for Photoreceptor Cell Types. *Development*, 147(3), dev184432. PMID: 31915147. doi: 10.1242/dev.184432.
- 2020 **Hughes AEO**, Webber DM, Wallace MA, Johnson C, Burnham CA, and Anderson NW. Comparable Detections of Viral Pathogens in Lower Respiratory Tract Specimens with the BioFire Respiratory Panel 2 and the BioFire Pneumonia Panel. *Journal of Clinical Microbiology*, 58(6), e00254-20. PMID: 32269103. doi: 10.1128/JCM.00254-20.
- 2020 Volkov LI, Kim-Han JS, Saunders LM, Poria D, **Hughes AEO**, Kefalov VJ, Parichy DM, and Corbo JC. Thyroid Hormone Receptors Mediate Two Distinct Mechanisms of Long-Wavelength Vision. *Proceedings of the National Academy of Sciences of the United States of America*, 117(26), 15262–15269. PMID: 32541022. doi: 10.1073/pnas.1920086117.
- 2019 Murphy DP, **Hughes AEO**, Lawrence KA, Myers CA, and Corbo JC. *Cis*-Regulatory Basis of Sister Cell Type Divergence in the Vertebrate Retina. *Elife*, 8, e48216. PMID: 31633482. doi: 10.7554/eLife.48216.
- 2018 **Hughes AEO**, Myers CA, and Corbo JC. A Massively Parallel Reporter Assay Reveals Context-Dependent Activity of Homeodomain Binding Sites In Vivo. *Genome Research*, 28(10), 1520–1531. PMID: 30158147. doi: 10.1101/gr.231886.117.
- 2017 **Hughes AEO**, Enright JM, Myers CA, Shen SQ, and Corbo JC. Cell Type-Specific Epigenomic Analysis Reveals a Uniquely Closed Chromatin Architecture in Mouse Rod Photoreceptors. *Scientific Reports*, 7, 43184. PMID: 28256534. doi: 10.1038/srep43184.
- 2016 Shen SQ, Myers CA, **Hughes AEO**, Byrne LC, Flannery JG, and Corbo JC. Massively Parallel *cis*-Regulatory Analysis in the Mammalian Central Nervous System. *Genome Research*, 26(2), 238–55. PMID: 26576614. doi: 10.1101/gr.193789.115.
- 2015 Young AL, Wong TN, **Hughes AEO**, Heath SE, Ley TJ, Link DC, and Druley TE. Quantifying Ultra-Rare Pre-Leukemic Clones Via Targeted Error-Corrected Sequencing. *Leukemia*, 29(7), 1608–11. PMID: 25644247. doi: 10.1038/leu.2015.17.

- 2014 **Hughes AEO**, Magrini V, Demeter R, Miller CA, Fulton R, Fulton LL, Eades WC, Elliott K, Heath S, Westervelt P, Ding L, Conrad DF, White BS, Shao J, Link DC, DiPersio JF, Mardis ER, Wilson RK, Ley TJ, Walter MJ, and Graubert TA. Clonal Architecture of Secondary Acute Myeloid Leukemia Defined by Single-Cell Sequencing. *PLOS Genetics*, 10(7), e1004462. PMID: 25010716. doi: 10.1371/journal.pgen.1004462.
- 2012 Ramos E, Levinson BT, Chasnoff S, **Hughes AEO**, Young AL, Thornton K, Li A, Valania FL, Province M, and Druley TE. Population-Based Rare Variant Detection Via Pooled Exome or Custom Hybridization Capture with or without Individual Indexing. *BMC Genomics* 13, 683. PMID: 23216810. doi: 10.1186/1471-2164-13-683.

Book Chapters

- 2023 Parikh BA, **Hughes AEO**, and Anderson NW. Molecular Microbiology. In Carroll KC, Pfaller MA *Manual of Clinical Microbiology*, 13th edition. ASM Press, Washington, DC.

Invited Presentations

- 2024 **Hughes AEO**, Bradley B. Molecular Virology and Molecular Diagnostic Techniques. Workshop. *Southwestern Association of Clinical Microbiology Annual Meeting*, August 21–23, St. Louis, MO.

