Special Issue

Evolution of Animal Toxins

Message from the Guest Editor

Animal toxins are valuable systems for understanding a variety of different evolutionary processes, including those relating to convergence, adaptive molecular evolution, gene duplication, and protein neofunctionalization. The evolution of animal toxin families through the “birth and death” model is often accompanied by strong evidence of adaptive evolution. Positive selection is prevailing in venomous animals and acts mostly on the surface-exposed amino acid residues. The modification of surface-exposed residues may facilitate neofunctionalization of the animal toxins by modification of protein-target interactions. The role of gene duplication crucial for organismal evolution by facilitating the evolution of new protein functions, can also contribute to gene dosage effects which might be particularly relevant for the production of highly potent animal toxins. Gene duplication, positive selection, and protein neofunctionalization therefore work together to provide the evolutionary novelty that allows adaptation of animal toxins to different prey, as well as overcoming prey defenses against them.

Guest Editor

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Message from the Editor-in-Chief

Toxinology is an incredibly diverse area of study, ranging from field surveys of environmental toxins to the study of toxin action at the molecular level. The editorial board and staff of *Toxins* are dedicated to providing a timely, peer-reviewed outlet for exciting, innovative primary research articles and concise, informative reviews from investigators in the myriad of disciplines contributing to our knowledge on toxins. We are committed to meeting the needs of the toxin research community by offering useful and timely reviews of all manuscripts submitted. Please consider *Toxins* when submitting your work for publication.

Editor-in-Chief

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