

ॐ

DAVID ROSENBERG, DDS, PhD

President & CEO

david@truenode.science

Jan 16, 2026

TRUE NODE
sciences

TRUE NODE
sciences
human knowledge for health

Innovating oral disease treatment

**FROM UNIVERSITY TO
INDUSTRY**

EBCT en la vida real

Pontificia Universidad Católica de Chile

Universidad de Cambridge

Carey Abogados



Esta quizás NO es una historia de ÉXITO.



**¿Qué entendemos por éxito?
Exit? Nasdaq?**



CREAR VALOR: Validable - Defendible - Real

**La palabra “INNOVACIÓN” intimida.
Nos hace pensar en algo genial,
magnífico, casi épico...
...pero rara vez significa partir de cero.**



Revisemos un ejemplo de innovación...

Las buenas ideas no se compran en la esquina.

Son la solución a “DOLORES”.

Innovar es: SOÑAR / OBSERVAR.

La industria suele resistirse.

La innovación es iterativa.

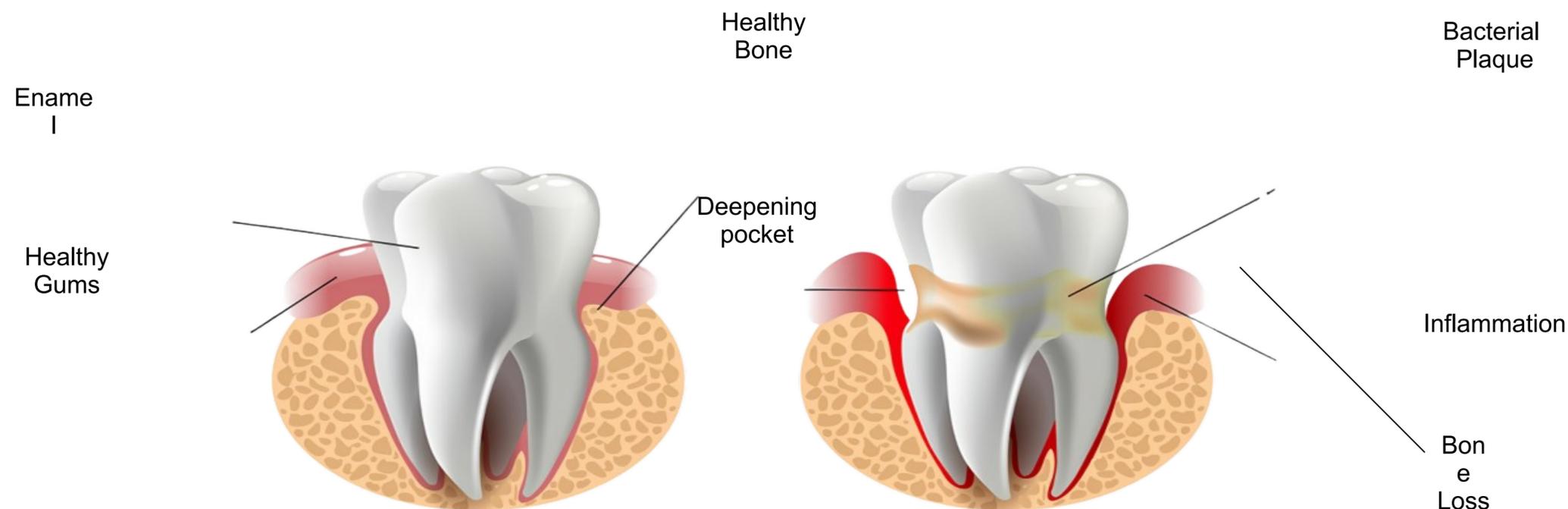
**TNS nace de una necesidad
clínica: La Periodontitis.**
Innovating the way oral diseases are treated

Periodontitis: INFECCIÓN X BACTERIA

Is a chronic oral inflammatory condition caused by gram negative bacterial infection.

Affects 42% of adults over 30 worldwide.

Is linked to systemic diseases like diabetes, cardiovascular issues, and more.



Healthy gums provide a protective barrier around teeth, supported by bone.

Periodontitis leads to gum chronic inflammation, bone loss, and, eventually, tooth loss

Periodontitis Economic Impact

1.1 billion
people

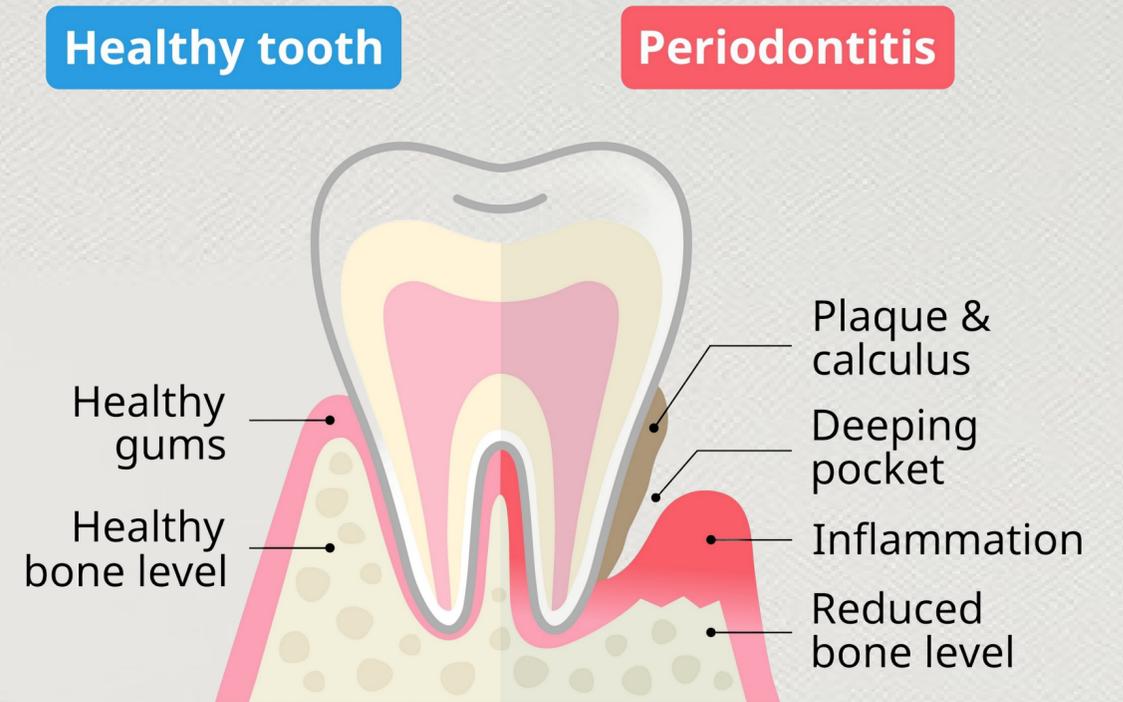
Severe periodontitis globally
(2019)

Al-Nasser, L., & Lamster, I. B. (2020). Prevention and management of periodontal diseases and dental caries in the older adults. *Periodontology* 2000, 84, 69–83.

