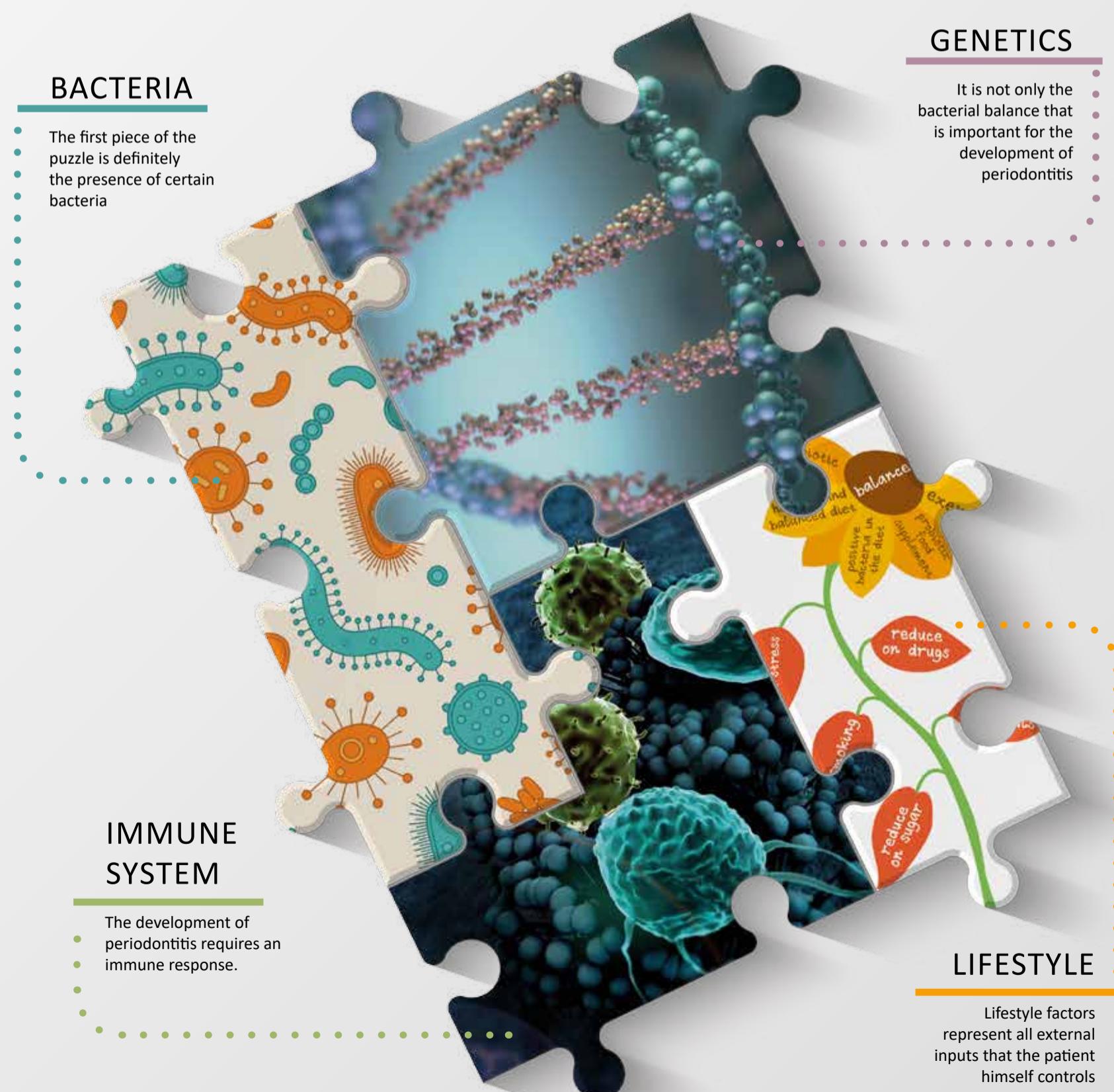


**PERIODONTITIS:**

# **WHAT'S OUR CURRENT POSITION?**

*“Severe periodontitis affects 750 million patients and is estimated to inflict a financial burden of USD 54 B”*

## **THE FOUR PIECES OF THE PERIO- PUZZLE**



# Bacteria

The first piece of the puzzle is definitely the presence of certain bacteria, without these, you do not get periodontitis. More precisely it is the balance between "the good, the bad and the ugly" bacteria that provokes the inflammation. Professionally they may be called the green, yellow and red bacteria complexes.

