Ekaterina Khvatkova
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EDUCATION

Wake Forest University May 2022
M.S. Mathematical Statistics, *Cum Laude*
University of Alabama May 2020
B.S. Mathematics (Concentration: Applied Math), *Summa Cum Laude*
Minored in Russian and Liberal Arts (Blount Scholars Program)

HONORS AND AWARDS

Graduate Teaching Assistantship, Wake Forest University — April 2020
Fulbright English Teaching Assistantship Alternate, Russian Federation — April 2020
Russian Departmental Honors Award, University of Alabama — February 2020
Blount Academic Scholarship Recipient, University of Alabama — September 2019
UA Capstone Scholar Scholarship Recipient, University of Alabama — August 2017

RESEARCH

General Research Interests:
Statistical Genetics, Multiomics, Biological and Epidemiological Mathematical Modeling, Molecular Dynamics Simulations, High Performance Computing, Data Science

Current Research Involvement:

"Intrinsic DNA Topology for Causal Variant Identification"
- Key Personnel: Hannah C. Ainsworth[1] (PI), **Ekaterina S. Khvatkova**[1], Carl D. Langefeld[1]
- Funded by the Errett Fisher Foundation via Hannah Ainsworth's Daryl and Marguerite Errett Discovery Award (Project Period: 10/01/2023 – 09/30/2024)
- Role: *Statistical Researcher and Analyst* (Mentored by Hannah Ainsworth and Carl Langefeld), *October 2023 – Present*

"Epigenetics of Methylphenidate Effects in Children with ADHD"
- Key Personnel: Tanya Froehlich[2] (PI), Hannah C. Ainsworth[1], Jeffrey N. Epstein[2], Timothy D. Howard[1], **Ekaterina S. Khvatkova**[1], Beth Krone[3], Carl D. Langefeld[1], Jeff Newcorn[2], Mark Stein[4], Xueguang Sun[1]
- Funded by the University of Cincinnati's Center for Pediatric Genomics (CpG)
- Role: *Statistical Researcher and Analyst* (Mentored by Hannah Ainsworth, Carl Langefeld, and Timothy Howard), *September 2022 – Present*

"Impact of Socioeconomic Disparity on the Methylome of Parkinson's Disease Patients"
- Key Personnel: Emily J. Hill[5] (K23 Award Recipient/PI), Daniel Woo[5] (K23 Mentor/Co-PI), Alberto J. Espay[5], Mary E. Comeau[6], **Ekaterina S. Khvatkova**[1], Carl D. Langefeld[1], Miranda C. Marion[1]
- Project is Funded by Emily Hill's NIH K23 Career Award
- Role: *Statistical Analyst* (Under supervision of Carl Langefeld and Mary Comeau), *May 2023-Present*

"Recovery of StrokE - Longitudinal Assessment With Neuroimaging (ROSE LAWN)"
- Key Personnel: Daniel Woo[5] (Contact PI/Project Leader), Tyler P. Behymer[5], Mary E. Comeau[6], Stacie Demel[5], Destiny Hooper[5], Vivek Khandwala[5], **Ekaterina S. Khvatkova**[1], Carl D. Langefeld[1], Sawyer P. Russell[5], Brady J. Williamson[5]
- NIH Project Number: 5R01NS120493-02
- Role: *Statistical Analyst* (Under direct supervision of Carl Langefeld and Mary Comeau), *August 2022 – Present*

"Multiancestral Genomic Approach to SLE Precision Medicine"
- Key Personnel: Carl D. Langefeld[1] (PI), Hannah C. Ainsworth[1], Timothy D. Howard[1], **Ekaterina S. Khvatkova**[1], Peter E. Lipsky[7], Miranda C. Marion[1], Katherine A. Owen[7], Tony E. Reeves[1], Amy Zinnia[1]
- US Army Medical Research & Development Command Grant Number: W81XWH-20-1-0686
- Role: *Statistical Analyst* (In close collaboration with Amy Zinnia under supervision of Carl Langefeld, Hannah Ainsworth, Timothy Howard, and Tony Reeves), *October 2022-Present*

