

BENJAMIN KRAMER

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EDUCATION

- 2026–Present **Yale University**, New Haven, CT
Ph.D. student in Human Genome Sciences
- 2022–2025 **Case Western Reserve University** - B.A. in Computer Science & Economics, *Cum Laude*
Minor in Mathematics; degree conferred January 2026
- 2024–2025 **University of Oxford** - Visiting Student in Computer Science and Economics,
first-class marks

RESEARCH EXPERIENCE

- 2026–Present **Yale School of Medicine**, New Haven, CT
Graduate Researcher, Lek Lab; Advisor: Dr. Monkol Lek
- Benchmark SpliceAI, Pangolin, and AlphaGenome against measured splice effects
 - Design a pooled endogenous perturbation study for execution in Lupeng Ye's laboratory
 - Analyze pediatric skeletal-muscle single-nucleus RNA and chromatin profiles
 - Draft a neuromuscular protocol, CRF, and data dictionary for Angkor Hospital for Children
 - Align Cambodia study endpoints with recorded variables and missing-data definitions
- July 2026 **Karolinska Institutet**, Stockholm, Sweden
Research visit with Sarah Bergen, Ralf Kuja-Halkola, and Andrey Rzhetsky
- Replicated sibling associations in Swedish registers and compared results across cohorts
- 2024–2026 **University of Chicago**, Chicago, IL
Research Assistant; Advisors: Drs. Andrey Rzhetsky and Megan Huisingh-Scheetz
- Analyzed 569 diagnoses in 10.3M people from 5.1M two-child families
 - Built a care-intensity atlas of 505 diseases from 90M people
 - Studied perinatal exposures in 1.18M births using mother fixed effects
 - Developed accelerometry models of baseline frailty and 12-month decline
- 2025 **Ragon Institute of Mass General, MIT, and Harvard**, Cambridge, MA
Research Assistant; Advisor: Dr. Bryan Bryson
- Built a cross-disease human skin immune scRNA-seq atlas (300,000+ cells)
 - Applied CellTypist models to tuberculosis granuloma perturbations
 - Implemented protein-design workflows with RFdiffusion and ProteinMPNN
- 2025 **University of Pennsylvania**, Philadelphia, PA
Collaborator; Advisor: Dr. Andrew Santiago-Frangos
- Retrieved and curated sequences for reverse-transcriptase-associated CRISPR analyses
- 2024 **University of California, Berkeley**, Berkeley, CA
STEER Summer Program; Advisor: Dr. Misbath Daouda, School of Public Health
- Linked MODIS observations over Benin to sensors and reference monitors
 - Estimated PM2.5 and evaluated seasonal and city-level differences
- 2022–2024 **Case Western Reserve University School of Medicine**, Cleveland, OH
Research Assistant; Advisors: Drs. Jeffrey Garvin and Agustin Gonzalez-Vicente
- Conducted metabolic-cage studies, urinalysis, and protein measurements
 - Performed tissue microdissection and trained in glomerular microdissection
 - Analyzed sex-associated kidney expression and contributed to atlas interpretation

PUBLICATIONS, PREPRINTS, & ABSTRACTS

Peer-Reviewed Journal Articles

1. **Kramer, B.**, Kushner, S.A., Rzhetsky, A. (2026). Birth order and disease risk across the human phenotype. *Nature Health*. Advance online publication, 3 August 2026. DOI. Code: [GitHub](#). Media coverage: *Scientific American*, *Newsweek*, *ScienceAlert*.
2. Zhang, R., Kim, N., Shi, S., Jadhav, D.A., Brostek, A., Forester, B.R., Shukla, R., Qu, C., **Kramer, B.K.**, Moss, F.J., Garvin, J.L., Kleyman, T.R., Gonzalez-Vicente, A. (2026). Abnormal activation of the mineralocorticoid receptor in the aldosterone-sensitive distal nephron contributes to fructose-induced salt-sensitive hypertension. *American Journal of Physiology-Renal Physiology* 331(2), F304–F317. DOI.
3. Zhang, R., Jadhav, D.A., Kim, N., **Kramer, B.**, Gonzalez-Vicente, A., on behalf of the Kidney Precision Medicine Project (2024). Profiling cell heterogeneity and fructose transporter expression in the rat nephron by integrating single-cell and microdissected tubule segment transcriptomes. *International Journal of Molecular Sciences* 25(5), 3071. DOI.