\$ 6.01 b (US dollars)

Only US and Europe!
(Direct expenditures)

Botelho J, Machado V, Leira Y, Proença L, Chambrone L, Mendes JJ. Economic burden of periodontitis in the United States and Europe: An updated estimation. *J Periodontol.* 2022 Mar;93(3):373-379. doi: 10.1002/JPER.21-0111. Epub 2021 Jun 9. PMID: 34053082.



Associated with:

Diabetes
Alzheimer's Disease
Heart Disease
Colon Cancer (Bacteria)

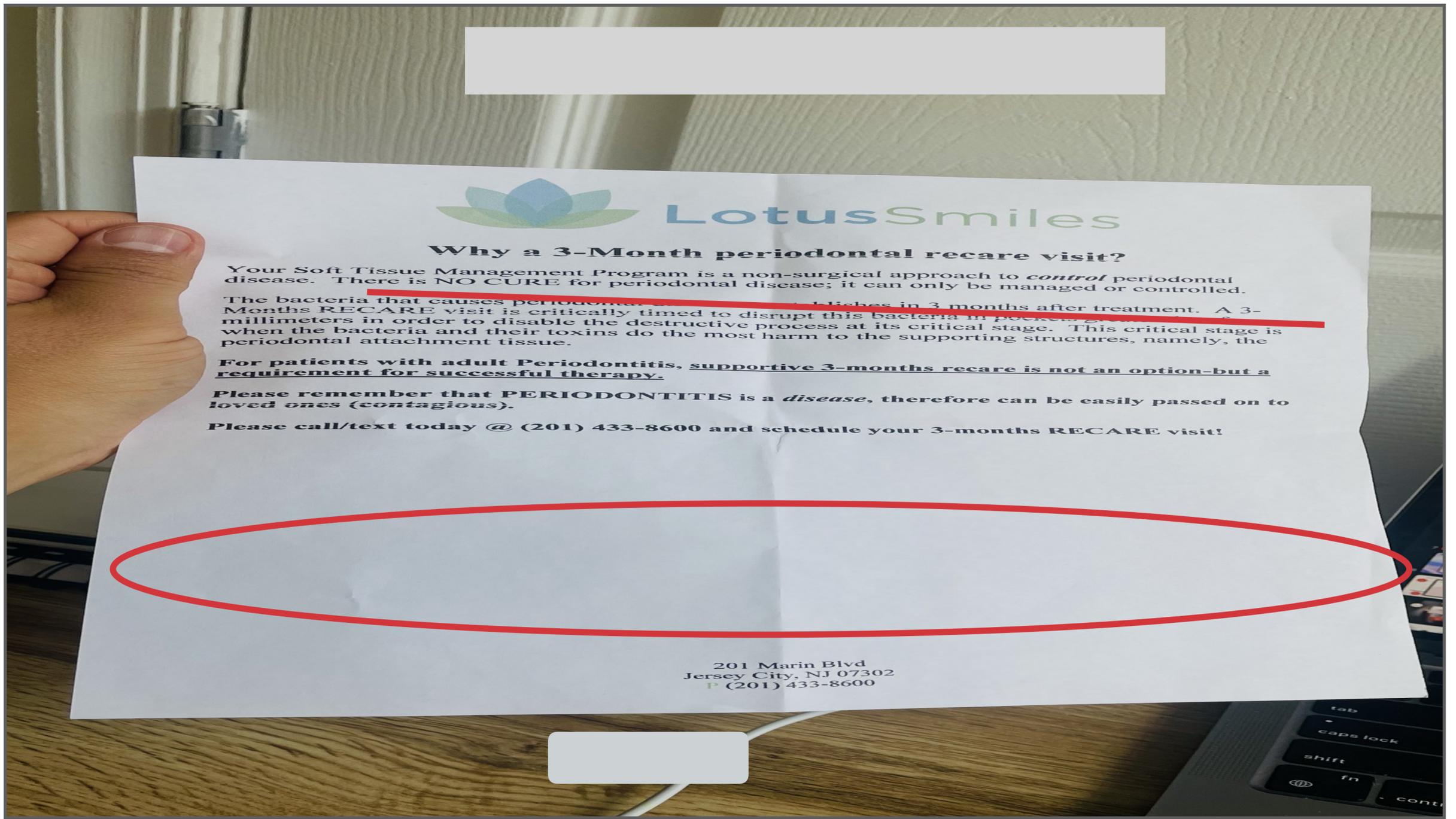
Quedaban muchas preguntas sin responder...

Periodontitis: A Glimpse into Reality

What Dental Offices in the U.S. Actually Recommend?



Note: This is a document provided by a dental office directly to the patient



LotusSmiles

Why a 3-Month periodontal recare visit?

Your Soft Tissue Management Program is a non-surgical approach to *control* periodontal disease. There is **NO CURE** for periodontal disease; it can only be managed or controlled.

The bacteria that causes periodontitis ~~disappears~~ ~~in 3 months~~ ~~after treatment~~. A 3-Months **RE CARE** visit is critically timed to disrupt this bacteria in pockets ~~greater than 4~~ ~~millimeters~~ in order to disable the destructive process at its critical stage. This critical stage is when the bacteria and their toxins do the most harm to the supporting structures, namely, the periodontal attachment tissue.

For patients with adult Periodontitis, supportive 3-months recare is not an option-but a requirement for successful therapy.

Please remember that PERIODONTITIS is a *disease*, therefore can be easily passed on to loved ones (contagious).

