ZIXUAN YU

(909) 292-3960 | zixuan.jhu@gmail.com | 10374 Old Olive Street Rd Apt 128, St. Louis, MO, 63141

EDUCATION

Johns Hopkins University Bloomberg School of Public Health | Baltimore, MD Aug 2021 - May 2023

- Master of Health Science in Epidemiology, GPA: 3.9 / 4.0
- Certificate in Clinical Trial
- Relevant coursework: Statistical Computing, Multilevel Statistical Models, Statistics for Genomics, Computer Science in Bioinformatics, Methods in Biostatistics Series, Clinical Data Analysis, Data Science in Public Health I-II, Statistical Machine Learning, Deep Learning and Medical Imaging

Zhejiang University City College (ZUCC) | Hangzhou, China Sept 2016 - June 2021

- Bachelor of Medicine, Major in Clinical Medicine, GPA: 3.9 / 4.0

HONORS & AWARDS

- Undergraduate research project won RMB 10,000 from XinMiao Talent Project of Zhejiang Province.
- 1st Class Merit-based Scholarship, 2nd Class Merit-based Scholarship (three times), 1st Class Scholarship of Academic Competition (once for group, three times for individual), Zhejiang Provincial Government Scholarship (three times), Freshman Elite Scholarship, 2020 MCM Honorable Mention.

PUBLICATION & PRESENTATION :

- **Yu, Z.**, Abdel-Azim, S., Duggal, P., & Vergara, C. (2023). Identity by descent mapping of HCV spontaneous clearance in populations of diverse ancestry. Research square (*In review at BMC Genomics*), rs.3.rs-2433454. https://doi.org/10.21203/rs.3.rs-2433454/v1
- Wang, Q., Mi, S., **Yu, Z.**, Li, Q., & Lei, J. (2020). Opening a Window on Attention: Adjuvant Therapies for Inflammatory Bowel Disease. *Canadian journal of gastroenterology & hepatology*, *2020*, 7397523. https://doi.org/10.1155/2020/7397523
- Presented master's thesis *Deciphering Entamoeba histolytica Infection Susceptibility* at Johns Hopkins Bloomberg School of Public Health Graduate Student Thesis Poster Session

RESEARCH EXPERIENCE

Washington University in St. Louis St. Louis, MO

Bioinformatics Research Analyst (full-time) June 2023-Present

- Developed a pipeline for genome-wide association studies (GWAS) that incorporates dosage information and parallel processing techniques, saving 70% time compared to the traditional way.
- Led a multi-ancestry GWAS project involving 2,200 dystonia cases and over 4,000 healthy controls.
- Trained four research assistants in GWAS quality control, imputation, and Bash scripting.
- Performed Identify-by-Descent (IBD) analysis to detect and further correct sample swapping and duplication issues.
- Performed GWAS data harmonization from diverse sources and maintained database structure.

Johns Hopkins University Bloomberg School of Public Health Baltimore, MD

Graduate Research Assistant Oct 2021-May 2023

- Investigated host genetic susceptibility to spontaneous hepatitis C virus (HCV) clearance, focusing on rare genetic variants.
- Conducted IBD haplotype mapping on 1,869 individuals of African ancestry and 1,739 individuals of European ancestry.
- Detected over 7.3 million combined IBD segments; confirmed that African descent had more, but shorter segments compared to those of European descent.
- Found a suggestive signal in the European ancestry population located in the MHC region (chr6p21.33), 7.8 kb downstream of the mucin 22 (MUC22) gene on chromosome 6.

