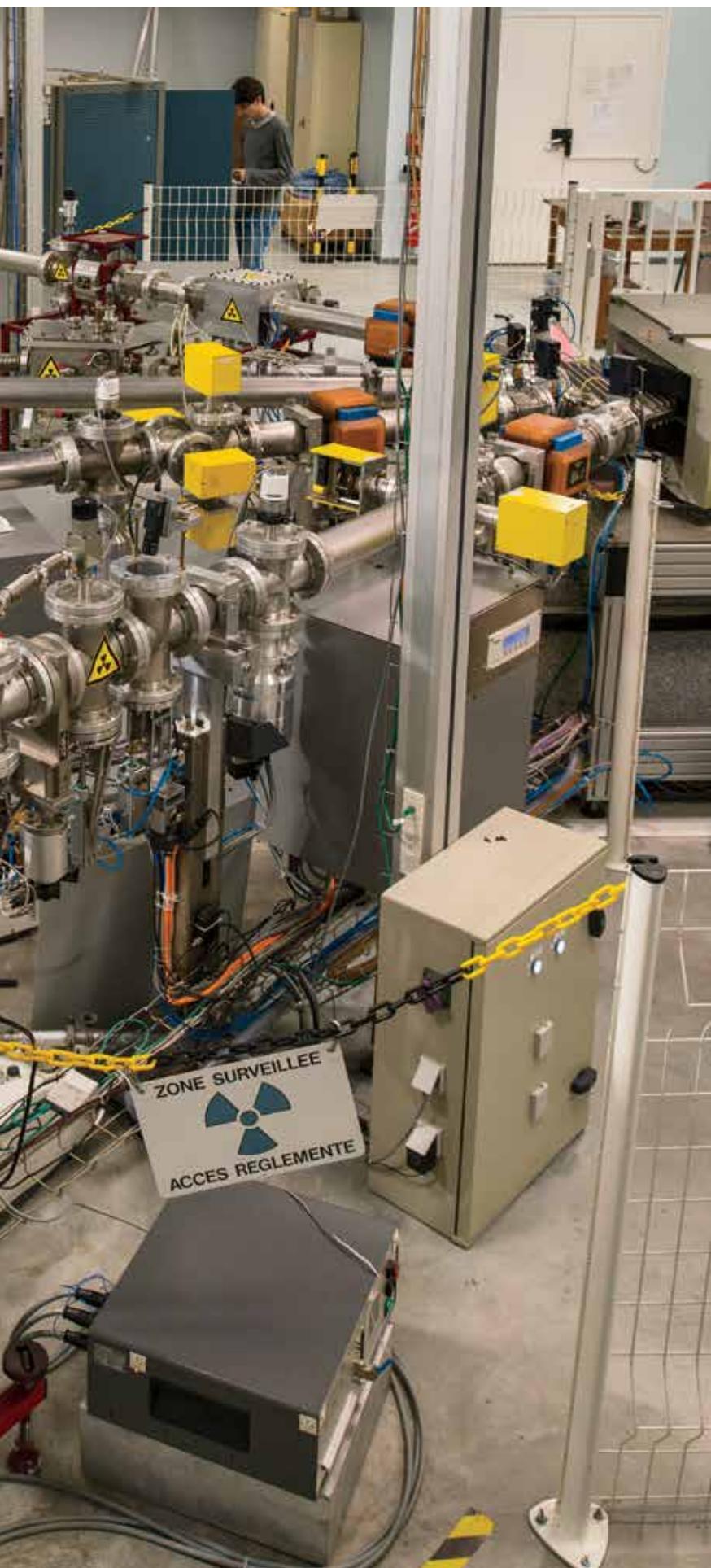


The €1 million particle accelerator at the University of Bordeaux, which scientists use to make a chemical analysis of wine bottle glass. The results will



## Cellar Beware

As the Market for Fine wine has exploded, so too has the problem of counterfeiting. But wineries—and collectors like billionaire Bill Koch—are fighting back. From particle accelerators in Bordeaux to Bluetooth-enabled bottles in the Napa Valley, Mark Ellwood reports on The battle to keep the veritas in vino.