Other Scholarly Publication

1. Boockvar-Klein, J., Bhandary, M., **Kramer, B.** (2024). Is bigger always better? The effect of a state's urban makeup on its economy. *Case Western Reserve University Journal of Economics* 2(1), Article 6. DOI.

Preprints

1. **Kramer, B.**, Rzhetsky, A. (2026). A clinical care intensity atlas of 505 diseases from 90 million people. *medRxiv*. DOI.
2. **Kramer, B.**, Kushner, S.A., Rzhetsky, A. (2026). Maternal immunity, cesarean delivery, and childhood neuropsychiatric risk in 1.18 million births. *medRxiv*. DOI.
3. **Kramer, B.**, Long, Y., Pagan, M., Brown, S., Rzhetsky, A., Huisinigh-Scheetz, M. (2025). Free-living hip accelerometry predicts frailty status and 12-month frailty decline in older adults. *medRxiv*. DOI.

Conference Abstracts

1. Huisinigh-Scheetz, M., **Kramer, B.**, Long, Y., Pagan, M., Brown, S., Rzhetsky, A. (2025). Free-living hip accelerometry detects and forecasts frailty decline in a sample of community-dwelling older adults. *Innovation in Aging* 9(Suppl. 2), abstract igaf122.1766. DOI.
2. Kim, N., **Kramer, B.**, Gonzalez-Vicente, A. (2024). Sexually dimorphic gene expression in rat proximal tubules suggests activation of the intrarenal renin angiotensin system and elevated transport rates in males. *Physiology* 39(S1), abstract 771. DOI.
3. Jadhav, D.A., Zhang, R., **Kramer, B.**, Gonzalez-Vicente, A. (2024). Transcript deconvolution reveals heterogeneous cell populations in microdissected nephron segments of the rat kidney. *Physiology* 39(S1), abstract 831. DOI.
4. **Kramer, B.K.**, Zhang, R., Gonzalez-Vicente, A. (2023). Sexually dimorphic transcriptional phenotypes in tubular epithelial cells of the rat kidney. *Hypertension* 80(Suppl. 1), abstract 097. DOI.

PRESENTATIONS

Talks

- 2026 "Wrist accelerometry surrogates in lower extremity physical function in an exercise trial in frail, multimorbid older adults"
Intrinsic Capacity, Frailty and Sarcopenia Research Conference
- 2025 "Free-living hip accelerometry detects and forecasts frailty decline in a sample of community-dwelling older adults"
Gerontological Society of America
- 2024 "Analyzing PM2.5 concentrations through satellite data in Benin"
STEER Research Symposium, UC Berkeley School of Public Health

Poster Presentations

- 2023 "Sexually dimorphic expression of the angiotensinogen gene (Agt) in the S3 subsegment of rat proximal tubules"
CWRU Department of Medicine Physiology and Biophysics Retreat
- 2023 "Rats given a high-salt diet with fructose exhibit greater activation of aldosterone-response genes in the kidney than those receiving high-salt and glucose"
CWRU SOURCE Intersections