Please call/text today @ (201) 433-8600 and schedule your 3-months **RE CARE visit!**

201 Marin Blvd
Jersey City, NJ 07302
P (201) 433-8600

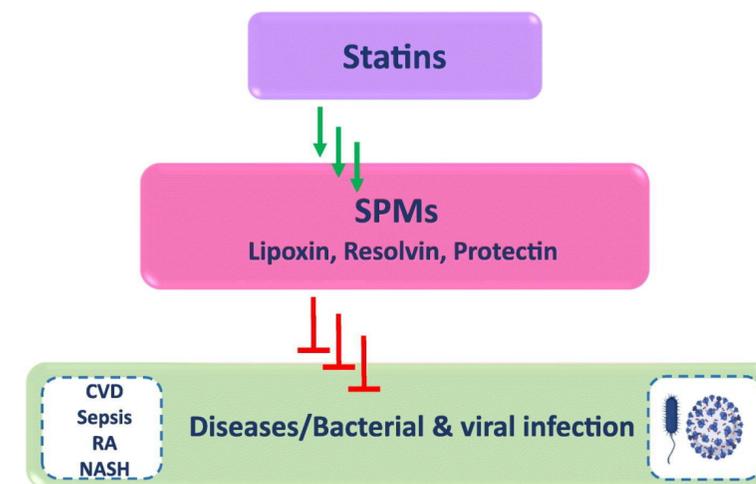
**Y encontramos el eslabón que faltaba,
fuera de la odontología...**

How?

Excessive and persistent inflammation following deep cleaning (SRP), which impedes periodontitis resolution, stems from disruptions in the pathways responsible for resolving inflammation and generating oral microbiota dysbiosis.

Rosuvastatin, significantly upregulated bioactive lipids (BALs) with anti-inflammatory, antiplatelet aggregation, and antioxidant properties. It also downregulated BALs associated with pro-inflammatory and pro-platelet aggregation activity, highlighting the **pleiotropic effects of statins beyond low-density lipoprotein cholesterol reduction**⁽¹⁾.

Statins can promote the generation of specialized pro-resolving mediators (SPMs), subsequently enhancing the resolution of inflammation in conditions such as cardiovascular disease, sepsis, rheumatoid arthritis, and bacterial and viral infections⁽²⁾.



PGR-1 controls bacterial load and promotes pro-resolving mediators, restoring the body's ability to self-regulate inflammation.

^A Hoshi RA, Alotaibi M, Liu Y, Watrous JD, Ridker PM, Glynn RJ, Serhan CN, Luttmann-Gibson H, Moorthy MV, Jain M, Demler OV, Mora S. One-Year Effects of High-Intensity Statin on Bioactive Lipids: Findings From the JUPITER Trial. *Arterioscler Thromb Vasc Biol.* 2024 Jul;44(7):e196-e206. doi: 10.1161/ATVBAHA.124.321058. Epub 2024 Jun 6. PMID: 38841856; PMCID: PMC11209760.

(2) Shabnam Radbakhsh, Niki Katsiki, Raul D. Santos, Dimitri P. Mikhailidis, Christos S. Mantzoros, Amirhossein Sahebkar, Effects of statins on specialized pro-resolving mediators: An additional pathway leading to resolution of inflammation, *Metabolism*, Volume 132, 2022.

PGR-1:

Promoting SMPs for inflammatory resolution and controlling the oral biome, PGR-1 promote a healthy symbiotic state.

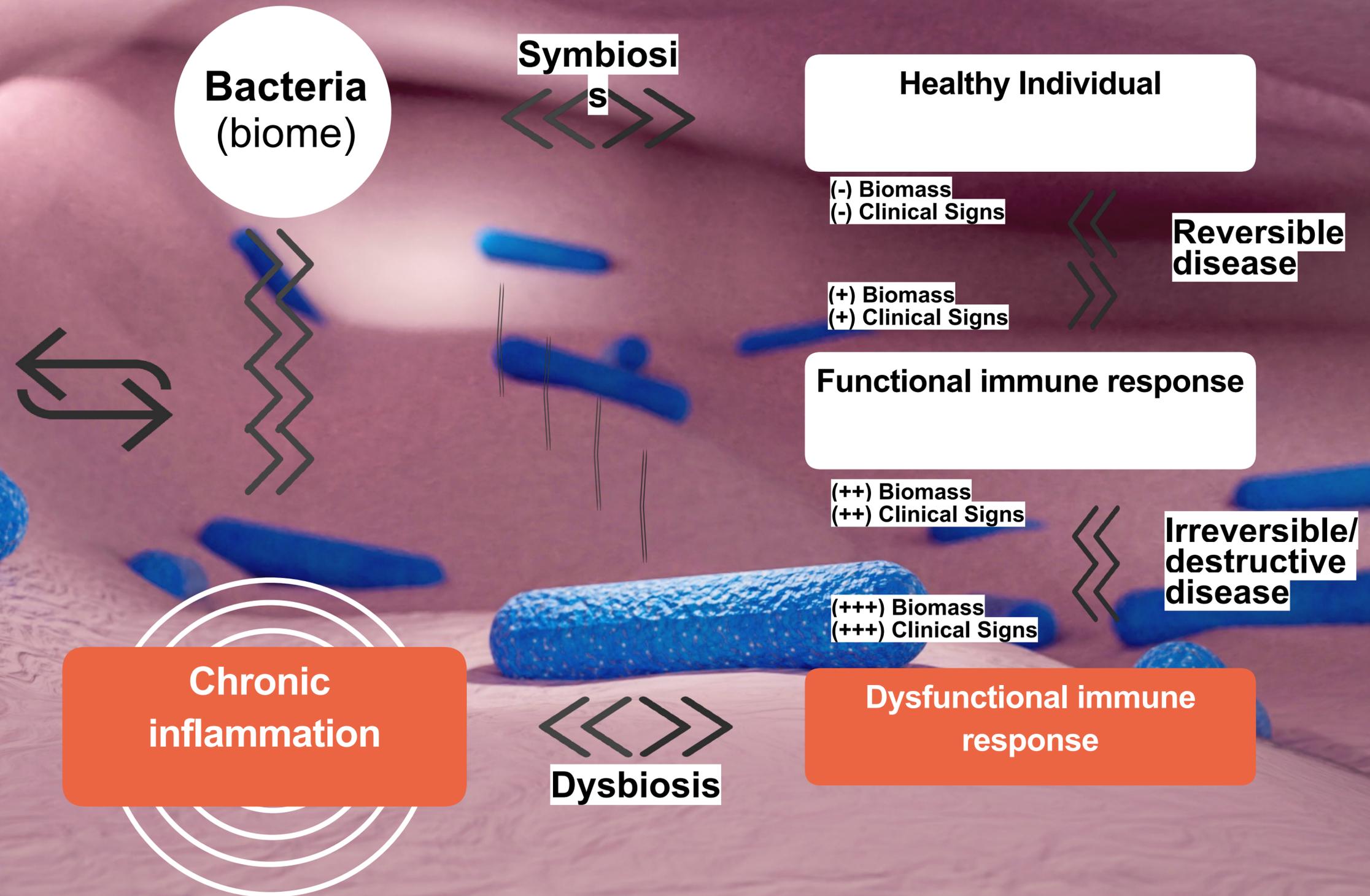
Host characteristics

1. Genetics

2. Habits

(smoke, obesity, metabolic syndrome, stress)

