

CURRICULUM VITAE

Samuel Kakraba, Ph.D., M.S., B.Ed.

PERSONAL INFORMATION

PRIMARY ADDRESS: Department of Biostatistics and Data Science

Celia Scott Weatherhead School of Public Health and Tropical Medicine
Tulane University, 1440 Canal Street, Suite 1610H, MB Code #8310
New Orleans, LA 70112, USA

SECONDARY

AFFILIATION: Connolly Alexander Institute of Data Science (CAIDS)

Tulane University, New Orleans, LA 70118

TERTIARY

AFFILIATION: Tulane Center for Aging, School of Medicine, Tulane University

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LANGUAGES: English, Fante, Twi

PROFESSIONAL PROFILES:

1. Tulane SPHTM Faculty: <https://sph.tulane.edu/bios/samuel-kakraba>
2. Tulane Center for Aging: <https://medicine.tulane.edu/departments/tulane-center-aging-tulane-cancer-center/faculty/samuel-kakraba-phd>
3. Google Scholar: https://scholar.google.com/citations?authuser=1&user=S9_ha_UAAAAJ
4. PubMed: <https://www.ncbi.nlm.nih.gov/myncbi/samuel.kakraba.2/bibliography/public/>
5. ORCID: <https://orcid.org/0000-0002-6362-5126>
6. ResearchGate: <https://www.researchgate.net/profile/Samuel-Kakraba>
7. LinkedIn: <https://www.linkedin.com/in/kakrabasamuel/>

EDUCATION

2021 Ph.D. in Bioinformatics, University of Arkansas at Little Rock (UALR) and University of Arkansas for Medical Sciences (UAMS), Little Rock, AR, USA (GPA: 4.0/4.0)

Dissertation: Drugs that Protect Against Protein Aggregation in Neurodegenerative Diseases

Advisor: Robert J.S. Reis, Ph.D.

2015 M.S. in Mathematical Sciences, East Tennessee State University (ETSU), Johnson City, TN, USA (GPA: 3.56/4.0)

Dissertation: A Hierarchical Graph for Nucleotide Binding Domain 2

Advisor: Debra J. Knisley, Ph.D.

2011 B.Ed. in Mathematics, University of Cape Coast, Cape Coast, Central Region, Ghana
Dissertation: The Relationship Between Students' Perception of Mathematics and their
Mathematics Achievements
Advisor: Benjamin Y. Sokpe, M.Phil.

PROFESSIONAL EXPERIENCE

January 2024 – Present

Assistant Professor of Biostatistics and Data Science (full-time position), Department of
Biostatistics and Data Science, Celia Scott Weatherhead School of Public Health and Tropical
Medicine, Tulane University, New Orleans, LA, USA

July 2026 – Present

Senior Advisor for Health Data Science Engagement (Secondary Affiliation), Tulane Center
for Aging, School of Medicine, Tulane University, New Orleans, LA, USA

January 2024 – Present

Assistant Professor (Tertiary Affiliation), Tulane Center for Aging, School of Medicine, Tulane
University, New Orleans, LA, USA

August 2021 – December 2023

Assistant Professor of Statistics and Data Science (Tenure track, full-time position),
Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

August 2015 – July 2021

Graduate Research Assistant (Full-time position), Department of Information Science, UALR
& UAMS; NIH Program Project Grant AG012411-17A1, Little Rock, AR, USA

2014 – 2015

Graduate Teaching Associate (Full-time position), Department of Mathematics and Statistics,
East Tennessee State University, Johnson City, TN, USA

2013 – 2014

Graduate Teaching Assistant (Full-time position), Department of Mathematics and Statistics,
East Tennessee State University, Johnson City, TN, USA

2011 – 2013

Instructor (Full-time position), Wesley Girls' High School, Cape Coast, Central Region, Ghana

2009 – 2011

Instructor (Full-time position), Wesley Girls' High School, Cape Coast, Central Region, Ghana

2006 – 2007

Instructor (Full-time position), Montessori Primary School, Pedu, Cape Coast, Central Region,
Ghana

2004 – 2006

Instructor (Full-time position), Cherish International School, Pedu, Cape Coast, Central Region, Ghana

HONORS AND AWARDS

2026

Bibliometrics: 17+ peer-reviewed publications; 15+ manuscripts under review; 312+ citations; h-index of 10 (vs. ~3–5 typical for assistant professors in biostatistics and data science); i10-index of 11; 3 patents/patent applications, 7 robust, fully reproducible, publicly available machine learning workflows spanning multiple state-of-the-art algorithms.

2021

Earned Ph.D. with a 4.0 GPA (on a four-point scale)

2020 – 2021

Outstanding College Doctoral Candidate, Donaghey College of Science, Technology, Engineering and Mathematics, University of Arkansas at Little Rock & UAMS, Little Rock, AR, USA

2020 – 2021

Outstanding Departmental Doctoral Candidate, Department of Information Sciences, University of Arkansas at Little Rock, Little Rock, AR, USA

2019 – 2020

Outstanding Oral Presentation (Third Place), Drug Discovery & Development Colloquium, University of Arkansas for Medical Sciences, Little Rock, AR, USA

2016 – 2021

Graduate Research Assistant Award (Full tuition waiver, stipend, and health insurance), NIH Program Project Grant AG012411-17A1, Department of Information Science, UALR & UAMS, Little Rock, AR, USA

2015 – 2016

Graduate Research Assistant Award (Full tuition waiver, stipend, and health insurance), Department of Information Sciences, University of Arkansas at Little Rock, Little Rock, AR, USA

2014 – 2015

Faculty Award: Outstanding Graduate Student, Department of Mathematics and Statistics, East Tennessee State University, Johnson City, TN, USA

2014 – 2015

Graduate Teaching Associate Award (Full tuition waiver and stipend), Department of Mathematics and Statistics, East Tennessee State University, Johnson City, TN, USA

2013 – 2014

Graduate Teaching Assistant Award (Full tuition waiver and stipend), Department of Mathematics and Statistics, East Tennessee State University, Johnson City, TN, USA

COMPUTATIONAL PROGRAMMING AND SOFTWARE SKILLS

Statistical & Data Science Software:

R Statistical Software, SAS, Python, Graph Pad Prism, Minitab, Hadoop, Apache, Bash scripting, SPSS

Molecular Modeling & Simulation:

Gromacs, Discovery Studio, Maestro Schrödinger, AutoDock Vina, Raccoon, Modeler, Chimera, Cytoscape, Sybyl

Operating Systems & Applications:

Linux/Ubuntu, LaTeX, Windows, Android, Microsoft Office (Word, Excel, PowerPoint)

A. SERVICE

PROFESSIONAL MEMBERSHIPS AND OFFICES

2024 – Present

Member, Delta Omega National Honorary Society in Public Health–Eta Chapter, LA, USA

2023 – Present

Member, International Society for Computational Biology

2023 – Present

Member, American Statistical Association, USA

2023 – Present

Member, American Mathematical Association, USA

2021 – Present

Member, American Association of University Professors, USA

2019 – Present

Member, American Association of Pharmaceutical Scientists–UAMS Chapter, AR, USA

2016 – Present

Member, Drug Discovery and Colloquium/MALTO, AR, USA

2016 – 2017

Co-chair, Next Generation Sequence Section, MCBIOS Conference, Memphis, TN, USA

Vice President, UALR & UAMS Bioinformatics Club–Chapter of the MCBIOS, AR, USA

2015 – Present

Member, Midsouth Computational Biology and Bioinformatics Society, USA

2015

Member, Kappa Mu Epsilon (KME) Tennessee Beta Chapter, TN, USA

2014 – 2015

Member, American Mathematical Society, USA

2002 – 2004

Founder and President, Wildlife Conservation Club, University Practice Senior High School, Cape Coast, Central Region, Ghana. Founded ecology and conservation club, organized workshops, mentored future leaders.

2003 – 2004

Pra House Prefect, University Practice Senior High School, Cape Coast, Central Region, Ghana.

2003 – 2004

Board Member, Students Representative Council (SRC), University Practice Senior High School, Cape Coast, Central Region, Ghana.

1999 – 2001

Library Prefect, Tuwohofo Holly International School, Akotokyir, Cape Coast, Central Region, Ghana.

EDITORIAL AND PEER-REVIEW ACTIVITIES

Editorial Board Membership

2026 – Present

1. Associate Editor, Journal of Medical Internet Research (JMIR Aging)
2. Editorial Board Member, *Scientific Reports* (Springer Nature)

Refereed Journals

2026 – Present

1. Associate Editor, Journal of Medical Internet Research (JMIR Aging)
2. Editorial Board Member, PLOS Digital Health
3. Editorial Board Member, Information Processing & Management
4. Editorial Board Member, Journal of Medical Internet Research (JMIR eHealth/mHealth)

2025 – Present

1. Editorial Board Member, Journal of Alzheimer's Disease (JAD)
2. Editorial Board Member, Journal of Medical Internet Research (JMIR Medical Informatics)

3. Editorial Board Member, Journal of Medical Internet Research Public Health and Surveillance
4. Editorial Board Member, Advances in Medical Sciences (Elsevier)
5. Editorial Board Member, Sage Publications
6. Editorial Board Member, Frontiers in Public Health

2024 – Present

1. Editorial Board Member, Age (GeroScience), Official Journal of the American Aging Association (Springer Nature)
2. Editorial Board Member, Journal of Clinical Medicine (JCM, MDPI)
3. Editorial Board Member, Computational Biology and Bioinformatics Journal

2021 – Present

1. Editorial Board Member, Journal of Advances in Biotechnology

Verified Peer Review Activity [<https://orcid.org/0000-0002-6362-5126>]

#	Journal	Publisher	ISSN	Reviews	Period	Notes
1	Age (Omaha)	Springer Nature	0161-9152	5	2024	Aging research and biogerontology.
2	Archives of Virology	Springer Nature	1432-8798	1	2026	Virology and viral pathogenesis.
3	Information Processing & Management	Elsevier	0306-4573	1	2026–present	Information science, data science, and AI methods.

4	Network Modeling Analysis in Health Informatics and Bioinformatics	Springer Nature	2192-6662 / 2192-6670 (e)	1	2025	Network modeling in health informatics and bioinformatics.
5	Journal of Medical Internet Research	JMIR Publications	1438-8871	12	2026–present	Leading eHealth/mHealth journal covering digital health, telemedicine, and medical informatics.
6	Digital Health	SAGE Publications Ltd	2055-2076	2	2026–present	Open access journal on digital health technologies and implementation.
7	Journal of Clinical Medicine	MDPI	2077-0383	1	2024	Multidisciplinary clinical medicine and healthcare research.
8	JMIR mHealth and uHealth	JMIR Publications	2291-5222	3	2026–present	Mobile health, ubiquitous health, and connected care.

9	JMIR Medical Informatics	JMIR Publications	2291-9694	2	2025	Clinical informatics, decision support, and health data science.
10	JMIR Rehabilitation and Assistive Technologies	JMIR Publications	2369-2529	2	2026–present	Digital rehabilitation, assistive technologies, and tele-rehab.
11	JMIR Public Health and Surveillance	JMIR Publications	2369-2960	4	2025–2026	Digital public health, surveillance systems, and epidemiology.
12	JMIR Aging	JMIR Publications	2561-7605	3	2026–present	Aging, gerontology, and digital health in older adults.
13	PLOS Digital Health	Public Library of Science (PLOS)	2767-3170	2	2026–present	Open access journal on digital and computational technologies in health.
14	JMIR AI	JMIR Publications	2817-1705	1	2026–present	Artificial intelligence and machine learning in health and medicine.

