

Beer was an important source of nutrition in the past. To study its importance in diet, the nutritional input of beer in early modern Ireland (c1550 – c1650) was examined. Archival records in Dublin Castle facilitated ingredients and recipes of the time to recreate an Irish beer. As well as barley, Irish beer included oats, and hops. A beer was made following the original recipe and ingredients. A working Tudor brewery that used traditional equipment and processes was built at the Weald & Downland Living Museum in Sussex. To select the most appropriate yeast, two strains from the NCYC collection were screened to represent the ancestral strain. The fermentation process was monitored and the beer analysed for nutritional parameters.

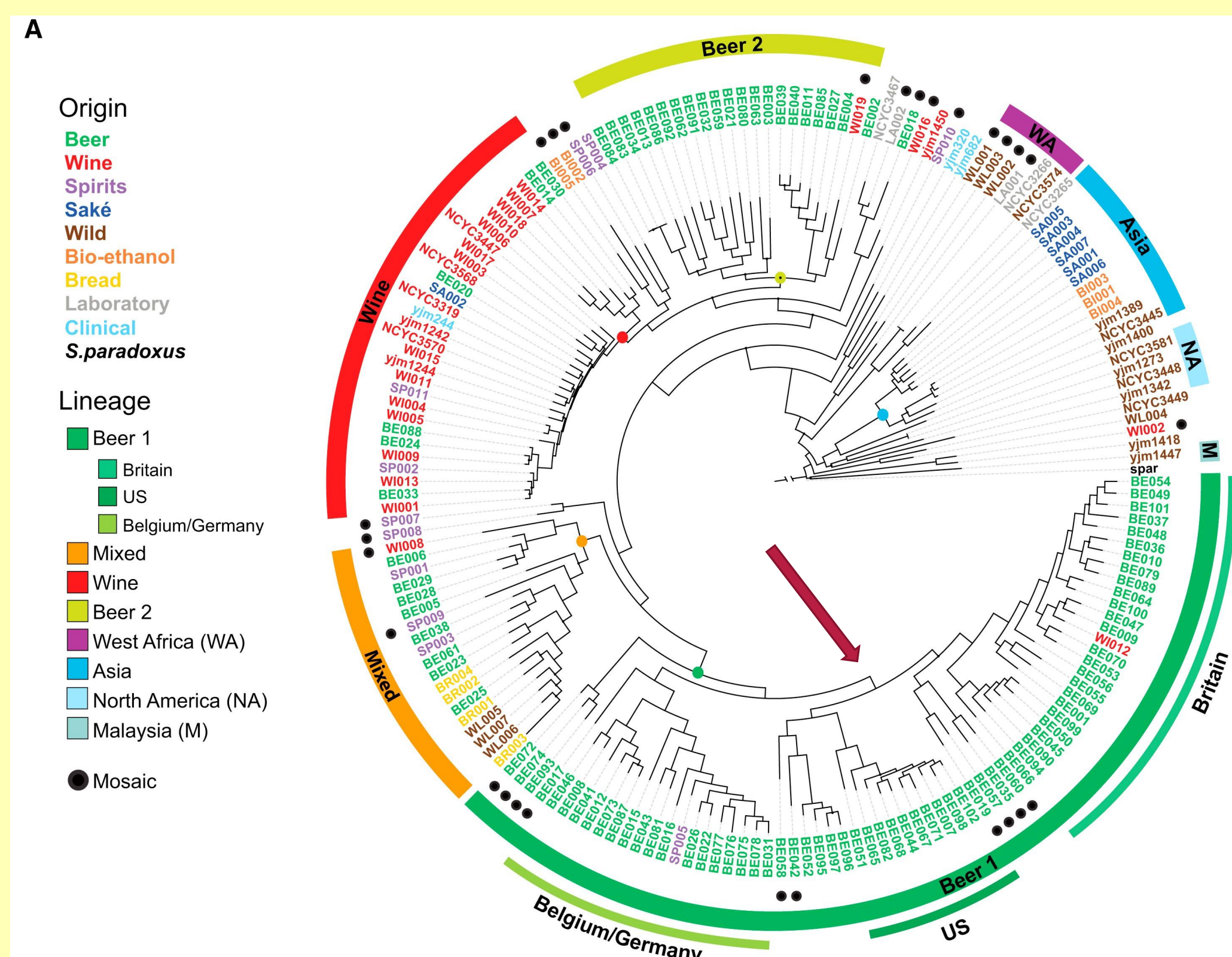
CHOOSE, SCREEN, BREW!

