

Gingivitis

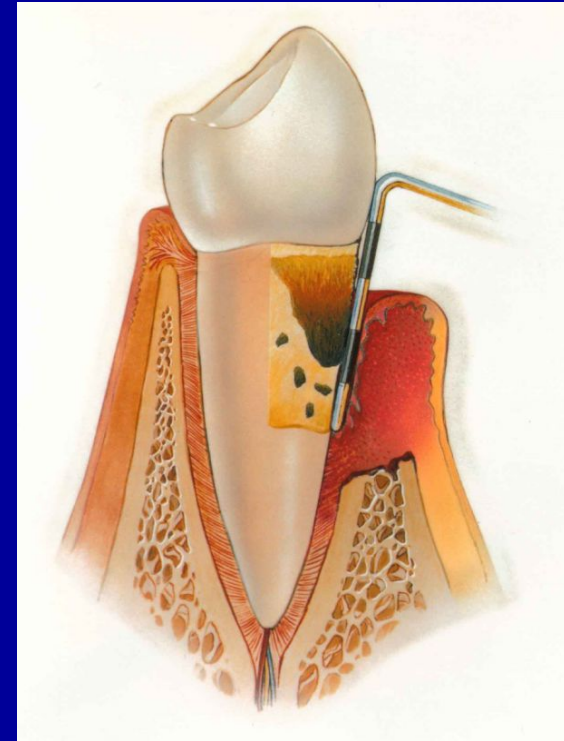
Red
Swollen
Bleed easily
Plaque
associated



Epithelium remains sealed around enamel/cementum line

Periodontitis

- Inflammation of gingiva
- Loss of epithelial attachment
- Irreversible damage to
 - Cementum
 - Alveolar bone
 - Periodontal ligaments



