

## P58 – Drinking water microbiota: exploring the neglected biodiversity from the source to the tap

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While safe and of high quality, drinking water harbours a complex ecosystem, still poorly characterized: this unknown microbial life may be playing important and even dominant role in ecosystem processes and can be of public health concern since the multiple and continuous interactions with us. Nevertheless, it is a long way from understanding the environmental bacteria dynamics, from the source to the tap.

We focused on what happens to the microbial communities from source water (groundwater) throughout the main steps of the potabilization process of a DWTP (carbon filters and chlorination), located in an urbanized area in Northern Italy.

Samples were processed by a stringent water filtration to retain even the smallest environmental bacteria and then analyzed with High-Throughput DNA Sequencing (HTS) techniques. Our results revealed that the composition of bacterial communities varies across the drinking water plant system. We showed that carbon filters harbour a microbial community seeding and shaping water microbiota downstream, introducing a significant variation on incoming (groundwater) microbial community. Chlorination does not affect the altered microbiota. Noteworthy, our results highlight how little we know about the diversity of microbes on this planet, even the ones that we interact with in various ways. We reported the presence of the so called “microbial dark matter” (*those microorganisms accounting for a large proportion of life and biodiversity but whose basic metabolic and ecological properties are not known*), across the entire DWTP, from the source to the tap. Further analyses will aim at unravelling the complex network beyond drinking water microbial dynamics: the microbiota residing across the DWTP and how it varies can be not only a proxy of water quality, useful for monitoring by water companies, but also a prospective indicator, addressing prevention measures.

### References

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