The only off-the-shelf growth factor approved for bone & soft tissue regeneration in dental & orthopedic applications.[4]

Geistlich GEM 21S®

Growth-Factor Enhanced Matrix

Promotes rapid healing and new bone formation for oral surgery[1,2]

leading regeneration

Geistlich GEM 21S®

Growth-Factor Enhanced Matrix

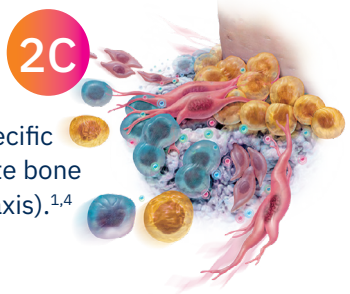
GEM 21S® is a synthetic bone graft composed of purified, sterile recombinant (bioengineered) platelet-derived growth factor (rhPDGF) and β-TCP. PDGF is naturally found in the body (present in the platelets in your blood) and is often referred to as nature's wound healing protein. **GEM 21S®** increases the amount of PDGF at the grafted site to aid in faster, more bone and better healing.[1,2,4]

PDGF significantly increases the proliferation and migration of osteoblasts and other cells of the periodontium[3,4]

How do you 4C predictability?

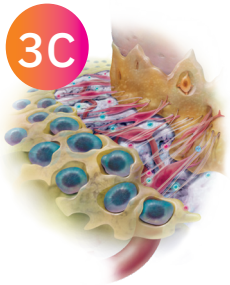
Consistency

The first and only off-the-shelf source of purified rhPDGF approved for bone and soft tissue regeneration.[4]



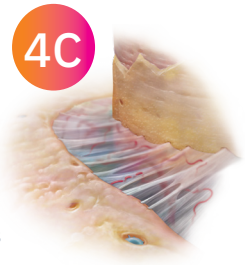
Cellular Attraction

GEM 21S® signals and recruits the specific cells that the body needs to regenerate bone and the surrounding tissues (chemotaxis).[1,4]



Cellular Proliferation

Once the cells migrate to the site, cell proliferation occurs (mitogenesis). This cellular activity stimulates angiogenesis, resulting in more rapid **healing** and new bone **formation**.[2,4]



Clinical Outcomes

GEM 21S® is one of the most researched growth factors in dentistry. It has been proven to be safe and **effective in regenerating bone and soft tissue** in more than 500 publications and 60+ clinical studies.[5]

Clinically Reliable

Intrabony and Furcation Defects

The largest prospective, randomized, triple-blinded, controlled pivotal clinical trial reported to date using **GEM 21S®** demonstrated the following:

- Stimulated a significant increase in the rate of CAL gain at 3 months
- Reduced gingival recession at 3 months post-surgery
- Improved bone fill and linear bone gain as compared to a β-TCP bone substitute at 6 months[1]

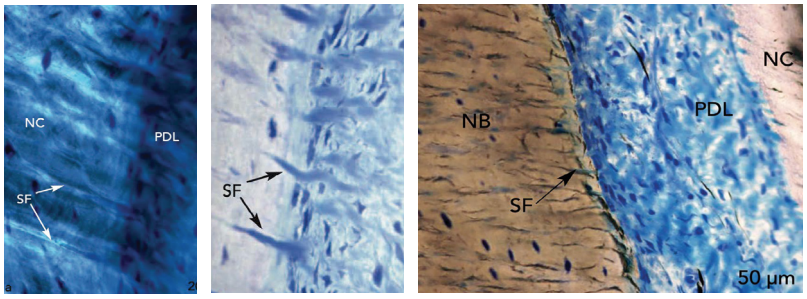
Recession Defects

A randomized, controlled clinical trial compared **GEM 21S®** to Subepithelial Connective Tissue Grafts (CTG).* In this study, both CTG and PDGF-mediated treatments demonstrated 100% root coverage at all sites, restoring the natural function and esthetic form of the mucogingival complex.[6]

* Results obtained in this trial are based on a technique not included in the **GEM 21S®** Instructions for Use.

Faster results, more bone and better healing[1,2,7]

Histologic Evidence



Under polarized light, Sharpey Fibers (SF) are seen inserting into newly regenerated bone (NB) and cementum (NC). In the ground section, well defined connective tissue fibers are also seen inserting into regenerated cementum. PDL = periodontal ligament.[6]

Overall, rhPDGF-BB exhibited the greatest effect size for most infrabony defects parameters, including clinical attachment level gain, pocket depth reduction, less gingival recession and radiographic linear bone gain.[8]

