NEWS RELEASE

Research Led by Ross University School of Veterinary Medicine Identifies Superbugs' Weaknesses

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BASSETERRE, St. Kitts--(BUSINESS WIRE)-- Annually, at least 2 million Americans become infected with bacteria that have evolved over time to be resistant to antibiotics, resulting in serious illness and in some cases death. New research from Ross University School of Veterinary Medicine shows that these so-called "superbugs" might not be invincible after all.

Scientists in Ross' One Health Center for Zoonoses and Tropical Veterinary Medicine studied two superbugs—Klebsiella pneumoniae (MDR K. pneumonia) and Escherichia coli (MDR E. coli)—that cause pneumonia and other severe infections. Their findings suggest that innovative new drugs could potentially make these multidrug-resistant (MDR) organisms defenseless.

The research findings were reported in *Scientific Reports* and *Antimicrobial Agents and Chemotherapy*, published by Nature Publishing Group and the American Society of Microbiology, respectively.

"Our research shows that resistant superbugs are not invincible," said Luca Guardabassi, DVM, Ph.D., Ross professor and the principal investigator for this project. "They have an Achilles' heel and now we know how to defeat them."

The "Achilles' heel" for MDR K. pneumoniae is the gene dedA which, when deactivated, made MDR K. pneumoniae sensitive to colistin, the last resort antibiotic for treating infections caused by the bacteria. Similarly, when other comparable genes were made inactive, the susceptibility to beta-lactam antibiotics used to fight MDR E. coli was restored.

The study points the way to developing innovative "helper" drugs that could be administered along with antibiotics to increase their effectiveness in killing drug resistant bacteria strains. Differently from the antibiotic helper drugs currently used in clinical practice (beta-lactamase inhibitors), the new helper drugs prospected by Ross researchers may also be used to destroy bacteria that is already susceptible to antibiotics. Reinforced antibiotic activity against susceptible bacteria could lead to more efficient drug administration—including patients receiving lower dosages of antibiotics (such as colistin) that have toxic side effects—while also reducing the potential for treatment failure due to factors like

immunosuppression.

Research collaborators include the University of Copenhagen and the Wellcome Trust Sanger Institute in the U.K.

About Ross University School of Veterinary Medicine

Ross University School of Veterinary Medicine (Ross), founded in 1982, is committed to preparing students to become members and leaders of the worldwide public and professional healthcare team and to advance human, animal and ecosystem health through research and knowledge exchange. Ross has focused research programs with an emphasis on emerging infectious and zoonotic diseases, conservation medicine, and ecosystem health. Ross offers postgraduate Masters', Ph.D. and Doctor of Veterinary Medicine (DVM) programs accredited by the St. Christopher & Nevis Accreditation Board. The DVM program also holds accredited status from the American Veterinary Medical Association (www.avma.org). Ross is a part of DeVry Education Group (NYSE:DV). For more information about Ross, visit www.rossu.edu/vet.

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