Pathogenesis of Periodontal Disease Biofilm



- Plaque
- Gingival redness/swelling
- Bleeding gums



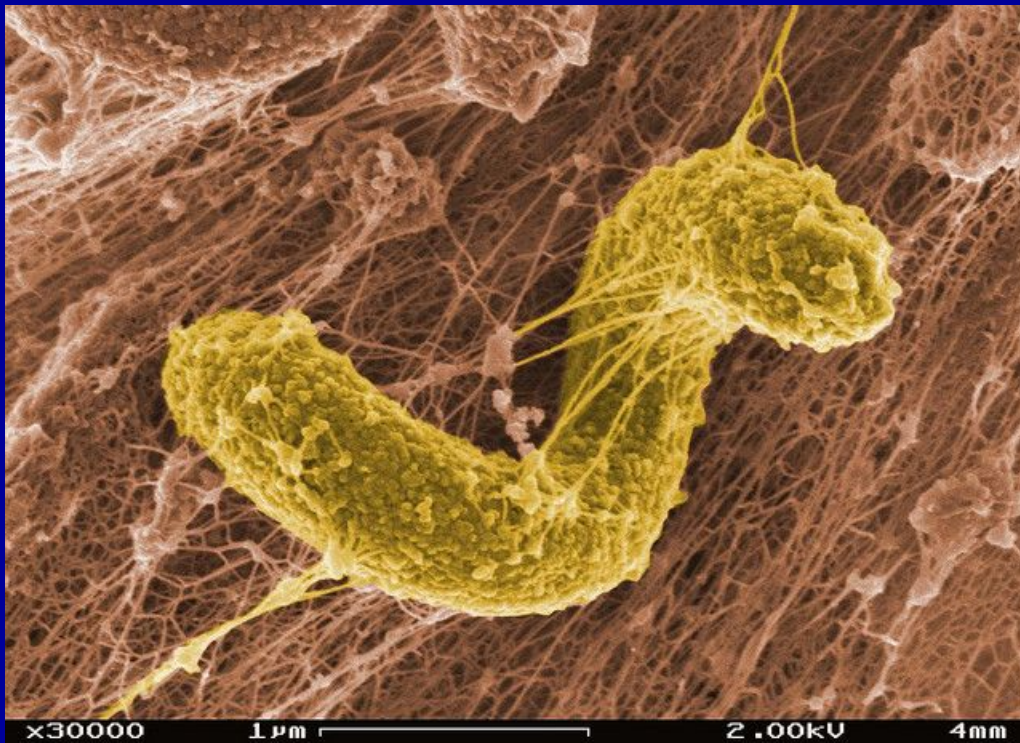
- Tartar
- Different oral bacteria

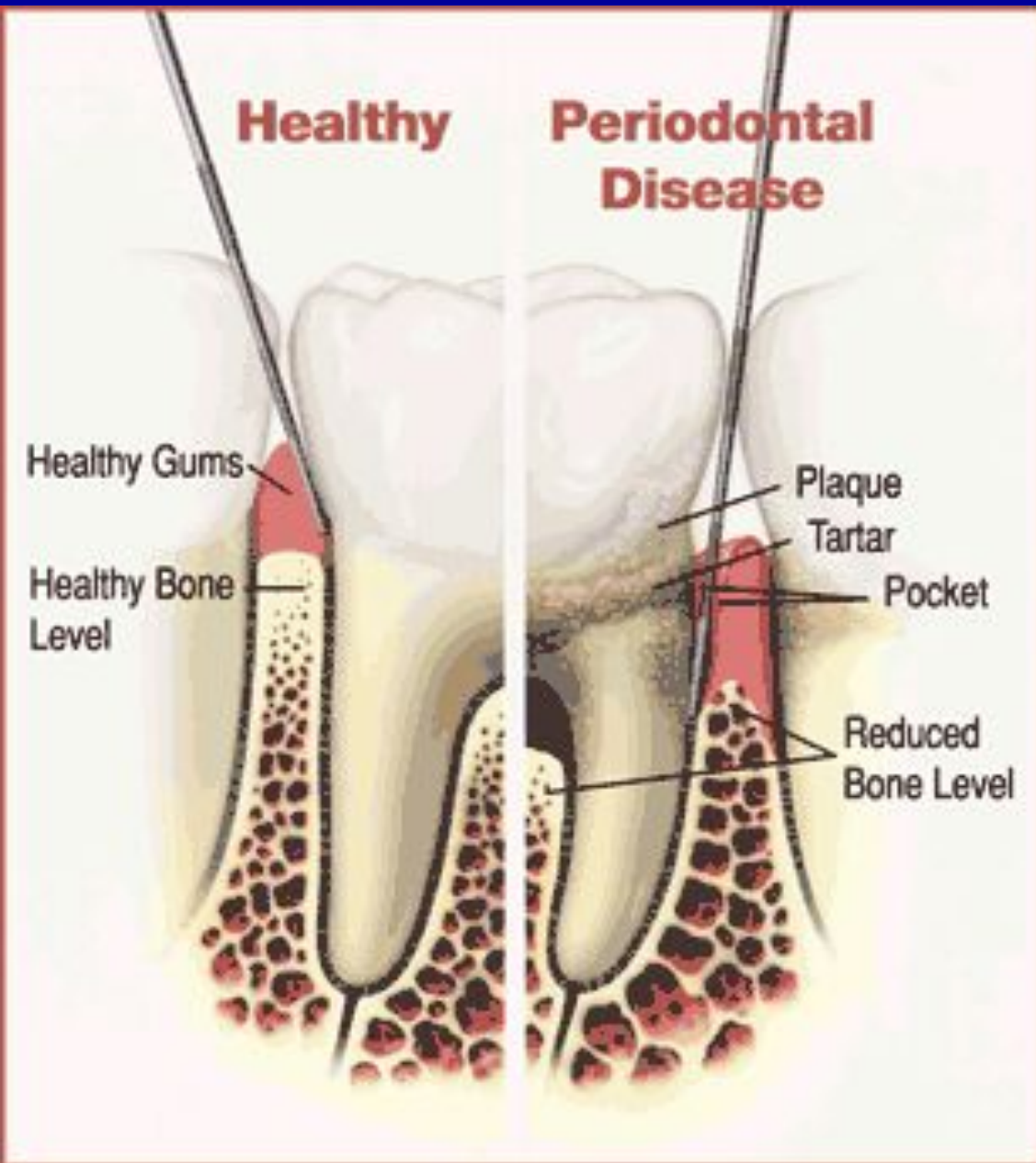
Pathogenesis of Periodontal Disease

Alter Bacteria

- Bacteria: *Porphyromonas gingivalis*

Gram negative anaerobic rod