Geistlich

Cases by Master Clinicians

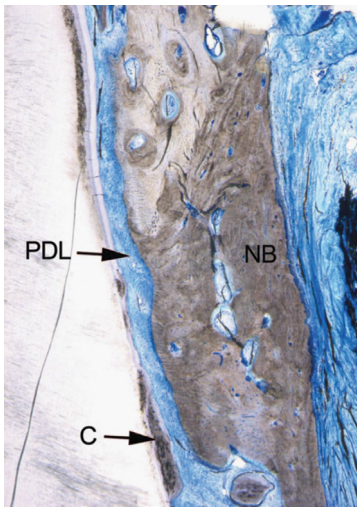
Dr. Michael McGuire
Houston, TX

Pre-Op

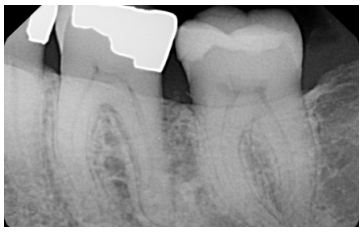
9 month post-op

Pre-Op

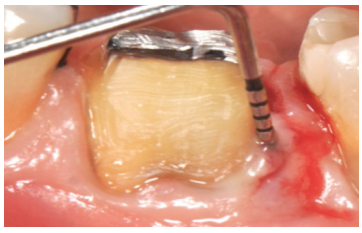
9 months post-op



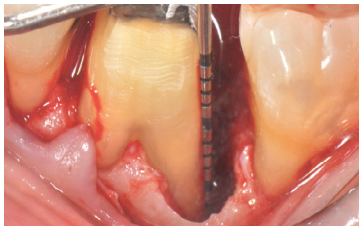
Dr. Robert Levine
Philadelphia, PA



Baseline radiograph

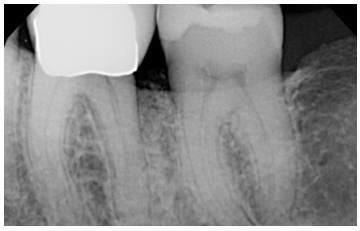


Baseline defect



Defect dimensions >10mm

10 year post-op



10 year follow up radiograph

Geistlich

Everything you need for bone regeneration in one partner

At Geistlich, we understand that today's clinical situations require a broad array of product options.

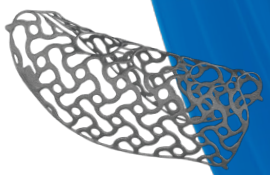
That's why we've expanded our offerings to include quality products which complement the use of the Geistlich regenerative portfolio.

Geistlich Fibro-Gide®

Geistlich Mucograft®

Geistlich Bio-Gide®

3D Titanium Scaffold
Yxoss CBR®



vallos® / vallos-f®

Geistlich Bio-Oss®

Geistlich Panorama®

LYNCH BIOLOGICS LLC

A **Geistlich North America, LLC Company.**

Princeton, NJ 08540
www.Geistlich.us

Customer Care Toll-free: 800-874-2334
customerservice@lynchbiologics.com
www.lynchbiologics.com

Geistlich

Geistlich GEM 21S®

Not just for your most challenging cases – GEM 21S® brings its best to every case.[5]

500+ Publications
60+ Clinical Studies
5 million Patients Treated

Lynch Biologics LLC, a Geistlich Pharma North America LLC company.

CAUTION: Federal law restricts these devices to sale by or on the order of a dentist or physician. For more information on contraindications, precautions, and directions for use, please refer to the Instructions for Use: https://www.lynchbiologics.com/products/gem-21S/

For more information, please visit:
www.geistlich.us

GEM 21S®

Growth-Factor Enhanced Matrix
Product No. LBGEM05
21S KIT
Quantity/Volume
0.5cc β-TCP/0.5 ml rhPDGF

References:

1. Nevins, Myron, et al. “Platelet-derived growth factor stimulates bone fill and rate of attachment level gain: Results of a large multicenter randomized controlled trial.” Journal of periodontology 76.12 (2005): 2205-2215.
2. Nevins, Myron, et al. “Platelet-derived growth factor promotes periodontal regeneration in localized osseous defects: 36-month extension results from a randomized, controlled, double-masked clinical trial.” Journal of Periodontology 84.4 (2013): 456-464.
3. Wang, Hom-Lay, et al. “The effect of platelet-derived growth factor on the cellular response of the periodontium: An autoradiographic study on dogs.” Journal of periodontology 65.5 (1994): 429-436.
4. Lynch, S. E. (2008). Tissue engineering: Applications in oral and maxillofacial surgery and periodontics (2nd ed.). Quintessence Pub.
5. Date on File, Lynch Biologics, LLC.
6. McGuire, Michael K., et al. “Evaluation of human recession defects treated with coronally advanced flaps and either purified recombinant human platelet-derived growth factor-BB with beta tricalcium phosphate or connective tissue: a histologic and microcomputed tomographic examination.” International Journal of Periodontics & Restorative Dentistry 29.1 (2009).
7. Wallace, Stephen C., Mark B. Snyder, and Hari Prasad. “Postextraction ridge preservation and augmentation with mineralized allograft with or without recombinant human platelet-derived growth factor BB (rhPDGF-BB): a consecutive case series.” International Journal of Periodontics & Restorative Dentistry 33.5 (2013).
8. Tavelli, Lorenzo, et al. “Efficacy of biologics for the treatment of periodontal infrabony defects: an American Academy of Periodontology best evidence systematic review and network meta-analysis.” Journal of Periodontology 93.12 (2022): 1803-1826.