

# Immunomodulatory Strategies to Treat Periodontal Disease

## CLINICAL NEED

Periodontitis affects nearly half of adults over of 30 in the U.S. If left untreated, dental implants and bone grafting procedures may be required. Antibiotics are currently used as an adjunct therapy to scaling and root planing, which remains the standard of care. With a shift away from antibiotics overuse, new treatment modalities that address the host immune response are needed.

## SOLUTION

A team at the University of Pittsburgh led by Drs. Steven Little and Charles Sfeir has developed controlled release systems that repair the underlying immunomodulation dysfunction responsible for tissue degeneration in periodontitis. Both systems induce homeostasis and thereby reduce inflammation and destruction to promote tissue regeneration, either through recruiting regulatory T cells or polarizing M0-M1 to M2 macrophages.

## COMPETITIVE ADVANTAGE

While bacterial removal has shown clinical benefit, it does not directly address the chronic inflammatory response. By targeting the underlying immunoregulatory discourse, these controlled release systems are thought to overcome the current limitation in the treatment of periodontal diseases.

## ITP SUPPORT

With the goal of FDA submissions, the ITP program is supporting the GMP-grade manufacturing and development of sterilization protocols, and establishing the effectiveness in a larger animal model for the regulatory T cell recruitment and macrophage polarization systems, respectively.



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*"This new class of treatments is extremely exciting in that organizing extraordinarily tiny amounts of proteins that are already found in the body seems to be capable of influencing the body's own cells to repair the destructive inflammation that produces periodontal disease. To give perspective, it is possible to deliver millions of times less drug and achieve a better effect than the current gold standard."*

[www.littlelab.pitt.edu](http://www.littlelab.pitt.edu)

[www.dental.pitt.edu/person/charles-s-sfeir-0](http://www.dental.pitt.edu/person/charles-s-sfeir-0)

## CLINICAL TRANSLATION PATHWAY

### Publications:

Prevention of Inflammation-Mediated Bone Loss in Murine and Canine Periodontal Disease via Recruitment of Regulatory Lymphocytes. PNAS 2014.

Restoring Host-Microbe Homeostasis via Selective Chemoattraction of Tregs. J Dent Res 2014.

Induction of M2 Macrophages Prevents Bone Loss in Murine Periodontitis Models. J Dent Res 2019.

### Intellectual Property:

US 8,846,098 Artificial cell constructs for cellular manipulation

Provisional patent application filed

### Regulatory Pathway:

Anticipated: Biologic, IND to enable BLA or NDA

### Commercialization Strategy:

In development with the MPWRM Commercialization/Market Needs Core

### Product Launch Strategy:

In development with the MPWRM Commercialization/Market Needs Core

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