Dr. Maria Perez-Johnson was born in Kingsville, and graduated from Bishop High School. She attended Texas A&M University-Kingsville, and graduated from (TAMUK) with a major in Biology and a minor in Chemistry. She joined the Ronald E. McNair Scholars program as an undergraduate and conducted research at the National Natural Toxins Research Center under the guidance of Drs. John C Perez and Elda Sanchez. Her research involved isolating proteins from snake venom for potential biomedical applications. She also did a summer internship at Texas A&M University-College Station where she isolated proteins from fungi to develop isolate proteins to aid in other biomedical applications. She graduated Magna Cum Laude in 1997 and following graduation began her studies at the University of Health Science Center, Texas College of Osteopathic Medicine in Fort Worth, Texas. She completed her Pediatric residency at Texas A&M University, Driscoll Children's Hospital. She is board certified in Pediatrics and has practiced Pediatric Emergency Medicine at Driscoll Children's Hospital, Edinburg Children's Hospital, Children’s Hospital of San Antonio, and Dayton Children’s Hospital in Ohio. She has served at the Pediatric Department Chair at Driscoll Children’s Hospital and has served on numerous committees at various institutions to focus on the health of the children of South Texas.
Cytoskeletal Toxicity of a Beta-cadherin Captoprin Isolated From King Cobra Venom: Ophiophagus hannah On Three Different Mammalian Tumor Cells: Twarokwanna, The Ngoro National Natural Toxins Research Center, Texas A&M University-Kingsville, Kingsville, TX, 2Department of Chemistry, Texas A&M University-Kingsville, Kingsville, TX 3Laboratorio de Inmunoquímica y Ultraestructura, Instituto Anatómico de la Universidad Central de Venezuela, Caracas 1041, Venezuela.

Crotalidae is a family of snake species that includes the copperheads and cottonmouth mambas, which are responsible for the majority of snakebites in the United States. Despite advances in antivenom therapy, envenomation remains a significant public health problem. In this study, we investigated the cytotoxic effects of a novel beta-cadherin captoprin isolated from the venom of Ophiophagus hannah, the king cobra. We evaluated the toxicity of this venom component on three different mammalian tumor cell lines: human osteosarcoma (U2OS), murine fibrosarcoma (3T3-L1), and human lung carcinoma (A549). The results indicated that this captoprin caused significant cell death in all three cell lines, with the highest toxicity observed in the A549 cells. These findings suggest that the beta-cadherin captoprin isolated from the king cobra venom may have potential as a novel therapeutic agent for the treatment of cancer.

Beta-cadherin (beta-CaC) is a calcium-dependent adhesion molecule that plays a critical role in cellular migration and invasion. In cancer, the overexpression of beta-CaC is associated with increased motility and invasiveness. The beta-cadherin captoprin isolated from the king cobra venom may contribute to the inhibition of beta-CaC expression, leading to decreased cell adhesion and migration. Therefore, this venom component may serve as a potential target for the development of novel antitumor drugs.

In conclusion, our results demonstrate the cytotoxic potential of this novel beta-cadherin captoprin isolated from the king cobra venom. Further studies are needed to elucidate the molecular mechanisms underlying its toxicity and to investigate its therapeutic potential for cancer treatment. These findings provide new insights into the potential therapeutic applications of snake venoms and highlight the importance of continued investigation into the bioactivity of venom components.