

THE SECRET BEHIND THE BREW

YEAST



Yeasts are single-celled fungi.

They've existed for hundreds of millions of years.

Humans started to use yeast to make beer around 4000 BC.



TYPES OF YEAST



SACCHAROMYCES CEREVISIAE

WHAT IS IT?

Saccharomyces means "sugar fungus." *Cerevisiae* means "of beer."

HISTORY

Humans have used *S. cerevisiae* to bake bread, brew beer and make wine for millennia.

FERMENTATION

Top-fermenting

WHAT KIND OF BEER?

Good for ales

DID YOU KNOW?

S. cerevisiae is the official microbe of Oregon, in honor of its many craft beer brewers.



SACCHAROMYCES PASTORIANUS

WHAT IS IT?

A hybrid of *S. cerevisiae* and *Saccharomyces eubayanus*

HISTORY

Developed in the 1300s in Bavaria but named in 1870 by Max Reess in honor of Louis Pasteur.

FERMENTATION

Bottom fermenting

WHAT KIND OF BEER?

Good for lagers

DID YOU KNOW?

Scientists are currently debating whether *S. eubayanus* came to Bavaria by way of trade from Patagonia or the Tibetan Plateau.



BRETTANOMYCES

WHAT IS IT?

A strain of wild yeast regaining popularity in craft brewing circles

HISTORY

Modern brewers nicknamed this "funky" yeast Brett and use it for both single-culture and mixed fermentations.

FERMENTATION

Brett takes longer to ferment than *Saccharomyces* strains.

WHAT KIND OF BEER?

Good for lambics, guezes, wild saisons, farmhouses and beers with big tastes



FLAVORS CREATED BY YEAST



ALCOHOLS

TASTES LIKE:

Warm, astringent alcohol (ethanol) or florals and wine (fusel)

HOW TO MANAGE:

Avoid extremely high fermentation temperatures or too much yeast. Either can create too much fusel alcohol, which makes beer taste sharp or burning.

TRY IT IN:

Belgian ales



ACETALDEHYDE

TASTES LIKE:

Green apples or fresh pumpkin

HOW TO MANAGE:

Give beer more time to age to get rid of unwanted acetaldehyde flavors.

TRY IT IN:

Ciders



DIACETYL

TASTES LIKE:

Butter, buttery popcorn or butterscotch

HOW TO MANAGE:

Certain strains of yeast and careful fermentation timing can produce desired diacetyl flavors. Unwanted diacetyl increases with age and problems in the canning/bottling process.

TRY IT IN:

Czech lagers



ESTERS

TASTES LIKE:

Banana (isoamyl acetate); chemical solvent (ethyl acetate); apple, pear or anise (ethyl caprylate and caproate).

HOW TO MANAGE:

Ester flavors are produced by higher fermentation temps and fast-clumping yeasts that leave more sugars behind during fermentation.

TRY IT IN:

British bitters and tropical stouts



PHENOLS

TASTES LIKE:

Spice, smoke, cloves (4-vinyl guaiacol), earthy or horsey (4-ethyl phenol)

HOW TO MANAGE:

German Hefeweizen yeasts produce bigger phenol flavors. Stick to moderate fermentation temperatures to limit phenol flavors; beers with too many phenols can taste medicinal.

TRY IT IN:

Hefeweizens and Trappist ales

YEAST BEYOND BREWING

BAKING

Bakers also use a strain of *S. cerevisiae* to create leavened breads.

Sourdough starter contains a wild yeast called *Saccharomyces exiguus* or *Saccharomyces minor*.



WINE-MAKING

Harvested grapes often carry *Kloeckera* and *Candida*, two genera of wild yeast that begin fermentation immediately.

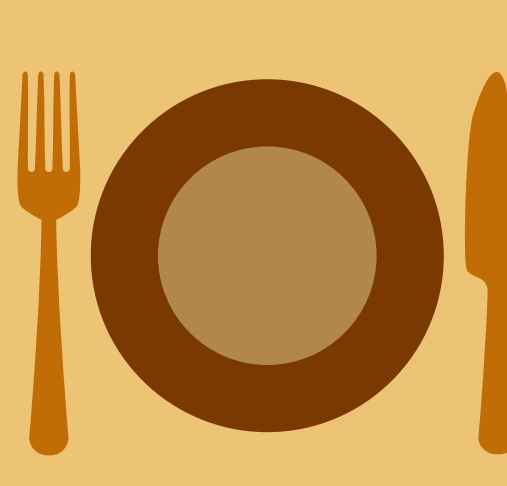
Vintners then usually add *S. cerevisiae* or, alternately, *Saccharomyces bayanus* for fortified and higher-sugar grapes.

Sometimes wine makers will use *Brettanomyces* for added complexity, but sometimes it will infiltrate production by mistake and spoil the batch.

NUTRITIONAL YEAST

Nutritional yeast is a deactivated strain of *S. cerevisiae* high in B vitamins.

Nutritional yeast is especially popular with vegans who often use it as a cheese substitute.



GROWING INTEREST



Searches for *Saccharomyces* and *Saccharomyces cerevisiae* on UL Prospector have both grown sharply in volume and relative interest over the past five years, according to UL's Industry Analytics tool.

