Jill King, MPH

Associate Health Scientist

Summary of Experience

Jill King is an Associate Health Scientist, specializing in epidemiology, with experience in diagnostic assay research and development. She received her dual degree Bachelor of Science in Biomedical Health Sciences and Biotechnology and Molecular Biosciences from Rochester Institute of Technology, where she graduated Magna Cum Laude. Jill furthered her education by earning her Master of Public Health with a concentration in Epidemiology from George Washington University's Milken School of Public Health. During her time with George Washington, she pursued a practicum with STOP Foodborne Illness, a non-for-profit institution to raise awareness of foodborne illness. This focus on food safety was mirrored by Mrs. King's curriculum in food microbiology and food systems through both her bachelor's and master's degrees. Her work with STOP Foodborne Illness, as well as her graduate capstone, involved tracking foodborne illness rates within the United States, tracking diagnostic practices as well as possible impacts of food safety practices on rates of illness, hospitalization and death.

Mrs. King's professional work experience has been in the development of diagnostic technologies, often focused on infectious diseases. She worked as a contractor for the Naval Research Laboratory within the Surface Nanoscience and Sensor Technology section. Here, Mrs. King developed and assembled catalytic lateral flow assays. Her work supported presentations to numerous conferences, and a manuscript published in the Sensing and Biosensing journal. She then furthered her professional work with QuidelOrtho, previously Ortho Clinical Diagnostics, to join the research and development team. During the development of diagnostic assays, Mrs. King performed verification and validation techniques, with tasks including long-term stability studies, method comparisons, and interference studies.

Education

Bachelor of Sciences (B.S.), Biomedical Science, Biotechnology and Molecular BioScience, 2018, Rochester Institute of Technology

Master of Public Health (M.P.H), Epidemiology, 2021, George Washington University

Project Experience

Data Analysis

Performed analysis to track rates of foodborne illness before and after the implementation of the Food Safety Modernization Act (FSMA). Utilized SPSS to track rates of infection, hospitalization and death in association with seven different infectious agents, comparing mean rates before

and after the implementation of FSMA. Other changes affecting foodborne illness rates were increased sensitivity in detection methods and improved communication between labs and states to better correlate outbreaks across state lines.

Performed statistical analysis in SPSS, determining statistical significance of change in mean between two distinct time periods for graduate capstone projects. Compared seven unique infectious agents and their associated rates of illness, hospitalization and death over a 20-year period to determine if there were mean differences before and after the passing, or implementation of the FSMA. Created charts to aid in visual understanding of rate changes to demonstrate trends.

Demonstrated competency in multiple data software platforms. Most experienced in creating and maintaining large datasets in Microsoft Excel. Calculate statistics to inform decision making for future experimentation. Transformed data from VITROs machines into usable numeric values to plot assay results and create dose response curves and comparisons of assay formulations. Utilized ImageJ to convert scanned images of lateral flow assays into quantitative formats, allowing for numeric analysis of qualitative data.

Took multiple online courses in R and earned certificates from Imperial College in London, IBM and Google. Updated foodborne illness dataset from SPSS and created updated charts and graphs in R with more recent datapoints. Continued data analysis to determine if mean rates had shifted since they were last analyzed.

Assay Verification and Validation

Executed assay verification and validation studies for numerous microwell tests, ensuring that all materials for testing were properly planned for, aliquoted, stored and within dates to successfully complete testing. This planning also required qualification activities of VITROs machines and their maintenance on numerous cadences; daily, weekly and monthly. Oversaw the writing of protocols and laboratory materials to allow for tracking of materials and errors if they were to arise. The documentation of these materials was critical for audits and submitting materials to the Food and Drug Administration (FDA). Of note, long-term stability study, sample classification, method comparisons, limit of detections, and interferent testing were performed in detail. All experiments were written into reports with appropriately analyzed data for 510K FDA submissions.

Served as team lead for laboratory staff. Organized weekly meetings with staff members to ensure that all individuals had the appropriate training, especially as developing assays were fickle and testing protocols were likely to change. Planned meeting topics, allowed members to share their findings or concerns with laboratory practices, and circulated meeting minutes. This allowed junior staff to be more confident in their technique and limited experimental delays and the need for unnecessary repeats. Additional tests were completed on a weekly basis with the addition of these meetings, increasing lab productivity by 20% weekly.

Professional Experience

Scientist II, QuidelOrtho Corporation, April 2021 – October 2024

Executed laboratory testing while developing microwell diagnostic assays on VITROS analyzers. Experiments were often in the verification and validation stages, preparing for 510K submissions to the FDA. Streamlined data management by isolating system errors and performing data validation practices to ensure accuracy. Tracked biological sample and reagent usage to foster accurate inventory management and create a database for future experiment planning. Screened samples for various protein levels to plan for usage in different experiments. Presented data analytics insights to a multidisciplinary team with various stakeholders, leveraging team results to inform evidence-based decision making. Wrote experimental protocols with appropriate laboratory materials to allow for thorough testing and recording of equipment for consistency.

Ensured labs remained compliant with safety regulations or regulatory standards, and ready for external inspections by volunteering as the safety team lead. Organized quarterly walkthroughs, and communicating updates from safety meetings. Trained laboratory staff on current good manufacturing practices and laboratory practices, analyzer maintenance and use, and safe sample handling.

Staff Scientist, NOVA Corporation, August 2018 – March 2021

Pioneered the development of in-house lateral flow assays with catalytic palladium nanoparticles. Worked closely with principal investigators to align with project goals, sticking to budget and timeline needs. Identified innovative diagnostic techniques through extensive literature research, re-creating various fluid batches and designs to test their efficiency with smaller sized nanoparticles. Directed experimental timelines, preparing materials to create small batches for testing and planning various formulations for ideal components and materials. Interpreted methods to aid in laboratory testing for sensitivity, accuracy and consistency.

Aided in cell culture experimentation, maintaining cell line and transferring cells over the span of three months. Performed experiments with team members to attempt the transfer of graphite scaffolding. Utilized various microscopy techniques to then image the success of the scaffolding transfer onto cells. Protocol has been submitted for trademark.

STOP Foodborne Illness Practicum Research Associate– May 2021 – September 2021

Evaluated educational practices for healthcare professionals concerning foodborne illnesses. Designed charts and graphs to analyze trends of various tracked infectious agents over time. Worked remotely with team members, while conducting research on national and global healthcare and diagnostic practices. Enhanced understanding of foodborne illness trends by creating comprehensive data profiles for nine infectious agents using CDC's FoodNet data, demonstrating changes over time in disease rates within associated sites. Created graphics, tables and charts to demonstrate not only how local infection rates have changed, but how laboratories have shifted their testing strategies. Contributed to a comprehensive review of healthcare practitioners' education on foodborne illnesses, identifying gaps in curriculum that supported the need to spread awareness amongst this community. We also wrote numerous applications and proposals to secure funding to support our review efforts.

Peer-Reviewed Publications

Mulvaney, S.P., Kidwell, D.A., **Lanese, J.N**., Lopez, R., Sumera, M.E., and Wei, E. "Catalytic Lateral Flow Immunoassays (cLFIATM): Amplified Signal in the Same Simple Format" Sensing and Bio-Sensing Research, Dec 2020.