Karamarie Fecho, PhD
Resume

CONTACT INFORMATION

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PROFILE

I am an experienced, doctoral-level biomedical consultant with strong critical-thinking skills and expertise in transforming complex ideas into meaningful real-world outcomes through clear and effective communications.

My expertise includes the application of state-of-the-art tools and approaches in data science to accelerate the translation of biomedical data into actionable insights.

I have extensive experience leading large, multidisciplinary teams in collaborative team-science environments, with a proven track record of delivering high-impact publications, products, and technologies.

My scientific background spans a wide range of clinical and translational science domains, including neurobiology, anesthesiology, pain medicine and pain genetics, environmental health and toxicology, immunology, pharmacology, psychology, and psychoneuroimmunology. Complementing this domain expertise, I bring strong proficiency in data science and informatics, including data processing and modeling, data standards, data analytics, clinical and biomedical informatics, knowledge graphs, and software development.

EDUCATION

- 1995: PhD, Neurobiology, University of North Carolina at Chapel Hill (UNC Chapel Hill), NC
- 1990: BA, *summa cum laude*, Psychology/Mathematics, Rutgers College, NJ

CONTINUING EDUCATION[1]

- 2024: Certificate, Python 3, Codecademy®
- 2009–2010: Professional Certificate, Medical Writing, American Medical Writers Association
- 2006–2009: Graduate Certificate, Core Public Health Concepts, School of Public Health, UNC Chapel Hill
- 2004–2006: Fellowship, Clinical Research Scholars Program, School of Medicine, UNC Chapel Hill
- 2002–2003: Fellowship, Neurosensory Disorders and Pain Genetics, UNC Chapel Hill
- 1995–1997: Fellowship, Department of Rheumatology and Immunology, UNC Chapel Hill

CURRENT POSITION (2010–present)

Founder and CEO, Copperline Professional Solutions, LLC — a biomedical consulting and communications company that specializes in transforming complex data and ideas into meaningful real-world outcomes through advanced data science technologies and effective communications

- Collaborating on multiple projects with large multidisciplinary and cross-institutional teams to create and apply massive biomedical knowledge graphs in support of clinical and translational science
- Coordinating and directing the dissemination of software technologies and biomedical findings via customary means of publications and presentations and less traditional means such as "mini-hackathons"
- Securing continued streams of funding and promoting active community engagement to ensure the long-term sustainability of open-source biomedical software technologies

Clients include:

UNC Chapel Hill ~ Columbia University ~ Vanderbilt University ~ Insilica ~ Synchrony Medical Communications ~ Synchrony Healthcare Communications ~ TARGET PharmaSolutions ~ Axial Exchange ~ AutismSphere ~ Dignify Therapeutics ~ Hearing Solutions Center ~ Henry Ford Health System ~ QBMI PhotoMedicine ~ Multi Radiance Medical ~ Lab Corps ~ Xelay Accumen

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[1] Formal continuing education only

CONCURRENT AFFILIATION

2012–present: Research Affiliate, Renaissance Computing Institute, UNC Chapel Hill
- Actively engaged in several large-scale, open-source, software technology projects focused primarily on open clinical data services and biomedical knowledge graph systems
- Developed proposals from concept papers to grant applications, leading to >$22M in funding from the National Institutes of Health and the National Science Foundation, 2016–2025

PRIOR POSITIONS

2004–2010: Assistant Professor, Department of Anesthesiology, UNC Chapel Hill
- Developed and directed a data-driven, team-oriented, research-based, Quality Assurance/Performance Improvement program on perioperative adverse events and postoperative pain; integrated and analyzed large perioperative data sets; prepared peer-reviewed journal articles and internal hospital reports designed to guide improvements in clinical practice and patient safety
- Served as Principal Investigator on an award supplement to UNC's Clinical and Translational Science Award, National Center for Research Resources, National Institutes of Health (Marschall S. Runge, PI)
- Developed and directed the Anesthesiology Medical Student and Resident Research Program — a highly successful medical research training program that contributed to multiple awards at the Gulf Atlantic Anesthesia Residents' Research Conference and the John B. Graham Medical Student Research Day, as well as funded internships through the Carolina Medical Student Research Program and the NIH Minority Research Training Program, as well as numerous peer-reviewed journal articles and conference papers/presentations
- Served as faculty mentor for students in the School of Medicine MD-MPH Leadership Program and Research Apprenticeship Program

