



# Excellence® TXL

**Excellence® TXL** is the product of a program of targeted breeding by the Institute of Oenology in Bordeaux. This strain has excellent fermentation capacities and produces a clean and balanced aromatic profile with significant volume on the palate.



## OUR SELECTION CRITERIA

### Fermentary characteristics:

- Implantation ability
- Ability to adapt to difficult fermentary conditions
- Ability to reveal the potential of the terroir:
  - ◆ **Clean profile:** no aroma maskers
  - ◆ **Revelation** of varietal aromas
  - ◆ **Low production** of standardising fermentary aromas



The fruit of this **revolutionary technique** (patented in the EU), **Excellence® TXL** gives round wines with **great volume** and **aromatic finesse**.



## WHAT IS TARGETED BREEDING?

**Targeted breeding** involves **crossing two strains**: a “donor” strain which possesses certain desired genes which we wish to introduce into a **target strain** in order to improve it without using GMO technology. In order to obtain a descendant which shares 93% of the original target strain, as well as the desired genes of the “donor” strain, several cycles of “**backcrossing**” are carried out and each generation is screened using **molecular and physiological markers**.

**Excellence® TXL** a product of this technique, combines the original characteristics of the parent strain (fermentary and aromatic profile) with three alleles which give it the following attributes:

- ◆ **SSU1-R:** gives a better resistance to sulphites and therefore assures the implantation and rapid start to the AF.
- ◆ **POF(-):** minimal production of vinyl-phenol and vinyl-gaiacol, compounds with pharmaceutical odours which mask other aromas.
- ◆ **URE2(-):** suppression of the “nitrogen catabolic repression” (see below), increase of the production of volatile thiols.



## IMPLANTATION ABILITY: A SSU1-R+ STRAIN

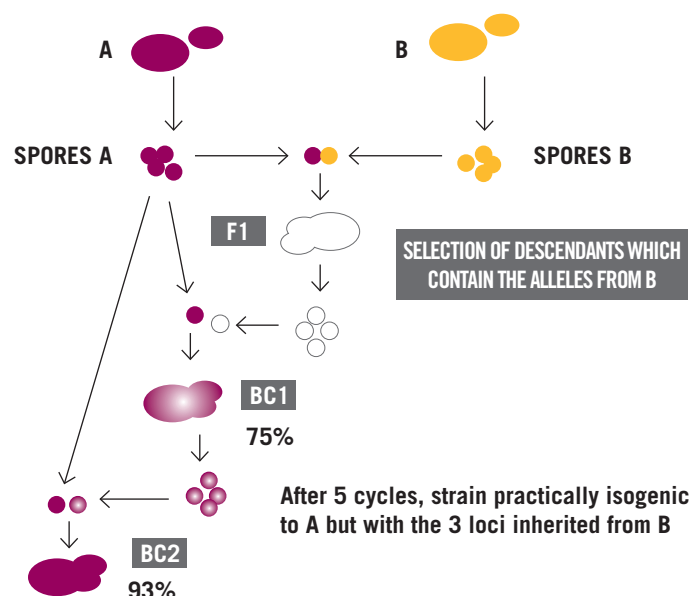
Recent studies have identified the genetic factors which determine the length of the **lag phase** of *Saccharomyces cerevisiae* (Zimmer, 2013). They demonstrated the role of the **SSU1-R gene** on the cellular mechanism of sulphite resistance.

Based on this knowledge, using **molecular markers** we isolated a strain which has a high SSU1-R activity and therefore a reduced latent phase.

Therefore, **Excellence® TXL** implants itself quickly and occupies the medium to safeguard the alcoholic fermentation.

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### EXAMPLE OF TARGETED BREEDING



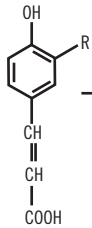


## A CLEAN NOSE: A POF(-) STRAIN

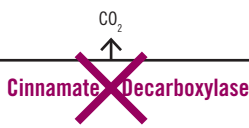
**Vinyl-phenols**, compounds responsible for pharmaceutical odours in wines, are produced from **phenol acids** which occur naturally in musts (Chatonnet, 1993). This reaction is catabolised by **Cinnamate Decarboxylase**, an enzyme endogenous to *Saccharomyces cerevisiae*. Its activity varies according to the strain.

L'Excellence® TXL lacks this activity, making it a **POF(-) (Phenol Off Flavour) yeast**. Wines produced using this strain do not contain vinyl-phenols and therefore are much cleaner on the nose. Excellence® TXL is therefore a strain particularly adapted for the faithful expression of the grapes and their terroir.