Photographs by  
Jonathan de Villiers

# The University of Bordeaux campus

resembles a weekend estate in the Gironde: sprawling gardens suffused with the smell of geraniums, scattered châteaux co-opted as classrooms or labs. Tucked away in a leafy grove is an incongruously modern research facility known as the Centre d'Etudes Nucléaires de Bordeaux Gradignan, or CENBG, home to the sleek, wood-sided lab of physicist Philippe Hubert.

Hubert specializes in radioactivity, and the lab contains three detectors, the most impressive of which resembles a huge barrel and is wrapped in lead salvaged from a Roman shipwreck off the British coast. The lead doesn't affect the detector's readings, Hubert explains, since the metal's naturally occurring isotopes have dissipated over the intervening centuries. The machine is traditionally used to evaluate wastewater from hospitals or fallout from nuclear disasters, but today it contains a bottle of 1905 Caruades de Lafite, the second wine of Château Lafite Rothschild, an icon of Bordeaux. Hubert's task is to discern whether the wine inside is what it purports to be.

Demand for this kind of authentication is booming. In December, Hubert's work was a cornerstone of the case against Rudy Kurniawan, a fine-wine dealer whose arrest exposed an issue no one in the industry is eager to discuss: the rampant counterfeiting of collector-grade bottles. "The market for fakes is growing," says Michael Egan, a former director of the wine department at Sotheby's and the world's foremost wine authenticator. "It does not show signs of slowing down."

In 2005, Bill Koch—the twin brother of Koch Industries Inc. executive David—realized he'd been had. Four bottles of 1787 Bordeaux, passed off as the erstwhile property of Thomas Jefferson, turned out to be worthless fakes. Koch, 64, had paid \$500,000 at auction and decided, in light of the fraud, to conduct a sweeping examination of his 43,000-bottle cellar. Koch's investigators identified 211 suspicious bottles consigned by Kurniawan—an Indonesian expat then living in Los Angeles—for which Koch had paid more than \$2 million. A sampling of the various vintages was shipped to the scientists at the CENBG for testing. Not a single bottle passed.

Koch filed suit against Kurniawan—and intensified his personal crusade to stamp out wine fraud, which by his own estimate has cost him more than \$25 million. "Maybe it goes back to my childhood," Koch says by telephone from his ranch outside Paonia, Colorado, pausing to say goodbye to his 8-year-old daughter as she leaves for school. "I hate being cheated, and I was cheated a lot when I was a weak and vulnerable little boy."

As it happens, Koch wasn't the only one gunning for Kurniawan. On March 8, 2012, FBI agents raided the dealer's Arcadia, California, home, where the indoor temperature was regulated to the cellar standard of 55 degrees Fahrenheit (13 degrees Celsius). Inside, they discovered an elderly woman, who identified herself as Kurniawan's mother, staying warm beside a space heater in her bedroom. They also discovered a staggeringly elaborate counterfeiting operation: bottles soaking in the sink to loosen the glue on their labels, corks both old and new, a device used for recorking and 19,000 fake labels for 27 of the world's top wines. Empty bottles reclaimed from restaurants were allegedly being refilled and resold, while other wines were being knocked off from scratch. Even Kurniawan's name turned out to be fake: according to private investigators hired by Koch, The Bernie Madoff of Bordeaux was born Zhen Wang Huan. Koch testified for the prosecution at Kurniawan's trial. On Aug. 7, the fraudulent former wine merchant was sentenced to TK years in prison.

Koch's openness is unusual given how few of his fellow collectors are willing to let experts into their cellars for fear of what they might—or might not—find. In December, following Kurniawan's conviction on one count each of mail and wire fraud, the judge delayed his sentencing in the hope that others might step forward and reveal the true scale of his crimes. None did. Koch, for one, is unsurprised. "They want to dump the fake wine on some other sucker," he says. "I bought some wine at a charity auction, and it was fake. So one guy gives it to charity and gets a tax deduction, and I'm stuck with damn fake wine."

