# Internship Offer

**Name of the hosting institution in France**  
Université de Bordeaux

**Name of the host laboratory / research team**  
Unité recherche Œnologie, ISVV

**Address**  
210 chemin de leysotte 33882 Villenave d’ornon

**Website**  
https://www.isvv.u-bordeaux.fr/fr/oenologie.html

**Name of the supervisor**  
Pons Alexandre

**Function**  
Senior research scientist

**Email**  
Alexandre.pons@u-bordeaux.fr

**Phone number**  
05 57 57 58 67

## Internship topic

**Topic of the internship (title)**  
Predicting the shelf life of red wines: an analytical approach

**Proposed dates of the internship**  
Start 01/11/2023  
End 29/04/2024

### Scientific and academic objectives of the internship:

The reputation of iconic wines is strongly associated with their aging potential. Indeed, these wines conserve the flavor nuances of young wines while developing specific varietal nuances. However, this ideal aging does not occur in every wine. Premature aging aroma phenomena reflect the defective aging of red wines, its oxidation. In wines, oxidation mechanisms involve reactive oxygen species (ROS) formation (mostly hydrogen peroxide and free radicals), modifying its intrinsic chemical composition. During aging, these red wines develop several aromatic nuances reminiscent of prunes and figs. In our experience of red wine tasting, the presence of these overriding odors affects the quality and subtlety of the wine flavor and may shorten its shelf life. Many years ago we identified a compound found at trace level (sub µg/L); 3-methyl-2,4-nonanedione (MND). Despite the impact of this compound on the aroma of wine, the origin of this diketone is little studied in wines and beverages in general.

Vere recently we identified an hydroxyketone, direct precursor of MND. Questions concerning the origin of this hydroxyketone remain unanswered. However, based on our experience we hypothesized the presence of glycosylated precursors of this compound in wine and in beverages. Thus, the goal of this intern is to contribute to the identification of aroma precursors of MND using several techniques including GC-MS, UPLC-MS at low and high resolution (Orbitrap). Based on these results, in collaboration with the industrial partner, applications relative to the study of wood addition on wine aroma stability and chemical composition will be envisioned. In addition, study of the wine ability to resist an oxidation stress (i.e. ability to produce free radicals) will be studied thanks to electron paramagnetic approach (EPR). Finally, intern will have the opportunity to work on specific projects solving wine chemistry and analytical chemistry problems using the latest laboratory equipment and tools in a world-class research environment.

### Industrial partner

**Does the project involve a French industry partner?**  
Yes

**Name**  
Seguin Moreau

**Role of the industrial partner in the internship project**  
The industrial partner is interested in studying the effect of oxygen released during barrel aging on the flavor of wines. The partner will provide wine samples from several wineries

**Main contact**  
Prida Andrei

**Email**  
aprida@seguin-moreau.

### Australian partner

**Is the internship project proposed in the framework of an existing collaboration with an Australian partner university?**  
No

**Name of the Australian partner institution**  
[Insert here]

**Lab/department/team involved in the collaboration**  
[Insert here]

**Main contact in the Australian partner institution**  
[Insert here]

**Function**  
[Insert here]

**Email**  
[Insert here]

**Outside of this ongoing collaboration, will students from other Australian universities be considered by the hosting institution in France?**  
[Select Yes/No]

### Expected profile of applicant

**Level of study**  
Master of science

**Discipline**  
Food chemistry, Enology, Food science, Analytical chemistry
<table>
<thead>
<tr>
<th>Prerequisite knowledge, qualities and skills</th>
<th>Good laboratory practices; Excellent written and verbal communication skills. Basic analytical chemistry skills including SPE extraction and GC-MS. Some personal interests in wine tasting.</th>
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<tbody>
<tr>
<td>Other specific eligibility criteria</td>
<td>Language: English or French</td>
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