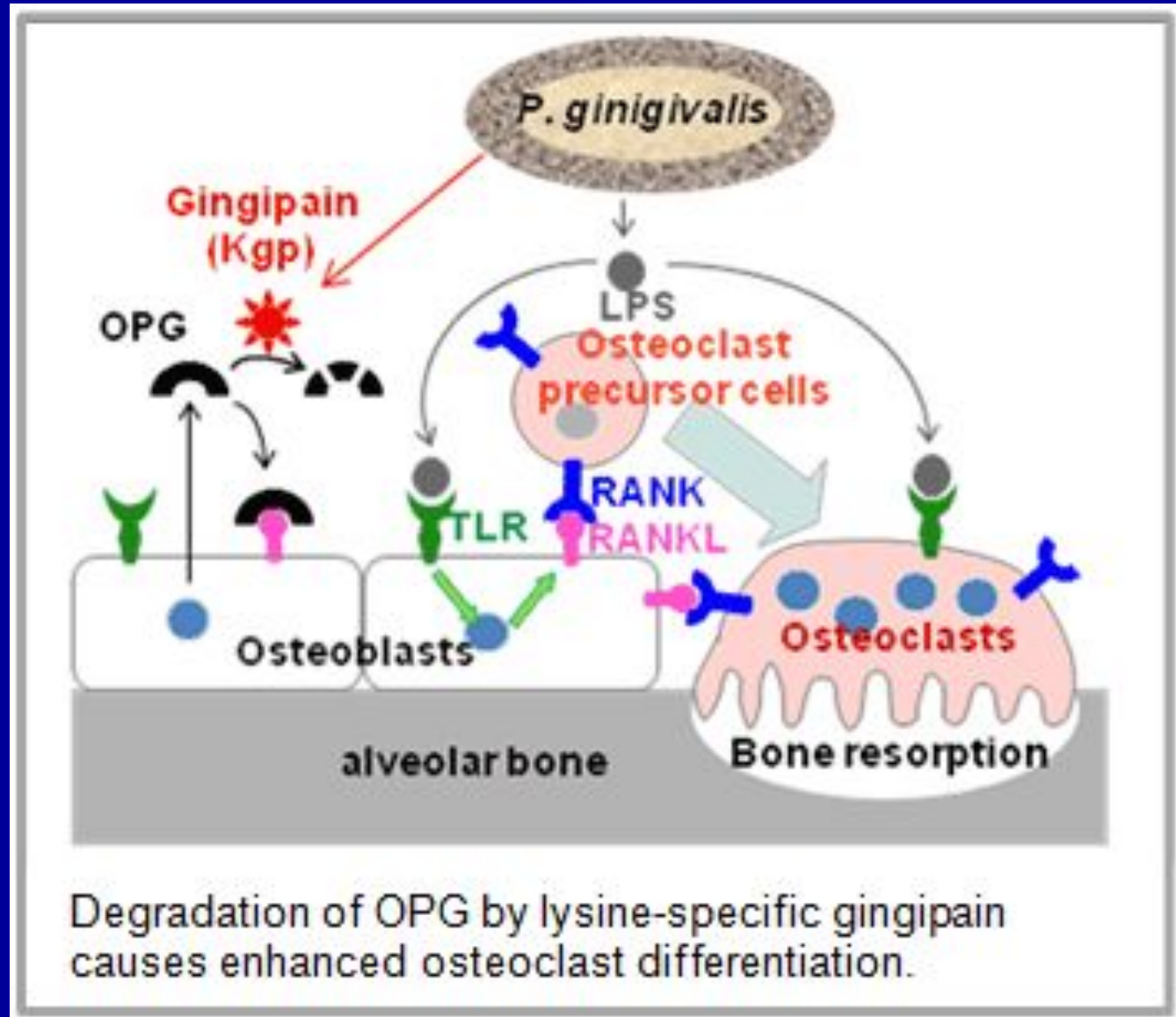




Halitosis

- due to anaerobes (sulfite reducing bacteria)

OPG(osteoprotegerin



Pathogenesis of Periodontal Disease

Support Destruction

- Alveolar bone loss
- Tooth mobility
- Tooth migration

Normal Periodontitis



Risk Factors for Periodontal Disease

- Smoking
 - 1/2 adults with PD are smokers
- Lack of fluoridated water
 - Fluorinated water supply decreases tooth decay
 - “Healthy People 2010” objective = 75% of population
 - Only 27 state meet objective (2010)

Risk Factors for Periodontal Disease

- Systemic illnesses
- Genetics
- Anxiety, depression
- Obesity
- Medications (↓ saliva)
- Hormonal flux
- Elderly

