

Modeling antifreeze protein from the beetle *Cucujus clavipes puniceus* from Alaska

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Larvae of the freeze-avoiding beetle *Cucujus clavipes puniceus* in Alaska overwinters under the bark of decaying poplar. These larvae can be intermittently exposed to temperatures as low as -45 °C *in situ*. *C. c. puniceus* regularly supercools between -35 to -55 °C; furthermore, some larvae do not freeze even when cooled to -100 °C and under experimental conditions enter a vitrified state between -58 to -85 °C. We present molecular modeling of *C. c. puniceus* antifreeze protein using Sybyl molecular modeling software to reveal putative ice binding motifs.

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