"Lung Organ Tissue Equivalent Platform for Modeling Chlorine Gas Toxicology and Medical Countermeasure Efficacy"
- Key Personnel: Anthony Atala[1] (PI), Hannah C. Ainsworth[1], **Ekaterina S. Khvatkova**[1], Carl D. Langefeld[1], Sean V. Murphy[1], Tony E. Reeves[1], Amy Zinnia[1]
- Biomedical Advanced Research and Development Authority Project Number: 75A50119C00058
- Role: *Statistical Analyst* (In close collaboration with Amy Zinnia under supervision of Carl Langefeld, Hannah Ainsworth, Timothy Howard, and Tony Reeves), *September 2022-Present*

Affiliations (In Order of Appearance):
[1]Wake Forest School of Medicine, *Winston Salem, NC*, [2]Cincinnati Children's Hospital Medical Center, *Cincinnati, OH*, [3]Icahn School of Medicine at Mount Sinai, *New York, NY*, [4]Seattle Children's Hospital, *Seattle, WA*, [5]University of Cincinnati College of Medicine, *Cincinnati, OH*, [6]MC Analytics, *Mount Pleasant, SC*, [7]AMPEL Bio Solutions, LLC, *Charlottesville, VA*

PROFESSIONAL EXPERIENCE

Biostatistician II   August 2022 – Present
Wake Forest School of Medicine*, Winston Salem, NC*
- Working under the advisement of Dr. Carl Langefeld in the Department of Biostatistics and Data Science as an analyst and statistical genetics researcher
- Performing statistical analyses in R and SAS in a Linux/Unix environment
- Bash scripting on Linux HPC for SLURM job submissions, data wrangling, and statistical analyses
- Conducting clinical/statistical literature review for grant proposals and active research
- Performing quality control on phenotypic and multiomic data as a basis for bias checks, model design and model selection

Graduate Teaching Assistant   August 2020 – July 2022
Math and Stats Center*, Wake Forest University*
- Worked alongside the same professor grading and leading study sessions for his Calculus II sections in Fall 2020, Spring 2021, Fall 2021, and Spring 2022, and for his Calculus III sections during Summer 2022 (~50 students a semester)
- Worked as a grader and lead study sessions for Intro Statistics and Calculus III in Summer I and Summer II Sessions in 2021 (~30 students across the summer)
- Gained experience explaining mathematical material to ~15 students through regular one-on-one tutoring sessions for Calculus I, II, and III and Intro Statistics
- Helped lead the early-stage planning and implementation of math teaching assistance program at Reynolds High School to prepare local math class without a permanent teacher for their statewide end-of-course exam (from April 2022 – June 2022)

Math Tutor   August 2018 – May 2020
Math Technology Learning Center, *University of Alabama*

- Taught topics to students and helped students work through in-class problem sets alongside instructors, GTAs, and other undergraduate tutors in several computer-assisted classrooms for introductory-level algebra, precalculus algebra, precalculus, and business calculus (classes ranging from ~40-250 students)
- Proctored online tests and final exams for computer-assisted and traditional mathematics courses in online testing center (up to ~400 students per exam window)
- Tutored in open study sessions for Precalculus, Calculus I, II, III, and Differential Equations I courses alongside instructors, GTAs, and other undergraduate tutors
- Employee of the Month (April 2019)

CONFERENCES, WORKSHOPS, POSTERS, AND PRESENTATIONS

Posit 2024 Workshop and Conference   August 2024
Workshop Attended: "R in Production" - *Seattle, WA*

Translational and Learning Health Systems Research Showcase   March 2024
Contributed Poster (PI: Hannah Ainsworth) - Wake Forest School of Medicine, *Winston Salem, NC*

CERTIFICATES AND CERTIFICATIONS

CITI Program: Good Clinical Practice for Clinical Trials with Investigational Drugs and Biologics (ICH Focus)   September 2022

