



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Domestication of Yeast for Food and Beverages

2425-117R-DOME

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#### Titolo

Domestication of Yeast for Food and Beverages

#### Docente(i)

Prof. John Morrissey

#### Lingua

English

#### Breve descrizione

##### Overview

Yeasts are widely used for the production of fermented foods and beverages. Some of these processes date by thousands of years and we now know that long before yeast were identified, humans were selecting strains with improved traits, gradually leading to the establishment of unique lineages. These strains have particular genetic changes that make them more suitable for human processes and can be described as having been domesticated. Genomic techniques enable us to now identify these changes and to reconstruct the events that led to domestication. The links between human society and strain domestication are fascinating. The knowledge gained can be used to design and build new strains for food and industrial biotechnology.

## Course content:

### Lecture 1

- Evolutionary and taxonomic status of yeasts
- Overview of yeasts used in food biotechnology
- Concepts of domestication

### Lecture 2

- Yeast fermentation from a historical and metabolic perspective
- Yeast in the production of bread and beer
- Domestication of\* *Saccharomyces cerevisiae*\*

### Lecture 3

- A historical perspective on the development of brewing in Europe
- Hybrid yeast: how hybrids form and their role in domestication
- Evolution of the lager yeast *Saccharomyces pastorianus*
- Trends in the development of new hybrid yeasts

### Lecture 4

- Domestication of yeasts in the dairy environment
- Evolutionary history of the *Kluyveromyces marxianus* and *Kluyveromyces lactis*
- Domestication of dairy strains of *Saccharomyces cerevisiae*

\*\*The goals of this module are for students to:

- Explain the concept of microbial domestication and its link to human society
- explain the process of yeast domestication using specific examples and case studies
- articulate how knowledge of yeast domestication can be beneficial for new innovations in biotechnology

## CFU / Ore

1 (8 hour), with in itinere evaluations

## Periodo di erogazione

July 8 & 9, 2025

## Sustainable Development Goals

SCONFIGGERE LA FAME | SALUTE E BENESSERE | IMPRESE, INNOVAZIONE E INFRASTRUTTURE |  
CONSUMO E PRODUZIONE RESPONSABILI | LOTTA CONTRO IL CAMBIAMENTO CLIMATICO

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