

16SrRNA Intermediate Bioinformatics Online Course: Int_BT

Module 2:

Introduction to the microbiome - why 16S?

Part 2.3











Contents lists available at ScienceDirect

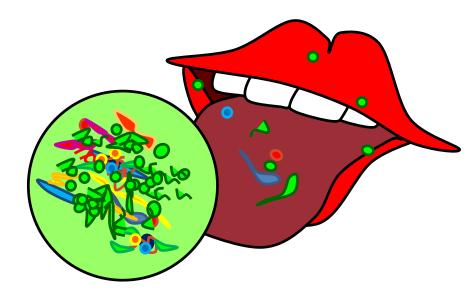
Immunology Letters





The oral microbiome and the immunobiology of periodontal disease and caries

Massimo Costalonga a,*, Mark C. Herzberg b,c

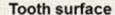












Streptococcus mutans, Actinomyces, Eubacterium,

Peptostrepptococcus

Tonsil

Streptococcus viridans, Neisseria species,— Haemophilus influenzae, coagulase-negative Staphylococci

Tongue

Veillonella atypica,
Porphyronas gingivalis,
Selenomonas species,
Actinobacillus
actinomycetemcomitans,
Prevotella intermedia,
Capnocytophaga species,
Streptococcus faecalis,
Eikenella corrodens

Gingival crevice

Fusobacterium, Prevotella, Porphyromonas

Oropharyngeal region

Streptococcus salivarius, Streptococcus mutans, Streptococcus anginosus, Streptococcus pyogenes, Streptococcus pneumoniae, Haemophilus influenza, Haemophilus parainfluenzae

Dental plaque

Actinomyces, Rothia, Kocuria, Arsenicicoccus, Microbacterium, Propionibacterium, Mycobacterium, Dietzia, Turicella, Corynebacterium, Bifidobacterium, Scardovia, Parascardovia

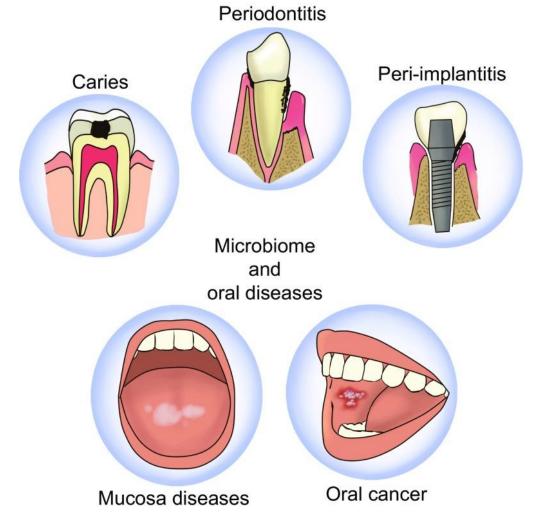
Lim et al 2017. Theranostics; 7(17):4313-4321. doi:10.7150/thno.21804











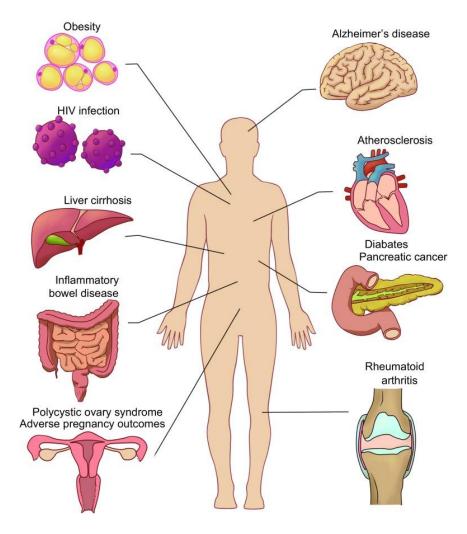
Gao et al. 2018. Protein Cell. May; 9(5): 488-500. doi: 10.1007/s13238-018-0548-1