The worldwide wine-collecting industry has more than tripled in the past 12 years, growing from \$90 million in 2002 to more than \$300 million in 2013, according to *Wine Spectator*. This is due in part to China's *bao fa hu* (literally: *explosively rich*) and their apparently unquenchable thirst for trophy bottles, especially Bordeaux and Burgundy. As prices have soared, so has the number of counterfeits. *Red Obsession*, a 2013 documentary about China's wine fever, reports that there are currently more

bottles of 1982 Château Lafite Rothschild for sale than were ever produced by the winery.

Unlike fake watches, which are easily identified by trained technicians, fine wine presents a host of problems when it comes to authentication. Older wines are routinely recorked in the name of preservation, a fact that counterfeiters hide behind after tampering with corks and closures. Record keeping is spotty, especially for older vintages; even the most-sought-after producers are often unsure of how many bottles were released in a given year. And only a handful of people have tasted enough of the world's great wines to tell whether a given bottle is consistent with others of that vintage. Money may win auctions, but it can't buy the palate required to differentiate among a 1947 Château Pétrus and a lesser Bordeaux dosed with California cabernet to mimic the age and roundness of a legendary vintage. Put another way: If an imposter bottle is poured and enjoyed while still conferring all the attendant status on its owner, who's in a position to complain?

This is not a view shared by Koch, who spends more money on the scientific validation of a single bottle—up to €600 (\$800)—than most would dare spend on the wine itself. Authentication, in this case, is a three-part process, carried out by a three-man dream team that Koch has helped assemble.

The first line of defense is Egan, a dapper Englishman with a wry Hugh Laurie-ish affect. Egan started his career in oenology at Sotheby's in London, where he helped build the wine department. Today, he lives at his family's sprawling country house in Bordeaux and freelances as a gumshoe for the Gironde and beyond. Egan's expertise is authenticating everything apart from the wine itself: corks, closures, labels, even the glass, all of which he inspects with forensic precision. There are obvious red flags: labels aged with tea or tobacco, unblemished bottles, bottles covered entirely in dust rather than half covered after years of careful storage. "Capsules are the hardest to fake," Egan explains, referring to a bottle's foil closure, "as you have to make a cut or a tear in order to tamper with the cork." Folds in the foil tend to develop naturally in older vintages, and a skilled counterfeiter will use these to conceal a cut. Capsules were Kurniawan's specialty. "He was a dab hand," Egan says with grudging admiration.

Once Egan has identified the questionable bottles in a collection or consignment, he ships the suspects to the University of Bordeaux, care of Hubert and Hubert's colleague Hervé Guégan, a rangy physicist with a



The particle accelerator test is the final step in an authentication process that also includes radiation testing and forensic analysis by the world's foremost wine detective.

bright-eyed intensity and a small silver earring. The duo's interest in authenticating wine began 14 years ago, when a Belgian dealer conveniently discovered 150 bottles of *grand cru* Bordeaux from 1900 just in time for the wine's centenary. The canny scientists suspected a scam, at which point Hubert had what might fairly be called a bombshell revelation. The isotope cesium-137 does not appear in nature, having been created by nuclear fission after the first atomic bomb drop in 1945. Hubert reasoned that any wine predating Hiroshima should be cesium-137-free. (The method is more accurate and practical than carbon dating, which involves uncorking and creates a Salem-witch-trial conundrum: You can be sure of the wine's value only after it has been destroyed.) Hubert tested his theory on a court-ordered

sample of the Belgian haul. Unfortunately for the would-be scammer, the vintage he chose to impersonate the 1900 coincided with a year when levels of cesium-137 peaked. "It was good wine," Hubert recalls, "but it was from 1964."

Collectors like Koch pay €300 for every bottle examined by Hubert. The bottle currently in Hubert's detector, the 1905 Carruades de Lafite, is a family heirloom belonging to Guégan. Fortunately, the wine contains no cesium-137. Some 60 percent of the vintages Hubert assesses pass his test; the rest are handed over to Guégan for further interrogation.

