

SUMANTH CHANDRUPATLA

srchandr@uab.edu

EDUCATION

UAB Heersink School of Medicine

MD-PhD Graduate Trainee

Birmingham, Alabama

June 2025-Present

The University of Alabama at Birmingham || Honors College

Bachelor of Science in Bioinformatics, Minor in Philosophy; GPA: 4.0

Birmingham, Alabama

August 2021-May 2025

Honors: 2022 Honors Summer Research Academy (REU), Presidential Honor Roll 2021-2024, Excellence in Organic Chemistry Award 2023, Honors Convocation Award 2024, Outstanding Undergraduate Student in Bioinformatics Award 2025

RESEARCH EXPERIENCE

Department of Anesthesiology and Perioperative Medicine

Heersink School of Medicine, Perioperative Data Science

Birmingham, Alabama

May 2025-Present

- Developing blood pressure imputation methods using transformer architectures and building custom deep learning models for perioperative vital sign prediction.

Informatics Institute

Heersink School of Medicine, AI.MED lab

Birmingham, Alabama

January 2025-July 2025

- Developed an application for exploring disease-gene relationships by integrating OpenTargets, PubMed, and MeSH databases with LLM functionality for automated summarization. The tool enables semantic search across MeSH descriptors, maps disease names to standard ontology IDs and generates human-readable disease summaries.
- Built a Published Association Graph (PAG) backend that analyzes gene association networks and packages results into downloadable reports, combining literature-derived evidence with genetic variant data from OpenTargets.

Division of Clinical Immunology and Rheumatology

Heersink School of Medicine, Merriman Lab

Birmingham, Alabama

September 2023-May 2025

- Ran and analyzed genome-wide association studies (GWAS) to identify loci and singly nucleotide polymorphisms significantly associated with serum urate concentration and diseases such as gout, benign prostatic hyperplasia, and prostate cancer
- Ran Mendelian Randomization analyses on GWAS to identify causal relationships between diseases
- Acquired expertise in genetic data analysis, and familiarity with genomic databases and filetypes, Bash scripting, GWAS meta-analysis and Mendelian Randomization techniques

Department of Otolaryngology

Heersink School of Medicine

Birmingham, Alabama

July 2023-April 2024

- Investigated how frailty influences the Total Treatment Package Time in patients with head and neck cancer undergoing microvascular free flap reconstruction
- Created and refined database of patients for analysis
- Developed proficiency in using Cerner Powerchart to review patient records
- Developed skills in data management according to HIPAA and procedures surrounding deceased patient records

Division of Clinical Immunology and Rheumatology

Heersink School of Medicine

Birmingham, Alabama

October 2022-Present

- Analyzed studies of patient-reported outcomes, health disparities, and comparative effectiveness of research in rheumatic diseases using SPSS, SAS, and R
- Use nationally representative datasets such as the National Inpatient Sample (NIS), National Readmissions Database (NRD), Behavioral Risk Factor Surveillance System (BRFSS), and the Medical Expenditure Panel Survey (MEPS)

Evelyn F. McKnight Brain Institute

Heersink School of Medicine, Herskowitz Lab

Birmingham, Alabama

October 2021-August 2022

- Determined the synaptic pathways that drive structural remodeling of spines to maintain cognitive abilities in

individuals resilient to Alzheimer's disease (AD)

- Conducted in vitro and in vivo experiments on the actin-binding protein Twinfilin-2 (TWF2) to investigate its role in altering dendritic spine morphology in AD-affected mice
- Used confocal microscopy and NeuroLucida tracing of dendrites to analyze spine morphology

