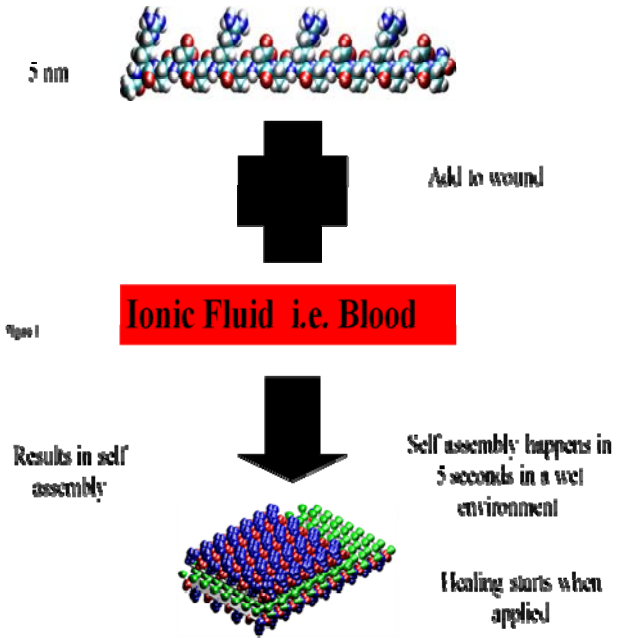
Translational Nanomedicine:

Molecular Medical Device

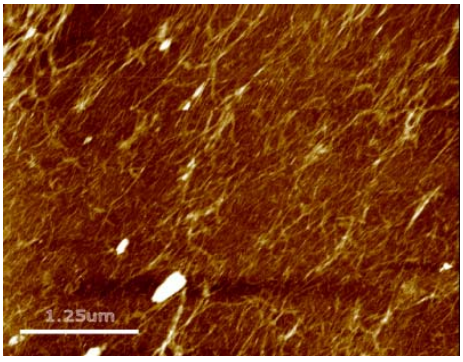
Molecular medical device: Self assembled peptide nanofiber scaffolds that build structure

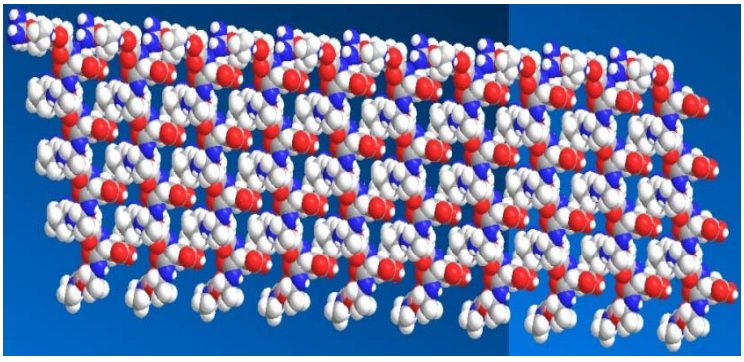


Discovery

The wonders of medical technology these days have enabled a 16-amino-acid peptide to be reengineered into a structure shaped like a comb, with water-loving teeth projecting from a water-repelling spine. Put these peptides into a salty, aqueous environment, and the spines will spontaneously cluster together (to avoid the water), forming long, thin fibers that assemble on their own into curved ribbons. This process changes a liquid peptide solution into a clear gel.

The truly amazing feature of this material – called 'nanofibers' – is that it creates an environment that accelerates healing of damaged brain and spinal tissue. These tiny fibers form a mesh that mimics the natural connective tissue of the body's extracellular matrix. A framework can thus bridge the two faces of a lesion caused by injury, allowing axons to go through the center of the lesion and reconnect. In other words, a permissive environment is created that encourages axonal growth, while preventing the formation of scar tissue.





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