The bacteria in this biofilm are hiding in the dental plaque and calculus. Patients not receiving regular SRP, and/or are genetically disposed to generate increased amounts, are more susceptible to periodontitis.

Where do these perio-pathogen bacteria come from? No infants carry these bacteria. In fact children and adolescents most often do not. So the bacteria instigating the inflammatory response come from our surroundings during our adult life.

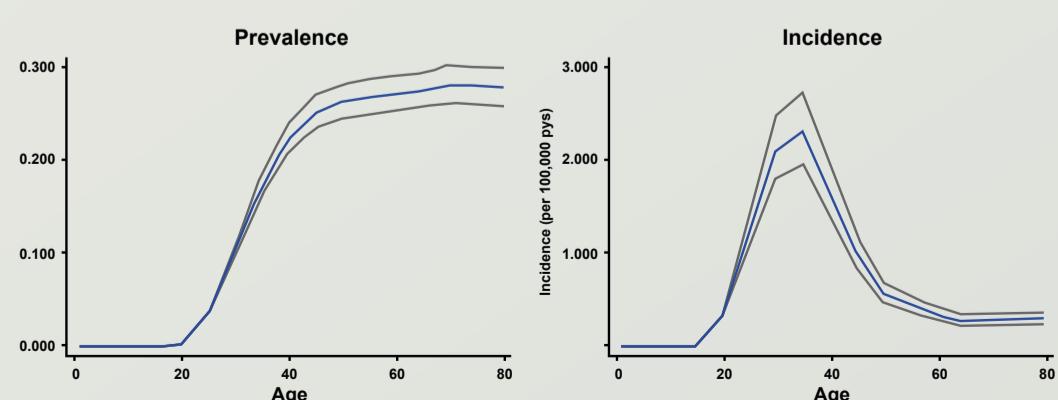
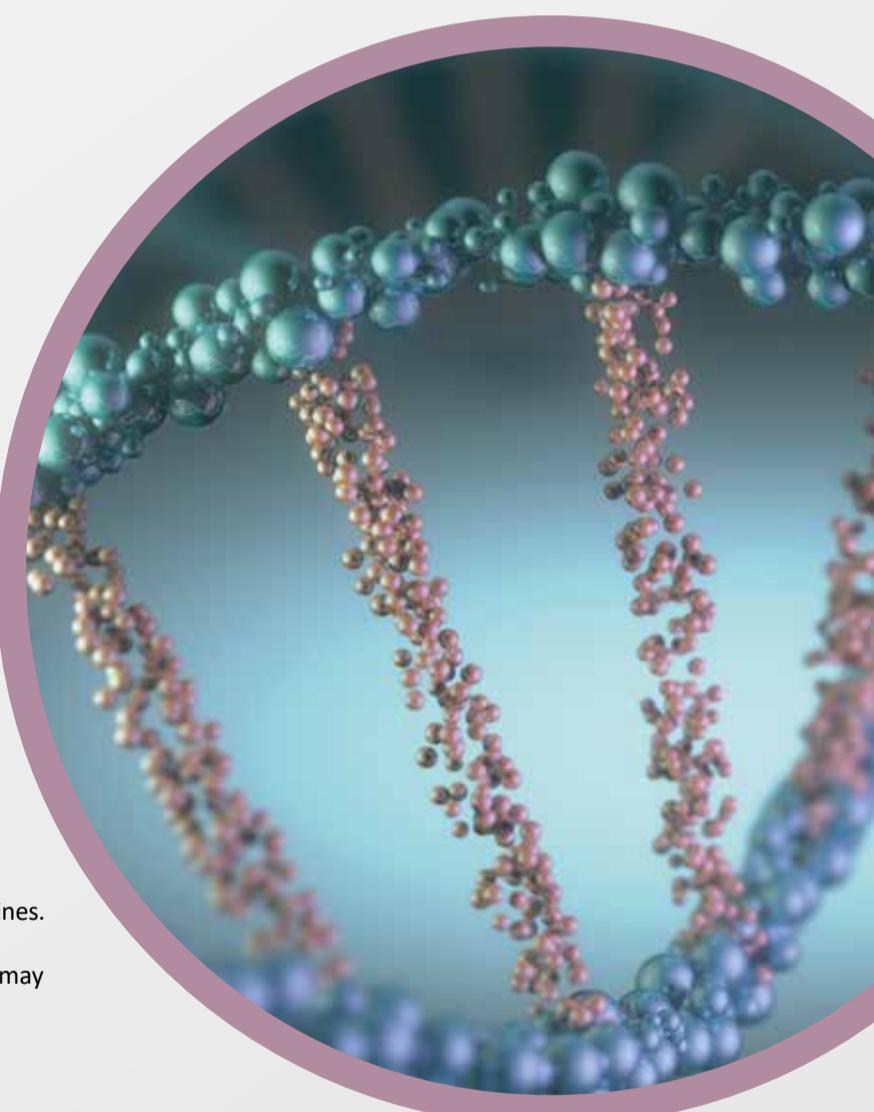


