



NABLAB MICROBIOLOGY

Joeri De Maere



AGENDA

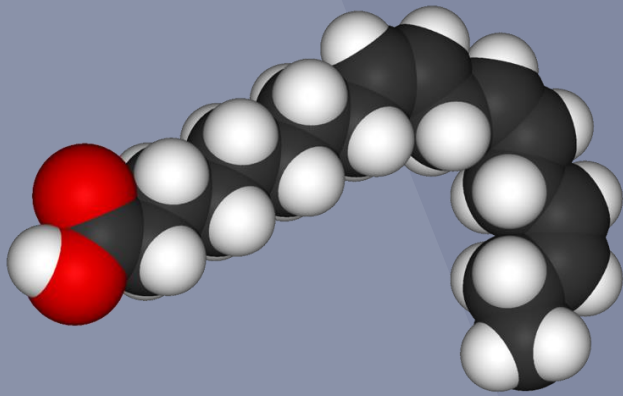
Beer is naturally anti-microbial

Traditional beer spoilers

Affect of less or no alcohol

Safe release methods

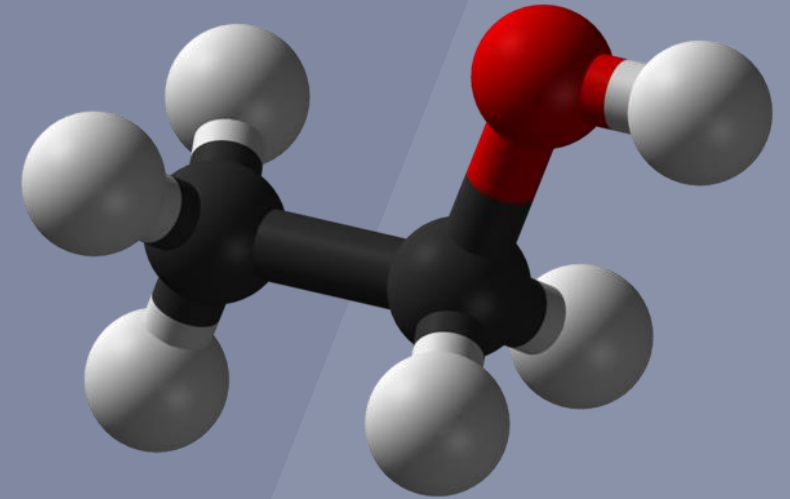
BEER IS NATURALLY ANTI-MICROBIAL



ALFA-ACID



PH



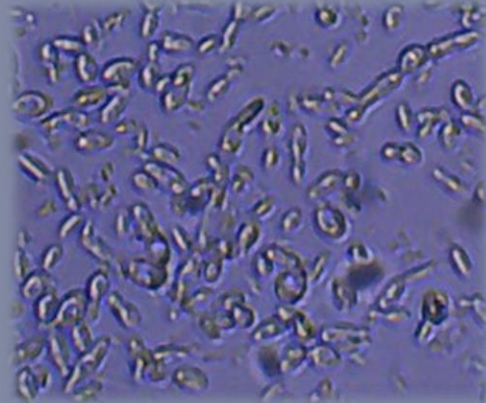
ALCOHOL

BEER SPOILERS

BACTERIA



LACTOBACILLUS

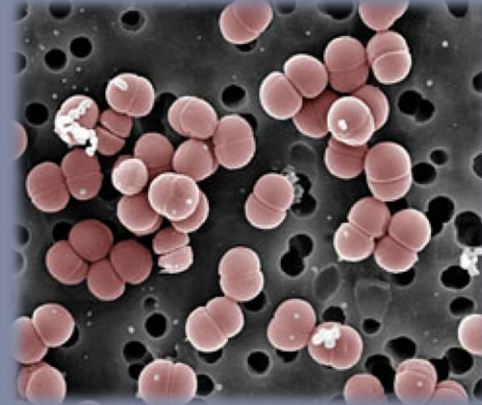


PEDIOCOCCUS

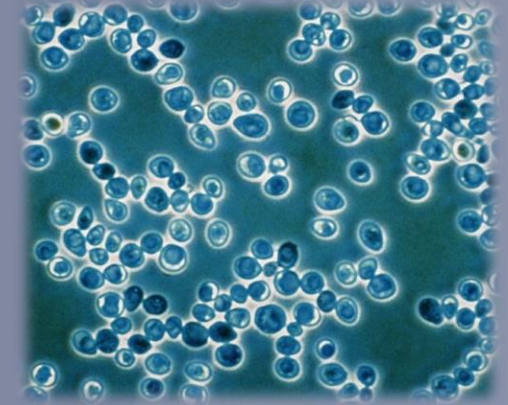


MEGASPHAERA
AND PECTINATUS

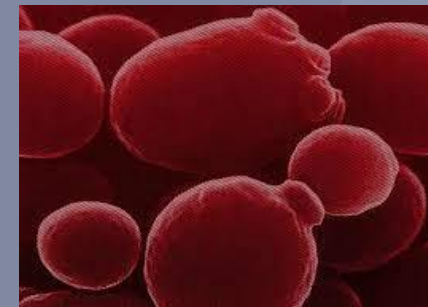
WILD YEAST



BRETTANOMYCES
LAMBICUS



BRETTANOMYCES
BRUXELLENSIS



DIASTATICUS

A close-up photograph of a woman with dark hair and blue eyes, wearing a black top. She has a disgusted or displeased expression on her face, with a wrinkled nose and a downturned mouth. She is holding a tall, elegant glass filled with golden beer and a thick head of white foam. The background is a plain, light-colored wall.