3. **Drugs** (cytotoxic or others)



Clinical and Scientific Findings

**Five rinses daily with PGR-1 for 30 days
(no additional interventions)**



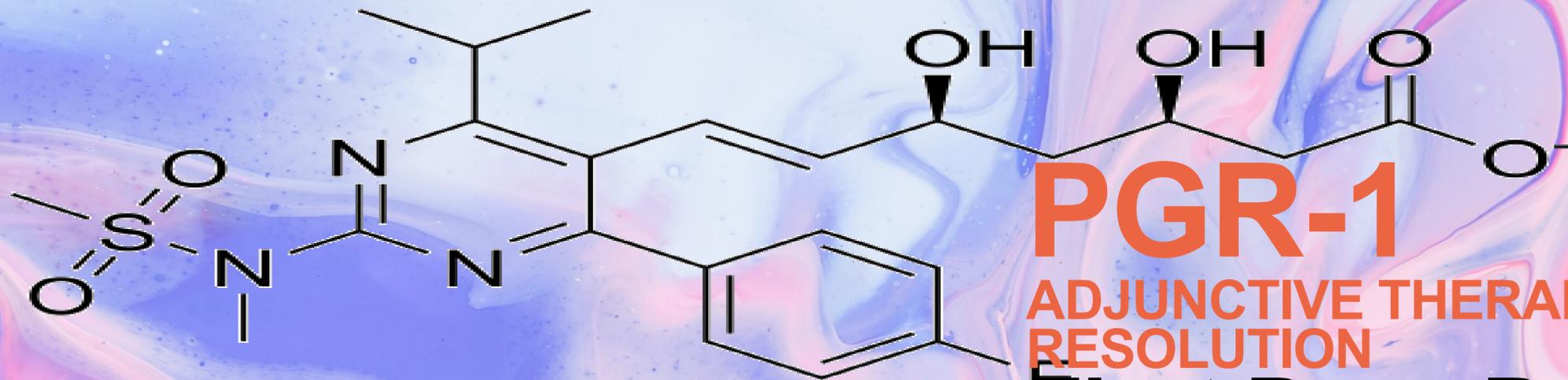
Antibacterial Effect

In vitro experiments have demonstrated that the PGR-1 formulation is bactericidal against *Fusobacterium nucleatum* and *Aggregatibacter actinomycetemcomitans*, two significant bacterial strains associated with periodontitis.

Anti inflammatory Effect of statins (publications)

1. Rosenberg, David, Andrade, Catherine, Larrea, Ricardo, Chaparro, Alejandra, Inostroza, Carolina, Ramirez, Valeria, Urquidi, Cinthya, Violant, Deborah, & Nart, José. (2015). **Changes in clinic periodontal status according to systemic statins intake.** Revista clínica de periodoncia, implantología y rehabilitación oral, 8(2), 111-116. <https://dx.doi.org/10.1016/j.piro.2015.03.005>
2. Rosenberg DR, Andrade CX, Chaparro AP, Inostroza CM, Ramirez V, Violant D, Nart J. **Short-term effects of 2% atorvastatin dentifrice as an adjunct to periodontal therapy: a randomized double-masked clinical trial.** J Periodontol. 2015 May;86(5):623-30. doi: 10.1902/jop.2015.140503. Epub 2015 Jan 29. PMID: 25630627
3. Rosenberg, David R, Kernitsky, Jeremy R, Andrade, Catherine X, Ramirez, Valeria, Violant, Deborah, & Nart, José. (2017). **Atorvastatin-Medicated Dentifrice Significantly Inhibits CD4+ T Cell Proliferation: In vitro Pilot Study.** International Journal of Morphology, 35(2), 394-402. <https://dx.doi.org/10.4067/S0717-95022017000200002>
4. Rosenberg, David R, Vega, María Paz, Chaparro, Alejandra, Kernitsky, Jeremy R, Andrade, Catherine X, Violant, Déborah, & Nart, José. (2019). **Association between the use of statins and periodontal status: a review.** Revista clínica de periodoncia, implantología y rehabilitación oral, 12(1), 41-46. <https://dx.doi.org/10.4067/S0719-01072019000100041>