2002–2003: Assistant Professor, Center for Neurosensory Disorders, UNC Chapel Hill
- Developed and directed basic science projects and contributed to clinical studies on pain genetics and opioid-induced hyperalgesia
- Supervised and trained graduate students and research assistants on research methodology, including study design, data management, and statistical analysis

1998–2002: Assistant Professor, Department of Psychology and Neuroscience, UNC Chapel Hill
- Developed and directed basic science projects on opioid analgesics and acute inflammation
- Served as Principal Investigator on an Individual National Research Service Award from the National Institute on Drug Abuse, National Institutes of Health, two grant awards from the UNC Chapel Hill University Research Council, and a Young Investigator Award from the N.C. Governor's Institute on Alcohol and Substance Abuse
- Served as Co-Investigator on two grant awards from the National Institute on Drug Abuse, National Institutes of Health (Donald T. Lysle, PI)
- Developed and taught undergraduate courses on "Drugs & Human Behavior", "Introduction to Biopsychology", "Independent Research in Psychology", and "Special Topics in Biology"

COMMITTEES, PROFESSIONAL SOCIETIES, AND OTHER PROFESSIONAL EXPERIENCE[2]

2025: Keynote speaker, "ISMB/ECCB 2025 NIH-ELIXIR session, "Building sustainable solutions for federally-funded open-source biomedical tools and technologies", July 23, 2025

2025–present: Lead, Biomedical Data Translator ("Translator") Ambassadors and Champions Program, NCATS

2025–present: Lead, Translator Relationships and Outreach for Visible Engagement and Resources (ROVER) Working Group, NCATS

2025–present: co-Chair, Translator Publications Committee, NCATS

2025–present: Member, Translator Planning Committee, NCATS

2023–2025: Member, Planning Committee, NC Clinical and Environmental Health Data Workshop Series

2023–2025: Member, Exposomics Consortium, NIEHS

2023–2024: Member, Translator Large Language Models Working Group

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[2] Select examples provided

2022–present: Guest Lecturer, UNC Eshelman School of Pharmacy, Data Science in Pharmacy graduate Course (Pharmaceutical Sciences 517)

2022: Invited Speaker, 11th Annual Meeting of the ASCCT, Shifting the Paradigm to Next-Generation (Quantitative) Risk Assessment, Session on Human Data and WoE Toxicology, "Leveraging Electronic health record data for environmental health research and WoE toxicology", October 20, 2022

2022–present: Member, Environmental Health Language Collaborative (EHLC), NIEHS

2022–present: Member, EHLC Exposure Events, Biological Processes & Adverse Outcomes Working Group

2022–present: Member, EHLC Data Harmonization Working Group

2022: Invited Speaker, EHLC, "Biolink Model: an open-source standardized data model for semantic harmonization, integration, and interoperability across datasets", October 7, 2022

2022: Invited Speaker, EHLC, "ICEES: Integrated Clinical and Environmental Exposures Service", March 15, 2022

2022–2023: Member, Environmental Health Domain Science Working Group, National COVID Cohort Collaborative

2022–2023: Moderator and Lead, Translator Question-of-the-Month Challenge Initiative, NCATS

2022–2024: Member, Translator Ordering & Organizing Working Group, NCATS

2022–2024: Member, Translator Agenda Coordination Team, NCATS

2022–2024: Member, Translator Sustainability Committee, NCATS

2020–2024: Chair, Translator Clinical Data Committee, NCATS

2020–present: Member, Translator Publications Committee, NCATS

2021–2023: Contributing Writer, *Translator Gazette* (monthly issues)

2021: Invited Speaker, UNC Program for Precision Medicine in Health Care, "Leveraging integrated clinical and environmental exposures data to democratize and accelerate open translational research", June 30, 2021