Total: 40 peer reviews across 14 publications

UNIVERSITY COMMITTEES/ADVISORY BOARDS

2026 – Present

Senior Advisor for Health Data Science Engagement, Tulane University, New Orleans, LA, USA

2025 – Present

WSPH Representative, Artificial Intelligence Literacy committee, Tulane University, New Orleans, LA, USA

SCHOOL/DEPARTMENT COMMITTEES

2026

Judge, 2026 Annual Delta Omega (Eta Chapter) Poster Competition, Tulane University, New Orleans, LA, USA

2025 – Present

Director, Areas of Specialization, Department of Biostatistics and Data Science, Celia Scott Weatherhead School of Public Health and Tropical Medicine, Tulane University, New Orleans, LA, USA

2024 – Present

Director, Graduate Biostatistics Certificate Program, Department of Biostatistics and Data Science, Celia Scott Weatherhead School of Public Health and Tropical Medicine, Tulane University, New Orleans, LA, USA

2024 – Present

University Liaison and Coordinator for Global Engagement with four Ghanaian Institutions (Kwame Nkrumah University of Science and Technology, Ensign Global University, University of Cape Coast, University of Ghana), Celia Scott Weatherhead School of Public Health and Tropical Medicine at Tulane University, New Orleans, LA, USA

2024 – Present

Member, Dean's Research Committee (DRC), Celia Scott Weatherhead School of Public Health and Tropical Medicine at Tulane University, New Orleans, LA, USA

2024 – Present

Member, Curriculum Committee, Celia Scott Weatherhead School of Public Health and Tropical Medicine, New Orleans, LA, USA

2024 – Present

Member, International Health & Humanitarian Crises Committee, Celia Scott Weatherhead School of Public Health and Tropical Medicine, New Orleans, LA, USA

2024 – Present

Expert Member, Dean's Data Science & Artificial Intelligence Initiative, Celia Scott Weatherhead School of Public Health and Tropical Medicine, New Orleans, LA, USA

2024 – Present

Member, Doctoral Admission Committee, Department of Biostatistics and Data Science, Celia Scott Weatherhead School of Public Health and Tropical Medicine, New Orleans, LA, USA

2024 – Present

Delta Omega Department Representative, Celia Scott Weatherhead School of Public Health and Tropical Medicine, Tulane University, New Orleans, LA, USA

2024 – Present

Departmental Representative, PMAC, Tulane University, New Orleans, LA, USA

2023 –2024

Director, Statistical Consulting Center, Eastern Kentucky University, Richmond, KY, USA

2023

Member, University Academic Integrity Appeals Committee, Eastern Kentucky University, Richmond, KY, USA

2023

Elected Member, College of STEM Research & Faculty Development, Eastern Kentucky University, Richmond, KY, USA

2023

Chair, The Thirty-Fifth Annual Eastern Kentucky University Symposium in Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Ad-hoc Statistics Search Committee, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Graduate Committee, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Statistics Committee, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Publication, Recruitment, & Alumni Committee, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Endowment Committee, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Scholarship Committee, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2023

Member, Wilson Endowment Review Committee, Eastern Kentucky University, Richmond, KY, USA

2022 – 2023

Chair, Symposium Committee, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2021 – 2022

Symposium Committee Member, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA

2016 – 2017

Co-chair, Next Generation Sequence Section, MCBIOS Conference, Memphis, TN, USA

2016 – 2017

Vice President, Midsouth Computational Biology and Bioinformatics Society, Little Rock Chapter, UAMS, AR, USA

PHILANTHROPIC EDUCATIONAL SPONSORSHIPS

As part of my broader commitment to expanding access to education, I have engaged in philanthropic educational sponsorships aimed at supporting talented but underprivileged students. Through personal funding and collaborative support, I have helped remove financial barriers that often prevent capable individuals from pursuing higher education. These efforts reflect my belief that academic potential should not be limited by socioeconomic constraints, and that targeted investment in education can transform not only individual lives but also entire communities.

Over the years, I have sponsored multiple students through their university education, covering tuition, fees, and in some cases living expenses, while also providing mentorship and guidance throughout their academic journey. These sponsorships have enabled recipients to access quality higher education and build pathways toward professional and personal advancement.

Selected Scholars Supported Through Personal Financial Sponsorship

1. Isaac Okyere (2022–2023)
Provided full sponsorship supporting bachelor's degree training, covering one year of university tuition and fees at the University of Cape Coast, Ghana.
Origin: Agona Swedru, Central Region, Ghana.
2. Dorothy Apreku (2018–2022)
Provided full sponsorship supporting bachelor's degree training, covering five years of university education including tuition and living expenses at the University of Cape Coast, Ghana.
Origin: Winneba, Central Region, Ghana.
3. Mawufemor Kpo (2012–2015)
Provided full sponsorship supporting bachelor's degree training, covering three years of university education including tuition and living expenses at the University of Cape Coast, Ghana.

Origin: Akotokyir, Cape Coast, Central Region, Ghana.

Note: First-year tuition and fees were co-sponsored by Francis Jami (Cape Coast, Central Region, Ghana).

4. Persis Blankson (2013–2014)

Provided full sponsorship supporting bachelor's degree training, covering one year of university tuition and fees.

Origin: Takoradi, Western Region, Ghana.

INTERNATIONAL STUDENT MENTORSHIP

As an act of service to my community and a tribute to those who opened doors for me, I volunteer my time, networks, and expertise to help local and international students realize their academic dreams. To date, I have successfully mentored over 20 international students who have either completed their master's or PhD degrees or are currently enrolled in doctoral programs. From securing admissions and graduate assistantships with full stipends to navigating visa processes and providing pre-departure support, I walk alongside students every step of the journey, ensuring that financial, logistical, or geographic barriers never stand between talent and opportunity at top universities in the USA, UK, Canada, and beyond.

In addition to my international mentorship efforts, I actively mentor students from a wide range of backgrounds, including but not limited to underrepresented minorities within my local community. I have directly motivated and guided approximately 10 minorities of USA citizenship to pursue advanced degrees, many of whom have successfully transitioned into graduate programs and professional careers. At the same time, I continue to support and mentor a broader population of students, reflecting my commitment to inclusive excellence and equitable access to academic opportunities. Through sustained mentorship, career guidance, and academic support, I remain dedicated to nurturing the next generation of scholars and professionals, helping them build confidence, access opportunities, and achieve long term success.

Selected Recent Mentees (2014– Present)

1. Andrews Jacobs Bilson (2026) – Interdisciplinary PhD Aging Studies, Tulane University, New Orleans, LA, USA
2. Desmond Yemeh (2024) – Interdisciplinary PhD Aging Studies, Tulane University, New Orleans, LA, USA
3. Owusua Ampong (2024) – M.S. Data Science and Analytics, Georgia State University, Atlanta, GA, USA
4. Benjamin Amoah (2023) – M.S. Plant Science and Agronomy, South Dakota State University, Brookings, SD, USA
5. Shadrack Asante (2022) – M.S. Mathematical Sciences, East Tennessee State University, Johnson City, TN, USA

6. Wilberforce De-Graft (2022) – MBA Accounting & Finance, Eastern Kentucky University, Richmond, KY, USA
7. Matthew Quansah (2022) – MPH Health Promotions, Eastern Kentucky University, Richmond, KY, USA
8. Kuukua Egyinba Abraham (2022) – M.S. Applied Statistics, Minnesota State University Mankato, MN, USA
9. Khadija Abdul-Samed (2022) – M.A. Clinical Mental Health Counseling, East Tennessee State University, Johnson City, TN, USA
10. Edmund Adorkor (2021) – M.S. Agribusiness and Applied Economics, North Dakota State University, Fargo, ND, USA
11. Bright Kweku Manu (2021) – M.S. Mathematical Sciences, East Tennessee State University, Johnson City, TN, USA
12. Matthew Quansah (2021) – M.S. Civil and Environmental Engineering, Brookings, South Dakota State University, SD, USA
13. Enoch Kwaku Larrey (2021) – Ph.D. Bioinformatics, UALR & UAMS, Little Rock, AR, USA
14. Joseph Asante Jnr. (2020) – Ph.D. Bioinformatics, UALR & UAMS, Little Rock, AR, USA
15. Nicholas Fiifi Hagan (2019) – Ph.D. Business Information Systems, University of Memphis, Memphis, TN, USA
16. Clement Aayire Yadem (2017) – Ph.D. Applied Physics, University of Arkansas at Little Rock, Little Rock, AR, USA
17. Evans Addo (2016) – M.S. Mathematical Sciences, East Tennessee State University, Johnson City, TN, USA
18. Theophilus Acquah (2015) – M.S. Mathematical Sciences, East Tennessee State University, Johnson City, TN, USA
19. Evelyn Fokou (2015) – M.S. Mathematical Sciences, East Tennessee State University, Johnson City, TN, USA
20. Thomas Torku (2014) – M.S. Mathematical Sciences, East Tennessee State University, Johnson City, TN, USA

MEDIA COVERAGE & PUBLIC ENGAGEMENT

2026

1. Tulane University. “***Tulane University professor creates AI-driven SMART-pred platform that aims to transform public health surveillance.***” *Connolly Alexander Institute for Data Science News*, Tulane University, 2026, New Orleans, LA, USA. Featured as principal investigator and lead developer of the SMART-Pred platform for AI-driven disease risk prediction and public health surveillance. Available at: <https://datainstitute.tulane.edu/smart-pred-platform>
2. Tulane University. “***Six seed grants fund AI and machine learning projects in public health.***” *Celia Scott Weatherhead School of Public Health and Tropical Medicine News*, February 23, 2026. Featured as seed grant recipient and principal investigator for the SMART-pred project. Available at: <https://sph.tulane.edu/six-seed-grants-fund-ai-and-machine-learning-projects-public-health>

2025

3. Tulane University. “***How to become a leader in public health AI.***” *Celia Scott Weatherhead School of Public Health and Tropical Medicine News*, November 12, 2025. Feature interview with Dr. Samuel Kakraba and Dr. Paul Hutchinson on leadership, training, and innovation in public health AI. Available at: <https://sph.tulane.edu/how-become-leader-public-health-ai>
4. International academic partnership engagements. Featured as faculty liaison and member of the Tulane delegation supporting collaboration and partnership agreements with multiple Ghanaian institutions:
 - a. Tulane University. “***Celia Scott Weatherhead School develops academic relationships with schools in Ghana.***” *Celia Scott Weatherhead School of Public Health and Tropical Medicine News*, Tulane University, 2025. Featured as faculty liaison and member of the Tulane delegation building academic relationships with Ghanaian institutions (including Ensign Global College, University of Ghana, KNUST, and University of Cape Coast). Available at: <https://sph.tulane.edu/celia-scott-weatherhead-school-develops-academic-relationships-schools-ghana>
 - b. Ensign Global College and Tulane University sign memorandum of understanding, featured in *Graphic Communications Group Ltd.* and *Ghana Webbers* (e.g., “***Ghana News: Ensign Global–Tulane University sign MoU***”). Available at: <https://www.graphic.com.gh/news/general-news/ghana-news-ensign-global-tulane-university-sign-mou.html> and <https://www.ghanawebbers.com/GhanaHomePage/NewsArchive/Ensign-Global-Tulane-University-sign-MoU-2063578>
 - c. University of Ghana and Tulane University partnership, featured in University of Ghana School of Public Health news (“***University of Ghana meets Tulane University***”). Available at: <https://publichealth.ug.edu.gh/events/university-ghana-meets-tulane-university>
 - d. Kwame Nkrumah University of Science and Technology (KNUST) and Tulane University memorandum of understanding, featured in KNUST News (“***KNUST, Tulane University Sign MoU to Deepen Academic Collaboration***”). Available at: <https://www.knust.edu.gh/news/news-items/knust-tulane-university-sign-mou-deepen-academic-collaboration>