1. Digging up an early modern yeast

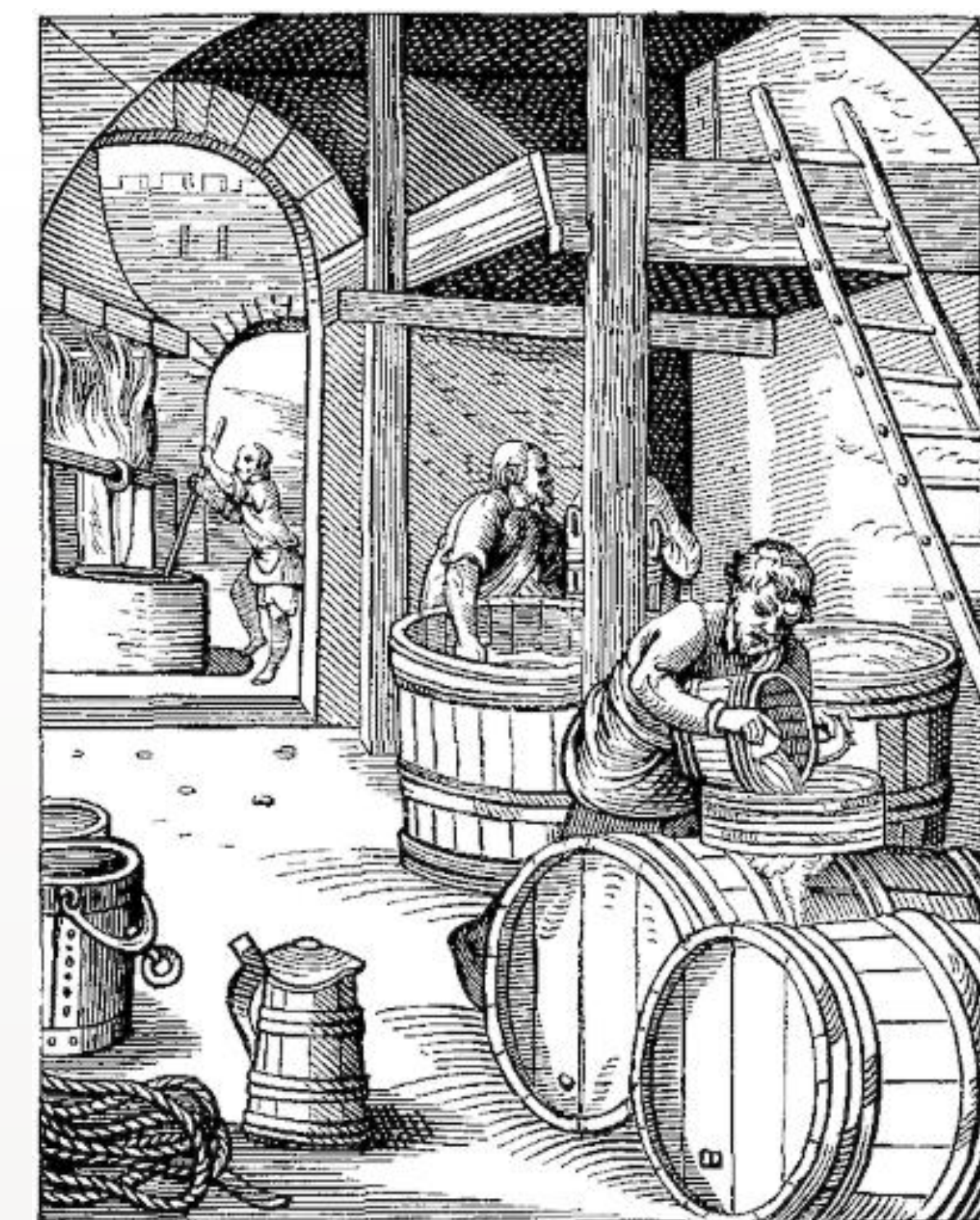
Phylogenetic tree helped selecting two *S. cerevisiae* at the root of British "Beer 1" yeast clade.