Our Innovation



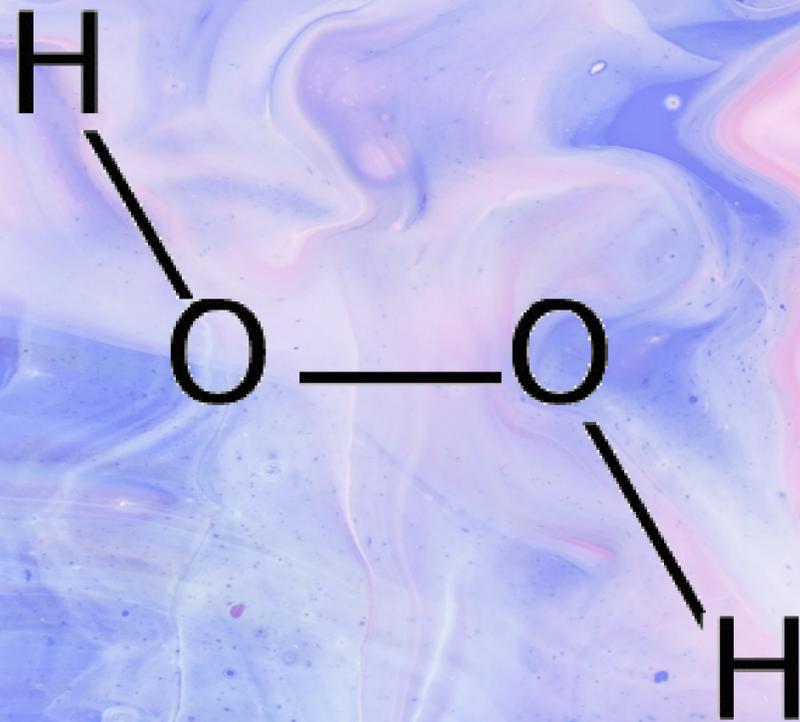
PGR-1

ADJUNCTIVE THERAPY TO SRP FOR PERIODONTITIS
RESOLUTION

**First Drug Product Designed to
Effectively Control Periodontitis
Progression**

A pharmaceutical platform constituted by
statins + hydrogen peroxide

0.5Ca²⁺

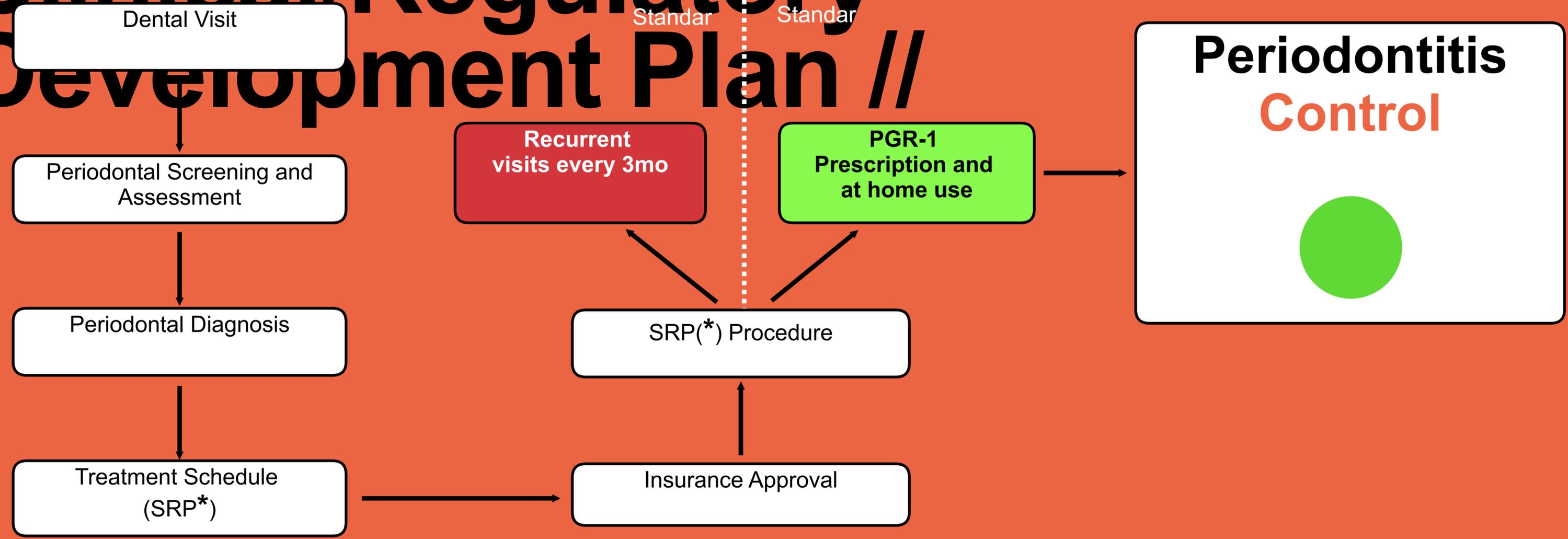


...Proposing a New Standard

Resolving disease, reducing office visits and costs, improving patient adherence, and optimizing outcomes for providers and insurers

Periodontitis Patient Journey Flowchart

Clinical/Regulatory Development Plan //



(*) SRP: Scaling and Root Planing – A Non-Surgical Deep Cleaning Procedure

**TNS es ciencia obligada a transformarse
en industria.
Y ese tránsito es mucho más incómodo de
lo que normalmente se enseña.**

**Transferencia tecnológica o conocimiento.
Transferir CIENCIA es transferir RIESGO.
Reducir el riesgo es crear VALOR.**

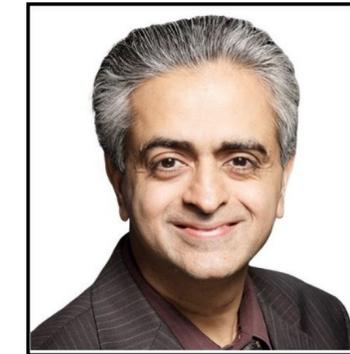
Team



Felipe Galvan
Chem Eng, BQ
MSc



Dr. David Rosenberg
DDS, MSc, PhD
Co-Founder and CMO



Dr. Rajesh V. Lalla
DDS, PhD
US Principal

Felipe Galvan is a versatile professional with a BS in Chemical Engineering from Universidad de Santiago de Chile, complemented by qualifications in Business Management and Clinical Applied Biochemistry. His experience includes research at Germany's University of Karlsruhe-TH. With over 15 years in multidisciplinary leadership across research, healthcare, and industry, Felipe excels in strategic planning and stakeholder management. His entrepreneurial skills have driven successful business ventures, leveraging his unique blend of technical expertise and commercial acumen. Felipe's ability to bridge scientific innovation with market opportunities has established him as a dynamic leader in both corporate and startup environments.

David is Dental Surgeon from the Universidad de Chile, MSc in Periodontology and Osseointegration at the Catholic University of Leuven, Belgium and PhD at the International University of Catalunya, researching topics in the areas of Periodontology and Oral Medicine. Between 2009 and 2019, David serves as the Director of Graduate Studies of the Faculty of Dentistry and part of the academic staff of Department of Oral and Maxillofacial Surgery at the Universidad de Los Andes, Chile. He is a well-published researcher in International journals and active member of the European Association of Osseointegration and the Academy of Osseointegration.

Dr. Lalla, a board-certified clinician and scholar, is a renowned authority in evidence-based dentistry and clinical research. As a professor and Associate Dean for Research at UConn's School of Dental Medicine, he leads a thriving NIH-funded research program. With over 125 publications, he has also developed educational courses and held leadership roles in international organizations. His groundbreaking work on oral side effects of cancer therapy has profoundly improved patient care. In 2020, he was honored with the Evidence-based Dentistry Accomplished Faculty Award for his exceptional contributions to research, practice, and education.



