Metagenomics analysis of bacterial communities in household biofilms

A comparative study

Eduardo S. Moreno Prieto

Biofilm comparison

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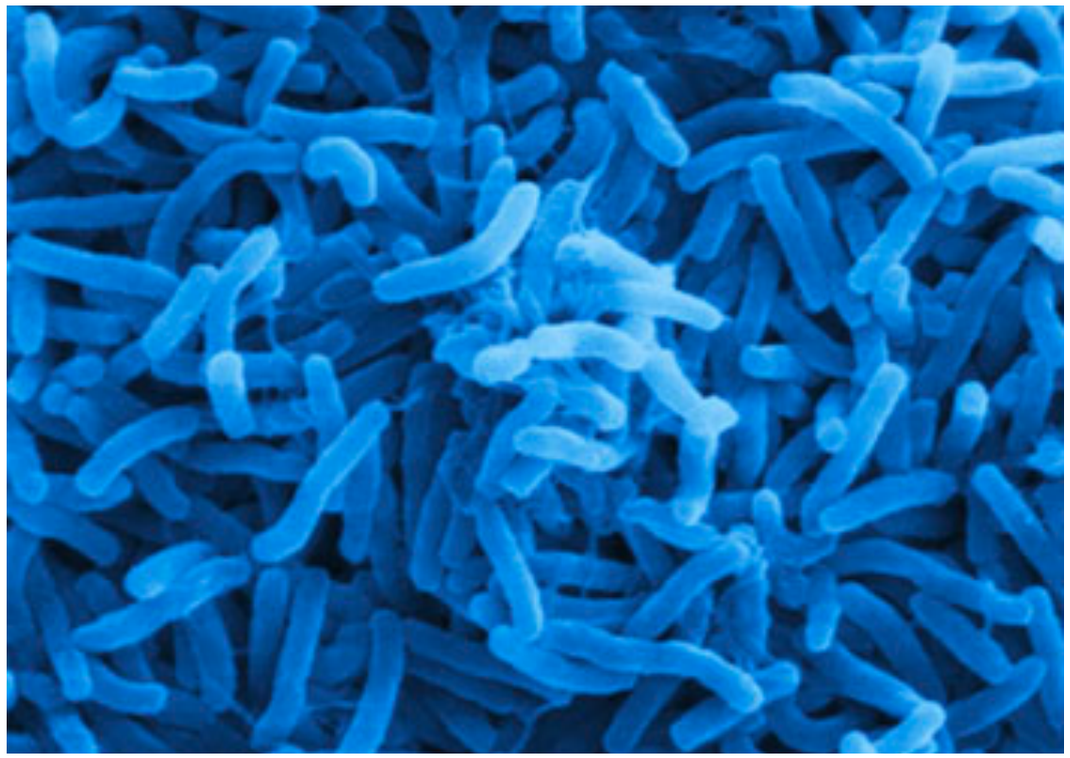
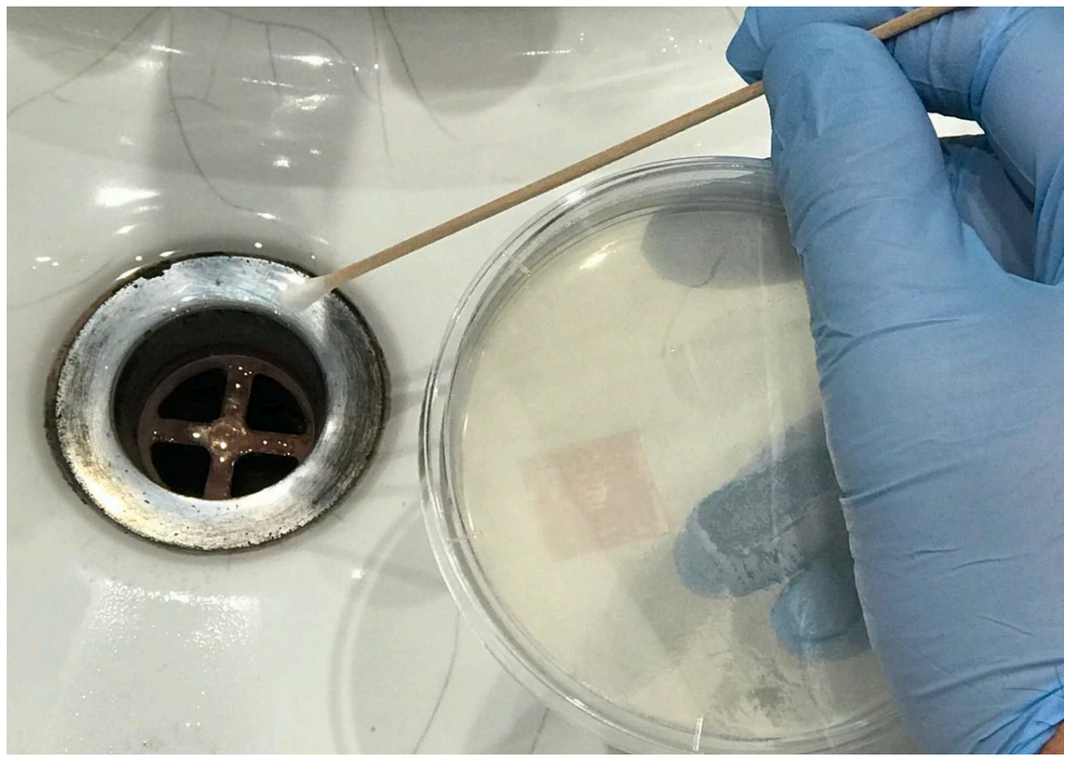
How The Hidden Microbes Inside Your Drains Could Be Making Your Shower and Sink Toxic?

