

Bacteriophages in water Proficiency Testing scheme: Why?

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INTRODUCTION & OBJECTIVES

Monitoring water quality and wastewater treatment is particularly important to minimize the impact of contaminated water on human, animal, and environmental health. Recently, the use of other biological indicators, such as viral, is being increased, especially the **somatic coliphages**. The quantification of this parameter, by following ISO 10705-2 and ISO 10705-3, has been introduced in the current EU Drinking Water directive 2020/2184 and EU regulation 2020/741 for water reuse.

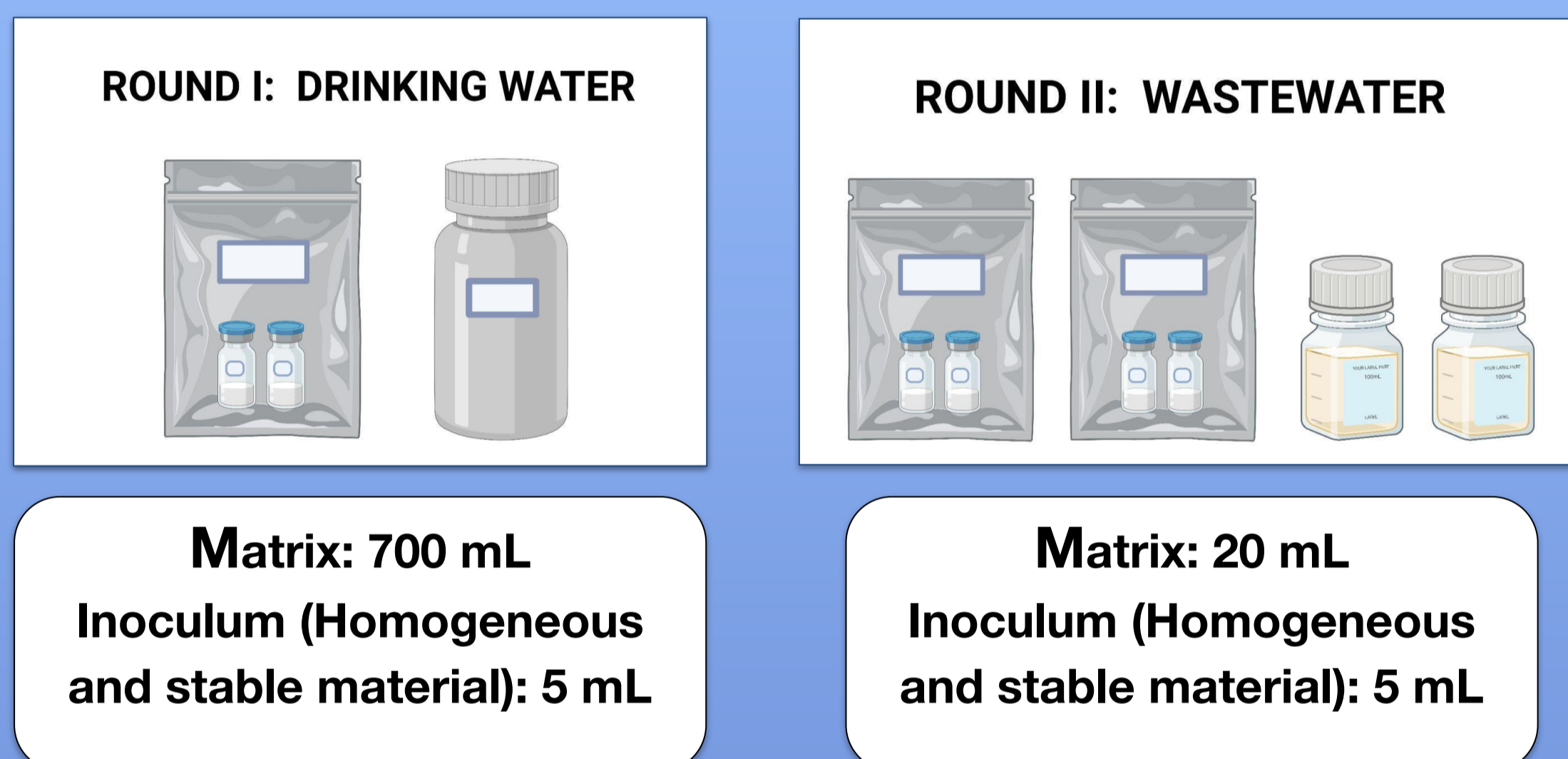
In this context, **ielab** has been a pioneer in addressing this need by offering a **Bacteriophages in water** proficiency testing (PT) scheme since **2019**. The main objective of this poster is to present an analysis of results obtained through this PT and show its evolution.