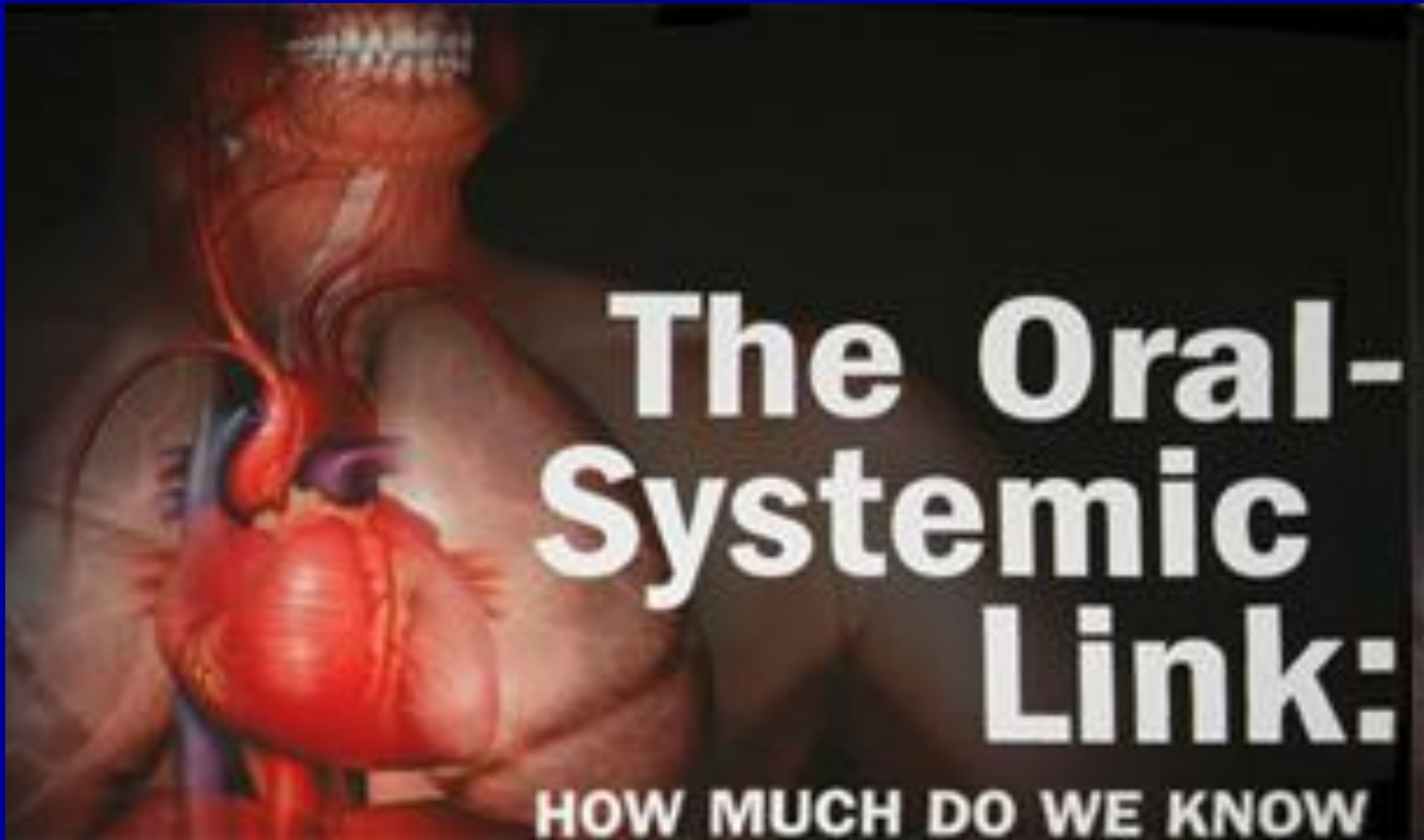
Treatments for Periodontal Disease



- Brush & Floss
- Dental cleaning (scaling and root planing)
- Doxycycline (Periostat)
- Vaccine –in development
- Surgery