TEACHING EXPERIENCE

- 2024–2025 **Teaching Assistant and Recitation Leader**, Case Western Reserve University
- Fall 2025 **Microeconomics (ECON 102)**, Case Western Reserve University
- Spring 2025 **Electricity & Magnetism (PHYS 122)**, Case Western Reserve University (remote)
- Spring 2024 **Macroeconomics (ECON 103)**, Case Western Reserve University
- Spring 2024 **Cells & Proteins (BIOL 215)**, Case Western Reserve University
- Spring 2024 **Data Science (CSDS 133)**, Case Western Reserve University
- Spring 2024 **Discrete Mathematics (CSDS 302)**, Case Western Reserve University
- Spring 2024 **Chemistry of Materials (ENGR 145)**, Case Western Reserve University (recitation leader)
- Spring 2024 **Thermodynamics (ENGR 225)**, Case Western Reserve University (recitation leader)

OUTREACH & COMMUNITY SERVICE

- July–Aug.
2023 **Unpaid Constituent Services and Data Intern**, City of Oakland, Office of Councilmember Carroll Fife, District 3
- Built maps and databases of community resources and constituent concerns; supported resident correspondence, canvassing, National Night Out mapping, and Measure HH policy work
- 2016–2022 **Eagle Scout and Senior Patrol Leader**, Boy Scouts of America, Troop 81
- Led troop instruction and community-service activities; planned and led a 100-plus-hour service project for First Presbyterian Church of Berkeley
- 2026–Present **Youth Gallery Educator Supervisor**, Yale Peabody Museum
- Observe youth educators' visitor conversations and provide feedback on scientific explanations, audience adaptation, and checks for understanding
- 2026–Present **Wurtele Gallery Teacher**, Yale University Art Gallery
- Museum-education training to lead close observation and discussion of original works of art with K–12 and undergraduate visitors

- 2026–Present **Health and Medical Resource Guide Volunteer**, Link New Haven
 – Role focuses on reviewing local health-resource information, including links, contact details, eligibility, and missing or outdated entries
- Fall 2026 **Volunteer Scientist and Mathematics Mentor**, Skype a Scientist and MathCOUNTS Outreach
 – Joined both programs; classroom science discussions and mathematics mentoring are planned
- 2026–Present **Member**, Open Labs at Yale
 – Graduate student science-outreach organization supporting school visits and public science demonstrations; volunteer onboarding pending

MUSEUM COLLECTIONS

- Sept. 2026 (incoming) **Student Museum Assistant in Entomology**, Yale Peabody Museum
 – Appointment accepted; regular work begins September 21, 2026
 – Role focuses on insect-collection digitization, specimen data entry, and georeferencing

PEER REVIEW SERVICE

- 2026 **Co-reviewer with Monkol Lek**
 – Contributed manuscript assessments for *European Journal of Human Genetics and Disease Models & Mechanisms*, including evaluation of a revised submission

LEADERSHIP & EXTRACURRICULARS

- 2023–2025 **CWRU Systems Biology Society**, Cleveland, OH – President
 May 2024–May 2025 **CWRU Quizbowl**, Cleveland, OH – Treasurer
 Nov. 2022–May 2023 **HackCWRU**, Cleveland, OH – Treasurer
 Aug. 2023–May 2024 **CWRU Undergraduate Student Government**, Cleveland, OH – Engineering Representative
 Aug. 2024–May 2025 **Worcester College Boat Club**, Oxford, UK – Coxswain and Rower

AWARDS & HONORS

- Fall 2024 ACF Fall Southern UK Mirror Champion (Oxford A); second overall individual scorer
 2022–2025 Dean's High Honors, Case Western Reserve University

TECHNICAL SKILLS

- Genomics** Single-cell RNA-seq, cross-dataset atlas integration and label transfer (CellTypist), splice-effect prediction, NGS data processing
- Health Data** Administrative claims (MarketScan), EHR phenotyping, phecodes, register-based cohorts, wearable accelerometry
- ML/Stats** Deep learning, within-family and quasi-experimental designs, survival analysis, multiple-testing control, cross-validation
- Programming Systems** Python, R, SQL, Bash, Java, C/C++, MATLAB
 Linux, Git, Docker, Apptainer, Conda, Nextflow, Snakemake, SLURM
- Experimental** Rodent care, metabolic-cage studies, urinalysis and protein assays, tissue microdissection