METAGENOMICS IN CHEESE QUALITY AND SAFETY
Universitat Autònoma de Barcelona

Gemma Sandoval Gil
June 2021

OBJECTIVES

- What is a metagenomic study? And how it works?
- How can metagenomic study improve the cheese quality?

METHODOLOGY

Research in: **Pub**Med   Google Scholar

METAGENOMIC STUDY

Two types of experimental approaches:

Amplicon sequencing

- Identify which microorganisms are present
- Virus can not be sequenced

Shotgun sequencing
- Identify all domains
- Strain identification
- Functional potential

Use Next-Generation Sequencing :

- **Second-Generation (Short-Read) Sequencing**
  - Short-Read Sequencing by Synthesis (Illumina)

- **Third-Generation (Long-Read and Real-Time) Sequencing**
  - Single-Molecule Real-Time Sequencing (Pacific Biosciences)
  - Nanopore Sequencing (Oxford Nanopore Technologies)

Fig. 1 Example of workflow of metagenomic study (Breitwieser FP, et al., 2019):
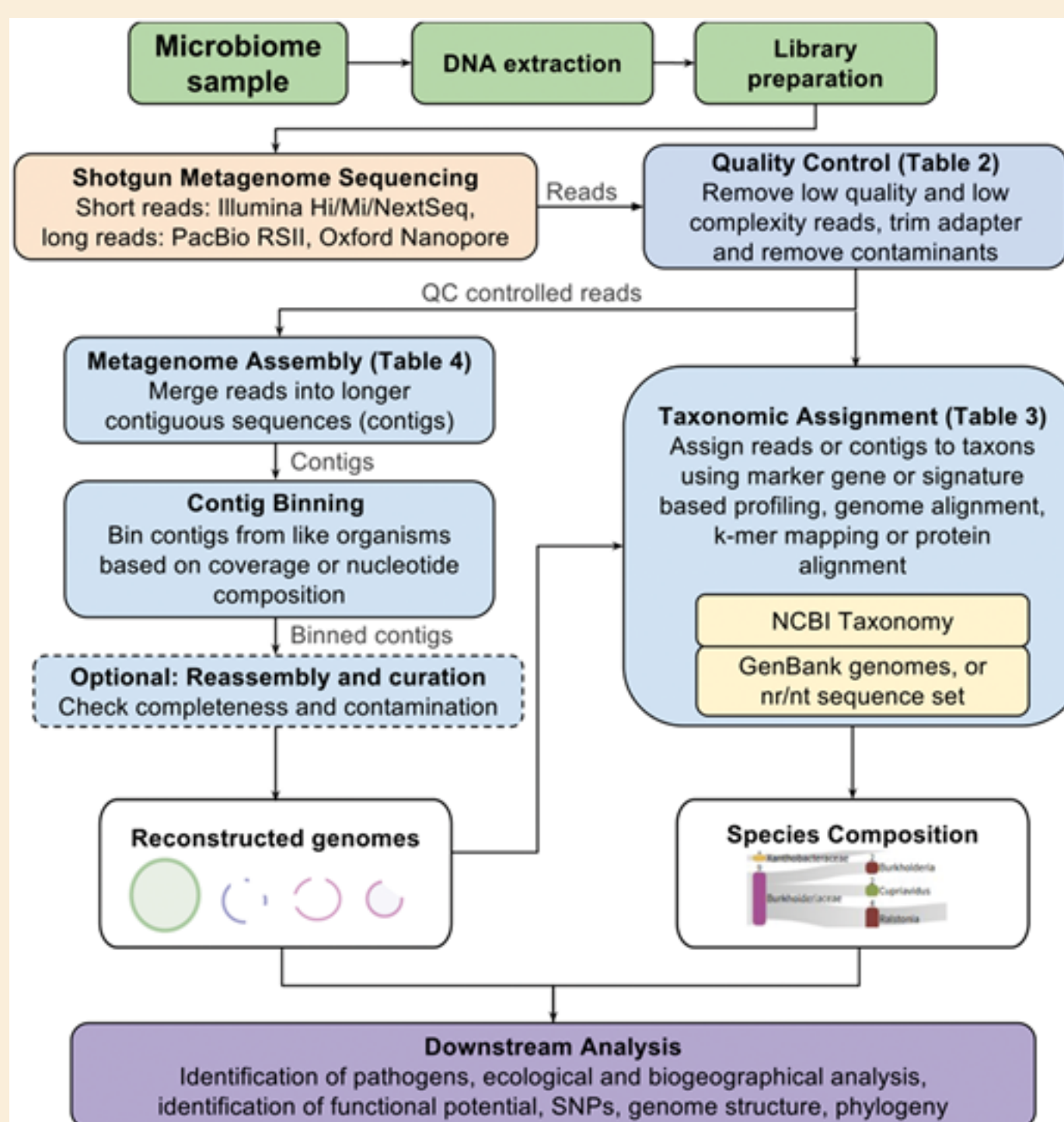
CONCLUSIONS

- Metagenomic can detect previously overlooked microorganism in cheese. This fact can lead to further investigations to know which roles play.
- The study of functional potential can help to choose better the starter cultures.
- Metagenomic can provide greater cheese security, because we can indentify all domains.
- Metagenomic can help to identify which are te factors that influence on cheese process . With that fact we can improve hygienic methods and organoleptic aspects

REFERENCES

Breitwieser FP, Lu J, Salzberg SL. A review of methods and databases for metagenomic classification and assembly. Brief Bioinform. [Internet]. 2019;20(4):1125–39. Available in: https://doi.org/10.1093/bib/bbx120