RESEARCH OUTPUT

Publications

1. **Chandrupatla S**, Rumalla K, Singh J. Hypothyroidism is associated with higher healthcare utilisation and higher need for blood transfusion after primary total knee arthroplasty (TKA) in patients with osteoarthritis: A National Inpatient Sample analysis. *J Experimental Orthopaedics*. Jan 2026. doi:10.1002/jeo2.70413
2. Rumalla K, **Chandrupatla S**, Singh J. Intersectional Racial, Ethnic, and Sex-based Disparities in Total Hip and Knee Arthroplasty. *Osteoarthritis and Cartilage*. Oct 2025. doi:10.1016/j.joca.2025.10.016
3. **Chandrupatla S**, Sumpter N, Takei R, Merriman T, Singh J. Testing for Causal Association Between Serum Urate, Gout, and Prostatic Cancer in European Males. *Gout, Urate, and Crystal Deposition Disease*. May 2025. doi:10.3390/gucdd3040020
4. Rumalla K, **Chandrupatla S**, Singh J. Hospital and patient factors predict length of stay in patients with osteoarthritis undergoing total primary hip replacement. *Joint Bone Spine*. Apr 2025. doi:10.1016/j.jbspin.2025.105913
5. Singh J, **Chandrupatla S**. Rural-Urban Disparities in Heart Disease Outcomes in Systemic Lupus Erythematosus in the US. *Lupus Science & Medicine*. Apr 2025. doi:10.1136/lupus-2025-001516
6. **Chandrupatla S**, Singh J. Medical Comorbidity and Male Sex Are Associated With Higher In-hospital Mortality for 90-Day Readmissions and Higher Readmission Rates After Nonelective Primary Total Hip Arthroplasty for Hip Fracture. *J Clin Rheumatol*. Apr 2025. doi:10.1097/RHU.0000000000002236
7. **Chandrupatla S**, Singh J. RA and the Risk of 90-Day Readmission after Hospitalization for Heart Failure. *Seminars in Arthritis and Rheumatism*. Apr 2025. doi:10.1016/j.semarthrit.2025.152727
8. Singh J and **Chandrupatla S**. Rural-dwelling patients with rheumatoid arthritis have higher risk of myocardial infarction hospitalization: an observational study using the National Inpatient Sample. *J Rheumatol*. Apr 2025. doi:10.3899/jrheum.2024-1036
9. Singh J, **Chandrupatla S**. Rural-Urban Disparities in cardiovascular disease hospitalizations and its outcomes in gout: a nationwide U.S. study. *Rheumatology (Oxford)*. Feb 2025. doi:10.1093/rheumatology/keaf112
10. **Chandrupatla S**, Singh J. Association of Patient Sex With Inpatient Mortality After Elective Primary Total Hip Arthroplasty for Osteoarthritis. *J Clin Rheumatol*. Feb 2025. doi:10.1097/RHU.0000000000002193
11. **Chandrupatla S**, Singh J. 90-day readmission risk, but not in-hospital mortality is lower in female patients who undergo elective primary total hip arthroplasty for osteoarthritis. *Clinical Rheumatology*. Oct 2024. doi:10.1007/s10067-024-07168-z
12. **Chandrupatla S**, Singh J. Women undergoing primary total hip arthroplasty (THA) for hip fracture have lower in-hospital mortality compared to men. *Injury*. Oct 2024. doi:10.1016/j.injury.2024.111970
13. Rumalla K, **Chandrupatla S**, Singh J. Hospital and Patient Factors in Patients with Osteoarthritis Undergoing Total Primary Knee Replacement: an Analysis of National Data Before and After its Removal from the Medicare Inpatient Only List. *J Arthroplasty*. Oct 2024. doi:10.1016/j.arth.2024.10.016
14. **Chandrupatla S**, Rumalla K, Singh J. Diabetes Impacts Clinical and Healthcare Utilization Outcomes After Primary Total Hip Arthroplasty. *BMJ Open*. June 2024. doi:10.1136/bmjopen-2024-085400
15. **Chandrupatla S**, Rumalla K, Singh J. Hypothyroidism Impacts Clinical and Healthcare Utilization Outcomes After Primary Total Hip Arthroplasty. *J Arthroplasty*. Nov 2023. doi:10.1016/j.arth.2023.11.005

Podium/Oral Presentations

1. **Chandrupatla S**, Rumalla K, Singh J. Diabetes Mellitus Impacts Primary Total Hip Arthroplasty Outcomes: A National Cohort Study. ACR Convergence Meeting, San Diego, California, November 2023
2. Rumalla K, **Chandrupatla S**, Singh J. Region, Race, and Hospital Factors Impact Length of Stay and Hospital Charges Post-Primary Total Knee Arthroplasty. ACR Convergence Meeting, San Diego, California, November 2023
3. **Chandrupatla S**, Rumalla K, Singh J. Hypothyroidism Impacts Clinical and Healthcare Utilization Outcomes After Primary THA. AAHKS Annual Meeting, Dallas, Texas, November 2023
 - a. *Note:* AAHKS conference requires podium presenters to hold an MD or equivalent

