

**Master 1 position in Investigation of the function of genes related to anthocyanin accumulation in grape flesh**

**Starting date: December 2024-March 2025**

**Duration: 6 months**

**Salary: Standard salary provided by the Implanteus project**

**Site: Beijing, China**

**Institute and Department: Institute of Botany, Chinese Academy of Sciences, Grape quality regulation lab.**

**Project description:**

Anthocyanins are an important class of specialized metabolites that determine the color of grape berries and wine, serving as a critical quality indicator for grape berry and wine. Most red grapevine genotypes accumulate anthocyanins exclusively in the skin but not in the flesh of the berries, which remains white. However, anthocyanins also accumulate in the berry flesh in teinturier cultivars. The synthesis of anthocyanins in grape skins begins at the onset of veraison, whereas the accumulation of anthocyanins in the flesh exhibits spatiotemporal specificity. In some varieties, the synthesis of anthocyanins in the flesh occurs concurrently with that in the skin, starting at veraison. However, in other varieties, anthocyanin synthesis in the flesh begins earlier than in the skin, right after fruit set. Hence, it is very likely that the molecular basis of anthocyanin accumulation in grape skin and flesh are different. In our earlier work, several candidate genes that may be involved in regulating anthocyanin synthesis in grape flesh were identified by WGAS and QTL analysis.

This project aims at validating the functions of these candidate genes. 1) Clone the promoter sequences of the candidate genes and compare among different cultivars. 2) Clone the coding sequences of the candidate genes and construct of overexpression and silencing vectors, then transform into grape embryonic cells and hairy root. 3) Stable transformed materials are used for anthocyanin quantification by HPLC.

**Pre-requirements:**

All master 1 students major in plant science are welcomed. We look for a motivated candidate, open personality, independent thinking and good skills of communication and writing will be appreciated.

**Supervisor:** Prof. Zhanwu Dai ([Zhanwu.dai@ibcas.ac.cn](mailto:Zhanwu.dai@ibcas.ac.cn)) and Dr. Junhua Kong ([kongjunhua@ibcas.ac.cn](mailto:kongjunhua@ibcas.ac.cn))

**The lab:** The hosting lab is led by Prof. Zhanwu Dai, who has obtained his PhD diploma from Avignon University and then worked as a scientist (CR1) at INRAE for 9 years. With in total of 13 years of experience, Prof. Dai is internationally very well known for his work on grape quality regulation research with multidisciplinary approaches, including modeling, transcriptomes, metabolomes, epigenomes, as well as phenomes. The lab is conducting world-leading projects around grape quality at different levels and have extensive international collaborations with researchers from France, Spain, Italy, Germany, South African, Belgium, Australian, New Zealand, and USA. A list of Prof. Dai's publication could be found: <https://www.researchgate.net/profile/Zhanwu-Dai/research>