2021: Panelist, National Academy of Sciences Workshop, Leveraging Advances in Remote Geospatial Technologies to Inform Precision Environmental Health Decisions, April 14–15, 2021

2020–present: Member, American Medical Informatics Association

2020–2024: Member, Translator Data Modeling Committee, NCATS

2020–2024: Member, Translator Architecture Committee, NCATS

2020–2021: Chair, Translator Publications Committee, NCATS

2018–2020: Moderator, Translator Clinical Data Working Group, NCATS

2019: Invited Speaker (with Stanley C. Ahalt), Joint CDC – NCATS Conference, "Coupling Patient Data and Environmental Data: An Open Science Framework for Accelerating Translational Research", November 1, 2019

2019–2019: Member, Translator Publications, Outreach and Communications Committee, NCATS

2018–2019: Acting Chair, Translator Publications Committee, NCATS

2018–present: Session Moderator, NCATS Biomedical Data Translator Consortium Winter, Spring, & Fall meetings

2018–present: Member, NCATS Biomedical Data Translator Consortium

2010–present: Member, American Medical Writers Association

2007–2010: Director, Medical Student and Resident Research, Anesthesiology, UNC Chapel Hill

2007–2010: Member, Patient Safety & Performance Improvement Committee, Anesthesiology, UNC Chapel Hill

2007–2010: Member, GE Centricity Perioperative Anesthesia Committee, Anesthesiology, UNC Chapel Hill

2006–2010: Member, American Society of Anesthesiologists

2006–2010: Member, International Anesthesia Research Society

2005–2010:	Associate Faculty Member, Curriculum in Neurobiology, UNC Chapel Hill
2004–2010:	Member, Chancellor's Child Care Advisory Committee, UNC Chapel Hill
2004–2010:	Member, American Pain Society
1995–2010:	Member, Association for Women Faculty and Professionals
1993–2010:	Member, PsychoNeuroImmunology Research Society
1991–2010:	Member, Society for Neuroscience

AWARDS AND HONORS

2024–2025:	Consultant and Senior/Key Personnel, US PHS Other Transaction Award (OT2TR005712), "DOGSLED: Data, Ontologies, and Graphs Supporting Learning and Enhanced Discovery", $2,685,210 [*program expected to continue through year 2029*]
2023–2026:	Consultant, National Science Foundation Award (2333728), "Proto-OKN Theme 1: BioBricks-OKG An Open Knowledge Graph For Cheminformatics And Chemical Safety", $1,454,200
2022–2027:	Consultant and Senior/Key Personnel, US PHS Cooperative Agreement (U24ES035214), "Supporting Biomedical Discovery with the ROBOKOP Graph Knowledgebase", $2,394,033
2020–2024:	Consultant and Senior/Key Personnel, US PHS Other Transaction Award (OT2TR003430), "ICEES+ Knowledge Provider: Leveraging Open Clinical and Environmental Data to Accelerate and Drive Innovation in Translational Research and Clinical Care", $4,368,294
2020–2024:	Consultant and Other Personnel, US PHS Other Transaction Award (OT2TR003449), "A Common Dialect for Infrastructure and Services in Translator", $5,592,124
2020–2022:	Consultant and Senior/Key Personnel, US PHS Research Grant (UL1TR002489-03S4), administrative supplement, "ICEES+ COVID-19 Open Infrastructure to Democratize and Accelerate Cross Institutional Clinical Data Sharing and Research", $412,692
2018–2020:	Consultant and Senior/Key Personnel, US PHS Other Transaction Award (OT2TR002514), "Biomedical Data Translator Technical Feasibility Assessment of Reasoning Tool: ROBOKOP (Reasoning Over Biomedical Objects linked in Knowledge Oriented Pathways)", $2,042,674
2017–2018:	Consultant, US PHS Other Transaction Award (OT3OD025464), "A Collaboration for the NIH Data Commons", $2,001,523
2016–2020:	Consultant and Senior/Key Personnel, US PHS Other Transaction Award (OT3TR002020), "Carolina Biomedical Data Translator", $3,099,918
2009–2010:	PI, US PHS Research Grant (UL1RR025747), administrative supplement, "Invitational Rhetoric as a Tool to Improve Communication between Anesthesiologists and Surgeons", $75,000
2008:	Advisor, First Place for Clinical Sciences, John B. Graham Medical Student Research Day
2007:	Advisor, Carolina Medical Student Research Award
2005:	Advisor, Carolina Medical Student Research Award
2005:	Advisor, NIH Minority Trainee Research Forum Award
2004:	Trainee, Clinical Research Scholars Award, UNC School of Medicine (5M01RR000046-44), $1,237,762
2002–2004:	PI, University Research Council Award, UNC Chapel Hill, "Effects of Morphine on the Inflammatory Response: Sex Differences", ~$5,000
2000–2003:	Co-Investigator, US PHS Research Grant (R01DA07481), "Determinants of Opioid/Immune Interactions", $637,137
2000–2003:	Co-Investigator, US PHS Research Grant (R01DA13371), "Behavioral Factors in Heroin's Effect on Nitric Oxide", $539,593
1998–2000:	PI, University Research Council Award, UNC Chapel Hill, "Health Consequences of Heroin Administration", $2,400
1998:	PI, Young Investigator Award, N.C. Governor's Institute on Alcohol and Substance Abuse, "Impact of Morphine Administration on Leukocyte Trafficking: Implications for Health and Disease", $6,000

