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**Three-Dimensional Structure of the Type III Secretion Chaperone SycE from *Yersinia pestis***

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Many bacterial pathogens utilize a type III (contact-dependent) secretion system to inject cytotoxic effector proteins directly into host cells. This ingenious mechanism, designed for both bacterial offense and defense, has been studied most extensively in *Yersinia* spp. To be exported efficiently, at least three of the effectors (YopE, YopH and YopT) and several other proteins that transit the type III secretion pathway in *Yersinia* (YopN, YopD, YopB) must first form transient complexes with cognate specific Yop chaperone (Syc) proteins. The cytotoxic effector YopE, a selective activator of mammalian Rho-family GTPases, associates with SycE. Here we report the first structure of a Type III secretion chaperone, that of *Y. pestis* SycE, at 1.9 Å resolution. The fold is novel, and it does not appear to be compatible with the amino acid sequences of the majority of type III secretion chaperones. Thus, while they may perform similar functions during type III secretion, it seems likely that the secretion chaperones are a structurally diverse family of proteins.