Strong IP Portfolio

68

Patent applications

51

Granted Patents

Formulations
Use
Mode of use



**14 relevant markets + Europe
IP Coverage**



Scientific Advisory Board



Dr. Tomas Galvan
DDS
**Inventor & Development
Advisor**



Pablo Valenzuela
BQ MSc, PhD
**Scientific
Advisor**



**Dr. Mariano
Sanz**
DDS, PhD
Clinical Advisor

Dental Surgeon from the Universidad de Chile and former professor of Chemistry at the Faculty of Dentistry at the University of Chile. 40 years of experience, he has developed many initiatives in the public and private sectors. Scientist and serial entrepreneur. Responsible for the development pipeline at Ingalfarma SpA an oral pharmaceutical Company based in Santiago de Chile. Inventor and author of a large number of international patents.

Ph.D. in Chemistry at Northwestern University, Post Doctor at University of California San Francisco and held a position as Professor in the Biochemistry Department of that institution. In 1981 he founded Chiron Corporation, which a decade later was the second-largest biotechnology company in the world. Valenzuela was responsible for the development of biotech products with a market value of nearly 8 billion dollars. Inventor in more than 50 patents in Chile and abroad, in 1997 he cofounded Fundación Ciencia & Vida.

Graduated in Medicine and Surgery from the Complutense University of Madrid. Specialty in Stomatology, Periodontics at the University of California, Los Angeles (UCLA) and DrMed (PhD) from the Complutense University of Madrid in 1985. Professor and Chair of Periodontology in the Complutense University of Madrid and Professor Type II in the University of Oslo (Norway). Visiting Professor at the Universities of Pennsylvania and University of California at Los Angeles (UCLA) in the United States and at Leuven and Kings College in Europe.

US Market Landscape

oraPHARMA



		<p>FP-200</p>	<p>Lipoxin A4 (LXA4)</p>
<p>Commercial</p>	<p>Commercial</p>	<p>Pre-Clinical</p>	<p>Phase I</p>
<p>OraPharma is a specialty pharmaceutical company focused on oral health products, founded in 1996 and now part of Bausch Health. Their lead product is ARESTIN, a locally administered antibiotic for periodontitis treatment (\$65 / perio pocket)</p>	<p>OraBio is a specialty pharmaceutical company founded in 2021, focused on developing and commercializing innovative products for oral health. Their initial focus is on facilitating innovation related to periodontal health under their Perioavance brand. They have Perioavance Oral Rinse for pain management after Scaling and Root Planing (US\$49,95 / 210ml)</p>	<p>Flightpath Biosciences is a biotechnology company that develops medications to treat rare infectious diseases. FP-200 is a new, narrow-spectrum antibiotic, is at pre-clinical stage, to determine the impact of eliminating gram-negative bacteria but not commensal bacteria from the oral cavity.</p>	<p>The ADA Forsyth Institute (AFI), established in October 2023 through the integration of the ADA and Forsyth Institute, focuses on advancing oral health. AFI is actively researching Lipoxin A4 (LXA4), a pro-resolving lipid mediator with both anti-inflammatory and pro-resolution properties. Phase 1 studies show promise in using LXA4 to treat gum inflammation.</p>

Creating a Economic Ripple Effect

Reducing Costs While Enhancing Care—an outcome highly valued by insurance companies.

Current Scenario based on a Delta Dental Insurance Plan

		Year 1	Year 2
Peridontitis Treatment Payment Summary	Insurance Pays	\$ 667,5	\$ 408,0
	Patient Pays	\$ 853,5	\$ 612,0
	Insurance Patient Premium	\$ 960,0	\$ 960,0

Insurance Pays (2 years)	\$ 1.075,5
Patient pays (2 years)	\$ 3.385,5

PGR-1 Scenario - same Delta Dental Insurance Plan

		Year 1	Year 2
Peridontitis Treatment Payment Summary	Insurance Pays	\$ 716,0	\$ 270,0
	Patient Pays	\$ 430,0	\$ 150,0
	Insurance Patient Premium	\$ 960,0	\$ 960,0

