



LA NOSTRA
ESPERIENZA,
LA VOSTRA
SICUREZZA.

A photograph of a laboratory setting with several clear petri dishes arranged in rows. A single green seedling with four leaves is growing out of the center dish, symbolizing growth and environmental monitoring.

Environmental monitoring webinar?

Application of microbiological and virological analyses in the environmental monitoring of process of production

30.09.21 Brescia



Food safety



- checks on food for safety criteria
 - microbiological
 - virological
 - allergens
- checks on the surfaces of equipment and processing environments





Environmental monitoring



- Size of the sampled surfaces
- Sampling sites
- Method of sampling (sponges or swabs)
- Use of analytical methods with high sensitivity
- Genetic characterization of the isolates





Size of the sampled surfaces



- In RLM plan for export in USA or Canada (meat products) is suggested to analyze, if possible, at least 900 cm²

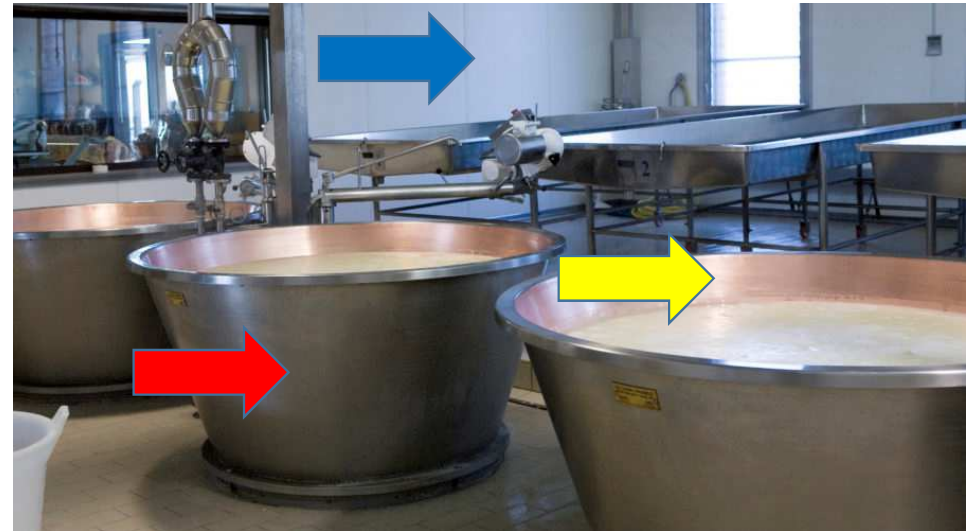




Sampling sites



- direct contact surfaces
- indirect contact surfaces
- not in contact surfaces



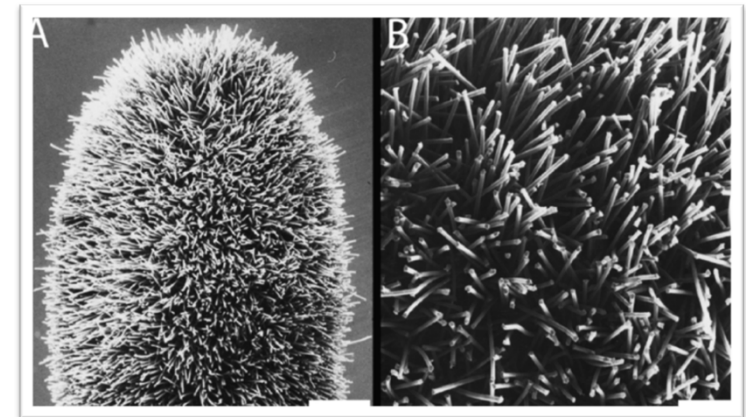


Method of sampling



Flocked swab

- better capacity to recover on surfaces
- better ability to release in the analysis





Use of analytical methods with high sensitivity



- Screening with PCR or Rt-PCR or dPCR
- ISO Methods
- Confirmation of isolates (ex. MaldiTof)