- e. University of Cape Coast and Tulane University partnership, featured in University of Cape Coast News (“*UCC, University of Cincinnati, and Tulane University meet to deepen academic and research partnerships*”). Available at: <https://www.ucc.edu.gh/news/ucc-university-cincinnati-and-tulane-university-meet-deepen-academic-and-research-partnerships>
 5. Tulane University. “*Demystifying AI in Public Health.*” *Celia Scott Weatherhead School of Public Health and Tropical Medicine*, 2025 (symposium held September 5, 2024; coverage published 2025). Faculty co-organizer and featured speaker (Dr. Samuel Kakraba), providing an overview of machine learning applications in public health, addressing ethical implementation and model bias reduction, and delivering a featured presentation on “*Design and implementation of scalable and equitable AI/ML workflows for population-health measurement and disease diagnostics to improve public health outcomes in low-resource settings.*” Available at: <https://sph.tulane.edu/demystifying-ai-public-health>
- 2024
6. UAMS News. “*Two Research Conferences Converge at UAMS for Young Scientists.*” 2024. Featured for leadership of a machine learning workshop at a University of Arkansas for Medical Sciences research conference. Available at: <https://news.uams.edu/2024/07/09/two-research-conferences-converge-at-uams-for-young-scientists>
- 2019
7. UAMS School of Medicine. “*UAMS Researchers Receive \$1.8 Million to Study Common Mechanisms Shared by Alzheimer’s, Other Diseases.*” 2019 (news article accessed 2021). Featured as graduate research assistant on a 1.8 million USD NIH grant studying shared mechanisms in Alzheimer’s disease and related conditions. Available at: <https://medicine.uams.edu/blog/uams-researchers-receive-1-8-million-to-study-common-mechanisms-shared-by-alzheimers-other-diseases>
- 2016
8. East Tennessee State University Graduate School. *Illuminated Magazine* (2016). *Graduate School alumni spotlight highlighting alumni achievements and career updates*, featuring Dr. Samuel Kakraba. Available at: <https://dc.etsu.edu/illuminated/3>
 9. ETSU NSA REU Final Report (2016). SMAaRT-Math program feature on Strengthening Minorities Achievements via Research Training in Mathematics, highlighting a research presentation on protein aggregation by Samuel Kakraba. Available at: <https://static1.squarespace.com/static/5e9b687d5c9c9e499bb04b9d/t/5ec1606eaa8738407dcdf72c/1589731446009/Report+ETSU+NSA+REU.pdf>

B. TEACHING

I have taught over 20 different courses across 4 universities in the USA since my initial teaching appointment, including courses at the graduate and undergraduate levels.

Table 1. Courses taught at Department of Biostatistics and Data Science, Celia Scott Weatherhead School of Public Health and Tropical Medicine, Tulane University, New Orleans, LA, USA (2024–Present)

Year	Semester	Course	Course code	Level	Credits	Modality
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2026	Spring	Introduction to Methods in Data Science	BIOS 6310	Graduate	3	In-person
2025	Spring	Introduction to Methods in Data Science	BIOS 6310	Graduate	3	
2025	Fall	Statistical Learning in Data Science	BIOS 7650	Graduate	3	In-person
2025	Spring	Introduction to Methods in Data Science *	BIOS 6310	Graduate	3	In-person
2024	Fall	Statistical Learning in Data Science	BIOS 7650	Graduate	3	In-person

Curriculum and Course Development

1. **BIOS 6980** – *Artificial Intelligence for Biomedical and Public Health Applications* (Graduate crosslisted, 3 credits), Tulane University, New Orleans, LA, USA. Developed entire course including primary syllabus, assignments, and assessments; first offering scheduled Spring 2027.
2. **BIOS 7680** – *Deep Learning for Health Data Science* (Graduate, 3 credits), Tulane University, New Orleans, LA, USA. Developed entire course including primary syllabus, assignments, and assessments; first offering scheduled Fall 2027
3. *R for Biomedical and Public Health Data Science* (3 Credits), Tulane University, New Orleans, LA, USA

Table 2. Courses taught at Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY, USA (Fall 2021–Fall 2023)

Year	Semester	Course	Course code	Level	Credits	Modality
2023	Fall	R and Introductory Data Mining	STA/DSC 780	Graduate	3	In-person
2023	Fall	R and Introductory Data Mining	STA/DSC 580	Undergraduate	3	In-person
2023	Fall	Introduction to Statistical Reasoning	STA 215	Undergraduate	4	In-person
2023	Fall	Intro to Statistical Reasoning – Lab	STA 215P	Undergraduate	2	In-person
2023	Spring	Applied Statistics	STA 270	Undergraduate	4	In-person
2023	Spring	Applied Statistics	STA 270	Undergraduate	4	In-person

2023	Spring	Seminar/Capstone	STA 498W	Undergraduate	1	In-person
2022	Fall	R and Introductory Data Mining	STA/DSC 780	Graduate	3	In-person
2022	Fall	R and Introductory Data Mining	STA/DSC 580	Undergraduate	3	In-person
2022	Fall	Regression Analysis	STA 340	Undergraduate	3	In-person
2022	Fall	Seminar/Capstone in Statistics	STA 498W	Undergraduate	1	In-person
2022	Spring	Applied Statistics	STA 270	Undergraduate	4	In-person
2022	Spring	Applied Statistics Lab	STA 270L	Undergraduate	2	In-person
2022	Spring	Regression Analysis	STA 340	Undergraduate	3	In-person
2022	Spring	Statistical Machine Learning in R*	STA 880	Graduate	3	In-person
2021	Winter	Intro to Statistical Reasoning (Online)	STA 215	Undergraduate	4	In-person
2021	Fall	R and Introductory Data Mining	STA/DSC 780	Graduate	3	In-person
2021	Fall	R and Introductory Data Mining	STA/DSC 580	Undergraduate	3	In-person
2021	Fall	Applied Statistics	STA 270	Undergraduate	4	In-person
2021	Fall	Intro to Statistical Reasoning	STA 215	Undergraduate	4	In-person
2021	Fall	Applied Multivariate Statistics*	STA 840	Graduate	4	Hybrid
2021	Fall	Intro to Statistical Reasoning–Lab	STA 215P	Undergraduate	2	In-person
2021	Fall	Intro to Statistical Reasoning–Lab	STA 215P	Undergraduate	2	In-person

* Indicates the course had not been taught for over six years prior to my instruction.

Table 3. Courses taught at Department of Mathematics and Statistics, East Tennessee State University, Johnson City, TN, USA (Fall 2013–Spring 2015)

Year	Semester	Course	Course code	Level	Credits	Modality
2015	Spring	Probability & Statistics–Non-calculus	MATH 1530	Undergraduate	3	In-person
2015	Spring	Prob. & Stats–	MATH 1530L	Undergraduate	4	In-person

		Learning Support				
2014	Fall	Probability & Statistics– Non-calculus	MATH 1530	Undergraduate	3	In-person
2014	Fall	Prob. & Stats– Learning Support	MATH 1530L	Undergraduate	4	In-person
2014	Summer	Probability & Statistics– Non-calculus	MATH 1530	Undergraduate	3	In-person
2013	Fall	Prob. & Stats– Learning Support	MATH 1530L	Undergraduate	4	In-person

Table 4. Other Teaching Experience

Institution	Course	Times Taught	Mode	Level	Modality
Wesley Girls' HS, Ghana (2009–2013)	Elective/Core Mathematics	18	In-person	HS	In-person
Montessori Jr HS, Ghana (2006–2007)	All Elementary Subjects	9	In-person	Elementary	In-person
Cherish Intl School, Ghana (2004–2006)	All Elementary Subjects	9	In-person	Elementary	In-person

STUDENT EVALUATIONS

Table 5. Student Course Evaluation Results, Tulane University, New Orleans, LA, USA

Item: “Overall, I would recommend this professor (Samuel Kakraba)”

Course/CRN	Course Title	Semester	% of students selecting Agree or Strongly Agree
BIOS 6310	Introduction to Methods in Data Science	Spring 2026	82.0%
BIOS 7650	Statistical Learning	Fall 2024	80.0%

Table 6. Student Evaluations (Explorance Blue Instrument), Eastern Kentucky University, Richmond, KY, USA

Course/CRN	Course Title	Semester	% of selecting Average or Better
STA/DSC/CSC 580	R and Introductory Data Mining	Fall 2023	100%
STA 215	Intro to Statistical Reasoning	Fall 2023	90.91%
STA 215P (13570)	Quantitative Support for STA 215	Fall 2023	88.88%
STA 215P (13570)	Quantitative Support for STA 215	Fall 2023	85.72%
STA 270 (21335)	Applied Statistics	Spring 2023	100%
STA 270 (24225)	Applied Statistics	Spring 2023	100%
STA 340	Regression Analysis	Fall 2022	100%
STA 498W	Seminar/Capstone in Statistics	Fall 2022	100%
STA/DSC/CSC 580	R and Introductory Data Mining	Fall 2022	100%
STA/DSC/CSC 780	R and Introductory Data Mining	Fall 2022	100%
STA 270L	Applied Statistics Lab	Spring 2022	100%
STA 340	Regression Analysis	Spring 2022	100%
STA 880	Statistical Machine Learning in R	Spring 2022	100%
STA 270	Applied Statistics	Spring 2022	81.25%
STA 215	Intro to Statistical Reasoning	Winter 2021/2022	92.85%
STA/DSC/CSC 780	R and Introductory Data Mining	Fall 2021	100%
STA/DSC/CSC 580	R and Introductory Data Mining	Fall 2021	100%
STA 270	Applied Statistics	Fall 2021	78.78%

Table 7. ETSU Student Evaluations (Online SAI)

Course/CRN	Course Title	Semester	% of selecting Average or Better
MATH 1530 (L08)	Prob. & Statistics–Non-calculus	Fall 2014	95% (3.8/4)
MATH 1530 (L10)	Prob. & Statistics–Non-calculus	Fall 2014	95% (3.8/4)

MATH 1530–007	Prob. & Statistics– Non-calculus	Spring 2015	90% (3.6/4)
MATH 1530–008	Prob. & Statistics– Non-calculus	Spring 2015	75% (3/4)
MATH 1530 (L08)	Prob. & Statistics– Non-calculus	Summer 2014	75% (3/4)

GUEST LECTURES/SEMINARS

2025

1. **Kakraba S.** “AI at the Frontiers of Aging: Redefining Diagnostics and Drug Discovery.” AGST 7020: Interdisciplinary Seminar on Aging I, Interdisciplinary PhD in Aging Studies, Center for Aging, School of Medicine, Tulane University, New Orleans, LA, USA.
2. **Kakraba S.** “C. elegans as a Model of Aging and Neurodegenerative Diseases.” AGST 7060: Topics in Aging Research I, Tulane Center for Aging, School of Medicine, Interdisciplinary PhD in Aging Studies, Center for Aging, School of Medicine, Tulane University, New Orleans, LA, USA.
3. **Kakraba S.** “Responsible Research Conduct Using Artificial Intelligence (AI).” INTD-6010-01: Responsible Conduct of Research (RCR) Seminar Series, Interdisciplinary PhD in Aging Studies, Center for Aging, School of Medicine, Tulane University, New Orleans, LA, USA.