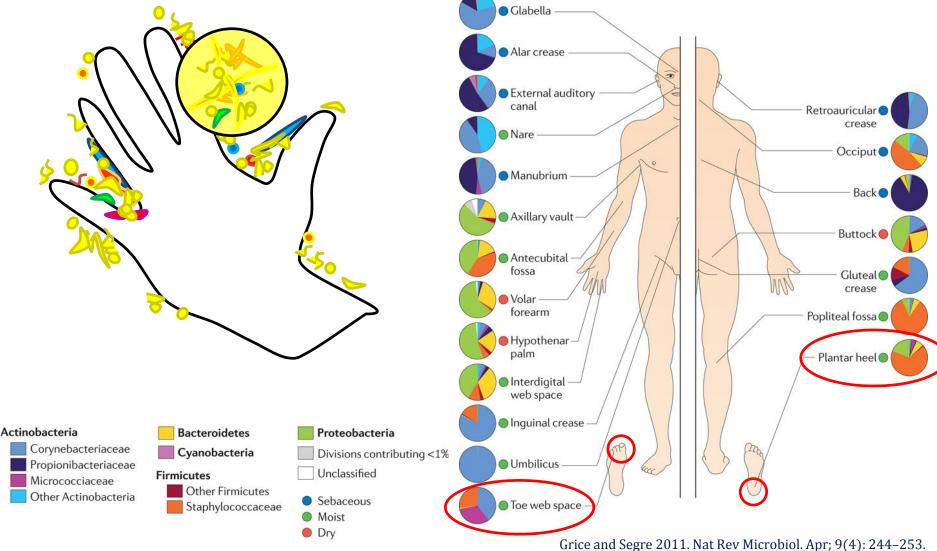
Gao et al. 2018. Protein Cell. May; 9(5): 488-500. doi: 10.1007/s13238-018-0548-1











doi: 10.1038/nrmicro2537

16SrRNA Intermediate Bioinformatics Online Course:

Int BT 2019 **Shantelle Claassen-Weitz**

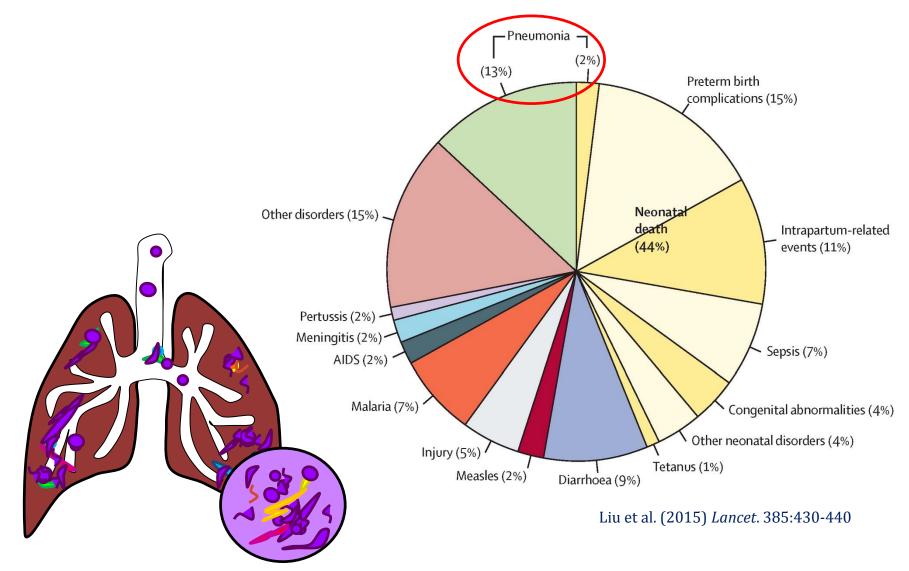
Pan African Bioinformatics Network for H3Africa

H3ABioNet







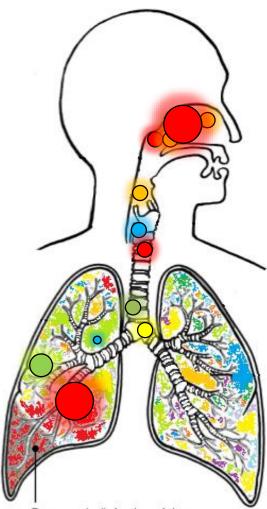












Pneumonia (infection of the alveoli and surrounding lung)

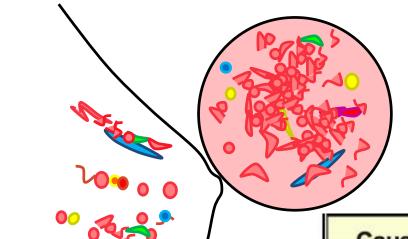
Dicksonet al. (2014) Lancet Respir Med. 2(3):238-246; Dickson and Huffnagle (2015) PLoS Pathog. 11(7): e1004923



