

Ryan Gallagher

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Education

University of Wisconsin - Eau Claire Sept 2017 – Dec 2021
BS in Statistical/Applied Mathematics & Applied Physics, double major

Medical College of Wisconsin Sept 2022 - Dec 2023
MA in Biostatistics & Data Science

Relevant Coursework

- **Graduate:** Statistical Modeling Series, Biostatistical Computing, Bayesian Analysis, Bioinformatics
- **Undergraduate:** Statistics & Probability, Linear Algebra, Calculus Series, Differential Equations, Numerical Analysis, Programming in C++, University Physics Series, Real Analysis, Complex Analysis

Research Experience

Biostatistician I Milwaukee, WI
Medical College of Wisconsin / Children's Wisconsin Jan 2024 - Present

- Primary Biostatistician supporting Dr. Ulrich Broeckel in the MCW/CW Advanced Genomics lab.
- Designed statistical QC reporting for a CAP-accredited genomics laboratory, monitoring lab instrument performance and data integrity using R.
- Directed research initiatives in biostatistics and bioinformatics.

Whole Genome Long-Read Sequencing Bioinformatics Pipeline

[github.link](#) 

- Created a Git-versioned Python pipeline converting raw whole-genome long-reads into analysis-ready data, processed ~ 100 genomes to date.
- Developed a variant annotation and analysis workflow to quantitatively identify clinically relevant mutations for determining disease association.

Differential Expression Analysis for Drug Discovery

[github.link](#) 

- Performed differential expression analysis in R (DESeq2) to statistically validate and quantify the efficiency of gene knockouts at the transcriptomic level in our TKI therapeutic research.

Hybrid Assembly of Oxford Nanopore Long-Read Sequencing & Bionano Optical Genome Mapping

[github.link](#) 

- Developed a workflow which combines two third-generation sequencing platforms for the construction of highly contiguous genome assemblies.
- Assemblies yield gap-reduced, end-to-end reconstructions that better approximate the complete genome.

Graduate Research Assistant Milwaukee, WI
Medical College of Wisconsin Jan 2023 - Dec 2023

- Assisted Dr. Rodney Sparapani on pediatric Sickle Cell research leveraging multi-institutional EHRs.

Quantile Regression for Sickle Cell Pediatric Growth Patterns

[github.link](#) 

- Performed advanced statistical modeling in SAS on TriNetX EMR data to uncover pediatric disparity factors (Master's Capstone).

Data Analyst Intern Madison, WI (Remote)
WPS Health Solutions April 2023 - Dec 2023

- Queried and analyzed large datasets from the CMS Medicare Claims database using SAS, SQL, & Python.
- Conducted statistical investigations on Medicare claims data to identify healthcare utilization patterns and potential fraud anomalies, supporting evidence-based policy and health services research initiatives.


Teaching Experience

Adjunct Professor

University of Wisconsin - Milwaukee

Milwaukee, WI

Spring 2025

- Designed & instructed: [Healthcare Informatics 743 – Predictive Analytics in Healthcare](#) .
- Taught 18 graduate level students the basics of R programming, regression, and statistical learning.
- Developed a course curriculum with integrated labs, homework, and term projects for statistical analysis in various healthcare data.

Academic Tutor

Tutor Doctor

Milwaukee, WI

Sept 2022- Dec 2022

- Tutored three individuals at the high school and college level in calculus & precalculus.
- Developed personalized lesson plans and practice materials tailored to student learning styles.

Publications

1. **Gallagher et. al**, "Optical Genome Mapping and Long Read Sequencing Identifies a Novel Dystrophin Gene Inversion in a Patient with Duchenne Muscular Dystrophy", *American Journal of Medical Genetics - Part A*, (Submitted, November 2025)
2. **Ries et. al**, "Optical Genome Mapping and Long Read Sequencing identifies a complex PAX6 rearrangement causing aniridia", *JAMA Ophthalmology*, (Submitted, October 2025)

Scholarly Presentations

- **Gallagher et. al**, "Optical Genome Mapping and Long Read Sequencing Identifies a Novel Dystrophin Gene Inversion in a Patient with Duchenne Muscular Dystrophy", Poster Presentation, American College of Medical Genetics, Boston Convention and Exhibition Center, Boston, MA, October 2025.
- **Gallagher et. al**, "Optical Genome Mapping and Long Read Sequencing Identifies a Novel Dystrophin Gene Inversion in a Patient with Duchenne Muscular Dystrophy", Poster Presentation, Midwest Society of Pediatric Research, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, July 2025.
- **Gallagher, Ryan J**, "Pediatric Disparities in Sickle Cell Disease and Quantile Regression for Childhood Growth Charts with a Multi-institutional Databank of Electronic Health Records", Oral Presentation, Master's Capstone Seminar, Medical College of Wisconsin, Milwaukee, WI, December 2023

Skills

Languages: R, Python, SAS, bash, SQL, C++

Computing Linux, docker, Git/GitHub, RStudio, conda, SLURM

Bioinformatics & Statistical Genetics: DeepVariant, bcftools, GATK, RNA-seq (DESeq2, edgeR), snpEff, VEP; ONT/Bionano, VCFtools, BEDTools, IGV

Data Visualization & Reporting: R Markdown / Quarto, ggplot2, plotly, seaborn, Interactive Dashboards (Shiny, Dash), L^AT_EX