2024

1. **Kakraba S.** “Machine Learning: Concept and Application in Biomedical Sciences.” Statistics Capstone Course Webinar, Department of Mathematics and Statistics, Eastern Kentucky University, Richmond, KY.
2. **Kakraba S.** “Unearthing the Mechanisms of Age-Related Neurodegenerative Disease Using Caenorhabditis elegans.” AGST 7060: Topics in Aging Research I, Interdisciplinary PhD in Aging Studies, Center for Aging, School of Medicine, Tulane University, New Orleans, LA, USA.
3. **Kakraba S.** AGST 7020: Interdisciplinary Seminar on Aging I. Graduate seminar presentation, Interdisciplinary PhD in Aging Studies, Center for Aging, School of Medicine, Tulane University, New Orleans, LA, USA.

MASTERS COMMITTEES:

NAME OF STUDENT, DATE, ROLE (Chair/member/adviser)

2025–2026

1. **Taylor Franks, Supervisor**, Spring 2026, Utilizing Machine Learning Models to Predict Post-Partum Depression Diagnosis, MS (Biostatistics), Tulane University
2. **Bailey P. Taylor**, Supervisor, Spring 2026, Identification of Predictive Comorbidity Patterns for Endometriosis Risk Stratification Using Explainable Artificial Intelligence and Electronic Health Record Data, MS (Biostatistics), Tulane University
3. **Ema Darr**, Co-Supervisor, Spring 2026, Comparing Performance Measure Behavior Across Statistical and Machine Learning Classifiers for Sepsis Mortality Prediction: A Simulation Study, MS (Biostatistics), Tulane University
4. **Chaudhry S. Farhana**, Supervisor, Spring 2026, Predicting Heart Failure Mortality: Integrating Baseline Risk Stratification with Temporal Risk Evolution for Enhanced Clinical Decision-Making, Integrated Learning Experience, Partial Fulfillment of MSPH (Biostatistics), Tulane University
5. **Kervin Dery**, Co-Supervisor, 2026, A Graph-Theoretic Model of Hepatitis B, MPhil (Mathematics), University of Cape Coast, Ghana
6. **Muthaiah Subashini**, Supervisor, Fall 2025, Preventable Emergency Department Visits Analysis, MSPH (Biostatistics), Tulane University
7. **Jingwen Li**, Supervisor, 2026, Mental Well-Being and Curriculum Evaluation, MSPH (Biostatistics), Tulane University
8. **Siyuan Luan**, Committee Member, 2025, Comparative Analysis of Dimensionality Reduction Techniques for High-Dimensional Data, MS(Biostatistics), Tulane University
9. **Hao Zhou and Zhengxiao Yang**, Chair, Spring 2024–Spring 2025, Optimizing Parkinson’s Disease Prediction, Published: Data, 2025, 10(4)
10. **Han Liu**, Committee Member, 2025, A Bayesian-Frequentist Hybrid Inference Framework for Optimizing Adaptive COVID-19 Vaccine Trials, Supervisor: Jeffrey G. Shaffer
11. **Han Wenzheng and Edmund F. Agyemang**, Chair, 2024–2025, AI-Enhanced Multi-Algorithm R Shiny App for Predictive Modeling and Analytics, Published: JMIR Aging (DOI: 10.2196/70272)

2024

12. **Jinjie Wang**, Committee Member, 2024, Comparative Evaluation of Approaches for Simultaneous Handling of Missing Data and Measurement Error: A Simulation Study, Supervisor: Jeffrey G. Shaffer

2023

13. **Stephen D. McQueen**, Chair, Fall 2023, Optimization of Machine Learning Models for Predicting Deposit Term Subscriptions in Bank Marketing, M.A. (Applied Mathematics), Eastern Kentucky University

2022

14. **Kamala Krishna Buddharaju**, Chair, Fall 2022, Modeling Drug-Induced Liver Toxicity Using ML-Driven QSAR, M.A. (Applied Mathematics), Eastern Kentucky University
15. **Samuel Christopher**, Co-Chair, Fall 2022, Optimizing Machine Learning Algorithms in an R Shiny App for Improved Predictions, M.A. (Applied Mathematics), Eastern Kentucky University

2020–2021

16. **Edem K. Netsey**, Co-Supervisor, 2021, A Mathematical Graph-Theoretic Model of Single Point Mutations Associated with Sickle Cell Disease, MPhil (Mathematics), University of Cape Coast, Ghana, Published: Journal of Advances in Biotechnology

DOCTORAL COMMITTEES:

NAME OF STUDENT, TITLE OF PROJECT, DATE, STATUS

1. Edmund Fosu Agyemang (Chair, Fall 2025–Present), Design and Implementation of robust AI workflows for enhanced health outcomes. PhD (Biostatistics), Tulane University.
2. Ema Akter (Chair, Fall 2025–Present), Transforming Public Health Outcomes with Robust Artificial Intelligence Workflow Design and Implementation. PhD (Biostatistics), Tulane University.
3. Yuanhao Zu (Member, Fall 2025–Present), Cross evaluation between traditional formulas and modern imputation strategies for missing data in the context of acute respiratory distress syndrome severity. PhD (Biostatistics), Tulane University.
4. Desmond Yemeh (Chair, Fall 2025–Present), AI-Assisted Drug Discovery and Design for Targeting Age-Associated Neurodegenerative Diseases. PhD (Interdisciplinary PhD in Aging Studies), Tulane Center for Aging.

5. Mamadou D. Coulibaly (Member, 2025–Present), Genomic and Epidemiologic Data for Integrative Modeling of Tuberculosis Drug Resistance Prediction. PhD (Bioinformatics), University of Sciences, Techniques and Technologies of Bamako, Mali.
6. Md Ariful Islam (Member, 2024–Present), Multi-omics and drug repurposing targeting complex age-related conditions. PhD (Biomedical Sciences), Tulane School of Medicine. Principal Advisor: Dr. Hong-Wen Deng.
7. Edem K. Netsey, (Chair, 2025- Present), Spectral Stability Analysis of Protein Mutation Networks: Mutation-Induced Spectral Perturbation Theory (MISPT) and Applications to Protein Engineering University of Cape Coast, Cape Coast, Ghana

STUDENTS ADVISED

Year	No. of Students Advised
2026	7
2025	6
2024	6
2023	2
2022	2
2021	1

C. RESEARCH

PATENTS/INVENTIONS

1. **Kakraba, S.**, et al. (2025). Novel Quinoline Analogs as Multi-Target Inhibitors of Acetylcholinesterase and Protein Aggregation in Alzheimer's Disease Therapy. Patent application submitted to Tulane Office of Intellectual Property Management, Submission ID: OI2026-00561, January 14, 2026.
2. Bowroju, S.K., Crooks, P., Penthala, N., Ayyadevara, S., Guzman, M., Shmookler Reis, R.J., Lopes, E., & **Kakraba, S.** (2021). Novel TDZD analogs as agents that delay, prevent, or reverse age-associated diseases and as anti-cancer and antileukemic agents. U.S. Patent Application No. US20230125667A1.
3. Bowroju, K.S., Crooks, P., Penthala, N., Ayyadevara, S., Guzman, M., Reis, S.J.R., Lopes, E., **Kakraba, S.** (2021). U.S. Patent Application No. PCT/US/2021/017970.

PUBLICATIONS

A. Peer-Reviewed Publications (Published or In Press)

2026

1. Daniela Candanedo, Edmund Agyemang, Farhana Chaudhry, Taylor Franks, Bailey Taylor, Kevin Siliezar, **Samuel Kakraba**. Leveraging machine learning algorithms and explainable AI for predicting mental health disorder treatment at the workplace, *Acta Psychologica*, Volume 267, 2026, 107081, ISSN 0001-6918, <https://doi.org/10.1016/j.actpsy.2026.107081>.
(<https://www.sciencedirect.com/science/article/pii/S0001691826008826>).
Impact factor (2024, 2025 JCR): 2.7 (Q1/Q2); CiteScore (2024): 3.3
Role: Corresponding author; senior mentor; explainability analyses; oversaw entire project, and manuscript refinement.
2. **Kakraba, S.**, Yadem, A.C., Abraham, K.E., et al. (2026). Unraveling protein secrets: machine learning unveils novel biologically significant associations among amino acids. *Network Modeling Analysis in Health Informatics and Bioinformatics*, 15, 114.
<https://doi.org/10.1007/s13721-026-00732-4>
Impact factor: 2.0; CiteScore (2024): 3.7
Role: First and corresponding author; senior mentor; led study design, machine learning methods, and manuscript development.
3. Doumbia, S., Kane, F., Diabate, O., Cisse, C., Sanogo, I., Coulibaly, M.D., Fofana, F.G., Delamou, A., Beavogui, A.H., Thiam, S.M., Li, J., Keita, M., Sogoba, N., Tangara, C.O., **Kakraba, S.**, Wele, M., Diakite, M., Toure, M., Shaffer, J.G. (2026). Advancing data science research education in Africa through datathon-driven innovations. *Scientific Reports*. 2026 Mar 2. <https://doi.org/10.1038/s41598-026-41474-7>. Epub ahead of print. PMID: 41771994.
Impact factor (2024): 3.9
Role: Coauthor; contributed to design, analysis, and writing.
4. **Kakraba, S.**, Agyemang, E.F., Srivastav, S.K. (2026). Cognitive sovereignty and decolonial public health: reclaiming epistemic authority in the global AI era. *Frontiers in Public Health*, 14:1785170. <https://doi.org/10.3389/fpubh.2026.1785170>

Impact factor (2024): 3.4; CiteScore (2024): 5.5

Role: First and corresponding author; conceptual lead; senior mentor.

5. **Kakraba, S.**, Agyemang, E.F., Shmookler Reis, R.J. (2026). Accelerating discovery of leukemia inhibitors using AI-driven quantitative structure–activity relationship: algorithm development and validation. *JMIR AI*, 5:e81552. 2026 Jan 27.

<https://doi.org/10.2196/81552>. PMID: 41358925; PMCID: PMC12892034.

Impact factor (2025, inaugural): 2.0; CiteScore: 2.5

Role: First and corresponding author; led conceptual framework, developed AI–QSAR workflow, and led writing.

2025

6. Yang, Z., Zhou, H., Srivastav, S., Shaffer, J.G., Abraham, K.E., Naandam, S.M., Kakraba, S. (2025). Optimizing Parkinson’s disease prediction: a comparative analysis of data aggregation methods using multiple voice recordings via an automated artificial intelligence pipeline. *Data*, 10(1), 4. <https://doi.org/10.3390/data10010004>

Impact factor / Impact score (2024, Scopus-based): 2.91 (Q2); CiteScore: 5.0

Role: Corresponding author; senior mentor; supervised AI pipeline design, analysis, and writing.

7. Wenzheng, H., Agyemang, E.F., Srivastav, S., Shaffer, J.G., Kakraba, S. (2025). AI-enhanced multi-algorithm R Shiny app for predictive modeling and analytics: a case study of Alzheimer’s disease diagnostics. *JMIR Aging*. 2025 Nov 5.

<https://doi.org/10.2196/70272>. PMID: 41237410.

Impact factor (2024): 5.0 (Q1); CiteScore: 6.6

Role: Corresponding author; senior mentor; led conception, modeling framework, and app integration.