# Genetics

It is not only the bacterial balance that is important for the development of periodontitis. The host must be susceptible as well, that is to say the genetic makeup is very important too. Periodontitis is not a hereditary disease per se, but our genetic makeup plays a role in various ways:

1. Why do the "bad and ugly" bacteria get the upper hand?
2. Why do the immune system react in such a way that the periodontal tissues are compromised. Remember that you do not get periodontitis without bacteria, but likewise, you do not get it without an immune system!
3. As for all other chronic diseases, our genetic makeup plays a vital part. One obvious reason is the way we respond differently on various life style challenges. Some people develop diabetes, and others with the same lifestyle do not. The same can be argued for people with overweight. Some people are very susceptible to hormonal changes, and again some to various medicines.

The genetic makeup is a very important factor, but almost everybody may improve their chances anyway through lifestyle changes.

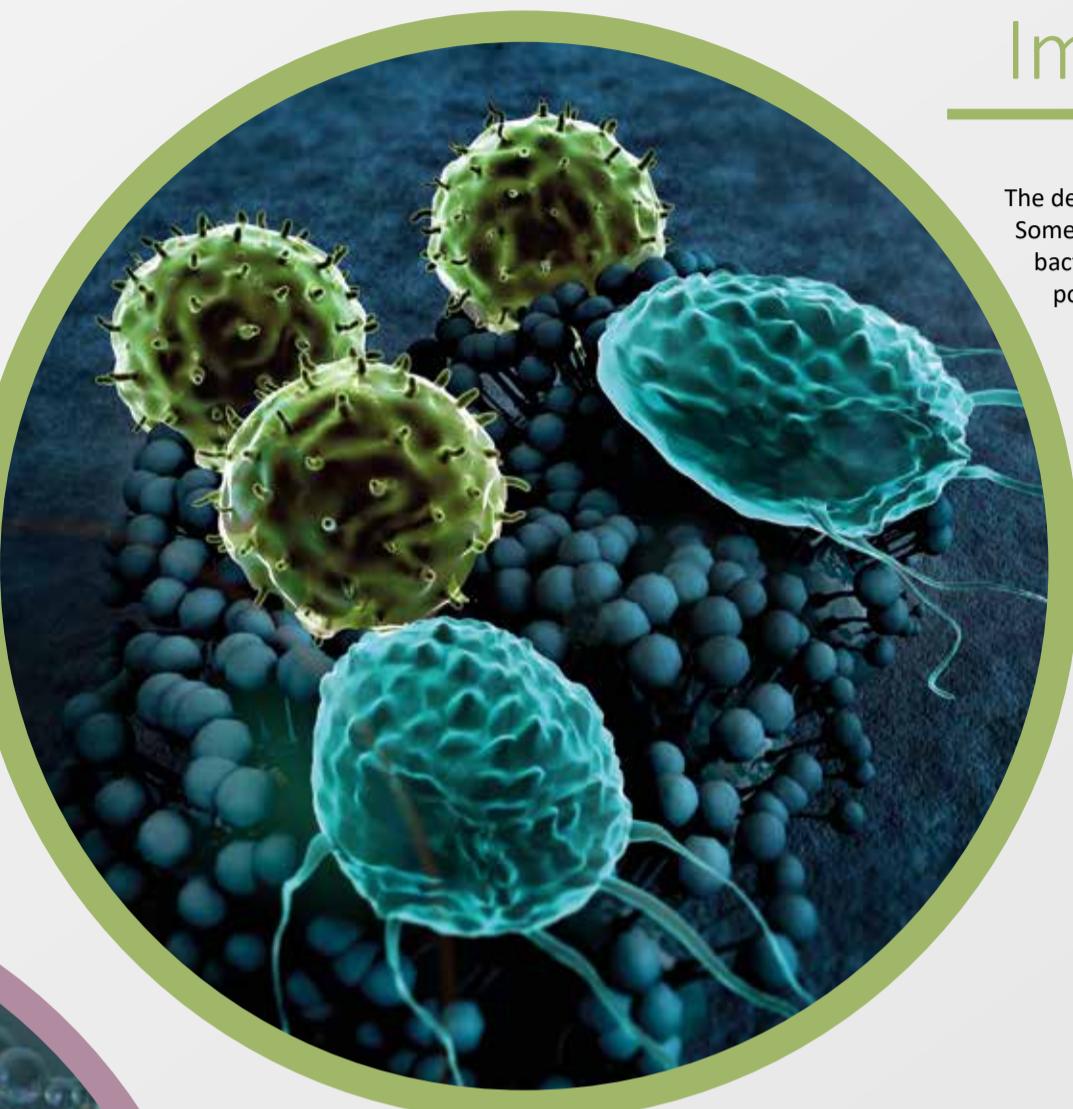


**Diagram 1. (\*)**

The peak incidence of severe periodontitis occurs at the age of 38. We know much about the bacterial complexes found in clinical severe periodontitis, bacteria we believe are responsible for the pathogenesis of periodontitis. On the other hand we do not know much about the development of the dysbiosis in the years before periodontitis is clinically present.

It is a reasonable assumption that the dysbiosis takes years to develop. It is therefore logical to conclude that preventive actions, such as taking regular oral cavity probiotics, should start before the age of 30, especially in patients disposed for periodontitis.