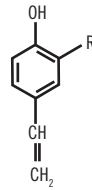
**Odourless phenols**  
coumaric and ferulic acid



R = H coumaric acid  
R = OCH3 ferulic acid



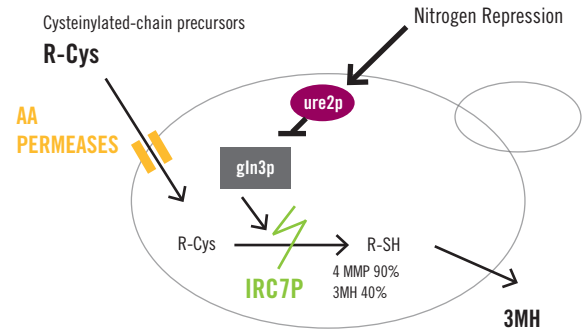
**Odorous volatile phenols**  
4-vinylphenol and 4-vinylguaiaicol



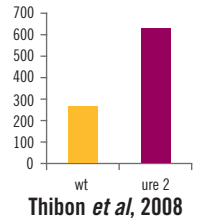
R = H 4-vinylphenol  
R = OCH3 4-vinylguaiaicol



## REVELATION OF AROMAS – AN URE2(-) STRAIN



During the **alcoholic fermentation**, yeast require nitrogen for the **multiplication of cells** and to assure a good fermentary activity. Certain sources of nitrogen, such as **ammoniacal nitrogen**, are assimilated and metabolised more quickly. The presence of this form of nitrogen in the must **inhibits** the metabolic pathways of the complex amino acids.



Several precursors of varietal aromas are bound to **amino acids**, such as the **cysteinylated-chain** precursors of the volatile thiols: **3-mercaptohexanol (3MH, citrus fruit)** and **4-mercapto-methylpentan-2-one (4MMP, boxwood)**. By removing the nitrogen catabolic repression, by deleting the **URE2 gene** which modulates it, the yeast assimilate and metabolise the precursors more easily and therefore produces **more varietal aromas** (Marullo *et al*. 2006, Thibon *et al*. 2008).

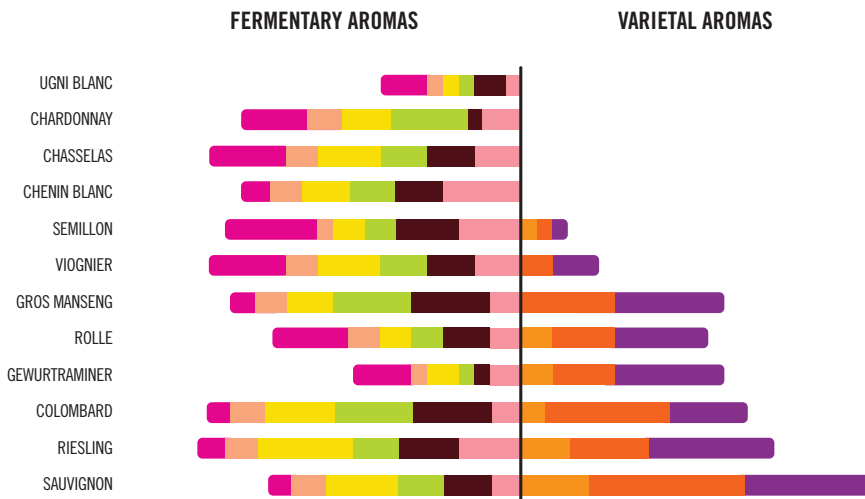
## TRIAL RESULTS



### Characteristics of the trial:

Vintage: 2011    Region: Northern and Southern Hemisphere    YAN: 140 to 210 mg/L    TAVP : 11.5 to 13%vol.    T° of AF: 14-21°C

### AROMATIC PROFILE OF EXCELLENCE® TXL ON DIFFERENT VARIETIES



### SUM OF THE AROMATIC INDICES (AI)

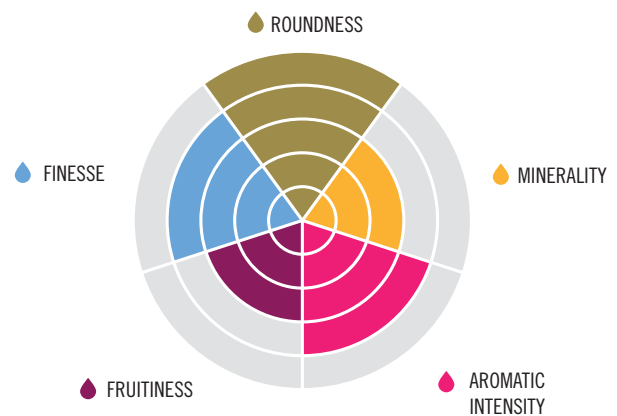
#### FERMENTARY AROMAS

ROSE BANANA PEAR PINEAPPLE WHITE FRUITS, PEACH FLORAL

#### ARÔMES VARIÉTAUX

PASSION FRUIT GRAPEFRUIT BOX TREE

### GLOBAL ORGANOLEPTIC PROFILE



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