The yeast *Saccharomyces cerevisiae* has a limited replicative lifespan. Replicative ageing depends on the number of divisions experienced by each cell, and can be determined by counting the number of bud scars on the wall of the mother cell.

The industrial production of beer reuses yeast cropped at the end of fermentation in subsequent fermentation, a process unique to brewery fermentations called «serial repitching». Depending on the mechanism used for extract and reuse the yeast, populations of different features can be obtained [1, 2].

The reproduction model involves two phases in the cellular cycle: Unbudded phase (U) and Budding phase (B). The change into the B phase takes place only if at the end of U phase the cell has attained a minimum stochastic cellular mass (the start mass) and a minimum growth of its biomass. The completion of the B phase requires a minimum duration (two cell cycles) and a minimum growth of biomass and a minimum temporal check: a minimum growth of its biomass. The completion of the B phase is completed with the cell division, the separation of the daughter cell (with a fraction of the mass achieved during this phase) and the parent cell.

The simulator INDISIM-YEAST.

**The set of N(0) virtual yeast cells configures the population, defined by**

\[ P(t) = \{Y(t)_{0}, \ldots, Y(t)_{N-1}\} \]

\[ Y_{i} \text{ is a yeast cell with the individual characteristics:} \]

- \( v_{i} \): cell biomass,
- \( s_{i} \): genealogical age, number of bud scars on the cellular membrane,
- \( p_{i} \): position in the spatial domain,
- \( r_{i} \): the reproduction phase in the cellular cycle (U or B phase),
- \( m_{i} \): "start mass" (mass required to change from U to B phase),
- \( t_{i} \): minimum time required to complete the B phase
- \( t_{i} \): min survival time without satisfying the metabolic requirements.

**RESULTS AND DISCUSSION**

**We have performed several simulations using INDISIM-YEAST, in which the only parameter that was changed was the genealogical age of the cells, the initial inoculum**

**The initial age of the seed yeast cell not only influences the population growth, but also the rate of nutrient uptake and ethanol production.**

**Our findings are in broad agreement with the experimental results of Powell and co-authors[1, 2] and support their views.**

**INDISIM-YEAST OFFERS DIVERSE AND ATTRACTION POSSIBILITIES TO CONTINUE TO EXPLORE THE FERMENTATION PROCESS, AND SPECIFICALLY ALL THE PROTOCOL RELATED WITH THE "REPITCHING" OF YEASTS IN THE BREWING INDUSTRY.**

**REFERENCES**