- Credential: https://www.citiprogram.org/verify/?w7daf4c9c-a664-48ee-b17b-3d9f38493741-51744349

CITI Program: Biomedical Investigators   August 2022

- Credential: https://www.citiprogram.org/verify/?wf748bdb7-438e-42af-b331-5d548ed2249d-50484927

NYU Quantitative Public Health Data Literacy Certificate   June 2022
GrassROOTS Community Foundations

- Virtual four-week data analysis and visualization training with a focus on public health and social justice
- Lead Organizers: Dr. Melody Goodman (NYU School of Global Public Health) and Dr. Janice Johnson Dias (John Jay College of Criminal Justice)

SKILLS

Languages
English: Native Fluency
Russian: Intermediate in Reading, Writing, and Listening
French: Beginner in Reading, Writing, and Listening
Programming Languages
R Language, Bash, SAS, LaTeX, Quarto/RMarkdown, MATLAB, C Language
High Performance Computing
PuTTY, XMing/XQuartz, SLURM job scripting
Version Control
Git, GitHub Actions, usethis (R package)

Applications and UIs
VSCode, Positron, RStudio, MATLAB, Microsoft Excel, Mathematica
Statistical Genetics Analysis Pipelines
methylKit, methrix, METAL, ChAMP
Statistical Genetics Software and Databases
UCSC Genome Browser, JASPAR, ReMap, bedtools, AlphaFold Web Database, PDBe, GTeX Database, String, Cytoscape/MCode Clustering, Reactome
Operating Systems
MacOS, Linux (Ubuntu), Windows 10

MATHEMATICAL AND SCIENTIFIC COURSEWORK

Mathematics – Mathematical Biology (G), Intro to Modern Mathematical Epidemiology (G), Boundary Value Problems (U), Differential Equations II (U), Numerical Linear Algebra (U), Complex Calculus (U), Theory of Probability (U), Discrete Mathematics (U)
Statistics – Applied Bayesian Statistics (G), Bayesian Analysis (G), Generalized Linear Models (G), Linear Models (G), Intro to Statistical Learning (G), Multivariate Statistics (G), Probability (G), Stochastic Processes and Applications (G), Statistical Inference (G), Advanced Statistical Inference (G)

*G=Graduate Level Course
*U=Upper Division Undergraduate Course

PROFESSIONAL ORGANIZATIONS

American Mathematical Society   Oct 2020 – Oct 2022
Wake Forest University Chapter, Member
Pi Mu Epsilon   May 2020 – Present
Wake Forest University Chapter, Member
University of Alabama Chapter, Member
Association for Women in Mathematics   Aug 2018 – May 2022
Wake Forest University, Secretary (Aug 2020 – Dec 2020)
Wake Forest University, Member
University of Alabama, Member

EXTRACURRICULARS AND COMMUNITY SERVICE

Journal Club Member – Monthly Genetics Research and Ethics Discussions
Wake Forest School of Medicine, Aug 2022 – Present
Blount Alumni Fellows – Student Relations and Recruitment Committee
University of Alabama, July 2022 – July 2023
Director of Social Media and Outreach
Blount Student Organization, *University of Alabama,* Jan 2020 – May 2020
Russian Club President
University of Alabama, Sept 2019 – May 2020
Student Government Association
Head Clerk, Judicial Branch, *University of Alabama,* March 2019 – Dec 2019
Clerk*,* Judicial Branch, *University of Alabama,* March 2018 – March 2019
Freshman Forum Representative, *University of Alabama,* Aug 2017 – May 2018

Blount Ambassador
Blount Scholars Program, *University of Alabama,* March 2018 – Dec 2019
"Al's Pals" Elementary School Mentor
University of Alabama, Jan 2018 – May 2018

ADDITIONAL COURSEWORK AND PROJECTS
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Advanced Russian Conversation and Composition   Aug 2020 – Dec 2020
Wake Forest University, Russian Department