Biofilm comparison





Biofilm comparison

Previous studies

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.heliyon.com

Heliyon

Metagenomics analysis of bacterial structure communities within natural biofilm

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ARTICLE INFO

ABSTRACT

Previous studies

- Hemdan, B. A., El-Liethy, M. A., ElMahdy, M. E. I., & EL-Taweel, G. E. (2019). Metagenomics analysis of bacterial structure communities within natural biofilm. *Heliyon*. https://doi.org/10.1016/j.heliyon.2019.e02271

- Hemdan, B. A., Azab El-Liethy, M., Shaban, A. M., & El-Taweel, G. E.-S. (n.d.). Quantification of the Metabolic Activities of Natural Biofilm of Different Microenvironments. Journal of Environmental Science and Technology. https://doi.org/10.3923/jest.2017.131.138

Biofilm comparison

Aims

This study aims:

(i) to find potential bacterial lineages using culture based method and confirm with Biolog GEN III PCR.

(ii) to investigate the bacterial profiles of communities in two biofilm samples NGS.

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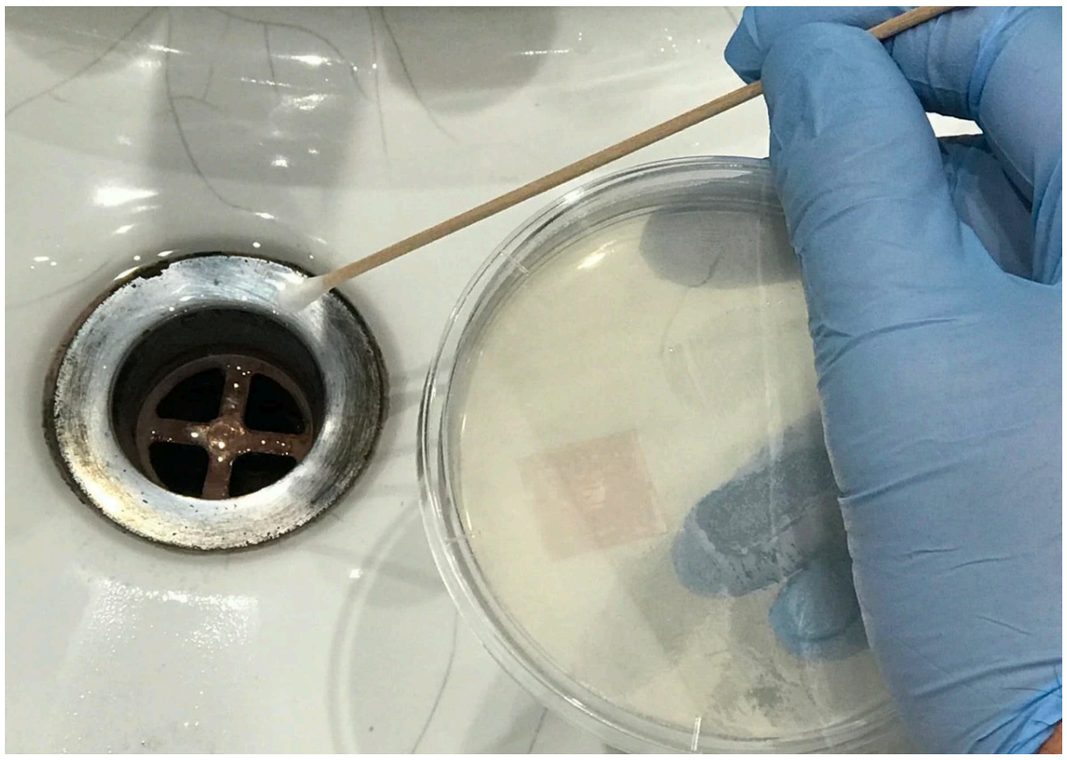
Sampling

