

INSTITUTION AND LOCATION	DEGREE	Completion Date	FILE
University of Cincinnati; Cincinnati, OH	B.S.	06/2010	Bio
University of Cincinnati; Cincinnati, OH	Ph.D.	04/2016	Bio
Cincinnati Children's Hospital Medical Center; Cincinnati, OH	Postdoctoral Research Fellow	10/2017	Bio

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. **DO NOT EXCEED FIVE PAGES**

NAME: Brokamp, Cole

eRA COMMONS USER NAME (credential, e.g., agency login): brokampr

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

A. Personal Statement

As a biostatistician, epidemiologist, and geospatial data scientist, I have specialized myself in the areas of informatics and machine learning with applications to large environmental and health outcome datasets. Recent democratization of “big spatial data” and advances in geoinformatics have allowed unprecedented access to environmental and socioeconomic characteristics that vary highly with respect to both time and space. More precise environmental features require more complex modeling and I have dedicated my career to furthering exposure science methodology in order to bring more precise exposure assessment tools to environmental and population health studies. This includes high resolution spatiotemporal exposure assessment models for fine particulate matter as well as a longitudinal measure of material community deprivation. Leveraging these models, I’ve also lead epidemiologic studies demonstrating the roles of air pollution, greenspace, and poverty on psychiatric and neurobehavioral child health outcomes. Furthermore, I have developed a novel approach and accompanying software package called DeGAUSS which allows for user-friendly attachment of geospatial variables to existing research cohorts while mitigating key privacy challenges. I am the founding director of the Geospatial Research Accelerator for Precision Population Health (GRAPPH), which is a shared facility at Cincinnati Children’s Hospital Medical Center that works to develop and democratize geospatial data and methodologies across the institution.

I look forward to contributing to Szczesniak_HEAL: Genome-sociome informed risk (G-SIR) risk prediction tools for enhanced clinical management and promotion of health equity across the lifespan (HEAL) as a project coinvestigator helping to lead the geomarker assessment and algorithm fairness in precision public health. Specifically, I recently published a racial algorithmic fairness evaluation of a widely used pediatric asthma prediction algorithm. Additionally, I have studied the impacts of daily fluctuations in air pollution and psychiatric exacerbations. Most importantly, I have expertise in creating geomarker assessment pipelines and have experience doing so with Dr. Szczesniak within the context of Cystic Fibrosis Foundation funding and goals.

B. Positions, Scientific Appointments, and Honors

2012 - 2016 Research Associate, Department of Environmental Health, University of Cincinnati
2016 - 2017 Research Fellow, Cincinnati Children’s Hospital Medical Center Division of Biostatistics and Epidemiology

Contributions to Science

1. Spatiotemporal exposure assessment methods and machine learning models

Cole Brokamp, Eric B. Brandt, Patrick H. Ryan. Assessing Exposure to Outdoor Air Pollution for Epidemiological Studies: Model-based and Personal Sampling Strategies. *Journal of Allergy and Clinical Immunology*. . 2019.

Cole Brokamp, Andrew F. Beck, Neera K. Goyal, Patrick Ryan, James M. Greenberg, Eric S. Hall. Material Community Deprivation and Hospital Utilization During the First Year of Life: An Urban Population-Based Cohort Study. *Annals of Epidemiology*. 30. 2019.

Cole Brokamp, Roman Jandarov, Monir Hossain, Patrick Ryan. Predicting Daily Urban Fine Particulate Matter Concentrations Using Random Forest. *Environmental Science & Technology*. 52 (7); 4173-4179. 2018.

Cole Brokamp, Roman Jandarov, MB Rao, Grace LeMasters, Patrick Ryan. Exposure assessment models for elemental components of particulate matter in an urban environment: A comparison of regression and random forest approaches. *Atmospheric Environment*. 151; 1-11. 2017.