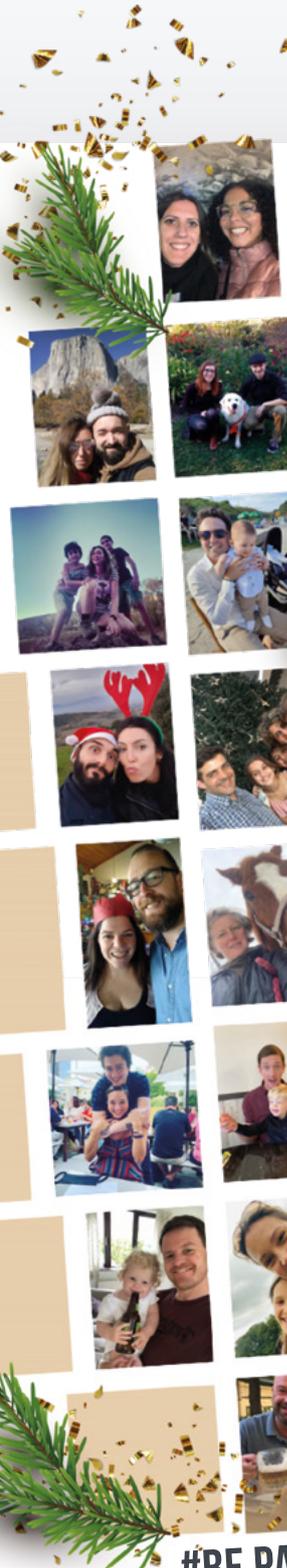


WE BREW WITH YOU.™

WHAT'S AROUND THE CORNER?



WARM
WISHES
* FROM THE *



FAMILY
FOR 2022!

#BE PASSIONNATE **BE LALLEMAND**

First and foremost, let me wish you a very Happy New Year 2022 on behalf of the Lallemand Brewing family. 2021 wasn't without its fair share of challenges; we focused on our well-being, listened to our customers to learn and improve our processes, and kept an eye on the trends and needs of the market. We launched two products in 2021: **AB Vickers YeastLife O™** nutrient and **LalBrew Farmhouse™** Hybrid Saison-Style yeast. Those two new additions to our portfolio are providing solutions to brewers regarding yeast nutrition for the former and over-attenuation for the latter. Creativity is what keeps us going and gets me the most excited, being a scientist at heart - there is still so much more to bring to the table.

So, what's next for **Lallemand Brewing**? We continue to experiment with hybrid yeasts to find new superior strains combining advantages in flavor/aroma and performance. We are collaborating with various institutes and universities that have isolated yeasts of interest that could bring something unique to the brewing industry. We continue focusing on finding solutions to make better beer, sustainably and reproducibly, looking at microorganisms and their derivatives. Here's to 2022, and as we maintain our focus on deliverables we look forward to your honest feedback and many beers shared.



Editorial by Sylvie Van Zandycke, Ph.D
Director of Sales and Marketing Brewing Yeasts,
Bacteria and Nutrients, Lallemand Brewing

Product Update

LALBREW FARMHOUSE™ WINS A BRASSINOV COMPETITION INNOVATION AWARD



The objective of the Brassinov Competition, presented by the French Brewery Museum, was to recognize the most remarkable innovations presented at the show – Innovations that responded to the economic, societal, and environmental challenges of the beer industry. Experts studied the various innovations before submitting them to a jury of professionals. Of the seventeen exhibitors entered, three were awarded. Awarded in the category of “Services and Process”, the **LalBrew Farmhouse™** yeast strain is the result of the research and development work of Renaissance Bioscience Corp. (Vancouver BC, Canada) and is **Lallemand Brewing’s** first collaborative release. The Renaissance team used classical and non-GMO science to breed a yeast without the STA1 gene, responsible for the diastatic activity of Saison yeasts. The result was a strain not able to metabolize dextrans but with all the

other characteristics of traditional Saison yeast. **LalBrew Farmhouse™** represents a new addition to **Lallemand Brewing’s** portfolio of solutions to safely brew a wide variety of modern and attractive Saison and Farmhouse beer styles in a short period of time. Eliminating the risk of cross-contamination that comes with a diastatic yeast, care was taken to retain all characteristics that make Saison yeast so attractive: flavor, aroma profile and high attenuation.