1993–1995:	PI, Individual National Research Service Award (F31DA05594), "Neural-Endocrine Mechanisms of Opioid-Immune Interactions", $35,400
1990	BA, Psychology/Mathematics, *summa cum laude*
1989	Phi Beta Kappa
1988	Psi Chi National Honor Society

PUBLICATIONS AND PRODUCTS[3]

- Served as author on >170 scholarly publications and products, including >65 peer-reviewed journal articles (first/lead or last/senior author on majority of articles), >25 white papers and technical reports, >50 peer-reviewed conference papers and proceedings, and numerous book chapters, requested articles, and consortial publications

- Served as technical and medical writer on >100 scholarly publications and products for the pharmaceutical and biotechnology sectors, including peer-reviewed journal articles, systematic reviews, regulatory documents, conference proceedings, slide decks, promotional products, and professional training materials

- Contributing to the development of >10 open-source biomedical software technologies

TEACHING EXPERIENCE

2004–2010:   Medical Student and Resident Physician Teaching, UNC School of Medicine
- UNC School of Medicine Research Apprenticeship Program, Advisor (2 semesters)
- Carolina Medical Student Research Fellowship Program, Advisor (2 semesters)
- Anesthesiology 403 Research Elective, Advisor and Lecturer (6 years, Director 3 ½ years)
- Anesthesiology Resident Physician Seminar Series (6 years)

2005–2010:   Graduate Student Teaching, UNC School of Medicine and Gillings School of Global Public Health
- Neurobiology 111, Laboratory Apprenticeship, Advisor and Lecturer (1 semester)
- Neurobiology 394 Doctoral Dissertation, Advisor and Lecturer (4 semesters)
- NIH Minority Trainee Research Forum, Advisor (1 semester)
- UNC School of Public Health MPH Leadership Program, Advisor (5 semesters)

1994–2002:   Undergraduate Teaching, UNC Chapel Hill
- Psychology 070, Drugs and Human Behavior, Instructor (6 semesters)
- Psychology 023, Biopsychology, Instructor (4 semesters)
- Psychology 098, Independent Research in Psychology, Instructor (1 semester)
- Biology 175, Special Topics in Biology, Guest Lecturer (1 semester)

MENTORING EXPERIENCE[4]

- [current] Terence Egbelo, PhD, Data Science, University of Sheffield

- [current] Virginia Hench, PhD, Director, Open BioData Systems, LLC

- [current] Julie Horvath, PhD, Senior Research Scientist, Renaissance Computing Institute, University of North Carolina at Chapel Hill