8. Netsey, E.K., Naandam, S.M., Asante Jnr, J., Abraham, K.E., Yadem, A.C., Owusu, G., **Shaffer, J.G.**, Srivastav, S.K., Doumbia, S., Owusu-Dabo, E., Morkle, C.E., Yemeh, D., Manortey, S., Yankson, E., Sangare, M., Kakraba, S. (2025). Structural and functional impacts of SARS-CoV-2 spike protein mutations: insights from predictive modeling and

analytics. *JMIR Bioinformatics and Biotechnology*, 6:e73637.

<https://doi.org/10.2196/73637>. (article corrected in 2025, see erratum.)

Corrections and errata

Netsey, E.K., Naandam, S.M., Asante Jnr, J., Abraham, K.E., Yadem, A.C., Owusu, G., **Shaffer, J.G.**, Srivastav, S.K., Doumbia, S., Owusu-Dabo, E., Morkle, C.E., Yemeh, D., Manortey, S., Yankson, E., Sangare, M., Kakraba, S. (2025). Correction: Structural and functional impacts of SARS-CoV-2 spike protein mutations: insights from predictive modeling and analytics. *JMIR Bioinformatics and Biotechnology*, 6:e89673. Erratum to: 10.2196/73637.

CiteScore (2025): 4.0

Role: Corresponding author; senior mentor; led predictive modeling strategy and manuscript integration, oversaw correction and clarified methods and results

9. **Kakraba, S.**, Ayyadevara, S., Yadem, C.A., Abraham, K.E., Compadre, C.M., Shmookler Reis, R.J. (2025). Machine learning-enhanced quantitative structure–activity relationship modeling for DNA polymerase inhibitor discovery: algorithm development and validation. *JMIR AI*, 4:e77890. 2025 Dec 3. <https://doi.org/10.2196/77890>. PMID: 41340396; PMCID: PMC12675996.

Impact factor (2025, inaugural): 2.0; CiteScore: 2.5

Role: First and corresponding author; senior mentor; led conceptual framework, developed AI–QSAR workflow, and led writing.

2023

10. **Kakraba, S.**, Ayyadevara, S., Mainali, N., Balasubramaniam, M., Bowroju, S., Penthala, N.R., Atluri, R., Barger, S.W., Griffin, S.T., Crooks, P.A., et al. (2023). Thiadiazolidinone (TDZD) analogs inhibit aggregation-mediated pathology in diverse neurodegeneration models, and extend *C. elegans* life- and healthspan. *Pharmaceuticals*, 16(10), 1498.

<https://doi.org/10.3390/ph16101498>

Impact factor (2023): 4.8 (Q1); CiteScore: 6.1

Role: First and corresponding author; led experimental and analytical components and primary writing.

2022

11. Naandam, S.M., Gogovi, G.K., **Kakraba, S.** (2022). Temperature effect on the structural dynamics of SARS-CoV-2 nucleocapsid domain. *Advances in Computer Vision and Computational Biology*. Springer Nature Research Book Series (accepted, in press).

Impact factor: not applicable (book series).

Role: Co-author; provided modeling guidance and interpretation.

2021

12. Netsey, E.K., **Kakraba, S.**, Naandam, S.M., Yadem, A.C. (2021). A mathematical graph-theoretic model of single point mutations associated with sickle cell anemia disease. *Journal of Advances in Biotechnology*, 9, 1–14. <https://doi.org/10.24297/jbt.v9i.9109>

Impact factor / CiteScore: not indexed in JCR/Scopus.

Role: Corresponding author; senior mentor; led modeling framework and supervised student first author.

2020

13. Bowroju, S.K., Mainali, N., Ayyadevara, S., Penthala, N.R., Krishnamachari, S., **Kakraba, S.**, Reis, R.J., Crooks, P.A. (2020). Design and synthesis of novel hybrid 8-hydroxy quinoline–indole derivatives as inhibitors of A β self-aggregation and metal chelation-induced A β aggregation. *Molecules*, 25(16), 3610.

<https://doi.org/10.3390/molecules25163610>

Impact factor (2020): 4.411 (Q2); CiteScore: 7.4

Role: Contributed to data analysis and manuscript review.

2019

14. **Kakraba, S.**, Ayyadevara, S., Penthala, N.R., Balasubramaniam, M., Ganne, A., Liu, L., Alla, R., Bommagani, S.B., Barger, S.W., Griffin, W.S.T., Crooks, P.A., Shmookler Reis, R.J. (2019). A novel microtubule-binding drug attenuates and reverses protein aggregation in animal models of Alzheimer's disease. *Frontiers in Molecular Neuroscience*, 12, 310.

<https://doi.org/10.3389/fnmol.2019.00310>

Impact factor (2019): 5.639 (Q2); CiteScore: 6.8

Role: First author; led in vivo work, integrative analysis, and manuscript writing and review.

15. Balasubramaniam, M., Ayyadevara, S., **Kakraba, S.**, Alla, R., Mehta, J.L., Shmookler Reis, R.J. (2019). Aggregate interactome based on protein-crosslinking interfaces predicts drug targets to limit aggregation in neurodegenerative diseases. *iScience*, 19, 356–372.

<https://doi.org/10.1016/j.isci.2019.09.026>

Impact factor (2019): 5.458 (Q1); CiteScore: 6.9

Role: Contributed to computational analysis and interpretation.

2017

16. Ayyadevara, S., Balasubramaniam, M., **Kakraba, S.**, Alla, R., Mehta, J.L., Shmookler Reis, R.J. (2017). Aspirin-mediated acetylation protects against multiple neurodegenerative pathologies by impeding protein aggregation. *Antioxidants & Redox Signaling*, 27(17), 1383–1396. <https://doi.org/10.1089/ars.2016.6978>

Impact factor (2017): 6.530 (Q1); CiteScore: 6.18.

Role: Contributed to experiments, analysis, and revisions.

2016

17. **Kakraba, S.**, Knisley, D. (2016). A graph-theoretic model of single point mutations in the cystic fibrosis transmembrane conductance regulator. *Journal of Advances in Biotechnology*, 6(1), 780–786. <https://doi.org/10.24297/jbt.v6i1.4013>

Impact factor / CiteScore: not indexed in JCR/Scopus.

Role: First and corresponding author; designed model, performed analysis, drafted and reviewed manuscript.

B. Publications in Review

B.1. Manuscripts Under Review (Submitted)

2026

1. **Kakraba, S.** *Beyond AUC: From Prediction to Epistemic Action in Healthcare Machine Learning.* MedComm (Sage). Manuscript ID: MCO2-2026-8299 (submitted July 2026).
Impact factor: 14.1 (Q1); CiteScore: 12.5
Role: Sole author
2. Chaudhry, F., Agyemang, E.F, Candanedo, D., Yemeh, D., Akter E., Assefa S., Siliezar, K., Franks, T., Taylor, B., **Kakraba, S.** *Development and External Validation of Explainable Machine Learning Models for Cardiovascular Disease Prediction.* MedComm (Sage). Manuscript ID: MCO2-2026-8224 (submitted June 26, 2026).
Impact factor: 14.1 (Q1); CiteScore: 12.5
Role: Corresponding author; senior mentor; supervised ML methods, interpretability analysis, and student-led writing.
3. Agyemang, E.F., **Kakraba, S.**, *Stratified Probability Sampling Allocation Procedures and Differential Nonresponse in Healthcare: A Narrative Review.* International Journal of Medical Informatics, Elsevier (Manuscript ID: IJMEDI-D-26-03412 ,Submitted June 19, 2026).
Impact factor (latest available, 2024 data): 5.0. (Q1); CiteScore: 8.8
4. **Kakraba, S.**, Akter E., Agyemang F.E. *Perspective Piece on From Case Files to Code:Reclaiming Social Work in the Age of Artificial Intelligence.* BMC Medical Ethics, Springer (Submitted June 8,2026).
Impact factor (latest available, 2024 data): 3.1 (Q1); CiteScore: 3.5
5. **Kakraba, S.** *The Anticipatory Gaze: Generative Health Stewardship, Prefigurative Algorithmic Equity, and the Constitutional Governance of Public Health Artificial Intelligence,* Journal of Healthcare Information Research, Springer (Submitted June 2026)
Impact factor (latest available, 2024 data): 3.7 (Q1); CiteScore: 2.1
Role: Sole author.
6. **Kakraba, S.**, Agyemang, E., Abraham, K.E. (2026). *Large language models for infectious disease surveillance: a surveillance-attribute–centered scoping review with implementation and governance agenda.* Artificial Intelligence in Medicine, Elsevier (manuscript ID:

AIIM-D-26-03279, Submitted June 8, 2026).

Impact factor (latest available, 2024 data): 6.2 (Q1); CiteScore: 15.0

Role: First and corresponding author; led review design, framework development, and manuscript drafting.

7. **Kakraba, S.** *Fluent Machines, Fragile Judgement: Reimagining AI through Three Births and a Sparring Partner*. Minds and Machines (Springer). Manuscript ID: MIND-D-26-00767 (submitted May 2026).

Impact factor: 3.4 (Q1); CiteScore: 8.4

Role: Sole author.

8. Agyemang, E., Rugeyo, J., Kyei, D., Nyarko, P., Ampomah, O.-A., Mensah, J., **Kakraba, S.** (2026). *Modeling predictors of hypertension in the United States of America: Empirical evidence from the cross-sectional study of the General Social Survey*. SN Social Sciences (Submitted May 2026), Q2

Role: Senior Mentor; corresponding author, contributed to study design, statistical modeling, and manuscript editing.

9. Yemeh, D., **Kakraba, S.** *Machine learning-enhanced drug discovery in protein aggregation-related pathologies: a systematic review*. MedComm (Sage). Manuscript ID: AIIM-D-26-02353 (submitted May 2026).

Impact factor: 14.1 (Q1); CiteScore: 12.5

Role: Corresponding author; study design, supervision, senior mentor, and manuscript development.

10. **Kakraba, S.**, et al. *Therapeutic strategies for Alzheimer's disease: a narrative review tracing the evolution from symptomatic treatment to multimodal precision medicine*. Alzheimer's & Dementia (Wiley). Manuscript ID: ADJ-D-26-01391 (submitted April 2026).

Impact factor: 11.1 (Q1); CiteScore: 13.6

Role: Corresponding author; study design, supervision, senior mentor, and manuscript development.

11. **Kakraba, S.**, Agyemang, E.F., Srivastav, S.K., Liu, Y., Li, J., Ho, L., Shaffer, J.G. (2026). *Generative AI as public health “language infrastructure”: designing the prompt layer of modern health departments*. Information Processing & Management (Elsevier). Submitted April 2026.
Impact factor: 6.9 (Q1); CiteScore: 11.0
Role: Corresponding author; study design, supervision, senior mentor, and manuscript development.
12. Agyemang, E.F., **Kakraba, S.**, Srivastav, S., Shaffer, J.G. *Impact of missing data imputation on the performance of machine and deep learning algorithms for breast cancer and leukemia risk prediction: a narrative review*. Cancer Medicine (Wiley). Manuscript ID: 6026811 (submitted April 2026).
Impact factor (2025): 3.1 (Q1); CiteScore (2025): 6.7
Role: Co-corresponding author; study design, supervision, senior mentor, and manuscript development.
13. **Kakraba, S.** *Artificial Intelligence as a Constitutional Moment: Reconfiguring Power, Governance, and Equity in Public Health Before the Window Closes*. Global Challenges, Wiley. Submitted April 2026.
Impact factor (2024 data, released 2025): 6.4 (Q1); CiteScore (2025): 11.5
Role: Sole author.
14. Chataa, P., Ameko, F., Nikingbong, C., Naandam, S.M., **Kakraba, S.** *Mathematical modeling and optimal control of Fusarium wilt transmission*. Engineering Reports, Wiley. (submitted June 2026).
Impact factor (2025): 2.0 (Q2); CiteScore (2024): 6.8
Role: Corresponding author; oversaw model formulation, optimal control analysis, and manuscript integration.
15. **Kakraba, S.**, Mainali, N., Ayyadevara, S., Shmookler Reis, R.J. *Development of an AI-enhanced workflow for automated quality classification of biomedical fluorescence*. Machine Learning with Applications (Elsevier). Manuscript ID: MLWA-D-26-00316 (submitted March 2026).