Insurance Pays (2 years)	\$ 986,0
Patient pays (2 years)	\$ 2.500,0

V
S

1. Patient Potential Savings 26,2%

2. Insurance Potential Savings 8,3%

3. Provider: Cost Optimization

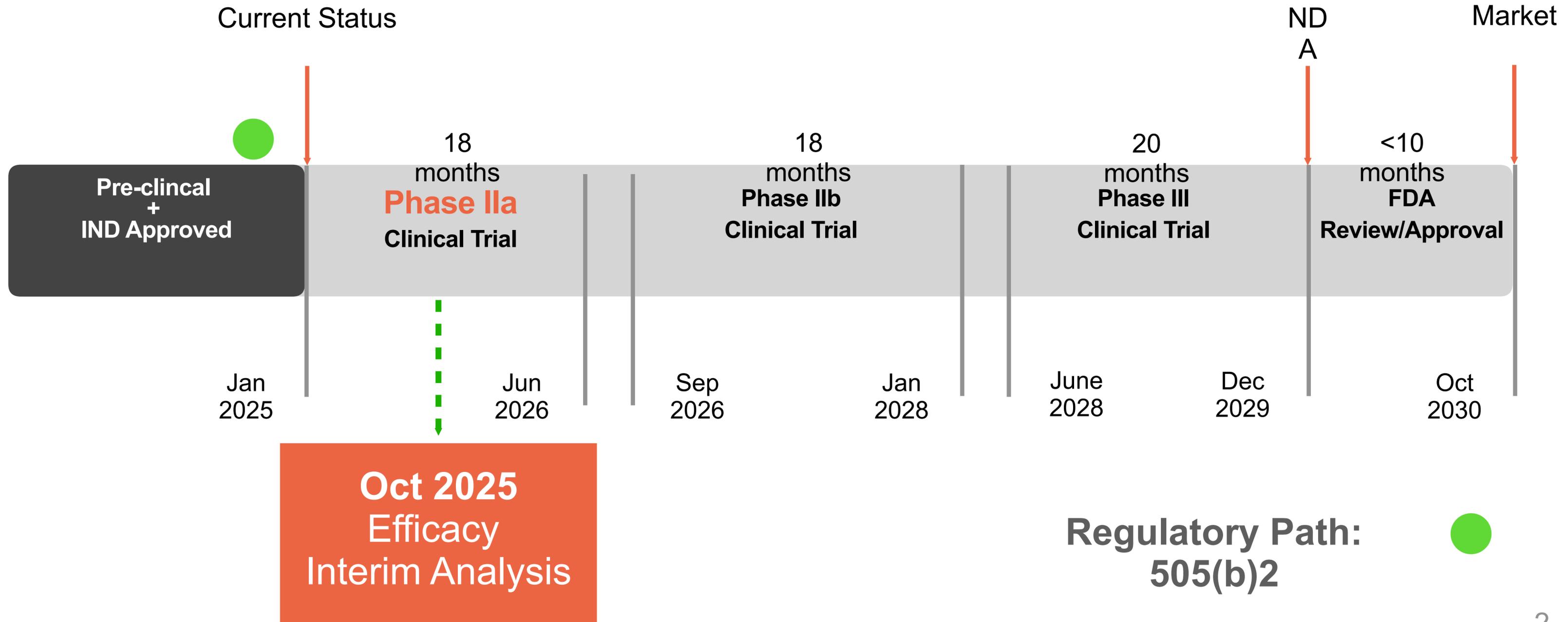
Key Payers



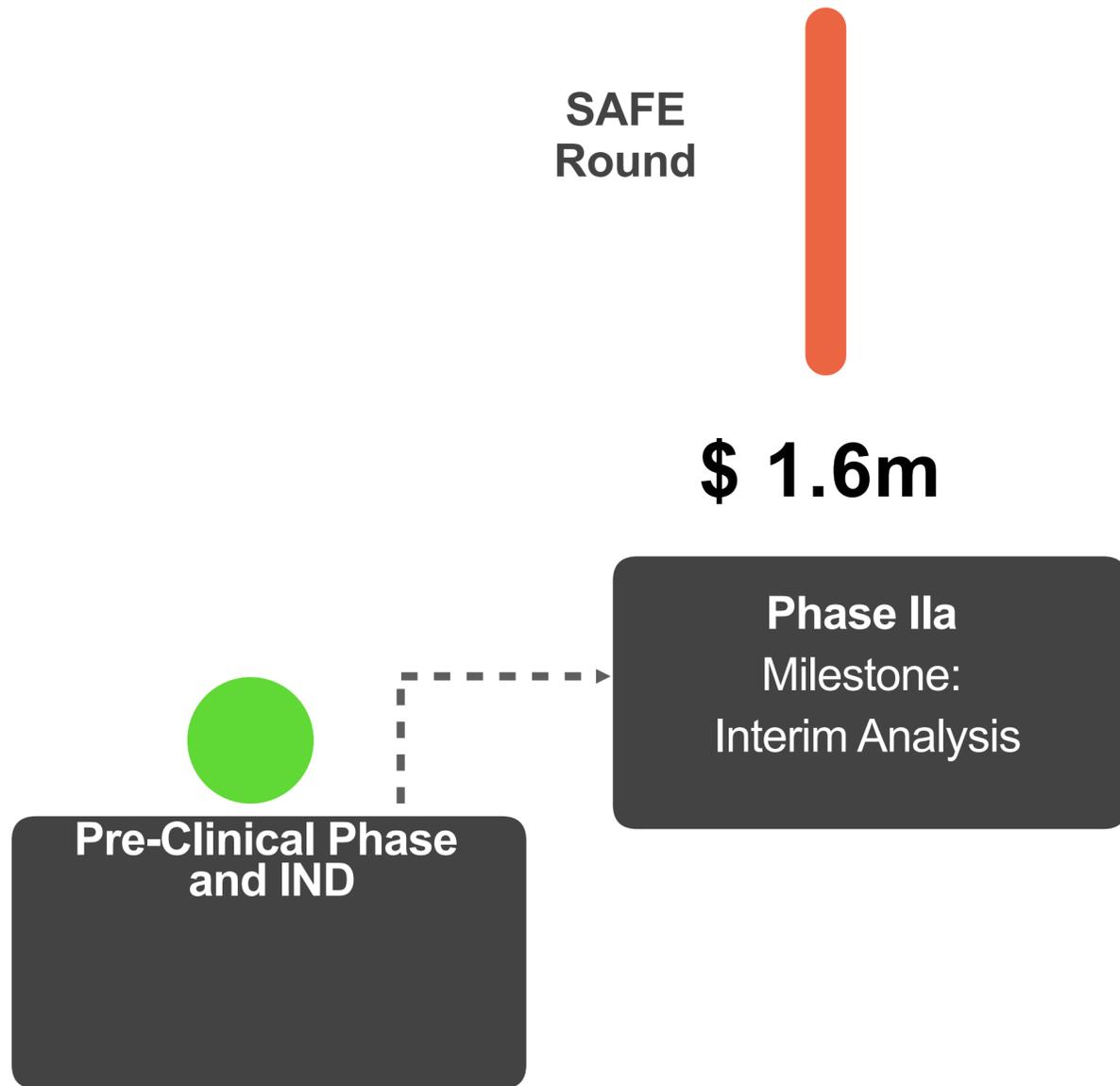
	Delta Dental	MetLife	Humana	Anthem	Aetna	DentaQuest
Plan Availability	Available in all 50 states	Available in all 50 states	Available in most states	Available in most states	Available in most states	Available in most states
Network Size	Extensive network of dentists and specialists	Extensive network of dentists and specialists	Large network of dentists and specialists	Extensive network of dentists and specialists	Extensive network of dentists and specialists	Extensive network of dentists and specialists
Coverage Type	PPO, DHMO, and discount plans	PPO, DHMO, and discount plans	PPO, DHMO, and discount plans	PPO, DHMO, and discount plans	PPO, DHMO, and discount plans	PPO, DHMO, and discount plans
Periodontal Maintenance	Covered (frequency may vary by plan)	Covered up to 4 times per year	Covered up to 4 times per year	Covered (frequency may vary by plan)	Covered (frequency may vary by plan)	Covered (frequency may vary by plan)
Scaling and Root Planing	Covered (frequency may vary by plan)	Covered once per quadrant every 24 months	Covered once per quadrant every 3 years	Covered (frequency may vary by plan)	Covered (frequency may vary by plan)	Covered (frequency may vary by plan)
Periodontal Surgery	Covered (e.g., flap surgery, pocket reduction)	Covered once per quadrant every 36 months	Covered (e.g., flap surgery, pocket reduction)	Covered (e.g., flap surgery, pocket reduction)	Covered (e.g., flap surgery, pocket reduction)	Covered (e.g., flap surgery, pocket reduction)
Antibiotics	Covered (e.g., antibiotic gels, mouth rinses)	Covered (e.g., antibiotic gels, mouth rinses)	Covered (e.g., antibiotic gels, mouth rinses)	Covered (e.g., antibiotic gels, mouth rinses)	Covered (e.g., antibiotic gels, mouth rinses)	Covered (e.g., antibiotic gels, mouth rinses)
Waiting Period	Varies by plan, typically 6-12 months for major procedures	Varies by plan, typically 6-12 months for major procedures	Some plans have no waiting period for periodontal treatments	Varies by plan, typically 6-12 months for major procedures	Varies by plan, typically 6-12 months for major procedures	Varies by plan, typically 6-12 months for major procedures