The samples were harvested by scraping of 10 cm2 from inner surface of pipes using sterile cotton swabs. Swabs were submerged into tubes each one containing 10 mL sterile water and homogenized by using vortex agitator for 5 min10. Then, it was preserved in ice box and immediately transferred to lab for analyses according to APHA (American Public Health Association).



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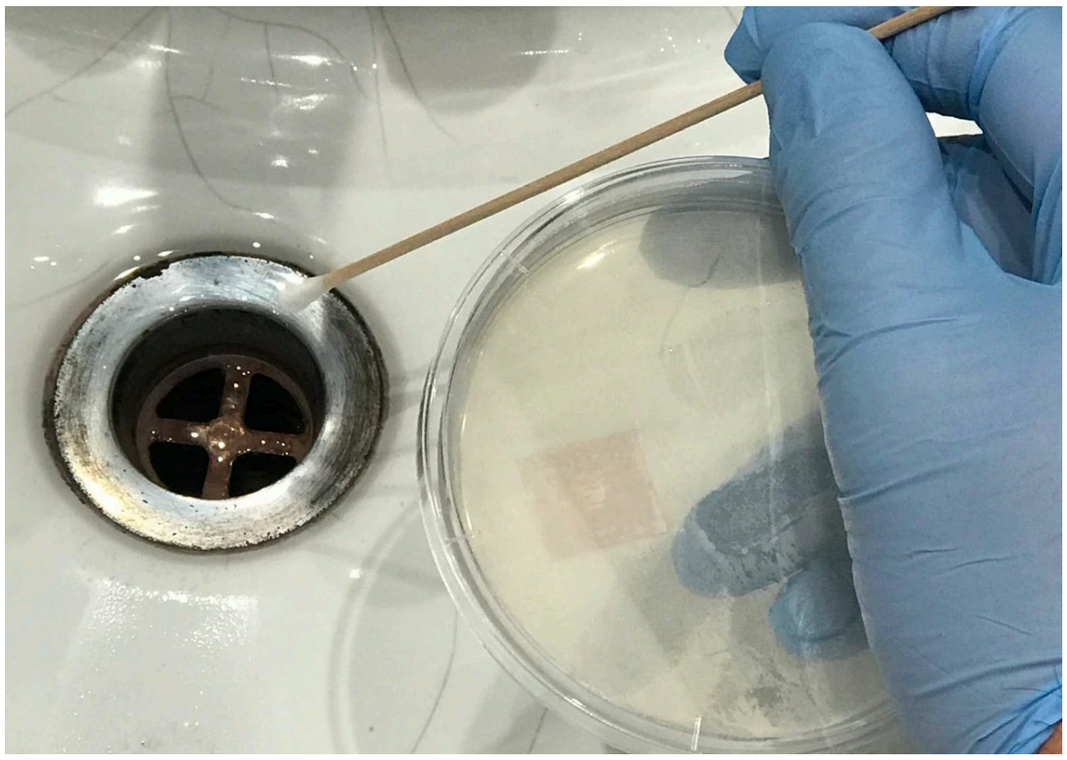
Results

- Proteobacteria is the most important group (Operational Taxonomic Group)
- Kitchen biofilms have higher OTG diversity than bathrooms
- Metal surfaces have higher biofilm accumulation
- A range of diversity results.



Research questions

- Which sink/surface contains the most dangerous microbes?
- How does the frequency/style of bathroom cleaning affect microbiome?
- Do the type, age or material of the drain, flat floor, distance to other drains matter?
- Does the type of personal care products used matter?
- How does the human composition of the household affect diversity?