

SPOTLIGHT ON

St. George's University Veterinary Medicine

Advancing animal health and welfare through research

Biomedical research with a Caribbean one-health perspective

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From our beautiful campus overlooking the Caribbean Sea, St. George's University (SGU) researchers work on topics that have regional and global impacts. Our institutional and international collaborations include the following four main areas of interest:

Aquatic animal research encompasses basic and applied studies on aquatic animal health and conservation. Of note is an international collaborative sea turtle program centered on Grenada's threatened leatherback, endangered green, and critically endangered hawksbill turtles. Projects include characterizing the health and genomic structure of these populations, examining ways to increase reproductive success, and identifying novel plasma biomarkers to diagnose morbidity in rehabilitating sea turtles. Grenada is home to vibrant coral reefs and both marine and freshwater fish that support the local food and tourist economies. Researchers are studying pathogens associated with reef fish and the role of invasive lionfish in spreading disease and as a sentinel species for ecosystem health. DNA barcoding projects are cataloging Grenada's freshwater fish biodiversity coupled with health studies to identify at-risk native populations. Research also focuses on the sustainability of regional and international aquaculture with local implications for food security and climate change adaptation.

Vector-borne diseases are prevalent in the Caribbean, thus making our location an ideal setting to study tick and mosquito pathogen transmission. Collaborative research with Kansas State University and the USDA resulted in development of a new ground breaking vaccine to protect cattle against bovine anaplasmosis.¹ This research paved the way for continued collaborations on important tick-borne diseases. Ongoing projects with Universidad Nacional de Asuncion, Paraguay, focus on *Anaplasma* and *Rickettsia* in dogs and small ruminants and have contributed to advances in pathogen detection and a better understanding of prevalence and clinical presentation in these species. Human pathogenic mosquito-borne zoonotic viruses are also important in Grenada where dengue virus is endemic and both Zika and chikungunya epidemics have recently occurred. Our research focus on these human diseases is to elucidate the role of domestic and wild animals in the epidemiological cycle.

Public health/one-health research addresses such issues as antibiotics in food animal carcasses and pesticide contamination of food. Another research focus is rabies, which is endemic in Grenada with a terrestrial reservoir involving



Aerial view of St. George's University campus, Grenada, West Indies.

the mongoose. Continued surveillance of spillover events and rabies virus variant typing will improve the understanding of viral epidemiology on the island. Research addressing animal welfare and the human-animal bond includes the assessment of knowledge, attitudes, and perceptions of persons toward animals during the COVID-19 pandemic, pet ownership, and academic performance and stress management among SGU veterinary students.

Parasitology research of local and international significance includes the epidemiology and control of *Toxocara canis* in dogs, heartworm prevalence in mosquitoes, the diversity and prevalence of zoonotic hookworm (*Ancylostoma*) species, and the prevalence and molecular genetics of drug resistance in *Haemonchus contortus* and other nematode species. Discovery and characterization of host-parasite interactions in wild and farmed fish, sea turtles, and other aquatic animals is integrated with applied research to provide risk assessment, improved diagnostic methods, and management strategies.

Reference

1. Hove P, Madesh S, Nair A, et al. Targeted mutagenesis in *Anaplasma marginale* to define virulence and vaccine development against bovine anaplasmosis. *PLoS Pathog.* 2022;18(5): e1010540. doi:10.1371/journal.ppat.1010540



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