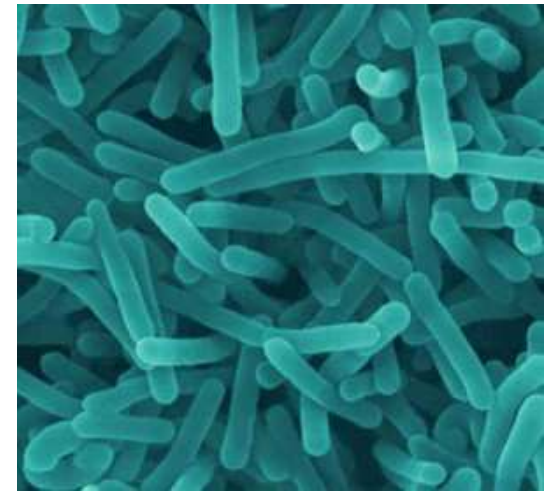




Some examples: pathogens



- *Lm* isolated in Italian cheese in Canada & US
- inspections with environmental sampling at the manufacturer
- *Lm* isolated from surfaces
- WGS demonstrated homology of the isolates
- implementation of the sanitation procedures by the manufacturer





Some examples: not-pathogens



- reports from consumers
- collection of samples of cheese and water
- inspections with environmental sampling at the manufacturer
- Strains of chromogenic *P. fluorescens* from water, cheese, sawbs and from gaskets of production line
- Set up of a PCR method for detection of chromogenic *P. fluorescens*





Some examples: allergens



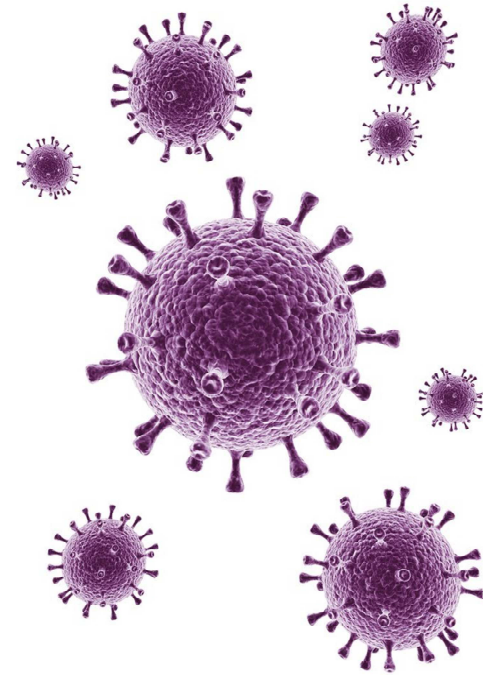
- the environmental sampling is essential to verify that in factories with production lines of products without allergens (gluten) there are no cross-contaminations



- Detection on swabs with Elisa



Some examples: virus



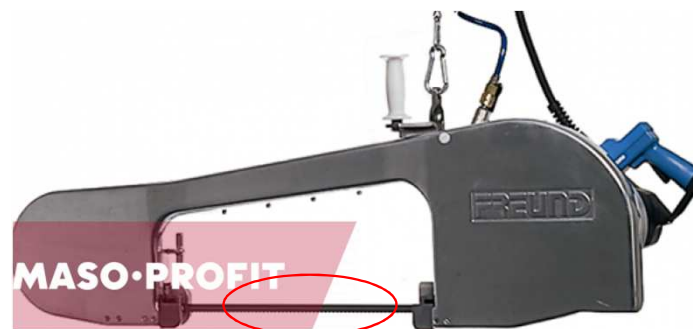
- viruses are able to resist to surface cleaning and disinfection treatments
- low doses are sufficient to cause disease
- viruses can remain viable on surfaces in environments such as canteens, kindergartens, etc.
- in our routine activity detection Norovirus and HAV from swabs
- detection of Sars-Cov2 from swabs collected in public transport or fast foods



Some examples: virus



- One Health European Joint Projects_BIOPIGEE
- detection of HPE virus in pig production chain
- Environmental sample taken at farms and at slaughterhouses





Thank you for your attention



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