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Darth Vader is My Lover: Revelations About *Brettanomyces* in Wine

By **W. Blake Gray** on Jan 20, 2013

My whole wine world is shaken.

What does Syrah taste like? Are floral aromas pretty? Is a “typical Bordeaux” supposed to taste like medicine and ashes? I don’t know anymore.

I’ve been to a *Brettanomyces* tasting at UC Davis. I described it on Twitter as spending a day in a room full of laboratory-created stink cells. I couldn’t get the taste out of my mouth for hours.

But the psychological impact ... well, I may be scarred for life. As I said at the tasting, “It’s like learning that Darth Vader is my father.”



Lucy Joseph, of UC Davis, presenting the diverse aromas of brett.

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The seminar was ground-breaking for

UC Davis, which previously always called *Brettanomyces* in wine a “spoilage organism.”

This was the first time the university acknowledged that brett is an important part of some wines’ terroir. UC Davis tested 83 strains of *Brett* and 17 — more than 20% — were regarded as giving more positive impact than negative.

That’s a big deal. Wineries are always looking for some way to boost the deliciousness of their wine. Here is the world’s foremost university on teaching clean winemaking, suddenly saying that *Brett* — previously derided as the bad yeast that makes your wine smell like rotting corpses — might actually add the scent of roses.

And that’s why I’m wondering whether roses in my wine — something I used to treasure in Gewürztraminer and Riesling, and to enjoy hints of in Pinot Noir and Nebbiolo — are actually the smell of, well, spoilage.

Sac vs Brett

Here’s a brief background on *Brett*. *Saccharomyces* (let’s call it “Johnny Sac,” for you Sopranos fans) is the “good” genus of yeast that wineries want to convert sugar in their grapes into alcohol. *Brettanomyces*, a different genus, is a misshapen cousin. They live in similar environments, which is to say everywhere: in vineyards, barrels, wood ceilings, winery workers’ clothing, etc.

Both types of yeast produce, in addition to alcohol, a variety of chemical compounds. This is one reason wines smell and taste complex, although it must be noted that grapes themselves are loaded with naturally occurring aromatic chemical compounds to begin with.

Saccharomyces — Johnny Sac — grows five times as fast as brett so it will naturally take the lead on almost every wine fermentation. But *Brett* is more versatile: it can eat different things, including ethanol and amino acids. It’s more tolerant of pH and temperature changes. It’s hard to kill. And everything you might use to kill *Brett* — usually SO₂ — is just as effective at killing Johnny Sac.

This is why commercial wineries blast grapes with sulfur when they’re picked, and then add live *Saccharomyces* yeast when the sulfur dissipates. All of the work wineries do in controlling fermentation is to keep Johnny Sac healthy and productive, so that brett stays marginalized, because you can’t be sure of having one without the other.

This is also why wineries add SO₂ to wines before bottling. If the wine is dry and there’s no sugar left, Johnny Sac won’t come back. But *Brett* in the bottle will find something to eat and will grow slowly over time. Open that bottle, expose it to air, and brett will come forth and multiply. This is why *Bretty* wines should never be served by the glass.

The reason wineries want to marginalize *Brett* is because of its dark side. Remember I wrote that *Brett* can make a wine smell like rotting corpses? That’s no exaggeration: *Brett* can produce a compound called “cadaverine.” *Brett* produces another compound, isovaleric acid, that is the main component of foot odor. And these aren’t even the stinky cells *Brett* is most famous for: those would be 4-EP and 4-EG, which have been described



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But where does that leave those of us raised to think that grape varieties, not terroir, have a particular taste? I just don't know anymore what I once thought I did.

Three days after the *Brett* seminar I tasted some Australian Grenache from century-old vines. Two wineries made different versions: one was riper and fruitier and less interesting. The other was spicy and interesting and just a week earlier, I would have chalked it up to old vines and earlier harvesting. Now I wonder if a misshapen molecule was the source. And I liked this wine better.

Actually it's worse than Luke Skywalker's horrible discovery. Of course I'm not going to stop liking the aromas of roses and jasmine and graphite and coffee and smoked meat.

But it's like waking up in the morning and discovering that ... Darth Vader is my lover. Oh Padmé, I know your pain.



