What Occurred in Your Experiment?

Since you have now taken part in the time-honored tradition of fermentation, what did you learn from this process? Below are excerpts from the Zilber interview. As you read or listen to these quotes, envision how your fermentation reaction exemplified this?

Note to editors, these are audio boxes that play the quotes in the boxes.

Ira Flatow: What is going on in the fermentation process that makes– you start out with something, and you wind up with something else. What's going on there?

DAVID Zilber: Yes, that's exactly it. Well, the most succinct way that I can define fermentation in layman's terms is that it's the transformation of one ingredient into another by way of a microbe. So if you imagine that you start out with cabbage and then you get lactic acid bacteria to grow in and alongside your cabbage, in two or three weeks' time, you end up with sauerkraut. It's not the same as it was going in. You've cultivated– cultured, really– this microorganism in your container with your cabbage, and lo and behold, a transformation is taking place.

1. What transformations occurred in your experiment?

The rest of the analogy is that as a fermenter, there's actually three people in play in the definition of fermentation– the ingredients, the vegetables or the foodstuff, the microbes, but also the person who's acting on that situation and actually willing the ferment into existence. So as a fermenter, you're kind of like the bouncer outside of a nightclub. You're the guy with the velvet rope, the big muscly dude, and you're the one deciding who gets into the club and makes a great evening where everyone's sipping champagne and beautiful people all around. And all the drunkards and rowdy boys stay outside.

So that velvet rope that you use as a fermenter– those are all sorts of control points, whether that be salt or access to oxygen or temperature or pH and acidity levels. These are all things that you have at your disposal as a fermenter to make sure that you're actually fermenting and not rotting. Rot's a club where everyone gets in. Fermentation is one where the party's popping.

2. In what ways did you serve in the role of the "bouncer" in your experiment?
3. Did any microbes pierce "the velvet rope" of your experiment?

Now lactic acid bacteria are all around us. They live on your skin. They're on the fruits of vegetables. So they're on the skins of fruits and vegetables. They're basically ever-present in our environment.

And as you add salt to that shredded cabbage, you're making sure that any malevolent microbes– things

that might cause the mixture to rot– are kept at bay. Salt is a really great anti-microbial, but lactic acid bacteria have a little bit of resistance to it. They can tolerate salt up to a certain point. And you so you kind of clear the playing field for lactic acid bacteria to do their thing. They start consuming the carbohydrates and sugars in that cabbage.

And in doing so, they leave something else behind, and that's something else is an exclusionary chemical. That's lactic acid. It sours the mixture and then makes it even harder for different things to grow.

What role did the microbes serve in your experiment?
What did the microbes "leave behind" in your experiment?
How did that affect the taste?

And the coolest thing about fermenting at home and really getting into it and getting really nerdy with it is that you almost get to taste places on Earth in your own garage or in your own apartment. You can get yeast from Belgium and taste a piece of history because these yeast have been cultivated in the rafters of Abyss that the Belgian monks are famed for making their beers in. So it is really cool to get very nerdy and go really deep and taste the whole pantheon of flavors that the microbial world produces. And as for your first question about what I'm really excited about, to be honest, I'm really excited about the thing I haven't found yet.

What interesting flavors emerged from your home fermentation?
How do these flavors compare with those in your memories from the first time you had a fermented product?