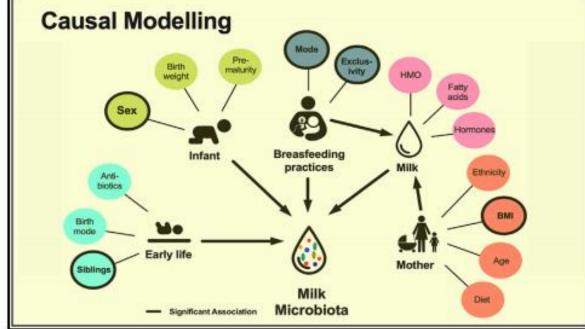








Moossavi et al. 2019. Cell Host Microbe. Feb 13;25(2):324-335.e4. doi: 10.1016/j.chom.2019.01.011

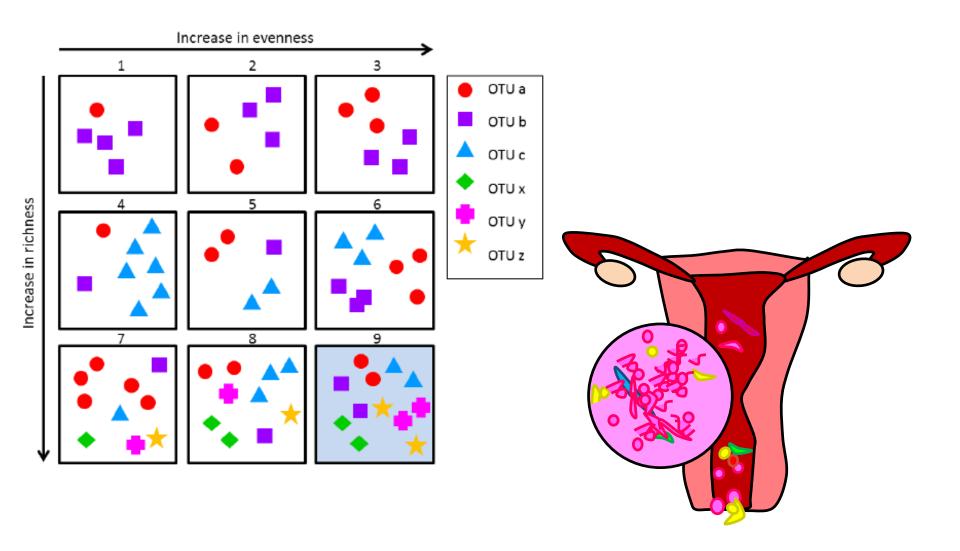




















Bacterial vaginosis +

Diverse microbial profiles

Bacterial vaginosis -

Dominated by 2

Lactobacillus

species:
L. crispatus or L.

iners

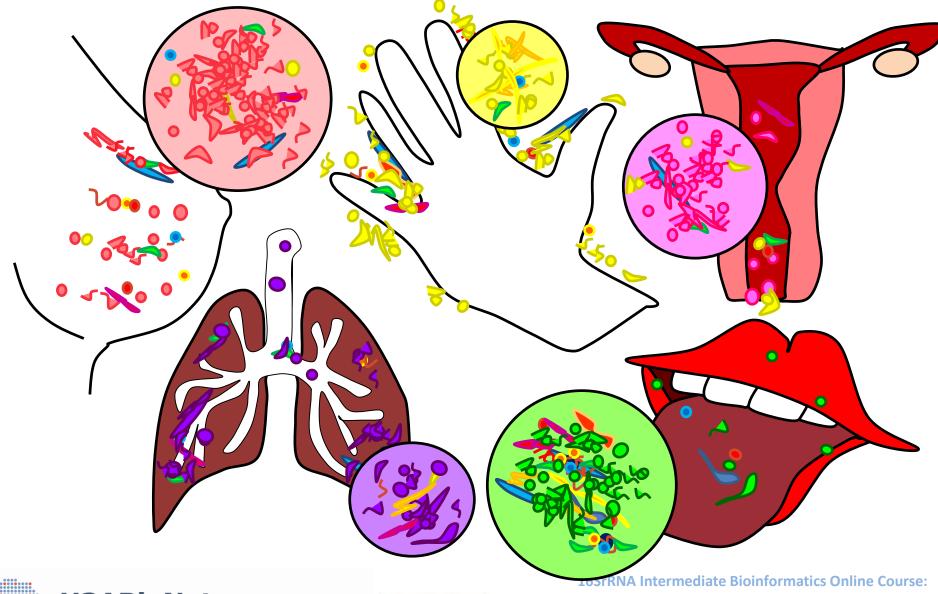
Srinivasan eta al 2012. Plos One. https://doi.org/10.1371/journal.pone.0037818







