

EPP148 / # 888Participatory science for microbiome sampling fieldwork: A case study-based model to bridge education and environmental microbiome research E-poster presentations - session 23: Other - part 1

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Background and Aims

Studying environmental microbiomes is crucial for applied research and health-protecting policymaking. However, conventional microbiome sampling is time-consuming and requires multiple replicates. Moreover, the perception of microorganisms as inconspicuous and neglectable challenges impactful outcomes. To address these challenges, we developed a participatory science model for sampling campaigns, enabling large-scale collection and fostering awareness.

Methods

We implemented a four-day trial event in the context of urban renovation, the Bicocca Sampling Days (BSDs), where students personally sampled environmental microbiomes. Following a theoretical introduction and practical demonstration, participants collected samples from three outdoors in the Milan Bicocca district. BSDs were organized to cover all four seasons and areas with different urbanization levels. We used KoboToolbox, an open-source platform, to standardize metadata collection. Educational impacts were assessed using standard and novel scales evaluating the understanding of the sampling process, science inquiry-related skills, and self-efficacy for learning and doing science.

Results

Over 2000 samples were collected, geolocalized, and annotated. We generated ready-to-use sampling campaign design templates, checklists, metadata collection templates, and evaluation protocols. Comparing participants and non-participants, we demonstrated that participatory science confers a significantly higher knowledge of microbiome sampling and a higher self-efficacy for doing related tasks. Additionally, participants' perceived skills for microbiome sampling significantly improved after

attending the BSDs, particularly for the ones with the lower pre-BSDs skills perception.

Conclusions

We provide the scientific community with a step-by-step guide for planning and managing participatory sampling, including protocols, metadata collection forms, and evaluation processes that can be scaled up to the general public and different research questions.