

PNAS Plus Significance Statement

Structural basis for Zn²⁺-dependent intercellular adhesion in staphylococcal biofilms

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Under adverse environmental conditions, bacteria can form specialized antibiotic-resistant colonies called “biofilms.” In *Staphylococcus epidermidis* biofilms, a protein, Aap, links bacterial cells together but does so only in the presence of zinc ions. We have determined (pp. E202–E211) the atomic structure of an adhesive portion of Aap bound to zinc. The protein adopts an elongated, flexible fold with zinc ions bridging two protein chains. The mode of assembly indicates that Aap is likely to form twisted rope-like structures between bacterial cells. These data provide clues about regions of the protein that could be targeted to prevent intercellular adhesion in the developing biofilm.