Other Presentations

- 2025 **Hughes AEO**, Du F, O’Laughlin M, Sprenger G, Mahgoub M, Davarapalli N, Struthers H, Abel H, Manring C, Harvey R, Saygin C, Yin J, Yang JJ, Deangelo D, Dinner S, Stone R, Konopleva M, Eisfeld A, Schroeder M, Duncavage E, Advani A, Stock W, Uy G, and Spencer D. Increased yield of recurrent structural variants (SVs) in Ph-like B-cell acute lymphoblastic leukemia (B-ALL) using a streamlined clinical whole-genome sequencing (WGS) assay. Poster presentation, *American Society of Hematology Annual Meeting*, December 6–9, Orlando, FL.
- 2025 Duncavage E, **Hughes AEO**, Alnoor, Hernandez P, Kodgule R, Zarbock C, Du F, O’Laughlin S, Khanna A, Krysiak K, Lee Y, Sun L, Abel H, and Spencer D. A Comparison of Multi-Dimensional Flow Cytometry versus high-sensitivity sequencing for the detection of persistent disease in MDS and AML patients. Poster presentation, *Association for Molecular Pathology Annual Meeting*, November 11–15, Boston, MA.
- 2024 **Hughes AEO**, Zarbock C, Alnoor, Abel H, Duncavage E, and Spencer D. Haplotect: A Robust Haplotype-Based Method to Detect and Quantify DNA Contamination in Next-Generation Sequencing Data. Poster presentation, *Association for Molecular Pathology Annual Meeting*, November 19–23, Vancouver, British Columbia, Canada.
- 2023 **Hughes AEO**, O’Laughlin M, Du F, Schroeder M, Duncavage E, and Spencer D. Comprehensive Molecular Profiling of B-Lymphoblastic Leukemia/Lymphoma by Whole Genome Sequencing. Oral presentation, *Association for Molecular Pathology Annual Meeting*, November 14–18, Salt Lake City, UT.
- 2022 **Hughes AEO**, Anderson NW, Eberly AR, and Parikh BA. Evaluating the Utility of Ct Skewness to Predict SARS-CoV-2 Epidemiological Dynamics. Poster presentation, *American Society for Microbiology Clinical Virology Symposium*, May 1–4, West Palm Beach, FL.
- 2021 **Hughes AEO**, Bell RC, Abel HJ, Schroeder MC, Liu C, Duncavage EJ, and Spencer DH. Human Leukocyte Antigen Typing of Patients with Myeloid Malignancies by Whole Genome Sequencing. Oral presentation, *Association for Molecular Pathology Annual Meeting and Expo*, November 16–20, Philadelphia, PA.

- 2021 **Hughes AEO**, Farnsworth CW, and Gronowski AM. Automated Interpretation of Serum Protein Electrophoresis. Oral presentation, *American Association for Clinical Chemistry*, September 26–30, Atlanta, GA.
- 2021 **Hughes AEO**, Montgomery MC, Liu C, and Weimer ET. Allele-Specific Quantification of HLA Transcript Isoforms by Nanopore Long-Read Sequencing. Poster presentation, *American Society for Histocompatibility and Immunogenetics*, September 27–October 1, Orlando, FL.
- 2021 **Hughes AEO**, Farnsworth CW, and Gronowski AM. Automated Interpretation of Serum Protein Electrophoresis. Poster presentation (virtual), *Association for Pathology Informatics Summit*, May 18–21, Pittsburgh, PA.
- 2020 **Hughes AEO**, Montgomery MC, Liu C, and Weimer ET. Allele-Specific HLA Expression with Nanopore Long-Read Sequencing. Poster presentation (virtual), *American Society of Hematology Annual Meeting*, December 5–8, San Diego, CA.
- 2020 **Hughes AEO**, Webber DM, Wallace MA, Johnson C, Burnham CAD, and Anderson NW. Combining the BioFire Pneumonia Panel with Culture Optimizes Lower Respiratory Pathogen Testing. Poster presentation (virtual), *American Society for Microbiology Microbe*, July 17–18, Chicago, IL.
- 2016 **Hughes AEO**, Enright JM, Myers CA, and Corbo JC. Nr1 Mediates Widespread Changes in the Epigenomic Landscape of Mouse Photoreceptors. Poster presentation, *The Biology of Genomes*, May 10–14, Cold Spring Harbor, NY.

Peer Review Activities

Referee: *Clinical Biochemistry*, *Clinical Chemistry*, *Frontiers*, *The Journal of Applied Laboratory Medicine*, *Journal of Clinical Microbiology*, and *The Journal of Molecular Diagnostics*.