

## Self-Assembling Peptide Scaffolds:

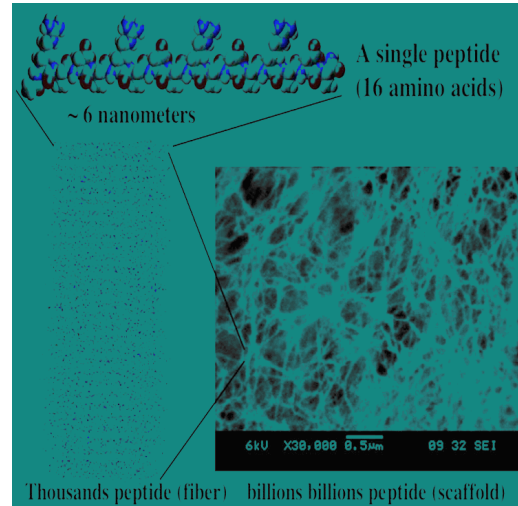
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The skin of the human body functions as protector against viruses and organisms, as well as preventing dehydration. When the skin is wounded, healing requires the migration and proliferation of keratinocytes. Human skin equivalents (HSEs) have been used to study the effect of the new growth factor-releasing biomaterial.

Epidermal Growth Factor (EGF) is a mediator for wound repair. This substance stimulates the proliferation and migration of the keratinocytes to the wound edge. Topical application of this substance is desired within a wound dressing. For proper skin re-growth several factors must be met with the dressing: a.) easily applied/removed, and conforms to wound surface, b.) provides moist environment and protects wound against dehydration, c.) allows gas exchange between wounded tissue and external environment, d.) slow release of bioactive agents, e.) absence of cytotoxicity.

Therefore, a Self-assembling peptide (SAP) nanofiber scaffold combined with EGF could serve as a bio-active wound dressing in the form of a hydrogel. Application is critical during the beginning stages of the wound healing.

RADA16-I was the SAP used in the study. A single peptide has 16 amino acids and is approximately 6 nm in length. These peptides self-assemble into nanofibers when in contact with water.



It was found that SAP scaffolds form on wounded or non-wounded surface of HSEs. EGF was only released when in contact with a wound. It was shown in the controlled experiment that wounds containing the SAP-EGF had undergone a 5-fold greater degree increase in reepithelization.

This study analyzed the mechanical effect of the SAP-EGF. There are more studies needed to show evidence of the elimination of undesired responses such as scarring. Antimicrobial molecules could be used in the SAP to prevent inflammation and infection. These scaffolds may be coupled with multiple growth factors for a desired result.

### References:

1. Schneider A, Garlick JA, Egles C (2008) **Self-Assembling Peptide Nanofiber Scaffolds Accelerate Wound Healing.** PLoS ONE 3(1): e1410. doi:10.1371/journal.pone.0001410