Roadmap and Timelines

Periodontitis Clinical Trials: 5 Years



Use of resources



Milestones

1. Phase IIa - Interim Results: **50 patients**

Use of resources

1. **Clinical Trial (64%):** \$ 1,044,484
2. **Management (19%):** \$ 310,000
3. **Operations (17%):** \$ 269,250

Product Pipeline

Dentoxol : To control the Severity of Mouth ulcers

Launched (South America - Chile)

	Medical Device	
LATAM Regulatory Pathway		<p>PGR_1-Perio : Adjunctive therapy for periodontitis</p> <p>IND Cleared</p>
		<p>PGR_1-OM : Prevention of severe oral mucositis</p> <p>IND Cleared</p>
US FDA		<p>PGR_1-UC : Treatment of mild to moderate ulcerative colitis</p> <p>Pre-Clinical</p>

50

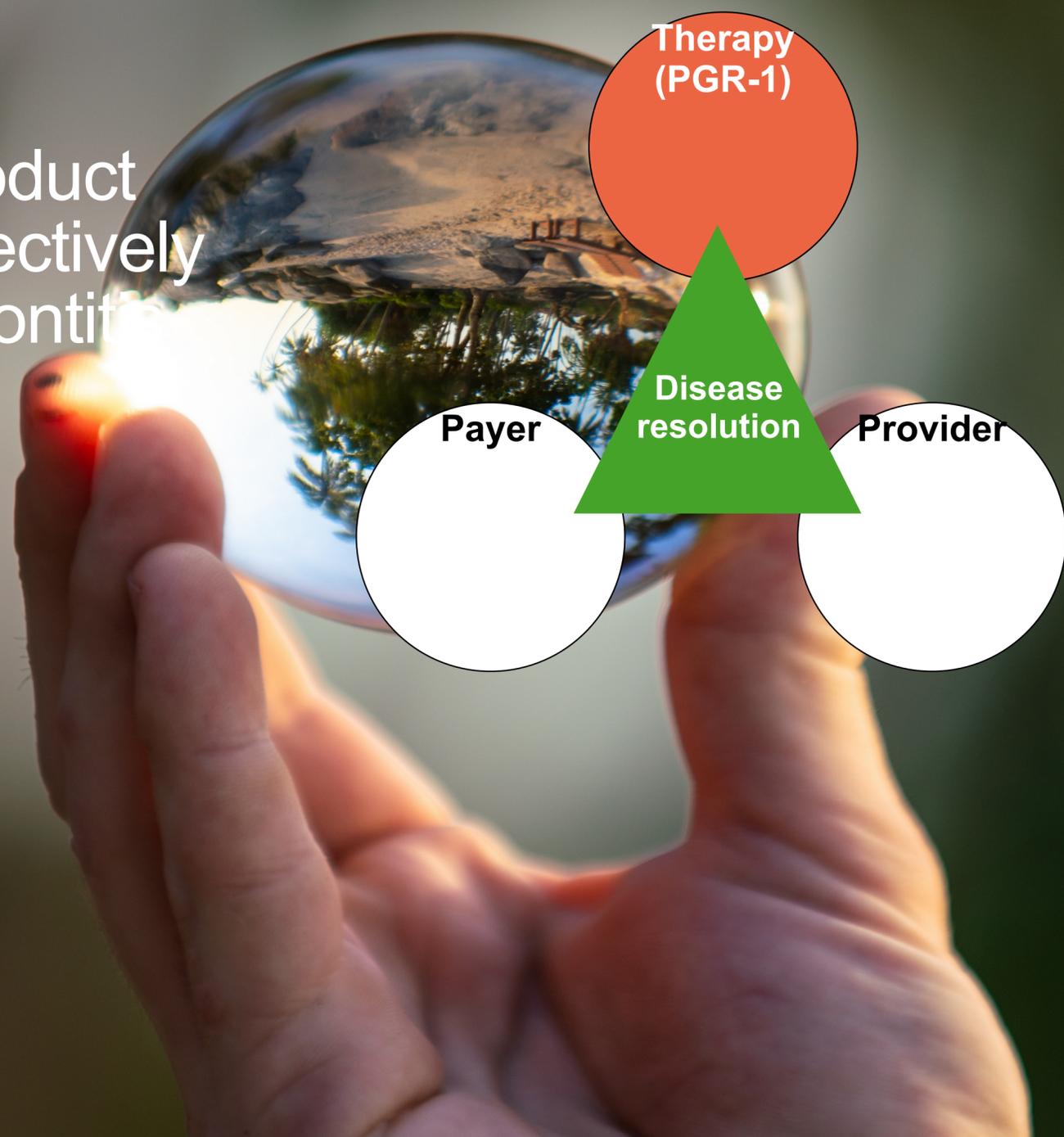


Menos incertidumbre ...más VALOR.



Solution: To bridge the Gap in Patient-Centered Oral Care...

PGR-1
First Drug Product
Designed to Effectively
Control Periodontitis



Sabemos ahora qué es el éxito???
No toda investigación debe transformarse
en empresa, pero al menos merece la
oportunidad de intentarlo....



**El verdadero fracaso es que una buena
idea nunca salga del laboratorio**



MUCHAS GRACIAS



Innovating oral disease treatment

**DR DAVID ROSENBERG,
PhD**

President and CEO

david@truenode.science

Jan 2026

**From University to Industry
EBCT en la vida REAL**