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**The incorporation of microbial proteins into functional organic coatings**

*Coelicolor* hydrophobic aerial proteins or chaplins are functional amyloids that are produced by the filamentous bacteria *Streptomyces sp*.  The chaplins can be extracted from the bacterium and will self-assemble *in vitro* at hydrophilic-hydrophobic interfaces to produce an amphipathic membrane.  Drying down the protein membrane onto a hydrophilic substrate will change the wettability of the surface increasing the water contact angle by up to 75° (seen on glass).  Hydrophobic substrates allow the chaplin proteins to self-assemble straight onto hydrophobic-hydrophilic interface, exposing the hydrophilic side of the amphipathic membrane, and decreasing the contact angle by up to 60°.  The production of these proteins can be increased when grown in a liquid medium, giving potential to produce a product on kg scale and yet only needing a concentration of 150mg/L in a coating.  The ability of these proteins to change the surface energy of a substrate gives them great potential for innovative applications including corrosion protection on steel products.