MATERIAL, METHODS & RESULTS



IELAB (PT PROVIDER)

1) SAMPLES PREPARATION



HOMOGENEITY AND STABILITY
 (ISO 10705-2 and 3)

STATISTICAL ANALYSIS
 (ISO 13528)

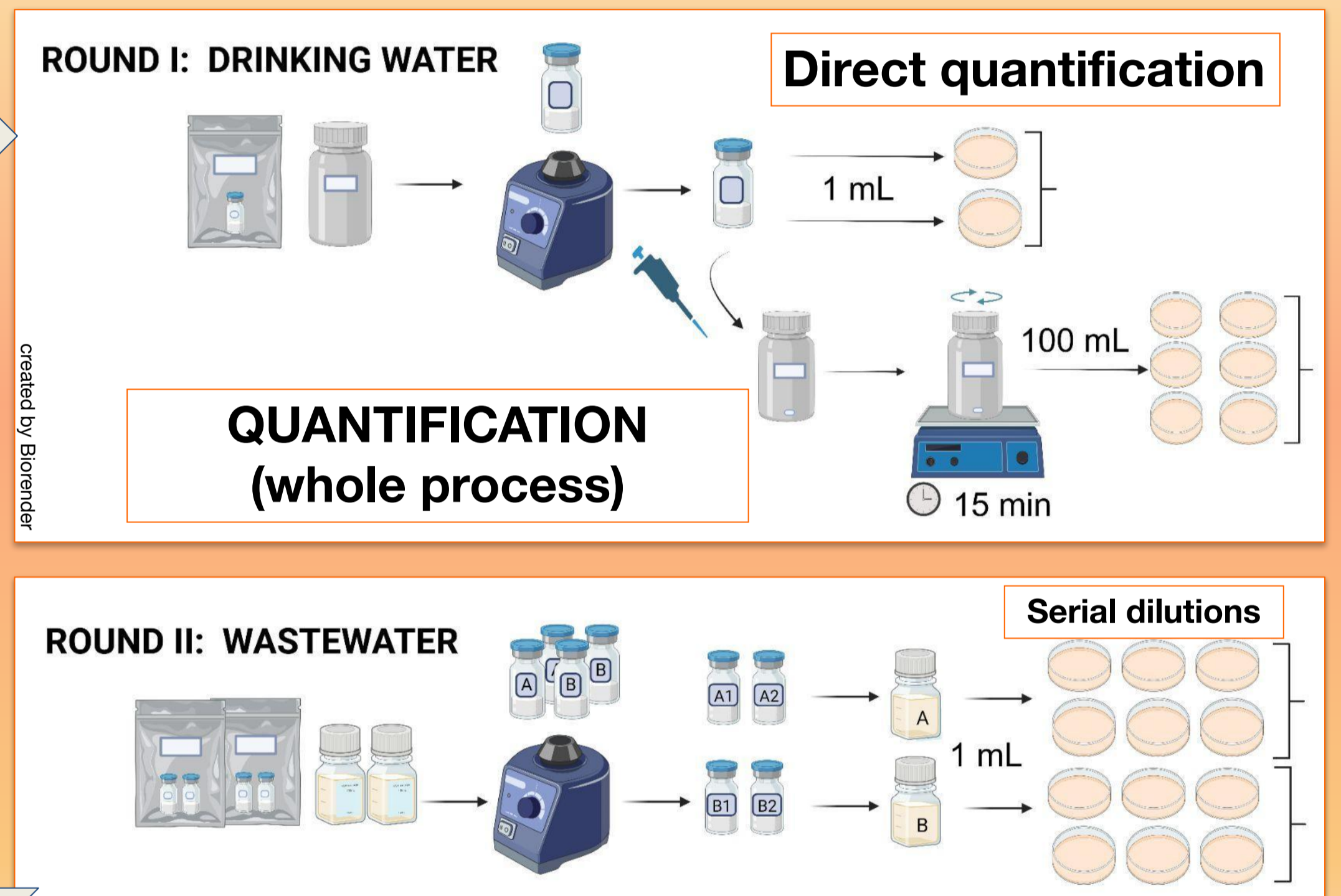
2) SAMPLES DELIVERY

4) RESULTS SUBMISSION

5) ROUND REPORT ISSUE

LABORATORY PARTICIPANT

3) ANALYSIS OF THE SAMPLES



- PARAMETERS TO INFORM:**
- SOMATIC BACTERIOPHAGES
 - F-SPECIFIC BACTERIOPHAGES
 - Other Technical data

6) Internal evaluation (ISO 17025)

- ✓ Elimination of false positive or negative results
- ✓ Logarithmic conversion
- ✓ Detection of outliers: Median Test, Cochran test and Kernel density distribution
- ✓ Calculation of the **Assigned value** and its **Uncertainty**
- ✓ Performance assessment: **z-score** calculation (97% z-score $\leq |2|$)
- ✓ **Recovery study** to show the effect of the concentration process (75%)
- ✓ Evaluation of other **Technical data**: used methods for Assay; Concentration and Elution; analyzed Elution volume; Plate size; Filtre; and Host Strains used.

CONCLUSIONS

- A significant increase in the number of participants was observed over the years in both PT rounds, proving that bacteriophage detection methods are being fine-tuned for both national (66%) and international (34%) laboratories.
- In general, the quantitative data sent by the laboratories is well correlated and in agreement with the results intended by the organization.
- The samples and design used in these schemes are suitable for the assessment of laboratory performances for analysing bacteriophages in all type of water.