- b. *Note:* Only 45/2000 abstracts were accepted for podium presentation

Poster Presentations

1. **Chandrupatla S**, Trotter A, Sembay Z, Song K, Yue Z, Chen J. Advanced PAGER for Functional Deconvolution of Diseases Using Transcriptomic Data. Annual Translational and Transformative Informatics Symposium 2025, Birmingham, AL, April 2025
2. **Chandrupatla S**, Rumalla K, Singh J. Male Sex, Medical Comorbidity and Post-procedure Complications Are Associated with Higher In-hospital Mortality After Primary Total Knee Arthroplasty for Osteoarthritis. ACR Convergence 2024. Washington D.C., November 2024
3. **Chandrupatla S**, Singh J. Rural-dwelling Patients with Rheumatoid Arthritis or Those with Lower Income Are More Likely to Be Admitted for Myocardial Infarction in the U.S. and Have Worse Outcomes. ACR Convergence 2024. Washington D.C., November 2024
4. **Chandrupatla S**, Sumpter N, Merriman T, Singh J. Association Between Serum Urate, Gout, and Prostatic Cancer in European Male Populations: A Mendelian Randomization Study. ACR Convergence 2024. Washington D.C., November 2024
5. **Chandrupatla S**, Singh J. Rural-urban Disparities in the Myocardial Infarction Hospitalizations in People with Systemic Lupus Erythematosus in the US. ACR Convergence 2024. Washington D.C., November 2024
6. Nishikawa J, Knight N, **Chandrupatla S**, Morgan J, Greene B, Fuson A, Jeyarajan H, Withrow K, McCammon S, Thomas C. The Effect of Frailty on Total Treatment Package Time in Head and Neck Cancer Patients Undergoing Microvascular Free Flap Reconstruction. AHSN at COSM 2024, Chicago, IL, May 2024
7. **Chandrupatla S**, Rumalla K, Singh J. Prevalence of Arthritis in the United States: National Estimates from a Population-based Study. ACR Convergence Meeting, San Diego, California, November 2023
8. **Chandrupatla S**, Rumalla K, Singh J. Hypothyroidism Is Associated with Worse Clinical and Utilization Outcomes After Primary Total Knee Arthroplasty. ACR Convergence Meeting, San Diego, CA, November 2023
9. Rumalla K, **Chandrupatla S**, Singh J. Race, Payer, and Hospital Factors Are Associated with Post-Primary Total Hip Arthroplasty Healthcare Utilization. ACR Convergence Meeting, San Diego, California, November 2023
10. Rumalla K, **Chandrupatla S**, Singh J. Social Determinants of Health and Joint Pain and Physical Limitation in Patients with Arthritis, September 2023. The 17th Annual Lewis Landsberg Research Day. Poster Presentation
 - a. 2nd Place Award in Public Health and Social Sciences
11. **Chandrupatla S**, Singh J. Marijuana use is associated with joint pain and functional limitation in Americans with arthritis. UAB 2023 Summer Expo, Birmingham, Alabama, July 2023
 - a. Awarded 1st place presentation in “Health Sciences and Health Professions” category
12. **Chandrupatla S**, Freeman C, Walker, C, Greathouse K, Herskowitz J. Upregulation of Twf2 does not alter dendritic spine density or morphology in hippocampal CA1 of C57BL/6J mice. UAB 2022 Summer Expo, Birmingham, Alabama, July 2022

LEADERSHIP AND INVOLVEMENT

UAB Student Health Services (SHS) Advisory Board

Birmingham, Alabama

Board Member

August 2023-May 2024

- Serve on the SHS advisory board to analyze policies, advocate for student-centric initiatives, and optimize healthcare service delivery for the diverse UAB student population

UAB Undergraduate Research Ambassadors (URA)

Birmingham, Alabama

Co-Director

October 2022-May 2025

- Guide and mentor undergraduates interested in pursuing research, help them find labs, and contact principal investigators
- Ran workshops for students to help with abstract writing, poster presentation skills, and applying to research-focused programs

Citrus County Education Foundation (CCEF)

Inverness, Florida

Student Liaison; Volunteer

August 2018-December 2024

- Represented over 16,000 students within the Citrus County school district as Student Liaison
- Worked with school board to provide free supplies to teachers and free lunches for students during COVID-19
- Helped fundraise through CCEF- sponsored Rubik’s Cube competition and golf tournament, raising over \$50,000
- Volunteer with the Community of Care program, helping economically disadvantaged students in the school district fight housing and food insecurity

World Cube Association (WCA)

Rubik's Cube Competitor and Competition Organizer

International

February 2017-Present

- 14th place in 2x2 at Rubik's WCA World Championship in Incheon, South Korea (2023) (out of 1400 competitors)
- Competed in the US National Championship in Salt Lake City, Utah (2018), WCA World Championship in Melbourne, Australia (2019), and Rubik's WCA North American Championship in Toronto, Canada (2022), Alabama 3x3 State Champion (2022), Alabama 2x2 State Record Holder (2022-2023), Alabama 3x3 State Record Holder (2022)
- Peak Rankings: 2x2 – 76 in World, 24 in USA 3x3 – 499 in World, 128 in USA
- Competition Organizer – Cubing with Manatees 2020, Jan 18th, 2020