The University of Bordeaux's €1 million particle accelerator is housed in a neighboring lab that resembles the engine room of the *Starship Enterprise*. Today, the ray gun-like

nozzle is aimed point-blank at a bottle of Bordeaux. Guégan bombards it with a beam of charged particles that enables him to discern the unique chemical fingerprint of the glass. The recipe for glass differs from year to year, depending on the availability and cost of ingredients. By comparing the glass of an alleged 1982 Château Pétrus with the data gathered from a bona fide bottle, Guégan can ensure that some enterprising scammer hasn't filled new glass with a lesser vintage of old wine, as Kurniawan was fond of doing. The test—an additional €300 per bottle—is so effective that Château Mouton Rothschild created a proprietary database of bottle readings by hiring Guégan to work through its cellars.

Of course, no test is foolproof. The level of cesium-137 in the atmosphere is diminishing in the wake of nuclear nonproliferation, so Hubert's method will be of little use on future vintages. Another Bordelais scientist, Bernard Médina, is working on a laser-based test to determine the exact chemical *terroir* of wine without opening the bottle, but for the moment, it works only on whites. And counterfeiting isn't limited to old wines—or the Old World. It's the Napa Valley's Opus One, the winery co-founded by the Mondavi and Rothschild families as a fusion of Bordelaise and Californian expertise, that pioneered the anti-counterfeiting program of the future.

The Opus One winery resembles a high-design spaceship idling quietly in the heart of Napa. In 2011, chief executive officer David Pearson became the first American producer to embrace high-tech anti-counterfeiting measures—which is fitting, given that Kurniawan traces his fine-wine obsession to his first sip of a (presumably genuine) 1995 Opus One.

Sitting in his airy office above the vineyard's courtyard, Pearson recalls a trip to China a decade ago during which he noticed a spike in Opus One imitators. Although there was no simple or cost-effective solution at the time, today every bottle of Opus One shipped overseas carries a near-field communication, or NFC, chip. When customers scan the chip with their phone, they're treated to a short video of the winemaker—and are thus assured that their wine was vinified in Napa and not cooked up in someone's kitchen. "And then," Pearson recalls, "someone brighter than us said, 'But how does the chip' (*continued on page 106*)

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know when the bottle is empty?” A skilled counterfeiter like Kurniawan, for example, could refill, recork and resell the chip-carrying Opus One empties. Enter SICPA, a Swiss company that produces the ink used in many of the world’s currencies. The company proposed a tamperproof closure, the top of which is printed with proprietary ink that changes color when viewed through the twin lenses of a “validator” card—red through the left lens, blue through the right. SICPA declines to release any information on its clientele, and the inks they produce are delivered to the printer under armed guard.

Just how effective are the twin safeguards? In years past, when Opus One’s annual allocation was released worldwide, Pearson would receive reports of counterfeits entering the market in tandem with the real deal. In 2013, when both the NFC chip and the SICPA ink-printed seal were in place, he fielded no complaints for the first time in the winery’s history.

Back in Bordeaux, Château Margaux has adopted a similar program, reinforcing its reputation as a forward-thinking *grand cru*. Guillaume Le Perchec, the estate’s head of logistics, resembles a bouncer with his burly build and shaved head. And in the interest of keeping riff-raff at bay, he’s developed a three-stage process that results in each bottle receiving what he calls a *carte d’identité*. First, the glass is laser-engraved with a unique serial number, before a second label with a distinct alphanumeric code, known as a proof tag, is attached. Finally, to secure the capsule, Le Perchec took a more analog approach: two dots of glue on both sides of the bottle’s neck, which safeguard the foil against tampering.

For collectors like Koch, who recently choked up while extolling the craft of the winemaker to ABC News, the incentive to end counterfeiting isn’t strictly financial. The current onslaught of imposter bottles detracts from the pleasures of a six-figure magnum. “It’s sacrilegious,” Koch says. “Here is something beautiful and wonderful they are destroying for base reasons. How would you feel if some guy burnt the *Mona Lisa*? I feel my love has been violated.”