Wine writer W. Blake Gray is Chairman of the Electoral College of the Vintners Hall of Fame. Previously wine writer/editor for the San Francisco Chronicle, he has contributed articles on wine and sake to the Los Angeles Times, Food & Wine, Wine & Spirits, Wine Review Online, and a variety of other publications. He travels frequently to wine regions and enjoys coming home to San Francisco.

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jacqueline friedrich says:
January 21, 2013 at 9:27 am

Two Thank Yous:

- 1) Thanks for having written this thought-provoking piece. Like many wine geeks, I spend a lot of time thinking about Brett and am currently playing with an empirical and emphatically non-scientific experiment: when I chill a lightly or slightly more than lightly Brett wine and come back to it the next day, the Brett — gamy, animal — aromas seem to have disappeared. To be continued.
- 2) Thanks, too, to the shout out to fans of Johnny Sack.

reply



Todd - VT Wine Media says:
January 21, 2013 at 11:19 am

Very glad to see Brett discussed in open fashion, in a context where it is not automatically damned for its existence. Beer brewers are actively employing it now, and it has been with us since the beginning of time.

It is part of the microbial spectrum, a universe that is managed during fermentation. There are many ways that wine warriors choose to deal with participation by this non-alien resident. Brett's appearance is not a flaw, but left uncontrolled, the by-products of its metabolism can poison a wine, where it does slip completely into the dark side.

I do enjoy the meaty, savory notes that it can convey, and can see how it fits into the profile of some traditional house styles. And yes, does represent their distinct and unique intersection in the galaxy of flora and fungi.

Great Kudos to the folks who assembled that Brett Impact Wheel – a great orb looming out there in space, waiting to destroy worlds of preconceived notions. I took particular note of the wet cardboard entry, a common TCA descriptor. Might explain more than one argument over the “corked” status of a wine.

“I felt a great disturbance in the Force...as if millions of tasters suddenly cried out for terroir and were suddenly silenced. I fear something terrible has happened.”

“The Force can have a strong influence on weak wines. You will find it a powerful ally.”

-Opus Wun Vinobi



larry schaffer says:
January 21, 2013 at 11:55 am

Great post indeed . . . but let's truly understand that, for the most part, Brett is a spoilage yeast and does leave negative impact more often on wines than not. Can you chalk it up to 'terroir'? Possibly, but even with this wheel, there is no way to 'confirm' that the 'rose petal' or 'rustic' quality you may enjoy in a wine is due to a specific strain of this yeast rather than to the interaction of fruit, oak, oxygen, etc.

It's also good to 'wonder' about these things, and this study certainly does make one take a step back. But the reality is that if you have a wine that has even slight levels of Brett at bottling (and I'm talking about the 'better known' strains) and the wine is unfiltered, there is ALWAYS a chance that sometime during transport or storage, the wine will hit 'elevated temperatures' that will allow the yeast to multiply and negatively affect the wine, and create something altogether 'different' than what the winemaker intended.

THAT to me is the biggest challenge with this spoilage yeast – 'controlling' it so that if you like it in 'small doses', you keep it in small doses . . .

Cheers!



Todd - VT Wine Media says:
January 21, 2013 at 12:39 pm

I definitely agree. All of wine making is a process of taming or living with the wild beasts that live among the vines. Whether by sulphur, temperature, or the filter, the relationship must be managed, and balanced.

reply



Larry Schaffer says:
January 21, 2013 at 12:45 pm

It's this 'balancing' I think that causes so many problems. Many winemakers prefer to 'do nothing' and let the 'beasts' take their course – and this, to me, is one of the biggest causes of 'bottle variation' that we have in our industry (along with variability of natural corks).

As a consumer first and a winemaker second, this kinda pisses me off because to me, it is avoidable and should be. I don't want to 'sterilize' the process, but at the end of the day, I really don't think many people want to open a wine that has been adversely affected by Brett and smells and tastes like horse crap, and ONLY horse crap . . .

Just my \$.02 . . . but heck, what do I know?!?!?

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Reid Kinnett says:

January 21, 2013 at 5:05 pm

Rose aromas in Riesling and Gewurtztraminer are due to terpenes, so you can rest easy there!

reply



Reid Kinnett says:

January 21, 2013 at 5:06 pm

Rose aromas in Riesling and Gewurtztraminer are due to terpenes, so you can rest easy there! Brett is often much harder to pick out in whites.

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