About Salon du Brasseur: The Salon du Brasseur is the leading trade and technical fair in France for professional and amateur brewers. Created more than 20 years ago in Saint-Nicolas-de-Port, over the years it has become the unmissable event for French brewers and for all suppliers of raw materials and equipment in this sector.



R&D Update

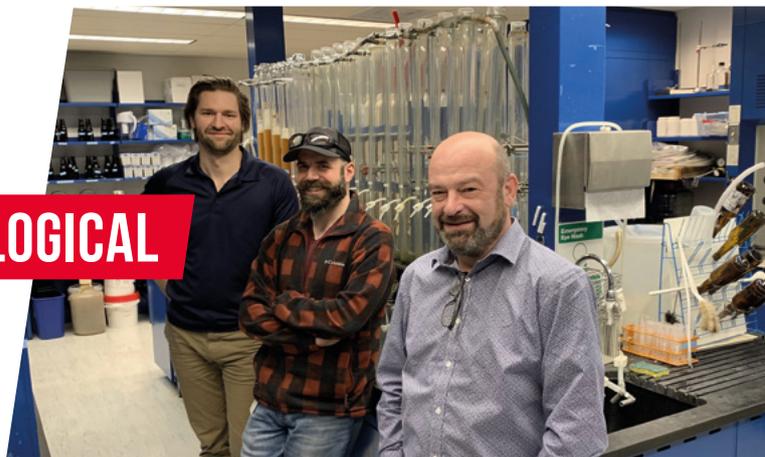
DETERMINING THE IMPACT OF BIOLOGICAL SYSTEMS ON BEER SENSORY

YEAST INFLUENCES BEER FLAVOR AND AROMA

Visit any brewing forum and read through topics regarding yeast selection. Chances are high that a healthy amount of discussion will revolve around yeast sensory profiles. Considering the significant role yeast plays in beer production, options and opinions abound. However, the argument can be made that the right choice of strain can make all the difference. This, in part, has driven significant academic and industrial research into functional genetics across the whole spectrum of food-related microbial strains. Thus, amidst the sheer number of options and independent variables, a common thread is to determine how much influence individual yeast strains have on the sensory profiles of beer.

FOCUS ON HOP BIOTRANSFORMATION

Unfortunately, there is no easy answer. Compounded by the fact that the sensory qualities imparted by an inoculum (be it pure or mixed) are the result of a complex and living system, separating yeast impact from sensory background noise has proven difficult. Difficult, but not impossible. A recent project undertaken by Lallemand Brewing R&D explores a broad biochemical and sensory evaluation of 10 LalBrew® yeast strains. The primary goal is to measure how specific strains interact differently with specific hop compounds. Though closely related, each of these strains contain slight variations of two important genes: IRC7 and STR3. These genes are strongly associated with a potent class of β -lyase enzymes related to key thiol sensory qualities in wine and are believed to play a role in enhancing hop character in beer.



SURPRISING RESULTS FROM TRADITIONAL STRAINS

This study has been one of the most in-depth qualitative and quantitative studies undertaken by Lallemand Brewing R&D to date – the entire scope of which cannot be covered here. Rather, this update will serve as a teaser and suffice to say that **some surprising biotransformation abilities have been found in some of our core LalBrew® Premium strains**, which is an exciting discovery for these strains that have already been highly characterized to date. With more updates pending, keep an eye out for future articles on this topic: covering the muddy waters of strain definition, speciation, and their impact on the sensory characteristics of fermentations.

Context references for studies that much of the original project was based around:

Opstaele, Filip & De Rouck, Gert & Janssens, P & Montandon, G. (2020). An exploratory study on the impact of the yeast strain on hop flavour expressions in heavily hopped beers: New England IPA. *BrewingScience*. 73. 26.

