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Title:	Tyrosine in the hinge region of the pore-forming motif regulates oligomeric β -barrel pore formation by <i>Vibrio cholerae</i> cytolysin
Authors:	Mondal, A.K. (/jspui/browse?type=author&value=Mondal%2C+A.K.) Verma, Paras (/jspui/browse?type=author&value=Verma%2C+Paras) Bhushan Pandit, S. (/jspui/browse?type=author&value=Bhushan+Pandit%2C+S.) Chattopadhyay, K. (/jspui/browse?type=author&value=Chattopadhyay%2C+K.)
Keywords:	Beta-PFT Membrane Oligomerization Pore-forming toxin
Issue Date:	2020
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Abstract:	β -barrel pore-forming toxins perforate cell membranes by forming oligomeric β -barrel pores. The most crucial step is the membrane-insertion of the pore-forming motifs that create the transmembrane β -barrel scaffold. Molecular mechanism that regulates structural reorganization of these pore-forming motifs during β -barrel pore-formation still remains elusive. Using <i>Vibrio cholerae</i> cytolysin as an archetypical example of the β -barrel pore-forming toxin, we show that a key tyrosine residue (Y321) in the hinge region of the pore-forming motif plays crucial role in this process. Mutation of Y321 abrogates oligomerization of the membrane-bound toxin protomers, and blocks subsequent steps of pore-formation. Our study suggests that the presence of Y321 in the hinge region of the pore-forming motif is crucial for the toxin molecule to sense membrane-binding, and to trigger essential structural rearrangements required for the subsequent oligomerization and pore-formation process. Such a regulatory mechanism of pore-formation by <i>V. cholerae</i> cytolysin has not been documented earlier in the structurally related β -barrel pore-forming toxins.
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