Periodontal Disease & Systemic Illness

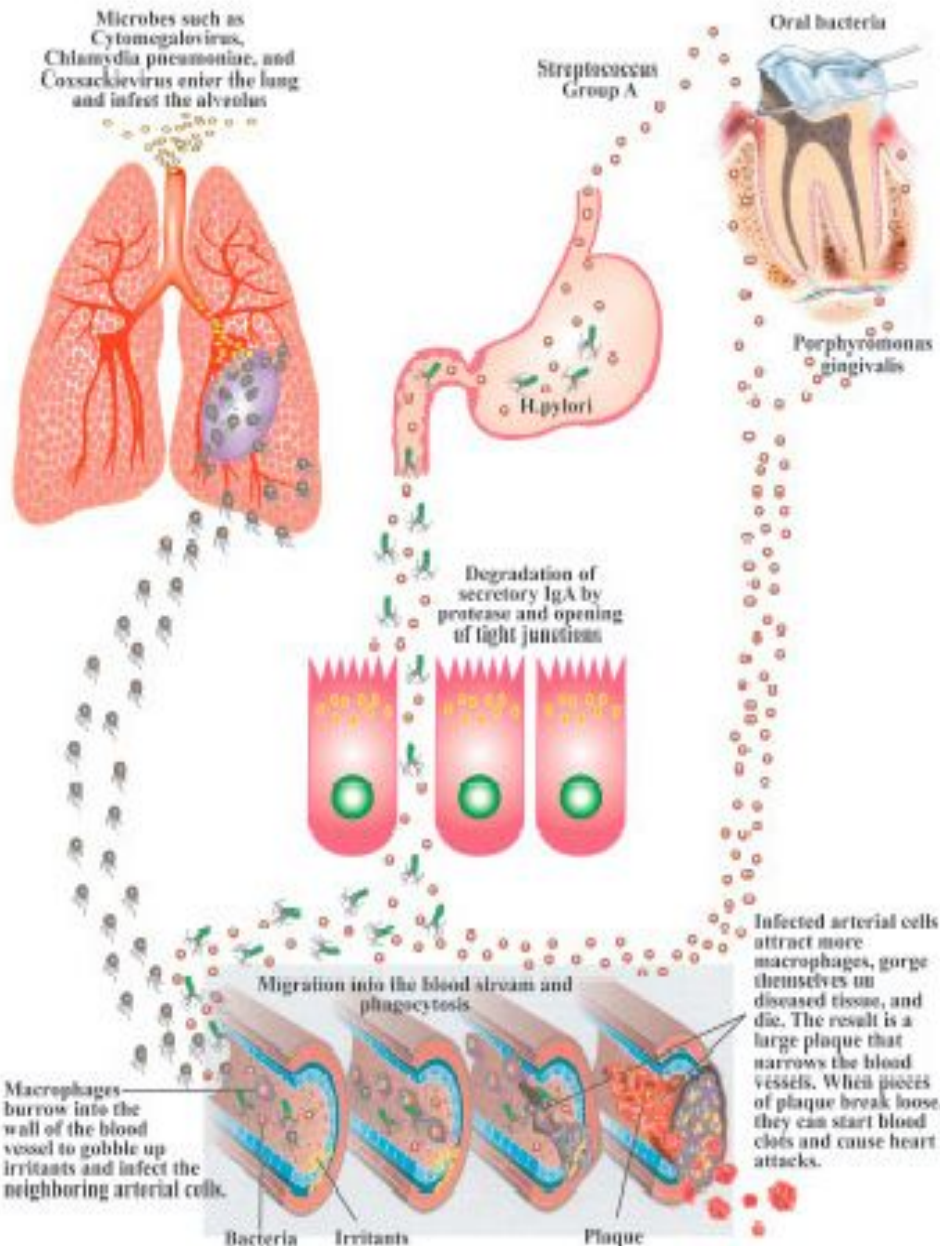


Periodontal Disease & Systemic Illness

- Atherosclerosis, CVD
- Diabetes mellitus
- Preterm parturition
- Respiratory disease -COPD, pneumonia
- Osteoporosis
- Impaired mastication & nutrition
- Hypertension
- Arthritis
- Inflammatory bowel disease
- Psoriasis
- Erectile dysfunction

Atherosclerosis: Risk Factors

- Ulcers
 - H. pylori
- Pneumonia
 - Chlamydia pneumoniae
- Periodontal Disease
 - Porphyromonas gingivalis



Periodontal Disease & Systemic Illness: Cardiovascular Disease

- Periodontal disease associated with:
 - ↑ Intimal thickening
 - ↑ C-reactive protein
 - ↑ fibrinogen
 - ↓ flow-mediated dilation

Periodontal Disease & Systemic Illness:

Cardiovascular Disease

Study to evaluate endothelial function with the treatment of periodontitis

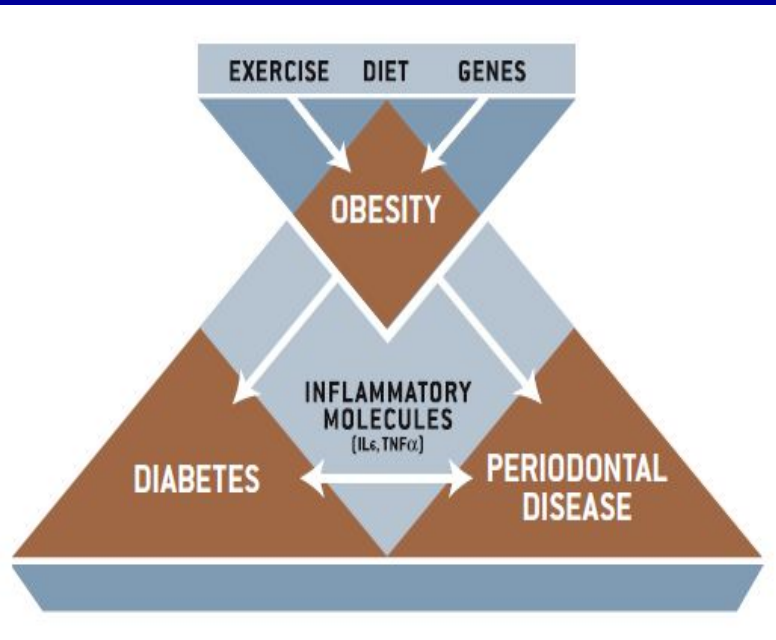
- All patient with severe periodontal disease
- 1/2 normal cleaning ; 1/2 intensive root planing (after 6 months)
 - ↑ Flow mediated dilation
 - ↓ soluble E-selectin