Johns Hopkins University Bloomberg School of Public Health Baltimore, MD

Thesis Research Aug 2022-May 2023

- Performed gene set analyses to assess the involvement of genes identified in a whole-genome RNAi screen in the pathogenesis of diarrheal disease caused by *Entamoeba histolytica* (*E. histolytica*) infection.
- Utilized Sequence Kernel Association Test (SKAT) and Optimal SKAT (SKAT-O) to evaluate how the collective effect of rare and common genetic variants influences susceptibility to E. histolytica infection.
- Applied DAVID software for functional annotation of nine genes that showed nominal significance in

SKAT-O, revealing their roles in phospholipase D regulation, ATPase activity, and calmodulin binding.
- Shed light on understanding the complex genetic landscape influencing susceptibility to *E. histolytica* infection at both the gene and pathway level.

Study on Vitamin D Receptor (VDR) and Neuropathic Pain Hangzhou, China
Group Member June 2019-July 2019
- Studied the relationship between VDR and neuropathic pain using partial sciatic nerve ligation (PSNL) models of normal mice and VDR-knockout mice.
- Used spontaneous pain behavior evaluation, paw withdrawal mechanical threshold test, von Frey filament (vFF) test, and footprint analysis to measure allodynia and hyperalgesia of mice in both groups.

Regulatory Effect of Cholesterol on Colorectal Cancer (CRC) Stemness Hangzhou, China
Group Leader Jan 2017-Apr 2018
- Investigated the molecular mechanism of the regulatory effect of cholesterol on CRC cell stemness and pathogenesis. Our findings highlighted the importance of cholesterol control in CRC prevention and positioned MLK3 as a potential therapeutic target.
- Led all project presentations including the mid-term and final defenses, and the report writing.

PROFESSIONAL EXPERIENCE

Johns Hopkins Center for Communication Programs Baltimore, MD
Graduate Student Data Analyst (part-time) Sept 2022 - April 2023
- Reviewed the health facility assessment questionnaire and conducted factor analysis.
- Developed statistical analysis pipelines (SAP) for internal reliability and construct validity for the questionnaire.

Johns Hopkins University Baltimore, MD
Graduate Teaching Assistant (part-time) June 2022 - March 2023
- Worked as a teaching assistant for 340.721 Epidemiologic Inference in Public Health I, 3 times: AY 2022-2023 Summer Institution Term, Term 1, and Term 3.
- Led lab sessions with faculty members and managed the discussion boards.

Sir Run Run Shaw Hospital Hangzhou, China
Student Physician (full-time) June 2020 - May 2021
- Rotated among departments including Internal Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, Psychiatry Neurology, Pathology and Clinical Laboratory, Gastroenterology to assist senior physicians.
- Assisted physician with outpatient service, ward rounds, medical records, surgery, etc.
- Participated in the weekly Grand Rounds for lectures and typical case discussions.

EXTRACURRICULAR ACTIVITIES

Volunteering Activities Sept 2016 - Aug2020
- Served as a volunteer hostess at the 13th National Students Games Ceremony
- Worked as a hospital guide and medical information consultant in Zhejiang Provincial People's Hospital, Sir Run Run Shaw Hospital, and Hangzhou Second People's Hospital.
- Volunteered for more than 400 hours; won the Award of Ten Best Volunteers of the School of Medicine.

The Mathematical Contest in Modeling Feb 2020
- Data pre-processing and exploratory data analysis; took charge of mathematical modeling and essay writing for the fifth topic about how fishing rights and socio-economic factors impact the fisheries industry.
- Applied Automatic Adaptive Trend Analysis model to predict the fishery resource migration pattern; applied content-based recommendation algorithm to refine the predictions.

OTHER STUDY EXPERIENCE

Loma Linda University *Visiting Student* | Loma Linda, USA July 2018
- Participated in the Basic Life Support (BLS) Practice and did hands-on procedures in the dental lab.
- Obtained the American Heart Association BLS Provider Certification.

McGill University Summer Program *Visiting Student* | Montreal, Canada Jul 2017 - Aug 2017
- Completed the Occupational and Environmental Health and Safety Summer Program (66 Hour).

SKILLS

Proficient in: R, Python, Bash Scripting, SQL, SAS. Intermediate in Java.