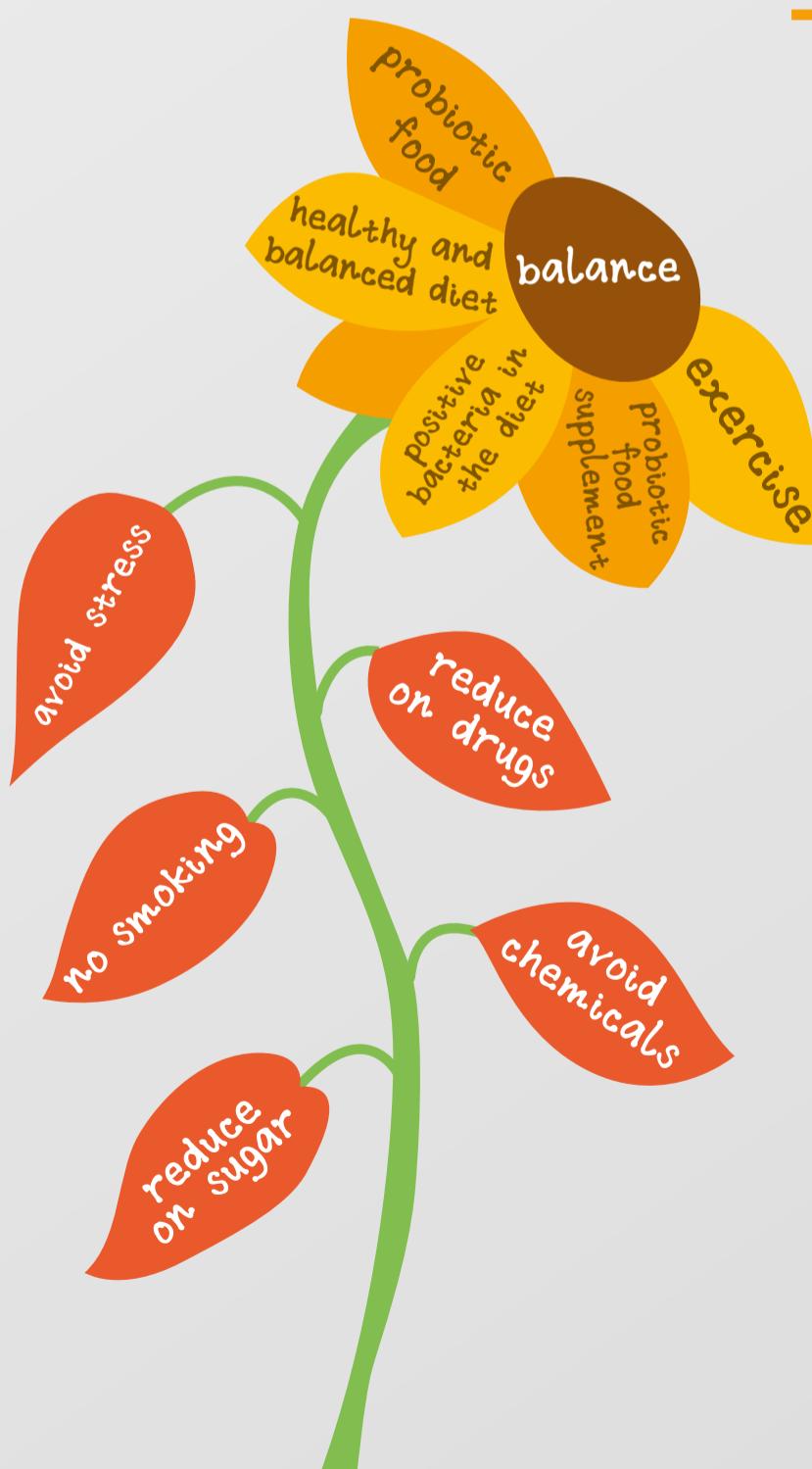
# Immune system



The development of periodontitis requires an immune response. Some patients have a "hyper" immune reaction to certain bacteria, while others may have the same bacteria in the dental pockets without an inflammatory reaction.

This is by no means unusual, as it is found to be the case in other inflammatory and/or autoimmune diseases.

## Lifestyle factors



Lifestyle factors represent all external inputs that the patient himself controls.

### DIET

Intake of sugar stimulates the growth of the "bad and ugly" bacteria, whereas the dietary fibers stimulate the good bacteria.

### SMOKING

Reduces local oxygen tension in the tissue, plus it has a direct negative effect on the immune system.

### PHYSICAL EXERCISE

Regulates not only the blood sugar level, but also the level of a long list of mediators and hormones, all with an effect on the immune system.

### MEDICINE

Is a significant factor in creating bacterial imbalance in the oral cavity. Examples are all medication with dry mouth as a side effect, and further asthma inhalation medication, cortisone and other hormonal medications and obviously all immunological suppressing medication or treatment.

