

Channel formation: a tale of two bacterial beta-barrel endotoxins

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Abstract

Some bacterial endotoxins spontaneously bind to cell membranes and form ion channels. We compare and contrast the pore formation kinetics for two structurally analogous toxins that are used extensively as biosensors: *Staphylococcus aureus* α -hemolysin (α HL) and *Bacillus anthracis* Protective Antigen 63 (PA63). While the two proteins and the channels they create have many structural similarities (*e.g.*, they are heptamers with beta-barrel pores), the rates and means by which they form channels are markedly different. Simplified pore-formation kinetic schemes are presented based on results from electrophysiology and small angle neutron scattering measurements.