

Guiding recombinant antivenom development by omics technologies - DTU Orbit (09/11/2017)

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In this review, the different approaches that have been employed with the aim of developing novel antivenoms against animal envenomings are presented and discussed. Reported efforts have focused on the use of innovative immunization strategies, small molecule inhibitors against enzymatic toxins, endogenous animal proteins with toxin-neutralizing capabilities, and recombinant monoclonal antibodies. Harnessing either of these approaches, antivenom development may benefit from an in-depth understanding of venom compositions and the medical importance of individual venom toxins. Focus is thus also directed towards the different omics technologies (particularly venomomics, antivenomics, and toxicovenomics) that are being used to uncover novel animal toxins, shed light on venom complexity, and provide directions for how to determine the medical relevance of individual toxins within whole venoms. Finally, techniques for assessing antivenom specificity and cross-reactivity are reviewed, with special focus on antivenomics and high-density peptide microarray technology.

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