### DISEASES

All other inflammatory diseases or auto-immune diseases will affect the immune system and therefore also the level of periodontitis. Furthermore most lifestyle diseases will accelerate a periodontitis. The classic example is diabetes, due to the increased level of sugar in the gingivo-crevicular fluid.

### OBESITY

In particular organ fat is in reality an inflammatory condition, accelerating all other inflammatory processes in the body, by releasing pro-inflammatory mediators from the adipose tissue.



## Light Activated Disinfection (LAD)

LAD also goes by the name aPDT for antimicrobial photodynamic therapy. LAD is a combination treatment with a dye, able to absorb energy from a specific wavelength of light, and then releasing this energy as reactive oxygen specimens, called ROS. This dye bonds strongly to single cell organism membranes. When the ROS are created, they become reactive and destroy the bacteria membranes immediately.

LAD is especially suitable for killing bacteria in localised areas, such as dental pockets and root canals, but works well on surfaces. The only limitation is applying sufficient light energy to start the process. It can be compared to the curing of dental composites. LAD has a long list of advantages: Works on all bacteria – and also on fungi. No side effects, and it may be repeated endlessly without any risk of development of resistance.

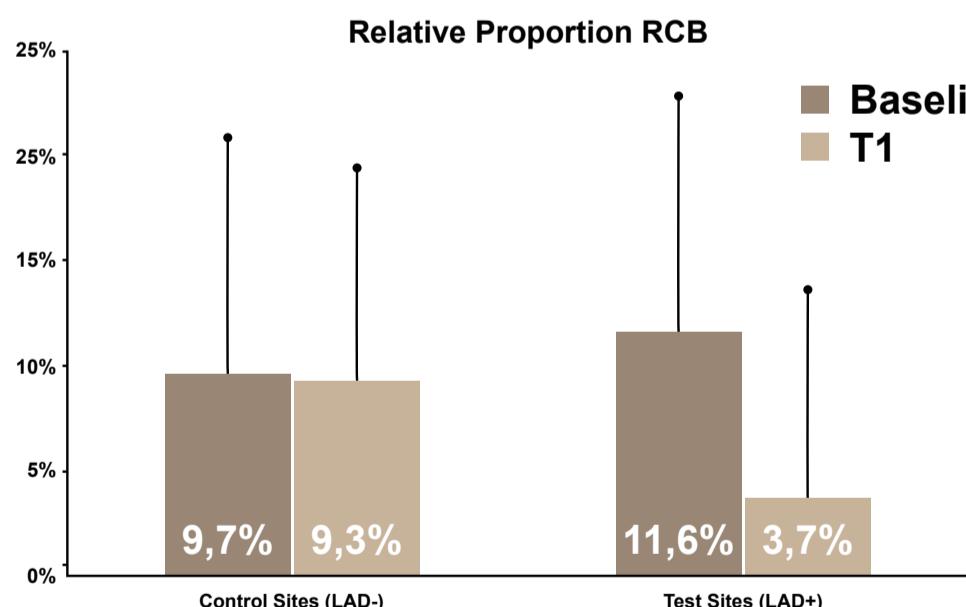
**Conclusion:** Inexpensive, no risks, no side effects. Moderately time consuming

