

YEAST CULTURING by Andy Thomas (extracted from notes from lecture by Dr. Jerry Vaughn of the University of Tennessee)
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The CCH members who were fortunate enough to attend the 1st annual Eastern Homebrew's Alliance Convention in Gatlinburg this Spring learned more about yeast culturing in one concise lecture than you could ever learn by reading the somewhat confusing books available to the homebrew. I certainly cannot convey the concept of yeast culturing as well as someone who has spent years studying the beasties, but I will try not to do too great of an injustice to Jerry's ideas.

"Hey, my Chimay yeast started to taste like crud. It must have mutated and is screwing up my beer. Right?"
Wrong, black patent breath! If you are reusing a yeast and it starts doing a bad job for you, chances are your lack of cleanliness allowed the yeast to incorporate wild yeast doing sexual reproduction, but yeast reproduce asexually, right? Wrong again, airlock head. Let me back up here . . .

Yeast reproduce both sexually and asexually. Asexual reproduction, or simply budding, takes place when yeast are comfortable and they are surrounded by food. One example is yeast in a fermenter full of new wort. They bud like crazy – producing our beer in a way that still seems a little bit like magic no matter how well you understand it. What do yeast do when times are not so good? When the wort is fermented? Yeast protect themselves from hard times by sexually reproducing with other yeast cells. This sexual reproduction produces spores. What do the spores do? They wait for better times again.

Yeast spores float on dust, they travel on your cat, they have found their way into every nook and cranny in your beer room! Remember that wort you spilled in the corner and didn't quite clean up? You guessed it. Wild yeast spores are all over the place and they are prepared to sexually reproduce with your prized Chimay yeast, carefully cultured Guinness yeast, whatever. Yeast is yeast. Once you inactive yeast is exposed to air (once you've racked your beer off) or after sneeze near it (saliva has 100 yeast cells/cc), the good yeast will probably find some of those odd wild spores and reproduce sexually with them. So what? Yeast reproduces tons of times during on fermentation and the wild yeast parent can slowly show up in larger numbers of the daughter cells or budded cells. Anyone who has ever drank a Gueuze from Belgium knows what wild yeast can do. Holy smoke! Talk about a mouthful of lactic, dry, sulfidic, vinegar, etc. These wild yeast can slowly work their way into your good colony and with the wild yeast, weird flavors!

Mutations in a yeast? Possibly. Yeast will produce mutations from time to time, but the odds are stacked against them. Then figure that when the odd mutation occurs, what are the chances that the mutation will be so superior to the others that it will take over the colony? Practically zero. Most mutation are genetically screwed up and get cast aside in favor of a healthy population. Mutations don't cause off flavors. Yeast which has been infected with wild yeast definitely will.

But wait, does this mean that there is no way to keep crazy wild yeast out of my favorite Sierra Nevada? No, it means that to reuse that Sierra yeast, you must culture it. Culture? Isn't that when you go to the opera and eat finger food? Not quite, lupulin breath. Culturing yeast can be as simple as making beer (usually easier than making beer), and can prolong the life of your best yeast as long as you desire.

What to use? Very expensive equipment!!! Note the following high tech:

- One cardboard box (2' X 2' X 2' approximately)
- One can spray paint
- A few cotton balls
- A few disposable pipettes & bulbs
- 6 sterilized test tubes & stoppers (note: these are available in any scientific catalog. US Scientists can take bulb orders for the club and supply them.)
- Also, you need a clean area and some common sense. Hmmm . . . we were in good shape until that last one. If short on common sense, you may want to watch someone.

----DIRECTIONS----

1. Spray paint a box after cutting one side out. The paint seals the surface of the box so no dust comes off. You will work under the box to reduce the chances of things falling into your operation. Wipe your counter (Formica or non-porous counter is best) down with alcohol before starting.
2. Put the disposable pipettes on a rack in your pressure cooker, seal, & bring the cooker to a boil to sterilize them. Bacteria cannot survive high temperature pressurized steam while a few varieties can survive a normal stove top boil. Let the pipettes cool and place some cotton in the large end before placing the bulb on.
3. Make up a cup of dry malt extract wort (a low gravity wort of 1.030). Cool the wort and pipette one tablespoon of wort into the pre-sterilized test tubes and cap them.
4. Take another sterile pipette & put cotton in the large end again. Pipette a small volume of yeast culture (one ml or ½ tsp.) into the six test tubes with the wort, uncapping, filling & capping them back one at a time. The yeast culture can consist of any source of desirable yeast such as:
 - a) A bottle of unpasteurized beer which was opened only a couple of minutes before.
 - b) The bottom of your fermenter if some style of blowout fermentation was used.
 - c) A starter you save in a sterilized container in the fridge
 - d) Your favorite brewery (if you can talk them out of it)

Transfer into the test tubes is easier if all the tubes stand upright in a rack, or just as easy, stand them up inside a short tumbler.

Keep an eye on your six new starters because, as the yeast works, gas will be liberated & they will try to pop the stoppers off. Crack them occasionally just to release pressure, but do not remove the caps unless you're ready to use it. Once you see sediment in the tube, put it in the fridge.

You now have pure colonies of your yeast, however the colonies are small. Prior to pitching into a 5 gal. work, the yeast must be built up into a larger colony by pitching the test tube contents into a pint or so of dry malt extract wort of some other wort. Do not pitch the contents of the pint starter into your wort unless you have observed activity in an airlock. Pitching only the contents of one test tube starter into a 5 gallon wort will result in a very long time for initial fermentation and will probably all time for bacterial infection.

So let's make beer!!!!