

Birgitte Moen, Trond Møretrø, Ingunn Berget, Tove Maugesten and Solveig Langsrud

Introduction

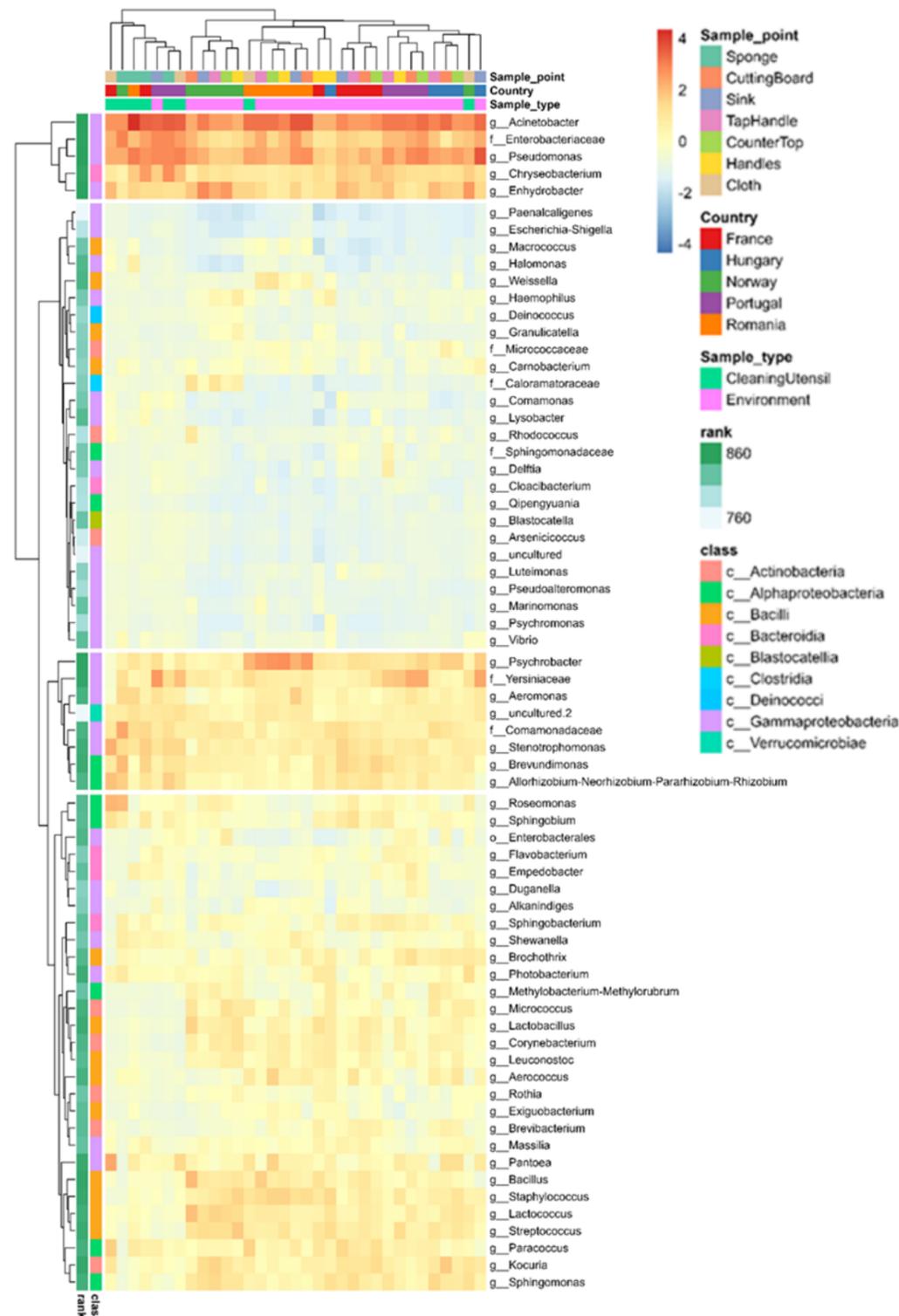
The residential kitchen is heavily colonized by microbes originating from handling and preparation of food, water, air, and humans, and typically a place where people are exposed to a broad diversity of microorganisms while indoors. Since there is limited knowledge of the bacterial diversity across different sample sites, households, and countries we have identified the bacteriota of cleaning utensils, kitchen surfaces and hand contact points in 74 households across five European countries (France, Hungary, Norway, Portugal, and Romania).

Methodology

The present study covers the analysis of the bacteriota from kitchens surfaces and cleaning utensils (cloths and sponges). Five different surface samples were taken from each kitchen before food preparation. The bacteriota was determined by high-throughput 16S rRNA amplicon sequencing (MiSeq, Illumina) of the V4 region. A heatmap is shown to illustrate the clustering of samples and bacteria (see figure).

Results

- A small core bacteriota was identified consisting of eight taxa: *Acinetobacter*, *Pseudomonas*, *Enhydrobacter*, *Enterobacteriaceae*, *Psychrobacter*, *Chryseobacterium*, *Bacillus* and *Staphylococcus*
- These were also among the most abundant genera/families across all samples
- Surface samples had a more diverse bacteriota, and a different composition, compared to cleaning utensils



Heatmap of the average of sample points and country for the most common bacteria.

- Surface samples had more variation between countries than between sample types
- The between country variation was smaller for cleaning utensils
- The bacteriota in sponges were similar across countries
- The bacteriota of surface samples from France and Portugal were more similar than samples from Romania, Hungary and Norway.

Conclusions

This study indicates that there may exist a small core bacteriota in European residential kitchens

- country of origin shapes the surface bacteriota
- sponges may have a niche selecting for certain types of bacteria

Acknowledgments

This research was funded by the European Commission H2020-SFS-2016-2017: Project no. 727580 Safeconsume, the Norwegian research funding for agriculture and the food industry, Norway grant nos. 262306 and 314743, and the Research Council of Norway grant no. 296083. We thank everyone from Safeconsume contributing to sampling.

Further information

birgitte.moen@nofima.no