Haslbeck, K., Bub, S., von Kamp, K., Michel, M., Zarnkow, M., Hutzler, M., and Coelhan, M. (2018) The influence of brewing yeast strains on monoterpene alcohols and esters contributing to the citrus flavour of beer. *J. Inst. Brew.*, 124: 403– 415. <https://doi.org/10.1002/jib.523>.

Murat, M.-L & Masneuf-Pomarède, Isabelle & Darriet, Philippe & Lavigne, V. & Tominaga, T. & Dubourdieu, Denis. (2001). Effect of *Saccharomyces cerevisiae* yeast strains on the liberation of volatile thiols in Sauvignon Blanc wine. *American Journal of Enology and Viticulture*. 52. 136-139.

NON-ALCOHOLIC BEER: PERCEPTION

Non-alcoholic beer tends to evoke strong mixed opinions. On one hand, when done well, it can be a refreshing, healthier alternative to its boozier cousin. But on the other hand, it appears as a mockery of all that the goddess Ninkasi herself was once revered for. Regardless of how it is prepared, sensory descriptors of non-alcoholic beers share many similarities: “grassy”, “vegetal”, “metallic”, “tinny” – not exactly appealing. Despite this, the market share appears to be growing among health-conscious consumers. So much so, that non-alcoholic beer comprises an estimated 5-7% of global beer sales. Recent analytics reveal a strong five-year annual growth of 20% (2011-2016) with a predicted compounded annual growth rate of 8.1% through 2030. This is big growth for a seemingly niche sector.

MARKET POTENTIAL

Indeed, data does appear to support this growth potential; a 2013 study found that over half of European beer consumers would preferentially choose non-alcoholic beer if the sensory was comparable to full strength beer. A similar study conducted in 2018 found that the largest beer drinking demographic in the United States (25–34-year-olds) viewed high alcohol as a negative, with 54% of that demographic seeking to reduce alcohol consumption overall while still desiring to consume beer. In the Middle East and North Africa, non-alcoholic beer constituted 42% (1.6 million hL) of regional beer market share in 2017.

Though lightly alcoholic beers have been consumed for centuries, the modern discourse on non-alcoholic beer arguably began in the early 20th century as a direct result of the enactment of prohibition in the United States. What we consider “non-alcoholic beer” or “low-alcohol beer” (aka NABLAB) may vary depending on the country of origin, but the generally (and arbitrarily) accepted definition in European and American markets defines non-alcoholic beer as containing less than or equal to

0.5% ABV and very low alcohol beer as having 0.5 to 4.0% ABV. Given the growth potential and valuation of this market sector, industrial research and development is warranted. The real challenges lay in producing beer that adds to this market growth.

TECHNICAL APPROACH

Producing a truly palatable NABLAB requires different production strategies, the most common of which is physically removing the ethanol post-fermentation. But for many smaller breweries, the primary strategy is to reinvent the wheel by producing organoleptically identical (or near-identical) versions of alcoholic beer. To accomplish this requires a combination of both physical controls (e.g., rectification, reverse osmosis, supercritical fluid extraction) and biological controls, (e.g., fermentative organism, recipe control, arrested fermentation), both of which have their advantages and disadvantages. At Lallemand, we seek to improve and develop the biological controls necessary to maintain and develop desired aroma and flavor profiles while minimizing ethanol production. The biological approach represents minimal physical intervention and requires almost no change to existing infrastructure. The biggest advantage of the biological approach is that it is cost effective at smaller scales.

WE BREW WITH YOU™

The long-term goal is to provide brewers with the biotechnology necessary to develop and implement recipes that suit them and their target markets. Research into new *Saccharomyces cerevisiae* strains, novel non-*Saccharomyces* species, biotechnology, and fermentation aids in combination with traditional physical controls will go a long way to developing a diverse range of non-alcoholic beer brands ready for an expanding market niche. Education is key to innovation, and as part of our **We Brew With You™** campaign, we aim to provide up-to-date resources for brewers seeking to diversify their brand portfolios and market presence.

https://www.lallemandbrewing.com/en/united-states/brewers-corner/brewing-downloads/?download_tag=low-alcohol

<https://www.youtube.com/watch?v=LL-my01gp4U>

<https://www.lallemandbrewing.com/en/united-states/blog/solutions-for-the-future-of-low-alcohol-beer-by-a-patterson/>



DID YOU KNOW...

