

John Seibert

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EDUCATION	Bloomsburg University of Pennsylvania , Bloomsburg, PA B.S. Mathematics, B.S. Computer Science; August 2020 - December 2025 GPA: 4.0/4.0 Thesis: “ Negative Latin Square Type Partial Difference Sets from Non-abelian Groups and their Product Constructions. ” Advisor: John Polhill	
PUBLICATIONS	Berry, A. S. F., Finucane, B. M., Myers, S. M., Walsh, L. K., Seibert, J. M. , Martin, C. L., Ledbetter, D. H., & Oetjens, M. T. (2024). <i>A genome-first study of sex chromosome aneuploidies provides evidence of Y chromosome dosage effects on autism risk.</i> <i>Nature Communications</i> , 15(1), 8897.	
PAPERS IN PREPARATION	Seibert, J. , Polhill, J. <i>Constructing an Infinite Family of Negative Latin Square Partial Difference Sets in Nonabelian Groups.</i>	
	Seibert, J. , Nguyen, H., Li W., Ma W., Cui X. <i>Transcriptomic Age Acceleration in Alzheimer’s Disease: A Predictive Modeling Approach Using Age-Responsive Genes from GTEx.</i>	
RESEARCH EMPLOYMENT AND EXPERIENCE	UC Riverside NSF Fellow (NSF Grant #2244480) <ul style="list-style-type: none">Developed and trained 3 machine learning models to predict biological age from high-dimensional bulk RNA-seq data.Engineered a data preprocessing pipeline to clean, $\log_2(TPM + 1)$ transform, and z-score standardize gene expression data from the GTEx v8 and GSE125583 datasetsAnalyzed “brain-age delta” between AD and control groups using non-parametric statistical tests to confirm significant findings.Implemented a feature selection process using linear modeling and Benjamini-Hochberg correction to identify and select 400 significant age-responsive genes from an initial set of over 20,000Validated the primary hypothesis that Alzheimer’s Disease patients exhibit accelerated biological aging, demonstrating a statistically significant increase in predicted transcriptomic age vs. chronological age	June 2025-August 2025
	Commonwealth University-Bloomsburg Undergraduate Research, Scholarly and Creative Activities Grant	May 2023-August 2023
	<ul style="list-style-type: none">Implemented a recursively-defined function (Mahler-Popken complexity) to define the “cost” of an integer relative to a set of 6 primitive recursive functions using PythonConjectured the function and 6 primitive recursive functions are computable	
	Geisinger Health System Summer Undergraduate Research Program Intern	May 2022-August 2022

- Queried and extracted data from the ‘All of Us’ research database to perform sensitivity analyses and correlate SCA status with cognitive performance and social determinants of health
- Analyzed genomic and phenotypic data from two biobanks (Geisinger MyCode and SPARK) to investigate the association between sex chromosome aneuploidy (SCA) and autism spectrum disorder (ASD)
- Identified proportions of 13 common symptoms of sex chromosome aneuploidies in the MyCode and SPARK biobanks

HONORS AND AWARDS

Susquehanna Valley Undergraduate Research Symposium 2023 Best Poster Award
 Community Government Association, Fall 2021 Senator of the Semester
 Bloomsburg University, Board of Governor’s Science and Technology Merit Scholarship

GRANTS AWARDED

Bloomsburg University Undergraduate Research, Scholarly, and Creative Activity Grant; Cost of an Integer (March 2023) - \$4,800

ORAL PRESENTATIONS

Predicting Biological Age in Alzheimer’s Disease Using Machine Learning, Mathematical and Digital Sciences Seminar Series, Commonwealth University-Bloomsburg (September 2025)

Transcriptomic Age Acceleration in Alzheimer’s Disease: A Predictive Modeling Approach Using Age-Responsive Genes from GTEx, Riverside High School Data Science Camp at University of California, Riverside (August 2025)

Evaluating the Cost of an Integer using Primitive Recursive Functions, Mathematical Association of America EPaDel Section Meeting, Villanova University (November 2023)

POSTERS

Negative Latin Square Type Partial Difference Sets from Nonabelian Groups and their Product Constructions, Eileen G. Jones Honors College Fall 2025 Capstone Symposium @ Commonwealth University-Bloomsburg (Bloomsburg, PA) (December 2025) [Presenter]

Transcriptomic Age Acceleration in Alzheimer’s Disease: A Predictive Modeling Approach Using Age-Responsive Genes in GTEx, Riverside High School Data Science Camp @ UC Riverside (Riverside, CA) (August 2025); SoCal REU Symposium @ Harvey Mudd College (Claremont, CA) (July 2025) [Presenter]

Evaluating the effects of sex chromosome dosage on autism spectrum disorder risk, 2023 American Society of Human Genetics Meeting @ Walter E. Washington Convention Center (Washington, DC) (November 2023) [Non-presenting author]

Mapping Integers to the Smallest Description of an Integer Possible in Python, COST Research Day @ Commonwealth University-Bloomsburg (Bloomsburg, PA) (May 2024); Susquehanna Valley Undergraduate Research Symposium @ Bucknell University (Lewisburg, PA) (July 2023) [Presenter]

Sex chromosome aneuploidies and risk of neuropsychiatric disorders in two population based cohorts, Susquehanna Valley Undergraduate Research Symposium @ Geisinger Medical Center (Danville, PA) (July 2022) [Presenter]

INSTITUTIONAL SERVICE

Community Government Association
 Senate Representative to Executive Board (23-24)
 Secretary (24-25)

Sep. 2020 - Dec. 2025

- Co-drafted and revised Academic Distinction policies regarding Dean's List eligibility for part time students
- Interim chair for Committee on Student Organizations
- Approved \$2 million budget for Community Activities Office, funding student clubs and organizations campus-wide
- Wrote and compiled all Executive Board and Senate meeting minutes, ensuring a timely distribution

OTHER
EMPLOYMENT

Sekisui Kydex

Manufacturing Technology Intern

May 2024-August 2024

- Consolidated ~200 cloned FileMaker scripts to 7 streamlined prototype scripts, enhancing maintainability and reducing redundancy.
- Hosted a FileMaker archive database to store 4.5 million archived records for old tables
- Authored a document detailing best practices for creating FileMaker scripts to facilitate developer collaboration

TECHNICAL SKILLS

- **Languages:** Python, R, Java C/C++, SQL, JavaScript, HTML/CSS, JSON, GAP (Groups, Algorithms, and Programming), L^AT_EX
- **Frameworks:** PyTorch, Apache Spark
- **Developer Tools:** Git, Google Cloud Platform, VSCode, Visual Studio, PyCharm, IntelliJ, Spyder, Project Jupyter
- **Libraries:** pandas, NumPy, Matplotlib, shiny, bokeh, scikit-learn, JavaFX, SQLite, tidyverse, YOLOv8

REFERENCES

Dr. William Calhoun (Department Chair/Research Mentor)

Mathematics, Computer Science, and Digital Forensics; Commonwealth University
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Dr. Wei Vivian Li (UC Riverside REU Mentor)

Associate Professor of Statistics; University of California, Riverside
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Dr. Wenxiu Ma (UC Riverside REU Mentor)

Associate Professor of Statistics; University of California, Riverside
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Dr. John Polhill (Undergrad Thesis Advisor)

Professor of Mathematics; Commonwealth University
jpolhill@commonwealthu.edu

Dr. Matthew Oetjens (Geisinger SURP Research Mentor)

Associate Professor; Geisinger Autism and Developmental Medicine Institute
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Dr. Alex Berry (Geisinger SURP Research Mentor)

Staff Scientist; Geisinger Autism and Developmental Medicine Institute
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