Impact factor (latest reported, 2025 cycle): 4.9 (Q1).

Role: First and corresponding author; led algorithm design, workflow implementation, and writing.

2025

16. Liu, H., Shaffer, J., **Kakraba, S.** (2025). *Optimizing adaptive COVID-19 vaccine trials using a Bayesian–frequentist hybrid framework: a simulation-based methodologic study.* BMC Medical Research Methodology. Under review (submitted August 2025).
Impact factor (2024 data, 2025 JCR): 3.4 (Q1); CiteScore: 6.6–6.9
Role: Corresponding author; senior mentor; directed methodological development and simulation study design.

B.2. Software and Data Repositories

2025

1. Chaudhry, F., Agyemang, E.F, Candanedo, D., Yemeh, D., Akter E., Assefa S., Siliezar, K., Franks, T., Taylor, B., **Kakraba, S.** *Workflow for “Development and External Validation of Explainable Machine Learning Models for Cardiovascular Disease Prediction.”* Github link: <https://github.com/Agyemang1z/Heart-Failure-Manuscript>
2. Agyemang, E. (student mentee; first author), Ruyego, J., Kyei, D., Nyarko, P., Obu-Amoah, A., Mensah, J., **Kakraba, S.** (2025). Workflow for leveraging machine learning algorithms and explainable AI for predicting mental health disorder treatment at the workplace. DOI: 10.13140/RG.2.2.29677.09448. <https://github.com/Agyemang1z/Mental-Health-Manuscript>
Role: Senior mentor; led overall project design, workflow architecture, and supervision of all stages.
3. **Kakraba, S.**, Netsey, E. (student mentee) (2025). Edge-interaction-weights-of-protein-phenotypes-for-SARS-CoV-2-Spike-RBD-Chain-E. <https://github.com/KakrabaLab/Edge-interaction-weights-of-protein-phenotypes-for-SARS-CoV-2-Spike-RBD-Chain-E>

Role: Senior mentor; designed analytic framework, led repository structure, and supervised data preparation.

4. **Kakraba, S.**, Aayire, Y.C., Abraham, E.K. (2025). Python workflow for AI-optimized consensus clustering analysis for amino acids. <https://github.com/KakrabaLab/AI-Optimized-Consensus-Clustering>

Role: Senior mentor; led method development, implementation, and validation of the workflow.

5. Yang, Z., Zhou, H. , Srivastav, S., Shaffer, J.G., Abraham, K.E., Naandam, S.M., **Kakraba, S.** (2025). Parkinson's disease prediction code and data repository. DOI: 10.13140/RG.2.2.16331.71202. <https://github.com/Durixas/Parkinson-s-Disease-Prediction-Code-and-Data-Repository>

Role: Senior mentor; led project direction, modeling strategy, and code review.

6. Wenzheng, H. , Agyemang, E.F., Srivastav, S., Shaffer, J.G., **Kakraba, S.** (2025). Basic SMART-Pred R Shiny web application for machine learning and deep learning tasks. DOI: 10.13140/RG.2.2.34301.68326. <https://github.com/Agyemang1z/SMART-Pred-Shiny-Multi-Algorithm-R-Tool-for-Predictive-Modeling-Manuscript>

Role: Senior mentor; led SMART-Pred app concept, multi-algorithm integration, and quality control.

7. Agyemang, E. , Ruyego, J., Kyei, D., Nyarko, P., Obu-Amoah, A., Mensah, J., **Kakraba, S.** (2025). Python-based workflow for uncovering the key predictors of hypertension in U.S. adults. <https://github.com/Agyemang1z/Hypertension-GSS-2022-Manuscript/tree/main>

Role: Senior mentor; led methodological framework, workflow design, and oversight of analysis and interpretation.

2024

7. Yang, Z. (student mentee; first author), Zhou, H. (student mentee), **Kakraba, S.** (corresponding author; senior mentor) (2024). A Python-based machine learning pipeline for predictive modeling. <https://colab.research.google.com/drive/10Hph-cZpjYmrrfA2rCa->

[y9-SAa_mLhvz?usp=share_link](#)

Role: Senior mentor; led pipeline architecture, methodological choices, and performance evaluation.

B.3. THESES & DISSERTATIONS

2021

1. **Kakraba, S.** (2021). Drugs That Protect Against Protein Aggregation in Neurodegenerative Diseases (2569992650) [Doctoral dissertation]. ProQuest Dissertations and Theses Global.

2015

2. **Kakraba, Samuel**, “A Hierarchical Graph for Nucleotide Binding Domain 2” (2015). *Electronic Theses and Dissertations*. Paper 2517. <https://dc.etsu.edu/etd/2517>.

B.4. MANUSCRIPTS IN PREPARATION

1. **Kakraba, S.**, et al. Artificial Intelligence for Aging and Geriatric Public Health: Opportunities, Risks, and Research Priorities
2. **Kakraba, S.**, et al. Therapeutic Strategies for Alzheimer's Disease: An Updated Review. .
3. **Kakraba, S.**, et al. Novel Quinoline Analogs inhibit Protein Aggregation in Neurodegenerative Disease Model.
4. **Kakraba, S.**, et al. Methods of generating novel molecular descriptors/database for the 20 most essential amino acids.
5. **Kakraba, S.**, et al. Effects of sampling scheme on variogram uncertainty: A simulation-based approach.
6. **Kakraba, S.**, et al. Artificial Intelligence Pipeline for Classification-Based Predictive Modeling in R Statistical Software.
7. **Kakraba, S.**, et al. Novel NSAIDs Ameliorate Cytotoxic Protein Aggregation in Neuronal Cell-Culture Model of Amyloidopathy.
8. **Kakraba, S.**, et al. Data science-driven machine learning predictive modeling of amino acids.
9. **Kakraba, S.**, et al. Artificial intelligence-driven image classification and analysis of bioassays.

10. **Kakraba, S., et al.** Machine learning quantitative-structure-activity relationship for drug discovery: quinoline family.
11. **Kakraba, S., et al.** Comparison of performance of ML algorithms in QSAR for predicting anti-leukemic activity.
12. **Kakraba, S., et al.** Interface of graph-theoretic predictive modeling with ML for insight into COVID-19 mutations.
13. **Kakraba, S., et al.** Moderate-throughput Screening for Anti-aggregative NSAIDs Drugs.
14. **Kakraba, S., et al.** Insight into mutations associated with Sickle Cell Anemia disease by molecular modeling and simulation.
15. **Kakraba, S., et al.** Age difference in associations of alcohol consumption and skin allergy with nonmelanoma skin cancer in US adults.

CONFERENCE PRESENTATIONS

2026

1. Emma Darr, Edem K. Netsey, Samuel M. Naandam, Joseph Asante, Kuukua E. Abraham, Aayire C. Yadem, Gabriel Owusu, Jeffrey G. Shaffer, Sudesh K. Srivastav, Seydou Doumbia, Ellis Owusu-Dabo, Chris E. Morkle, Desmond Yemeh, Stephen Manortey, Ernest Yankson, Mamadou Sangare, **Samuel Kakraba** (Spring 2026). Multiscale Predictive Modeling of SARS-CoV-2 Spike RBD Mutations: Structural and Functional Insights. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA.
Role: Senior mentor; supervised project design, modeling strategy, and abstract preparation.
2. Samuel D. Assefa, Farhana Chaudhry, Edmund Agyemang, Daniela Candanedo, Bailey Taylor, Kevin Siliezar, Desmond Yemeh, **Samuel Kakraba** (Spring 2026). Machine Learning–Driven Survival Prediction and Risk Stratification in Heart Failure. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA.
Role: Senior mentor; guided ML pipeline development, feature engineering, and interpretation

3. Daniela Candanedo, Edmund Agyemang, Farhana Chaudhry, Taylor Franks, Bailey Taylor, Kevin Siliezar, **Samuel Kakraba** (Spring 2026). Explainable Machine Learning for Predicting Workplace Mental Health Treatment-Seeking. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA. Role: Senior mentor; guided ML pipeline development, feature engineering, and interpretation.
4. Adeshola Lawal, Bailey Taylor, **Samuel Kakraba** (Spring 2026). Explainable Machine Learning for Improved Thyroid Cancer Recurrence Risk Stratification. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA. Role: Senior mentor; guided ML pipeline development, feature engineering, and interpretation.
5. Desmond Yemeh, **Samuel Kakraba**, Srinivas Ayyadevara, Aayire Yadem Clement, Kuukua E. Abraham, Cesar M. Compadre, Robert J. Shmookler Reis (Spring 2026). Machine Learning-Enhanced Quantitative Structure-Activity Relationship Modeling for DNA Polymerase Inhibitor Discovery: Algorithm Development and Validation. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA. Role: Senior mentor; oversaw study design, data analysis, and clinical interpretation.
6. Edmund Fosu Agyemang, Han Wenzheng, Sudesh Srivastav, Jeffrey Shaffer, **Samuel Kakraba** (Spring 2026). Design and evaluation of an ai-enhanced multi-model R shiny application for predictive analytics in Alzheimer's disease. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA. Role: Senior mentor; oversaw study design, data analysis, and clinical interpretation.
7. Daniela Candanedo, Edmund Agyemang, Farhana Chaudhry, Taylor Franks, Bailey Taylor, Kevin Siliezar, **Samuel Kakraba** (Spring 2026). leveraging machine learning algorithms and explainable ai for predicting mental health disorder treatment at the workplace. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New

Orleans, LA, USA.

Role: Senior mentor; supervised model selection, XAI methods, and narrative framing.

8. Subashini Muthaiah, Edmund F. Agyemang, **Samuel Kakraba** (Spring 2026). Near-Perfect Survival Prediction in Pancreatic Cancer with Ensemble Machine Learning: Evidence from a SEER-Based African American Cohort. Invited poster, Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; oversaw ensemble modeling framework and equity-focused interpretation.

9. Ema Akter , Zhengxiao Yang , Hao Zhou , Sudesh Srivastav , Jeffrey G. Shaffer , Kuukua E. Abraham , Samuel M. Naandam , and **Samuel Kakraba** (Spring 2026). A Comparative Analysis of Data Aggregation Approaches for Parkinson’s Disease Prediction Using Multi-Recording Voice Data and an Automated Artificial Intelligence Pipeline. Invited poster. Tulane Research, Innovation, & Creativity Summit (TRICS) 2026, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; supervised comparative study design and pipeline implementation.

2025

11. **Kakraba, S.** (Fall 2025). Harnessing Artificial Intelligence for Faster Drug Discovery.

Keynote speaker. 11th Biennial Scientific Conference, KNUST, Kumasi, Ghana.