- [current] Sepid Mazrouee, PhD, Scientific Researcher, Data And Technology Advancement (DATA) Scholar,
- National Institute of Allergy and Infectious Diseases (NIAID)

- [current] Julia McAfee, PhD candidate, Department of Chemistry, University of Virginia

- [former/current] Meghamala Sinha, graduate student, Oregon State University (Stephen Ramsey, primary advisor; Hao Xu, co-advisor); currently Staff Scientist at Scripps Research

- [former] Brenna Hanson, undergraduate student, Department of Statistics, North Carolina State University; currently a graduate student in Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

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[3] Please see http://www.copperlineprofessionalsolutions.com for complete list of publications and products
[4] Select examples provided

- [former] Griffin Roupe, undergraduate student, Department of Computer Science, University of North Carolina at Chapel Hill (Isma Gilani, co-advisor)
- [former] Juan Garcia, graduate student, Department of Computer Science, University of North Carolina at Chapel Hill (Ashok Krishnamurthy, co-advisor)
- [former] Lauren Chan, graduate student, Oregon State University (Melissa Haendel, co-advisor); currently a postdoctoral fellow in Bioinformatics at the University of Chicago
- [former] Priya Sharma, postdoctoral fellow, RENCI (Chris Bizon, co-advisor); currently a postdoctoral fellow with the UNC Obesity Biology, Behavior, and Environment Group
- [former] Bo Lan, research associate, UNC Highway Safety Research Center (Raghavan Srinivasan, primary advisor; Hao Xu, co-advisor)
- [former] Patrick Schmitt, undergraduate student, UNC Chapel Hill and intern at RENCI (Stanley Ahalt and Hao Xu, co advisors); currently Junior Software Engineer at Courthouse Computer Systems
- [former] Rose Wang, high school student, North Carolina School of Science and Math (Ashok Krishnamurthy, co-advisor); currently co-Director at Hack4Impact
- [former] Tasha Wilhelmsen, former undergraduate student at Champlain College; currently Managing Editor & System Support Expert at J&J Editorial
- [former] Sylvia H. Wilson, MD, former UNC Chapel Hill anesthesiology resident physician; currently Endowed Chair, Jerry Reves for Anesthesia Research at the Medical University of South Carolina
- [former] Stephanie Vanterpool, MD, former UNC Chapel Hill anesthesiology resident physician; currently Assistant Professor at The University of Tennessee Graduate School of Medicine
- [former] Heidi Schroeck, MD, former UNC Chapel Hill anesthesiology resident physician; currently Assistant Professor at the Dartmouth-Hitchcock Medical Center
- [former] Bridget Marroquin, MD, former UNC Chapel Hill anesthesiology resident physician; currently Associate Professor at The University of Vermont Medical Center
- [former] Amy Judge, MD, former UNC Chapel Hill anesthesiology resident physician; currently Senior Instructor and Anesthesiologist at Children's Hospital Colorado, School of Medicine, University of Colorado Anschutz

VOLUNTEER EXPERIENCE

Current (2011–present): Founder and Mentor, Copperline Advancement Internship Program for Female Junior Professionals; Wikipedia Editor; Board Member, The People and The Pen, thepeopleandthepen.org (2025–present)

Previous[5]: Pollander Homeowners Association, Member and Secretary (two terms, 2019–2024); Hawbridge School Board of Directors, Member and Secretary (two terms, 2014–2019); Hawbridge School Volunteer and Parent Administrator Student Teacher Association (PASTA) Member, Strategic Planning Committee Member, and Annual Silent Auction Volunteer (2013–2024); AMWA Conference Reporter; Weaver Street Market's Cooperative Community Fund, Grant Reviewer; McDougle Middle School, Teacher Appreciation Week Committee Chair; Frank Porter Graham Elementary School, Discovery Days Volunteer, Yearbook Committee Member, and Public Relations Representative; Community Independent School Volunteer; Odyssey of the Mind Coach; Girl Scouts of the USA Troop Co-Leader; Rainbow Soccer Assistant Coach; Carrboro Day Volunteer; United States Voter Registration Volunteer

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[5] Select examples provided