Periodontal Disease & Systemic Illness: Obesity & Diabetes

- Pima Indians – AZ
- Shift from desert survival to modern diet
- ↑fat intake: fr15%, to 40%
- Obesity
 - Diabetes Type 2
 - Periodontal Disease

Since 1960s Robert Genco (NIH)

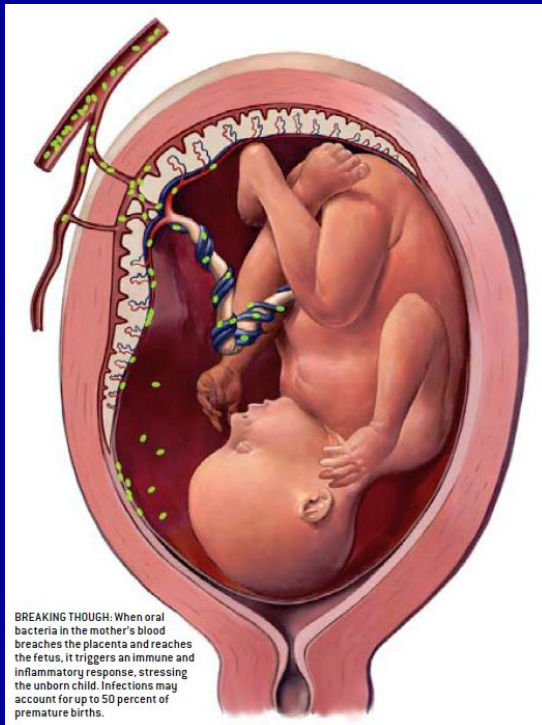




- Diabetes Type 2
- ↑ periodontal disease(3-4x)
 - ↑ Worse sugar control
 - Neuropathy, kidney disease
 - ↑ CVD
 - ↑ $TNF\alpha$, IL-6
 - ↑ C-reactive protein

Simply treating periodontal disease improved blood sugar control

Periodontal Disease & Systemic Illness: Pregnancy Complications



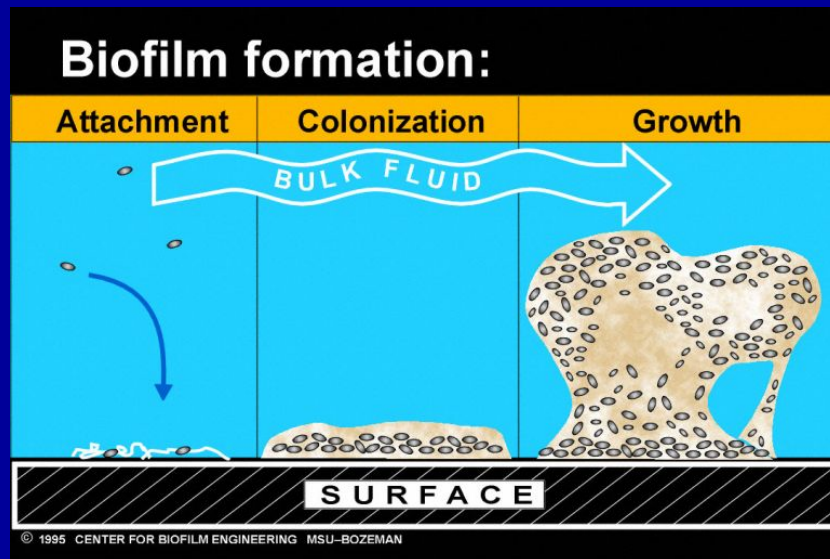
- Miscarriage
- Premature birth
- Low birth weight

**Maternal oral bacteria found
in amniotic fluid**

**Y.W. Han, 2006 Case Western
Reserve**

Periodontal Disease & Systemic Illness: Pregnancy Complications

Hormonal flux may increase
bacterial biofilm & gum bleeding



- Oral contraceptives
 - Premenstrual
 - Pregnancy