12. **Kakraba, S.** (Fall 2025). Design and Implementation of Scalable and Equitable AI/ML Workflows for Population-Health Measurement and Disease Diagnostics to Improve Public Health Outcomes in Low-Resource Settings. Invited speaker. AI Research Symposium: Demystifying AI in Public Health, Tulane University, New Orleans, LA, USA.

13. **Kakraba, S.** (Fall 2025). Opportunities with AI/ML in Public Health. Invited speaker. AI Research Symposium: Demystifying AI in Public Health, Tulane University, New Orleans, LA, USA.

14. Agyemang, E., Wenzheng, H., Srivastav, S., Shaffer, J., **Kakraba, S.** (Fall 2025). AI-Enhanced Multi-Algorithm R Shiny App for Predictive Modeling and Analytics. Invited

poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; led concept, methods, and poster development.

15. Akter, E., Yang, Z., Zhou, H., Srivastav, S., Shaffer, J.G., Abraham, K.E., Naandam, S.M., **Kakraba, S.** (Fall 2025). Optimizing Parkinson's Disease Prediction. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; supervised modeling approach and results communication.

16. Yemeh, D., **Kakraba, S.**, et al. (Fall 2025). Discovery of DNA Polymerase Inhibitors: ML-Enhanced QSAR Modeling Approach. Poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; guided QSAR design and interpretation.

17. Sivebukola, I.O., **Kakraba, S.**, Shmookler Reis, R.J. (Fall 2025). Accelerating Discovery of Leukemia Inhibitors with AI-Driven QSAR Modeling. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; supervised project scope and presentation.

18. Taylor, B., **Kakraba, S.** (Fall 2025). Enhancing Thyroid Cancer Recurrence Risk Stratification with Explainable Machine Learning. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; guided XAI methods and clinical messaging.

19. Owusu, G., Netsey, E.K., et al., **Kakraba, S.** (Fall 2025). Structural and Functional Impacts of SARS-CoV-2 Spike Protein Mutations. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; oversaw analytic design and visualization.

20. Candanedo, D., Agyemang, E., Chaudhry, F., Franks, T., Taylor, B., Siliezar, K., **Kakraba, S.** (Fall 2025). Leveraging ML and Explainable AI for Predicting Mental Health Disorder Treatment at the Workplace. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.

Role: Senior mentor; supervised ML modeling and explainability framework.

21. Taylor, F., **Kakraba, S.** (Fall 2025). Enhancing Early Detection of Cervical Cancer: ML Prediction of Biopsy Outcomes. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.
Role: Senior mentor; guided model development and evaluation.
22. Chaudhry, F.S., **Kakraba, S.** (Fall 2025). Harnessing ML and Model Interpretability for Survival Prediction in Heart Failure Patients. Invited poster. AI Research Symposium, Tulane University, New Orleans, LA, USA.
Role: Senior mentor; supervised survival modeling and XAI analyses.
23. **Kakraba, S.** (Fall 2025). Improving Student Visa Outcomes Before and After 214(b) Denials. Invited speaker. Graduate Admissions, Tulane University, New Orleans, LA, USA.
24. **Kakraba, S.** (2025, July 15). Global Health Initiatives: University of Ghana Meets Tulane University. Invited panelist. University of Ghana, Accra, Ghana.
25. **Kakraba, S.** (2025, July 14). Shaping the Future of Global Health: University of Cape Coast Meets Tulane University. Invited panelist. University of Cape Coast, Cape Coast, Ghana.
26. **Kakraba, S.** (2025, July 11). Data Science as Powerful Transformational Tool for Enhanced Health Outcomes. Invited speaker. School of Physical Sciences, University of Cape Coast, Cape Coast, Ghana.
27. **Kakraba, S.** (2025, July 10). Global Health Initiatives: KNUST Meets Tulane University. Invited panelist. KNUST, Kumasi, Ghana.
28. **Kakraba, S.** (2025, July 8). Future of Global Public Health Research and Practice. Invited panelist. Ensign Global University, Kpong, Ghana.
29. **Kakraba, S.** (2025, April 10). Harnessing AI to Revolutionize Diagnostics and Drug Discovery for Neurodegenerative and Other Diseases. Invited lightning talk. 3rd Annual TRICS, Tulane University, New Orleans, LA, USA.
30. **Kakraba, S.** (2025, April 9). Harnessing AI to Revolutionize Diagnostics and Drug Discovery. Invited poster. 3rd Annual TRICS, Tulane University, New Orleans, LA, USA.

31. **Kakraba, S.** (2025, April 4). Revolutionizing Public Health: Predictive AI-Enhanced Workflows. Invited webinar. Ensign Global University, Kpong, Ghana.
- 2024
32. **Kakraba, S.** (2024, December 2). Harnessing AI for Enhanced Health Outcomes. Invited speaker. Medical Grand Rounds, Tulane School of Medicine, New Orleans, LA, USA.
33. **Kakraba, S.** (2024, November 13). Design and Implementation of AI-Powered Pipelines for Predictive Modeling. Invited speaker. Public Health Discovery Seminar Series, Tulane University, New Orleans, LA, USA.
34. Abraham, E.K., **Kakraba, S.**, et al. (2024, June). Identifying and Designing Better DNA Polymerase Inhibitors Using ML-Oriented QSAR. Invited poster. 10th DDC/MALTO, UAMS, Little Rock, AR, USA.
35. Zhou, H., **Kakraba, S.**, et al. (2024, June). Modeling Anti-Aggregative Activity of Quinoline Analogs. Invited poster. 10th DDC/MALTO, UAMS, Little Rock, AR, USA.
36. Yang, Z., **Kakraba, S.**, et al. (2024, June). ML-Driven QSAR to Model Anti-Leukemic Activity of TDZD Family. Invited poster. 10th DDC/MALTO, UAMS, Little Rock, AR, USA.
37. **Kakraba, S.**, Yang, Z., Zhou, H. (2024, June). Building Machine Learning Pipelines for Predictive Modeling and Analytics. Invited workshop. DDC/MALTO, UAMS, Little Rock, AR, USA.
38. **Kakraba, S.** (2024, May 30). Exploring the Scope and Impact of AI in Higher Education Research. Invited speaker. AfriQAN, Association of African Universities, Accra, Ghana.
39. **Kakraba, S.** (2024, March). Data Science-Driven Drug Discovery and Design for Treatment of Neurodegenerative Diseases. Invited speaker. 20th Annual MCBIOS, Emory University, Atlanta, GA, USA.

40. **Kakraba, S.** (2024, March 8). Data Science-Driven Drug Discovery and Design to Target Diseases. Invited speaker. Bioinformatics Program, UAMS and UALR, Little Rock, AR, USA.

2023

41. **Kakraba, S., et al.** (2023). Computer-Aided Drug Discovery to Modeling the Inhibition of Protein Aggregation. Invited poster. 19th Annual MCBIOS Conference, USA.

2022

42. **Kakraba, S.** (2022, Fall). Application of Machine Learning to Drug Discovery and Design. Guest speaker. ECU, Richmond, KY, USA.

43. Naandam, S.M., Gogovi, G.K., **Kakraba, S.** (2022, July). Temperature Effect on the Structural Dynamics of SARS-CoV-2 Nucleocapsid Domain. Oral presentation. 23rd Intl BIOCOMP'22, USA.

44. **Kakraba, S.** (2022). Application of ML to Modeling of the Inhibition of Protein Aggregation. Invited speaker. 18th Annual MCBIOS, USA.

45. **Kakraba, S.** (2022, February). A Mathematical Graph-Theoretic Model of Single Point Mutations Associated with Sickle Cell Anemia Disease. ECU Colloquium, Richmond, KY, USA.

2021

46. **Kakraba, S.** (2021, September). Application of Machine Learning in Drug Design and Discovery. Colloquium talk. ECU, Richmond, KY, USA.

2019

47. **Kakraba, S., et al.** (2019, November). Using QSAR Approach for Identifying Novel Drugs for Treatment of Neurodegenerative Diseases. Oral presentation. Southeast Regional IDEa Conference, Louisville, KY, USA.

48. **Kakraba, S., et al.** (2019, November). Identification of Novel Drugs for Treatment of Neurodegenerative Diseases by QSAR Approach. Oral presentation. DDC/MALTO, UALR, Little Rock, AR, USA.

49. Ayyadevara, S., **Kakraba, S.**, et al. (2019, June). A Novel Microtubule-Binding Drug Attenuates and Reverses Protein Aggregation. Poster. 22nd Intl C. elegans Conference, Los Angeles, CA, USA.

50. Balasubramaniam, M., **Kakraba S.** et al. (2019). Aggregate Interactome Based on Protein-Crosslinking Interfaces. Poster. NSF meeting, Chicago, IL, USA.

2018

51. **Kakraba, S.**, et al. (2018, June). Identifying Novel Drugs for Treatment of Neurodegenerative Diseases by QSAR Approach. Invited poster. NISBRE, Washington, DC, USA.

52. **Kakraba, S.**, et al. (2018, March). Using QSAR in Drug Discovery. Invited poster. 14th Annual MCBIOS, Starkville, MS, USA.

2017

53. **Kakraba, S.** et al. (2017, June). Screening and Characterization of Drugs to Block Protein Aggregation. Invited poster. Southeast Regional IDeA Conference, WVU, Morgantown, WV, USA.

54. **Kakraba, S.**, et al. (2017, June). Drugs to Block Protein Aggregation in Neurodegenerative Diseases. Invited poster. DDC, UAMS, Little Rock, AR, USA.

55. Bowroju, K.S. , **Kakraba S.** et al. (2017, June). Design and Synthesis of Cyanoreseveratrol Analogs. Invited poster. DDC/MALTO, UAMS, Little Rock, AR, USA.

56. Bowroju, K.S. ,**Kakraba S.** et al. (2017, May). P16-Synthesis and Evaluation of Novel Drug Molecules. Invited poster. MALTO, University of Louisiana Monroe, Monroe, LA, USA.

57. **Kakraba, S.**, et al. (2017, March). Screening and Characterization of Small Molecules that Reduce Amyloid Aggregation. Invited poster. 14th Annual MCBIOS, Little Rock, AR, USA.

2016

58. **Kakraba, S.** (2016, June). Drug Design and Discovery. Invited guest speaker. MAA SUMMA Program, ETSU, Johnson City, TN, USA.

59. **Kakraba, S.** (2016, June). Effects of Small Molecules on Protein Aggregation and Paralysis in *C. elegans*. Invited speaker. NISBRE, Washington, DC, USA.
60. **Kakraba, S., et al.** (2016, April). Effects of Small Molecules on Protein Aggregation. Invited poster. AR-BIC Second Annual Conference, Little Rock, AR, USA.
- 2015
61. **Kakraba, S.,** Ke-Sheng Wang. (2015, November). Association of Alcohol Consumption and Skin Allergy with Non-Melanoma Skin Cancer. Invited speaker. 2015 Southeast Regional IDeA Meeting, Biloxi, MS, USA.
62. **Kakraba, S.,** Knisley, J.D. (2015, March). A Graph-Theoretic Model of Nucleotide-Binding Domain 2 of the CFTR. Invited speaker. 13th Annual MCBIOS Conference, Memphis, TN, USA.

C.2. RESEARCH SUPPORT

C.2.1. Current Support

1. **Kakraba (PI)** 01/2026–06/2027

Tulane University – WSPH–CAIDS AI Seed Grant

SMART-pred: Machine Learning for Population Health Surveillance

Role: Principal Investigator

Effort: N/A

Total Sponsor Costs: Approximately \$50,000 (WSPH Seed Funds: \$30,000; CAIDS

Research Assistant Funds: \$20,000)

Status: Funded / Active

Description: Develops and pilots SMART-pred, a scalable multi-algorithm AI/ML platform for population health surveillance, extending an Alzheimer's-focused prediction tool to broader applications such as cancer, maternal health, and infectious diseases, while providing intensive graduate student training in applied AI and biostatistics.

