Kartik Sunagar

While pursuing a Master's degree in Applied Genetics at the Karnatak University, Dharwad, I frequently dreamt of working with venomous animals. I was astonished by the abilities of certain venomous animals, particularly snakes, to induce rapid paralyses and death in their prey. I wanted to understand the origin and evolution of venom, and develop advanced therapies for treating snakebite, the most neglected tropical disease that affects the lives of more than 200,000 victims in our country, annually. I then went on to purse my PhD at the University of Porto, Portugal, where I investigated the molecular evolution of venom across the breadth of the animal kingdom. Thereafter, I was a Guest Scientist and a Marie Curie Fellow at the Hebrew University of Jerusalem in Israel, where,by generating transgenic sea anemones that express fluorescent proteins in their 'stinging cells', I have investigated the origin and evolution these unique venom delivery systems.

I have recently established the'Evolutionary Venomics Lab' (www.venomicslab.com) at the Indian Institute of Science, Bangalore. My labinvestigates venomous animals, and their venoms, as model systems to address basic but broad questions in ecology, evolutionary biology, and genetics.However, aparticular emphasishas been placed on characterizing the composition, toxicity profiles, and the evolutionary dynamics of venoms of the medically important Indian snakes to deliver advanced snakebite therapies with a commensurate improvementin safety, specificity, and affordability. We will unravel intra- and interspecific venom variability in medically significant Indian snakes, and utilize this information for the molecular design of the revolutionary Next Generation Antivenom.