NCYC 84 deposited in 1943 by Barclay, Perkins & Co., Diploid.

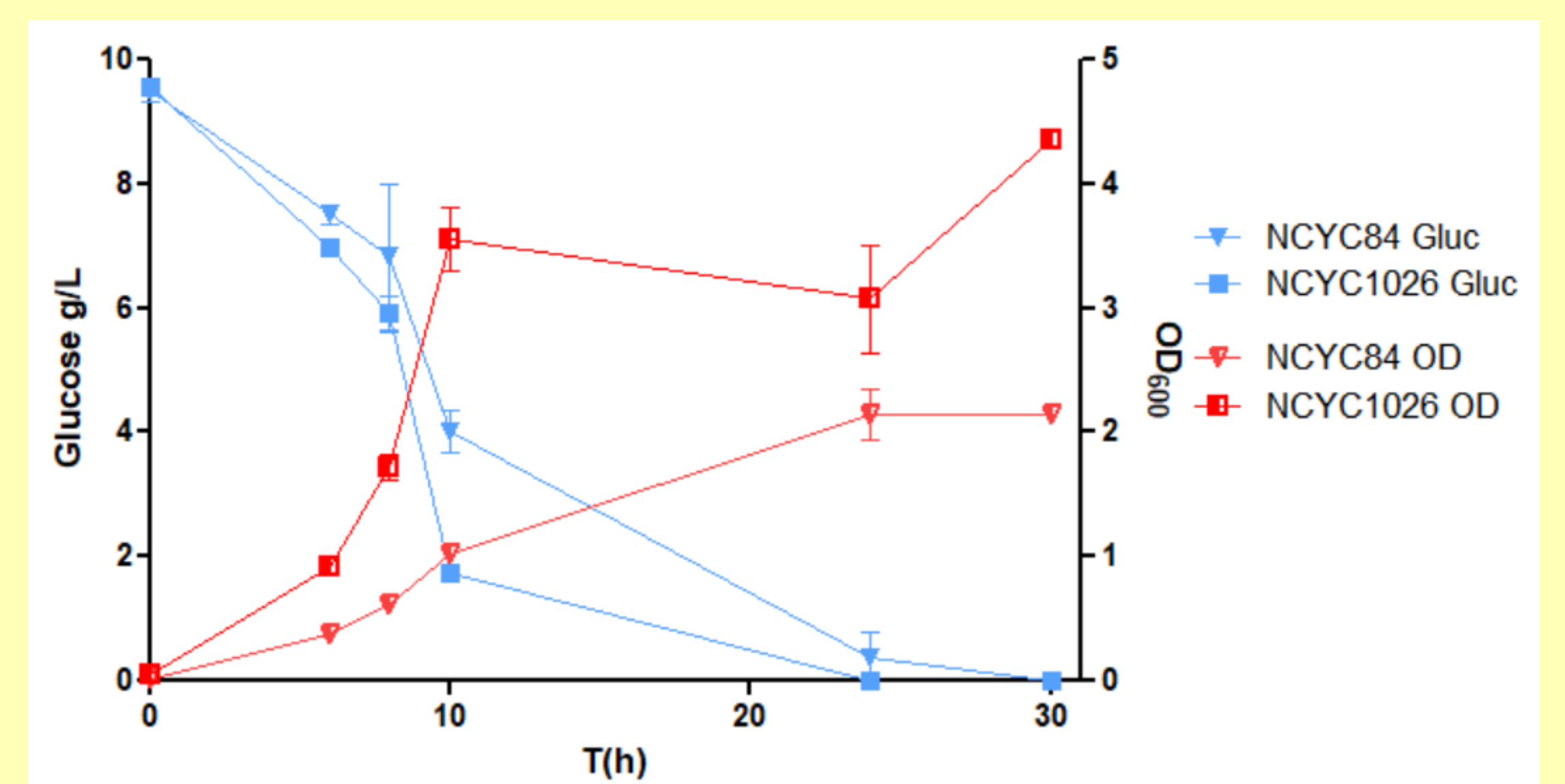
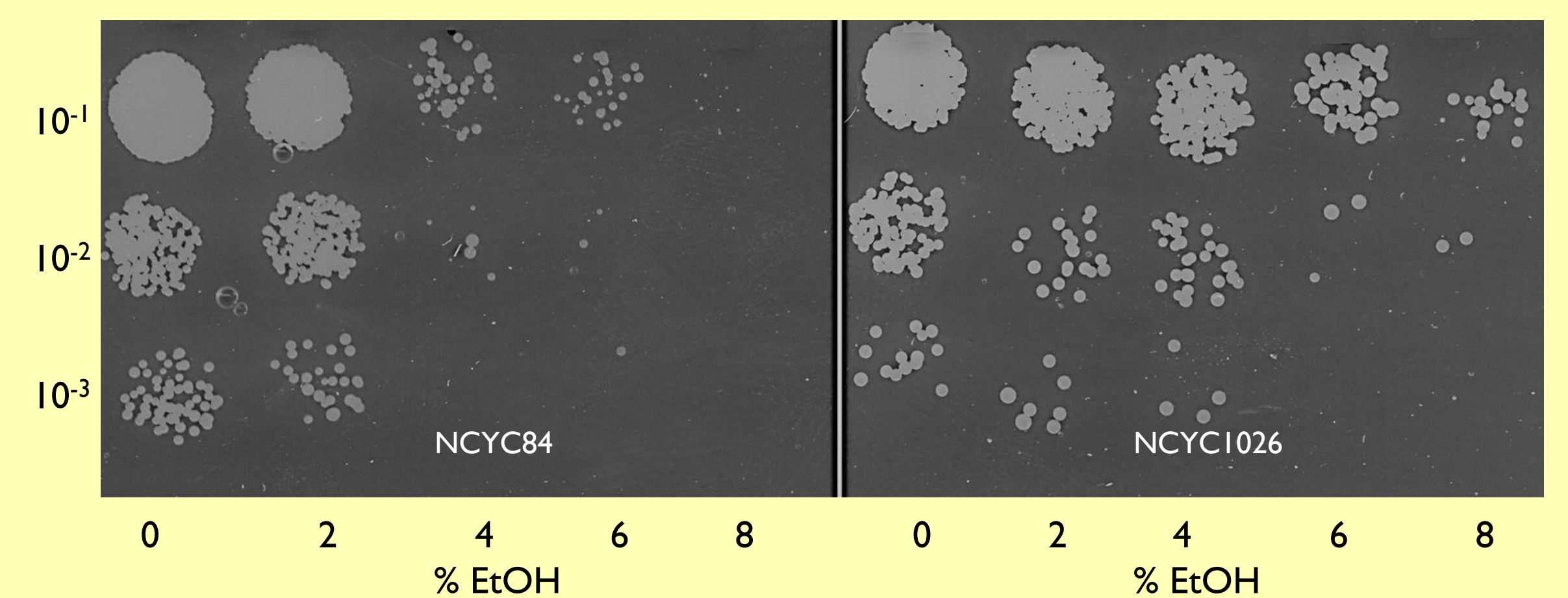
NCYC 1026 deposited by a British brewery in 1958. Tetraploid.



Taken from Gallone et al., 2016. Cell. doi: 10.1016/j.cell.2016.08.020



2. Screening ale strains



- Better performance of **NCYC 1026** on ethanol tolerance test.
- **Faster growth** of **NCYC 1026** on different fermentation media.

3. Brewing in a Tudor kitchen



Brewing performed in a Tudor kitchen set up.

Old recipe followed to replicate early brewing.

Fermentation lasted a week, when the exhausted yeast sank to the bottom.

Final beer:

- Complete fermentation.
- Final ethanol 5%.
- No detectable off-flavours.