C.2.2. Submitted / Pending and Unfunded Applications

1. **Vilda(PI)** 4/1/2027 - 3/31/2032

Multilevel machine learning to predict and prevent adverse pregnancy, birth, and postpartum outcomes in Louisiana (26-0873-P0001)

Role: Co-Investigator

Effort: 10%

Total Sponsor Costs: \$ 3,553,208

Status: Under review

Description: Provides multilevel AI/ML modeling support to predict and prevent adverse pregnancy, birth, and postpartum outcomes in Louisiana.

2. Kakraba (PI) 09/2026–09/2029

Josial Macy Jr. Foundation – SMART-Pred v2 Teach: Transforming the Clinical Learning Environment for Equitable, Explainable Clinical Prediction and AI (Board Grant)

Role: PI

Effort: 30%

Total Sponsor Costs: Approx. \$300,000 (3 years)

Status: Submitted

Description: SMART-Pred v2 Teach is built on existing, validated work from my laboratory. The curriculum centers on SMART-Pred v2, an open-source Shiny platform I have already developed that integrates multi-algorithm benchmarking, SHAP-based explainability, subgroup equity analysis, temporal surveillance, and operational decision-support views

3. Shaffer, Doumbia (MPI) 03/2025–02/2030

NIH – Advancing Data Science Training for Enhancing Global Infectious Diseases in West Africa (D43; 26-0076-P0001)

Role: Co-Investigator (Subaward)

Effort: ~7.5% (biostatistics and data science contribution)

Total Sponsor Costs: Approx. \$545,000 (prime award; subaward to Tulane)

Status: Unfunded (not awarded to date)

Description: Provides biostatistical and data science expertise to support training and research activities in global infectious disease surveillance in West Africa.

4. Japa(PI) 4/1/2027 - 3/31/2029

A Neurovascular Pathway to Apathy in AD/ADRD: Extracellular Vesicle and Imaging Markers of Vascular and White Matter Injury (26-1193-P0001)

Role: Co-Investigator

Effort: 5%

Total Sponsor Costs: \$ 420750

Status: Under review

Description: Provides biostatistical and computational support for the study.

5. Hutchinson (PI) 04/2026–03/2028

Coefficient Giving – AI-Enhanced Forecasting to Reduce Contraceptive Stockouts and Unplanned Pregnancies in LMICs (26-0621-P0001)

Role: Co-Investigator

Effort: 10%

Total Sponsor Costs: \$600,000

Status: Unfunded

Description: Provides AI/ML modeling support for contraceptive supply chain forecasting to reduce stockouts and unplanned pregnancies in low- and middle-income countries.

6. Hutchinson (PI) 10/2025–03/2027

Bill & Melinda Gates Foundation – Economic Impact of Gender Violence and Mental Health (EIGVM) Calculator (25-0865-P0001)

Role: Co-Investigator

Effort: 10%

Total Sponsor Costs: \$149,955

Status: Unfunded

Description: Contributes data science and analytical methods for economic impact modeling of gender-based violence and mental health outcomes.

7. Datta (PI) 07/2025–06/2030

NIH (Tulane National Primate Research Center) – Neuroinflammation and CNS HIV Persistence: Role of DDX3 (R01; 25-0492-P0001)

Role: Co-Investigator

Effort: 5%

Total Sponsor Costs: \$3,393,494

Status: Unfunded

Description: Provides biostatistical and computational support for CNS HIV neuroinflammation research, with emphasis on DDX3-mediated mechanisms.

8. **Datta (PI)** 04/2025–03/2030

NIH (Tulane National Primate Research Center) – DDX3X Inhibitor, RK-33, as an Antiviral Agent for HIV-1 Cure (R01; 25-0092-P0001)

Role: Co-Investigator

Effort: 5%

Total Sponsor Costs: \$4,233,933

Status: Unfunded

Description: Contributes statistical modeling and data analysis for antiviral drug discovery and evaluation of DDX3X inhibitor RK-33 in the context of an HIV-1 cure.

9. **Srivastav (PI)** 07/2026–06/2029

NSF Statistics – Scalable and Efficient Bootstrap Methods (26-0593-P0001)

Role: Co-Investigator

Effort: 10%

Status: Submitted / Under Review

Description: Provides statistical and computational expertise for the development and evaluation of scalable bootstrap methodology.

10. **Shaffer (PI)** 12/2026–11/2031

NIH – USTTB/NIH R21/R33 (Global Infectious Disease Research; 26-0919-P0001)

Role: Co-Investigator

Effort: 7.0%

Total Sponsor Cost: \$ 441,829

Status: Unfunded (to date)

Description: Contributes AI/ML and biostatistical support to global infectious disease research activities via subaward.

11. **Kakraba (PI)** 2025–2026

Larvin Bernick Grant – Piloting and Implementing Machine Learning Workflows to Enhance Disease Diagnostics and Public Health Outcomes in Ghana

Role: Principal Investigator

Effort: N/A

Total Sponsor Cost: \$10000

Status: Unfunded

Description: Proposed full scientific and administrative leadership to pilot AI/ML workflows for improving disease diagnostics and public health outcomes in Ghana.

C.2.3. Previously Funded Research Support

1. **Reis (PI)** 04/01/2013–03/31/2022

Department of Veterans Affairs (I01BX001655) – Analysis and Therapy of Age-Dependent Proteostasis Failure in Neurodegeneration

Role: Graduate Research Assistant

Direct Costs: Approximately \$150,000–\$200,000/year

Description: Conducted protein aggregation studies using *C. elegans* and human CNS samples, contributing to mechanistic and therapeutic investigations of neurodegeneration and proteostasis failure.

2. **Reis (PI)** 10/01/2012–09/30/2019

Department of Veterans Affairs – Senior Research Career Scientist Award

Role: Graduate Research Assistant

Direct Costs: Approximately \$150,000–\$200,000/year

Description: Participated in a sustained aging and neurodegeneration research program, contributing to studies of protein aggregation, neurodegenerative mechanisms, and translational therapeutic development.

3. **Griffin (PI)** 09/2016–06/2021

NIH / NIA (P01 AG012411-17A1) – Early Events in Alzheimer Pathogenesis

Role: Graduate Research Assistant

Direct Costs: Approximately \$1.2–\$1.5 million/year

Description: Conducted protein aggregation and drug-testing research within a large, interdisciplinary Alzheimer's disease program; project also supported graduate assistantship including tuition, stipend, and health insurance.

4. Arkansas INBRE Program (PI TBD in CV) 08/17/2015–03/17/2017

NIGMS / NIH (P20 GM103429) – Arkansas IDeA Network of Biomedical Research Excellence

Role: Doctoral Graduate Assistant

Description: Supported protein aggregation inhibition studies and provided research-training infrastructure (tuition, health insurance, conference travel, and stipend support) during early doctoral research development.

SELECTED GRADUATE LEVEL COURSEWORK

Data Science (AI and ML) & Statistics & Biostatistics

Artificial Intelligence for Biomedical and Public Health Applications

Introduction to Methods in Data Science

Programming in R

Programming in Python

Introduction to Data Science and Technologies

Machine Learning and Applications/Statistical Learning

Deep Learning

Data Science and Technologies

Big Data and Data Analytics

Data Mining and Visualization

Predictive Modeling and Analytics

Artificial Intelligence

Business Analytics and Business Intelligence

Data and Information Visualization

Data Management and Data Mining

Probability and Statistics

Regression Analysis

Advanced Statistical Analysis

Multivariate Statistics

Biostatistics I & II

Categorical Data Analysis

Statistical Methods I & II
Statistical Consulting
Mathematical Statistics I & II
Statistical Inference
Probability & Statistics & Applied Statistics

Computational Biology & Bioinformatics & Drug Discovery & Mathematics

Molecular Modeling and Simulation
Bioinformatics: Theory and Applications
Discrete Models of Proteins
Complex Network and Systems Biology
Drug Discovery and Design
Biology of Aging
Molecular Biology
Graph Theory I & II
Calculus I–III
College Algebra
Real Analysis
Linear Algebra
Differential Geometry
Complex Analysis
Graph-Theoretic Modeling
Modern Algebra
Ordinary Differential Equations

ACADEMIC ADVISING

As an academic advisor for graduate students, I provide guidance on course selection, degree requirements, academic planning, and related services to help them achieve their educational goals.

1. Samuel Assefa – MS(Biostatistics), (2026–Present), Tulane University
2. Adeshola Lawal – MS(Biostatistics), (2026–Present), Tulane University
3. Edmund F. Agyemang (2025–Present) – PhD (Biostatistics), Tulane University
4. Ema Akter (2025–Present) – PhD (Biostatistics), Tulane University
5. Muthaiah Subashini (2024) – MSPH (Biostatistics), Tulane University
6. Taylor Franks (Fall 2024–2026) – M.S. (Biostatistics), Tulane University
7. Jingwen Li (Fall 2024–Present) – MSPH (Biostatistics), Tulane University

8. Bailey Taylor (Fall 2024–2026) – M.S. (Biostatistics), Tulane University

PROFESSIONAL DEVELOPMENT

Tulane University, New Orleans, LA, USA (Fall 2024)

1. Office of Research Faculty Orientation, Tulane University, New Orleans, LA, USA
2. New Faculty Orientation, Tulane University, New Orleans, LA, USA

CITI Training Certifications – Tulane University

1. Human Research – Group 2: Social and Behavioral Research (Completed: October 22, 2024)
2. Responsible Conduct of Research – Social and Behavioral Research Course (Completed: October 21, 2024)
3. Conflict of Interest Mini-Course (Completed: October 21, 2024)
4. COVID-19 Public Training Series (All completed: October 21, 2024)
5. Research Security Training (Combined) (Completed: December 10, 2025)

Eastern Kentucky University, Richmond, KY, USA (2021–2023)

1. Junior Faculty Mentorship Program, College of STEM
2. New Faculty Orientation (August 2021)
3. Professional Development Session on Classroom Technology (2021)
4. STA 270 Workshop (Fall 2021)
5. WebAssign Training (Fall 2021)
6. Junior Faculty Mentoring Program Orientation (Fall 2021–Spring 2022)
7. Workshops on Mentorship and Teaching Effectiveness (2022)
8. Faculty Center for Teaching and Learning Workshop: “Integrating Learning Targets” (Fall 2023)

LICENSES AND CERTIFICATIONS

1. R Programming (2016) – Johns Hopkins University, Coursera
2. The Data Scientist's Toolbox (2016) – Johns Hopkins University, Coursera
3. Drug Discovery (2016) – University of California, San Diego, Coursera

CO-CURRICULAR ACHIEVEMENTS

Track and Field Accomplishments

University Practice Senior High School, Cape Coast, Central Region, Ghana

1. 5000 Meters (5K) Boys' Division:
2. First Place (20:34.4) – 2001/2002
3. Second Place (17:41.55) – 2002/2003
4. Third Place (19:17.14) – 2003/2004

Circuit 4, Basic Schools Sports Festival, Cape Coast, Central Region, Ghana

1. 1500 Meters (1.5K) Boys' Division: First Place (5:14:40) – 1998/1999
2. 3000 Meters (3K) Boys' Division: Third Place (11:09.39) – 1998/1999