## SRP

Sub- and supra gingival removal of plaque and calculus is still a cornerstone in the treatment of periodontitis. Debridement, however does not eliminate the bacteria present, and does not significantly change the dysbiosis (bacterial imbalance).

**Conclusion:** Essential treatment, time consuming

# Strengthen your patient's quality of life by offering them a comprehensive treatment plan



**Diagram 2:**

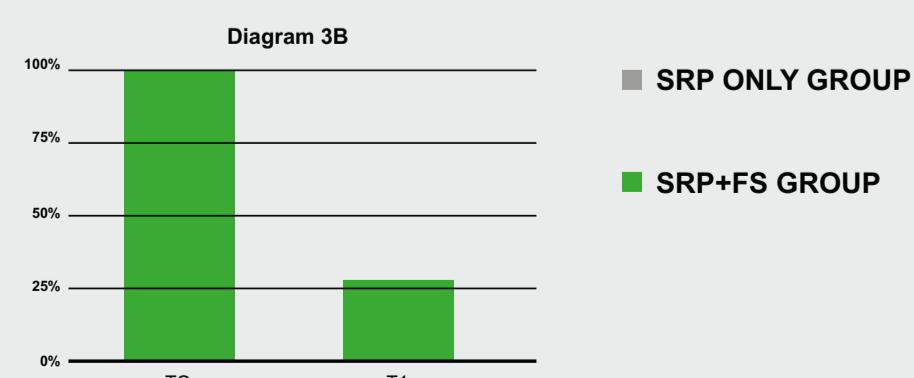
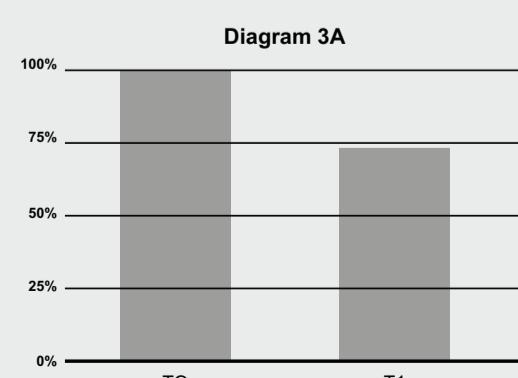
In a clinical double blind study on 30 patients with well treated chronic periodontitis (3), half of the group received SRP and the other half SRP + FotoSan® treatment (60 sec). At the control visit 1 week later, bacterial tests (PCR) were taken from the dental pockets. In the "SRP-ONLY" group, the reduction of RCB (red complex bacteria), i.e. the "ugly" bacteria was a little higher than 4 %. In the "SRP+FS" group, the comparable reduction was more than 68%, i.e. 16 times higher. (\*\*)

**Diagram 3:**

The same study showed a difference in bleeding on probing (BOP). BOP was an inclusion criteria in the study.

In the "SRP-ONLY" group BOP was reduced from 100% to 73 % at control one week later.

In the "SRP+FS" group BOP reduction was from 100% to 27%. (\*\*).



# Let the patient take a more active part in the battle against periodontitis

Many patients feel helpless in the fight against periodontitis. They brush and floss several times a day, but still they do not see enough progress. You can give your patients new hope with a new tool: Specific oral cavity probiotic strains.

## Bacterial replacement – also called probiotic supplement

This treatment adds positive bacteria to the oral environment. The selected bacteria may change the balance between the good, the bad and the ugly. The rationale is, that to change the dysbiosis – which is a bacterial imbalance – the most logical action is to add some more of the good guys.

Probiotics works by modulating the biofilm. The composition of the biofilm has a big impact on the oral bacterial balance.

In patients with deep dental pockets, it is advised to eliminate as many bacteria as possible before applying the probiotics. Probiotics may be applied as a gel directly into the dental pockets or for more general application in the oral cavity as a lozenge.