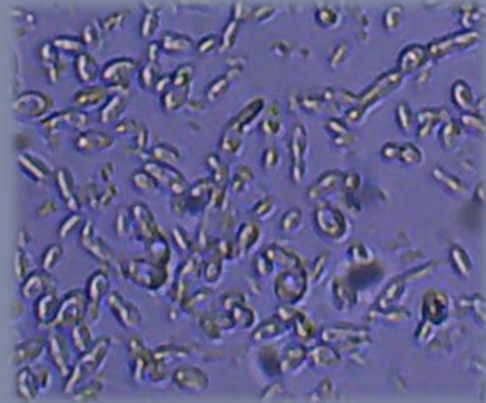
**OFF-FLAVORS ARE
BIGGEST RISK IN BEER**

NABLAB SPOILERS=BEER SPOILERS + 1 SLIDE EXTRA

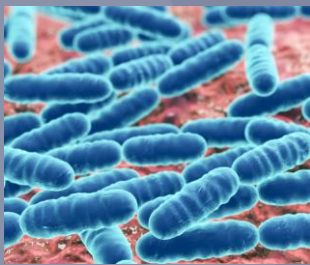
BACTERIA



LACTOBACILLUS

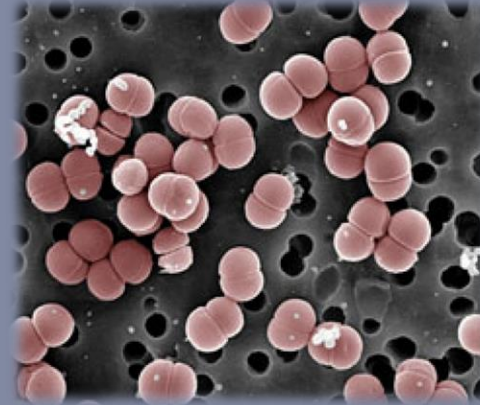


PEDIOCOCCUS

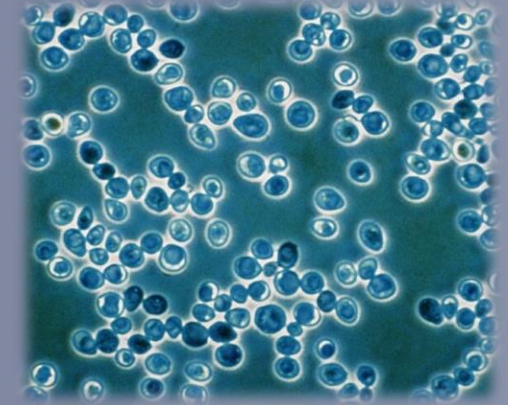


MEGASPHAERA
AND PECTINATUS

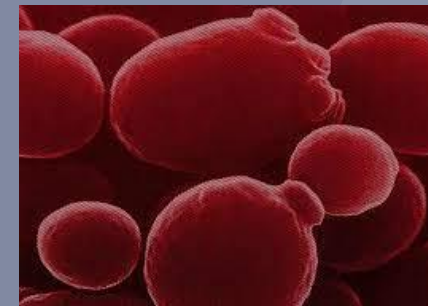
WILD YEAST



BRETTANOMYCES
LAMBICUS



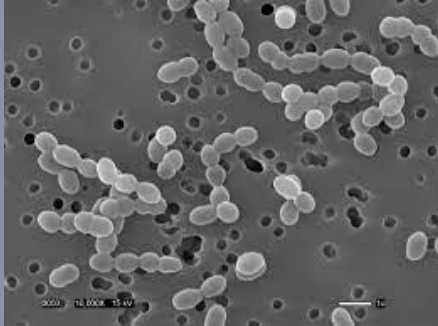
BRETTANOMYCES
BRUXELLENSIS



DIASTATICUS

NABLAB SPOILERS EXTRA SLIDE

BACTERIA



LEUCONOSTOC



ACB



BACILLUS



ACETOBACTER

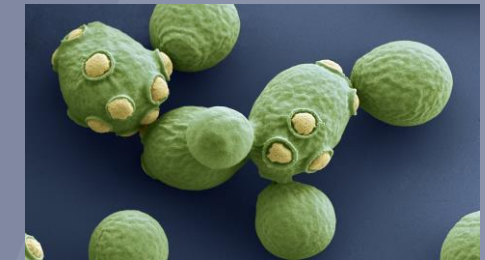


GLUCONOBACTER

WILD YEAST



PICHIA



**SACCHAROMYCES
CEREVISIAE**

A woman with dark hair and a disgusted expression is holding a glass of beer. The background is a plain, light-colored wall. The text is overlaid on the left side of the image.

OFF-FLAVORS ARE BIGGEST RISK IN NABLAB BEER AS WELL IF:

- PH stays low (ideally below 4.6)
- Alpha acids are present higher than 20 IBU

NABLAB BEER SAFE RELEASE TECHNIQUES



PASTEURISATION



STERILE FILTRATION



PCR ANALYSIS

COMPARISON

- **Craft:**
 - No pasteurisation due to cost
 - No sterile filtration due to cost
 - PCR technology solution of partner
- **Industrial:**
 - Pasteurisation:
 - bad shelflife
 - ACB is resistant
 - Sterile filtration 0.1/0.2 μm
 - PCR technology solution inhouse

=> **Combination of sterile filtration and PCR**





THANKS A LOT

Joeri De Maere
Pall Corporation