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Georgia Southern University

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NOAA Grant

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A collaborative study including Dr. Asli Aslan (PI), Assistant Professor of Environmental Health Sciences, and co-principal investigators, Dr. Marina Eremeeva, Associate Professor of Environmental Health Sciences at the Jiann-Ping Hsu College of Public Health and Dr. John Van Stan, Assistant Professor of Geology and Geography at the College of Science and Mathematics Georgia Southern University receive funds from the National Oceanic and Atmospheric Administration (NOAA) and Coastal Incentive Grant Program of Georgia Department of Natural Resources (DNR) to conduct a [new research project](#) on assessment of pathogen sources in wetland sediments and their influence on human health and beach water quality.

The researchers will use state-of-the art molecular laboratory techniques and geographic mapping tools to create a database for more informed resource management decisions and develop healthier beaches in Georgia. The study will be conducted at the Kings Ferry; a beach that has been under permanent advisory since 2005 because of high concentrations of enterococci; a fecal indicator bacteria to detect pollution at recreational marine beaches.

According to Dr. Aslan, "This is the first time a rapid and sensitive method for detection of the pollution sources will be applied to Georgia Beaches. These new methods have potential for better understanding the water quality problems and providing solutions. We will work with state agencies to develop beach rehabilitation strategies based on our results. With this project, we bridge theory in a sophisticated research laboratory with practice in the field, creating opportunities for our students to improve their skills in applied sciences. Also, our training workshops and meetings will be available to everyone, because our overarching goal is to create public health awareness on the potential health risks from exposure to waterborne pathogens in recreational waters".



The team will use microbial source tracking techniques (*i.e.* quantitative PCR and sequencing) to determine whether these source(s) are of anthropogenic or natural origin, such as recent contamination caused by sewage, persistent pollution due to resuspension from sediments or wildlife, and collaborate with Environmental Protection Division to estimate the Total Maximum Daily Load and related beach management decisions in this area. The researchers will also explore the relation between existing of pathogenic protozoa and fecal indicator bacteria. Dr. Eremeeva adds, "Surveillance of free-living amoeba in recreational waters is very important since some of these organisms can cause severe clinical conditions in humans and livestock, but also serve as a "Trojan horse" supporting the survival of many pathogenic bacteria including *Legionella* and *Chlamydia*." Real-time, interactive Google-based GIS maps, along with monthly updated information on beach quality and its predicted effects on human health, will be available at the GA DNR Coastal

Resources Division website.

The results of this project will be disseminated through a series of public meetings jointly organized by Georgia Southern University, Chatham County Health Department and Ogeechee Riverkeeper, to educate public on recreational activities and health outcomes at rural beaches of Georgia.

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