...our company is named **LALLEMAND** after the first owner nickname?

At the end of the 19th century, a young man from Alsace arrived in Montréal: Fred Schurer. Since his name was difficult to pronounce for his fellow citizens, he was nicknamed “Lallemand”, which is French for “the German”. In 1923, he started producing baker’s yeast and we have not stopped being a yeast producer since!





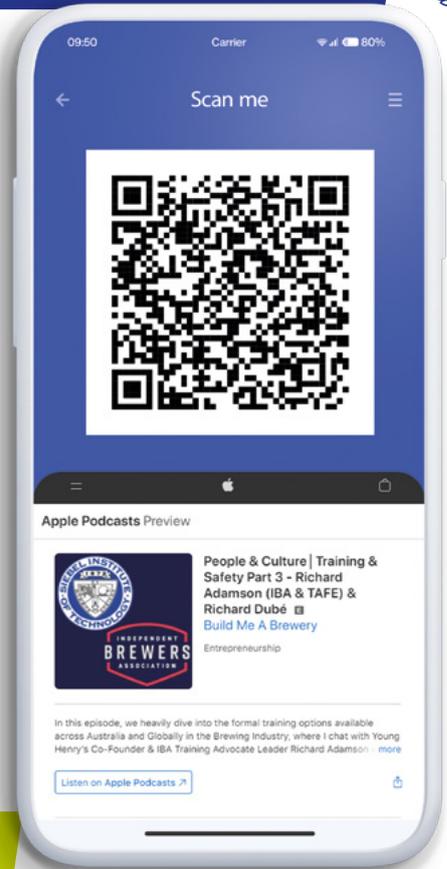
EDUCATION AND TRAINING ARE IMPORTANT FOR CONSISTENCY

Previous craft beer booms in both the United States and Australia died primarily because of quality concerns. Today, craft brewers understand that consistency is crucial to quality. Consumers are more sophisticated than in previous decades. If they love a beer, customers will want to repurchase — and they expect the beer to be the same from one visit to the next. To achieve consistency, brewers must understand more about what they are doing and the science behind why they are doing it.

Everyone from the brewer to the beer server should be educated. Training can play a role from top to bottom. The Siebel Institute offers training courses and programs to suit every investment level. In many cases, training can be done without leaving your home.

The [Build Me a Brewery podcast](#) recently featured **Richard Dubé, Director of Online Education at the Siebel Institute**, for a deep dive into training options available across the world. You can now find the episode on Apple Podcasts.

At the Siebel Institute, we are delighted to see our classrooms filling up again, with some programs and courses even on a waitlist. Our online offerings are also becoming increasingly popular as the benefits of online education become more and more relevant in today's world. More than ever, education is key for brewers who wish to produce high-quality beers, consistently.



Homebrew update

LALLEMAND'S TEAM BUILDING BREW DAY



In October 2021, the Lallemand Brewing French and Spanish Teams were lucky to meet near Toulouse in the Southwest of France at Le Veilleur de bières, which is a micro-brewery, homebrew workshop and homebrew shop all in one. We divided into four groups, each brewing a different recipe, with different yeast strains.

We send a big thank you to the team from **Le Veilleur de bières**. We were thrilled to test recipes together and take some great pictures throughout our brew day. A month after, we met for a tasting session.

Our favorite pairing: Smoked salmon with the Mint Gose fermented with **WildBrew Philly Sour™**. Indeed, a sour beer, which brings freshness, acidity and a citrus aroma resonated very well with the texture and the flavor of the salmon.

#2 Choice: 36 months old Comté with the Saison Beer fermented with **LalBrew Farmhouse™**. The fruity and spicy characteristics of the Saison beer perfectly complemented this mature cheese.

#WeHomeBrewWithYou



For more information, please visit us online at www.lallemandbrewing.com

For any questions, you can also reach us via email at brewing@lallemand.com

