Title:	Signaling beyond punching holes: Modulation of cellular responses by Vibrio cholerae cytolysin
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Abstract:	Pore-forming toxins (PFTs) are a distinct class of membrane-damaging cytolytic proteins that contribute significantly towards the virulence processes employed by various pathogenic bacteria. Vibrio cholerae cytolysin (VCC) is a prominent member of the beta-barrel PFT (beta-PFT) family. It is secreted by most of the pathogenic strains of the intestinal pathogen V. cholerae. Owing to its potent membrane-damaging cell-killing activity, VCC is believed to play critical roles in V. cholerae pathogenesis, particularly in those strains that lack the cholera toxin. Large numbers of studies have explored the mechanistic basis of the cell-killing activity of VCC. Consistent with the beta-PFT mode of action, VCC has been shown to act on the target cells by forming transmembrane oligomeric beta-barrel pores, thereby leading to permeabilization of the target cell membranes. Apart from the pore-formation-induced direct cell-killing action, VCC exhibits the potential to initiate a plethora of signal transduction pathways that may lead to apoptosis, or may act to enhance the cell survival/activation responses, depending on the type of target cells. In this review, we will present a concise view of our current understanding regarding the multiple aspects of these cellular responses, and their underlying signaling mechanisms, evoked by VCC
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