**Conclusion:** Inexpensive, not time consuming, no risks or side effects



### Illustration 4:

When selecting the optimal oral cavity probiotic, one should consider a number of criteria:

1. Are the bacteria of human origin and from the oral cavity? Commercially available probiotics might originate from rodents, pigs or chickens.
2. Do the selected strains possess the right qualities to become a major part of – and hopefully dominate – the biofilm in the oral cavity of your patient?
3. Do the strains have the antibacterial effects needed to compete against the "bad and ugly"?
4. Are they able to survive the oral cavity environment with the use of toothpaste and mouth washes?
5. Do they make acid from sugar and cause caries?
6. Not to mention formation of VSC (volatile sulphuric compounds) causing a bad breath. All these factors must be taken into consideration when choosing an optimal oral cavity probiotic.



## Patient compliance

One cannot exaggerate the patient's own efforts in dealing with periodontal problems. For many years, dentists have been focused on instructions in proper tooth brushing, the use of dental floss and special inter dental brushes. The patient can however do a lot more than that.

First of all a daily supplement of an oral cavity probiotic product is one of the easiest efforts to do. It is a lot more difficult to improve the patient's lifestyle: healthier diet, no smoking, more physical exercise, reduction of overweight, reduction of unnecessary medication etc.

The dental crew needs more tools to work with the patient and facilitate the message.

We have therefore created a patient leaflet that may be helpful in the communication with the patients:

"Together we make a difference to your dental health"

## Why not just prescribe antibiotics?

Administering antibiotics to periodontitis patients has been used since antibiotics became commercially available about 50 years ago. Antibiotics are still very much used as a treatment for this condition, even though the rationale for using it is unclear. Yes, there are bacteria involved in periodontitis, and yes they may (still) be sensitive to antibiotics. Periodontitis is however not a strictly infectious disease. Typically an infectious disease is treated with antibiotics for days or weeks and they weaken the pathogenic bacteria sufficiently for our immune system to be able to do the rest. Do notice, that all the bacteria are typically not killed by the antibiotics. It is often practically impossible.

In the case of periodontitis all the "bad and ugly" bacteria are likewise not killed. The antibiotic treatment will buy the patient some time, but the "bad and ugly" bacteria will return. The past 10 years have taught us much more of the negative effects when using antibiotics. Not all bacteria are bad, and unfortunately antibiotics do not know the difference, so they kill all bacteria, also the good ones as collateral damage. In fact for every time throughout your life span you are taking antibiotics, your bacterial diversity is being reduced. That is very bad news, as newer research has shown that lack of bacterial diversity is linked to the development of a lot of different chronic conditions, including autoimmune diseases, degenerative and cognitive diseases.

Antibiotics may still have a purpose in the treatment of periodontitis, however they should not be used readily or repeatedly, only after careful consideration.

**Conclusion:** relatively inexpensive, with side effects, potential of long term risks, may lead to resistance.

# Light Activated Disinfection

**One Patient Kits**  
contain all necessary  
products for the  
treatment  
of one patient

## ONE PATIENT KITS

<b>Diamond kit</b>	<b>1.2 ml FotoSan® Agent Gel syringe, tips:</b> perio long/short and blunt, 2 x covers, ProlacSan® Gel, 3 x boxes ProlacSan® lozenges (3 x 30 pcs.)
<b>Gold PLUS kit</b>	<b>1.2 ml FotoSan® Agent Gel syringe, tips:</b> perio long/short and blunt, 2 x covers, ProlacSan® Gel, 1 x blister (10 pcs.) ProlacSan® lozenges
<b>Gold kit</b>	<b>1.2 ml FotoSan® Agent Gel syringe, tips:</b> perio long/short and blunt, 2 x covers, ProlacSan® Gel
<b>Silver kit</b>	<b>1.2 ml FotoSan® Agent Gel syringe, tips:</b> perio long/short and blunt, 2 x covers.
<b>Endo kit</b>	<b>0.3 ml FotoSan® Agent Low syringe, tips:</b> endo and blunt, 2 x covers, irrigation tip



**FotoSan® agent**  
is also available  
as individual  
syringes

## FOTOSAN® AGENT

<b>FotoSan® Agent Low</b>	1.2 ml FotoSan® Agent Liquid syringe, application tip
<b>FotoSan® Agent Medium</b>	1.2 ml FotoSan® Agent Gel medium syringe, application tip
<b>FotoSan® Agent High</b>	1.2 ml FotoSan® Agent Gel high syringe, application tip

