Periodontal disease is the inflammation and infection of the gums caused by bacteria. It is a common oral disease that affects more than 50 percent of the U.S. population over the age of 50. Nearly 65 million Americans suffer from it. If untreated, periodontal disease can destroy gum structures and cause tissue and tooth loss. Although it is preventable, current treatments are ineffective and long-lasting positive results are rare.

**PROBLEM**
There are few periodontal disease treatment options that exist and these have varying degrees of efficiencies with most treatment options proving ineffective. Treatments often have to be repeated and they have several side-effects.

**SOLUTION**
Spider silk is the ideal material for increasing the effectiveness and longevity of periodontal disease treatments. Spider silk solutions act as a vehicle for periodontitis medications and are applied to infected oral areas in the form of a gel or solid structure. The properties of spider silk allow the solution to stick to the infected areas for long periods of time and slowly release the treatment, making it much more effective.

**BENEFITS**
Many properties of spider silk proteins are beneficial in the treatment of periodontal disease. Spider silk proteins better control the release and elution rates of medication to improve the longevity and effectiveness of treatments. The spider silks are workable and flexible, allowing the material to adapt to new treatment platforms. The biocompatibility of spider silk reduces the risk of inducing an immune response, and using a combination of antiseptics and anti-inflammatories with the spider silk allows treatments to target microbial and immune responses, making it a more effective treatment overall.

**APPLICATIONS**
This technology is ideal for combination with periodontitis medications to provide a more effective and long-lasting treatment for periodontal disease.