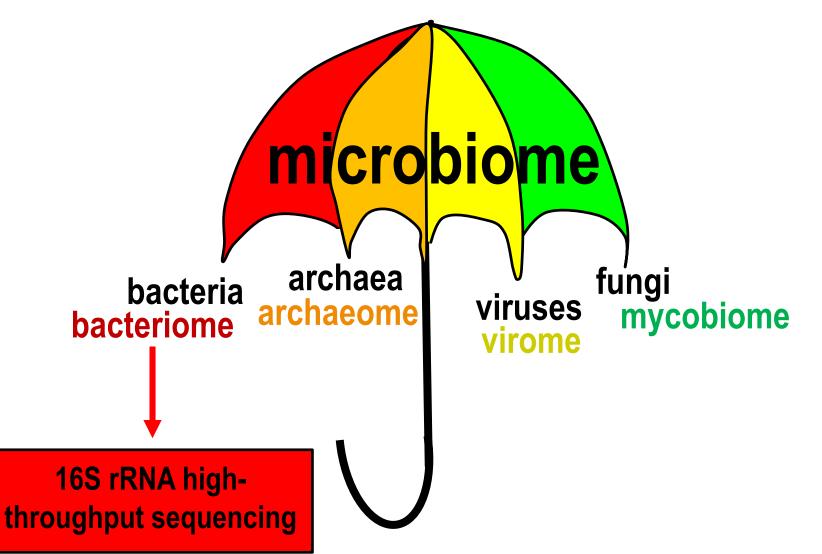










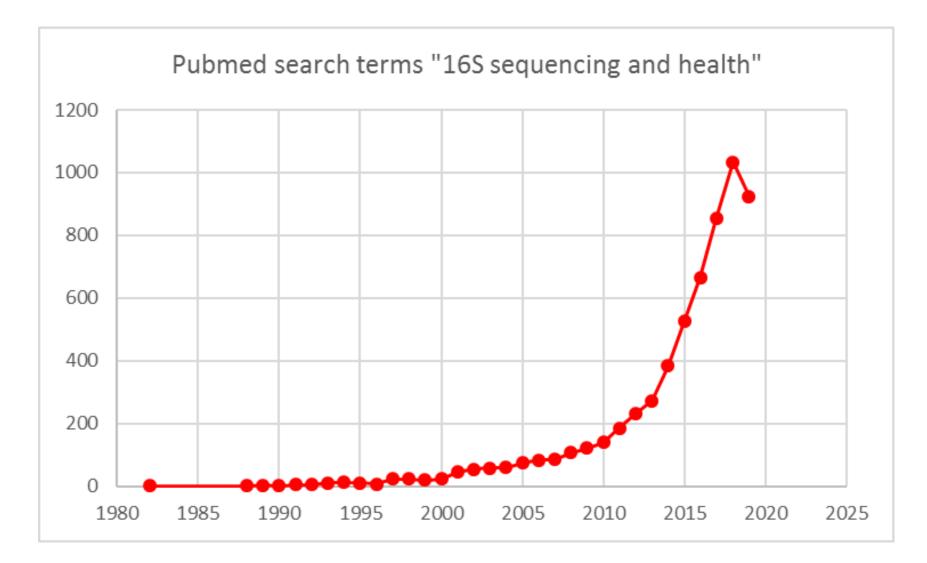




















In summary:

- Microbial communities exist outside the human GIT.
- A number of studies have shown that microbial communities detected at different body sites are associated with health and disease states.
- Microbial communities are different for different body sites and we even find different communities within different topographies of the same body site.
- The term "microbial diversity" is defined as the number of different organisms and how evenly they are distributed within an environment.
- The term "microbiome" is an umbrella term for a number of microscopic organisms (which includes bacteria) detected in any given environment.
- 16S rRNA high-throughput sequencing is used to study the bacteriome / bacterial profiles within any given environment.







Module 2:



Introduction to the microbiome – why 16S?