## OTHER ACCESSORIES

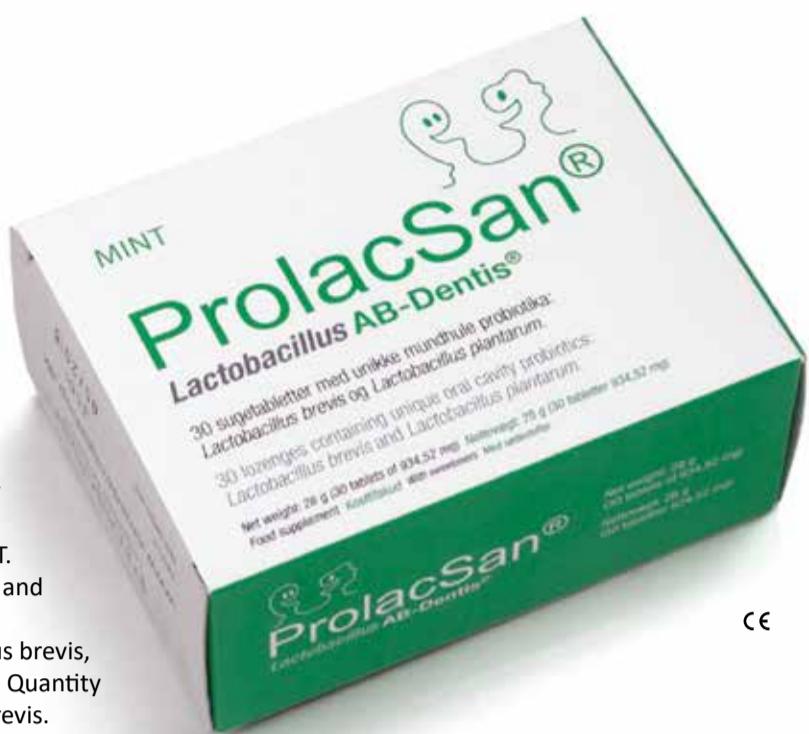
<b>Light tips</b>	In boxes of 50 pcs. Five different versions: endo, perio short, perio long, blunt 4 mm, blunt 8 mm
<b>Covers</b>	In bags of 10 pcs.
<b>Protective sleeves</b>	In boxes of 250 pcs. Protects the light from blood and saliva

## ProlacSan® Lozenges

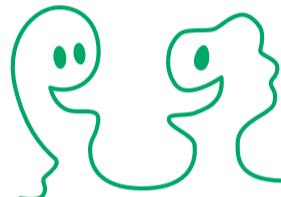
Each ProlacSan® lozenge contains more positive bacteria than in 100 liters of good quality yogurt. Take one every day. There are 30 lozenges in a box. ProlacSan® is based on two original human oral cavity Lactobacillus strains, carefully selected because of their extraordinary qualities.

Let the lozenges dissolve in mouth. Dosage 1 tablet each day, preferably after tooth brushing either morning or evening. Each tablet contains 1.2 Billion in total of lactobacillus brevis 7480 CECT and Lactobacillus plantarum 7481 CECT. Patent protected bacteria species (W020012/022773A1). Store in a dry place and in not too hot conditions.

Ingredients: Bulking agent (Sorbitol), Lactobacillus plantarum and lactobacillus brevis, stabiliser (guar gum), mint flavour, humectant (hydrogenated cottonseed oil). Quantity per daily dose 62.5 mg of Lactobacillus plantarum, 62.5 mg of lactobacillus brevis. Gluten free.



# ProlacSan®



## ProlacSan® Gel

Packed as powder in a syringe. Aspirate up to 1.2 ml water, shake and wait 15 minutes. The gel contains minimum 6 billion living bacteria: Lactobacillus plantarum and Lactobacillus brevis.

Store in a dry place and in not too hot conditions.

### References:

(\*) *Global Burden of Severe Periodontitis in 1990-2010 A Systematic Review and Meta-regression N.J. Kassebaum et al. J Dent Res. 2014 Nov; 93(11): 1045-1053. doi: 10.1177/0022034514552491*

(\*\*) *Light-activated disinfection using a light-emitting diode lamp in the red spectrum: Clinical and microbiological short term findings on periodontitis patients in maintenance. A randomized controlled split mouth clinical trial Claudio Mongardini et al. Lasers Med Sci DOI 10.1007/s10103-012-1225-x*



www.prolacsan.com

