

# PLS 298: Molecular and Cellular Aspects of Crop Quality and Safety

**Sec 055, CRN 57324, 3 credits**

Spring Quarter 2023; Mon and Wed 2:40 – 4:00 pm

Location: Mann Lab Conference Room

Instructor and Coordinator: Maeli Melotto [melotto@ucdavis.edu](mailto:melotto@ucdavis.edu)

## Course Objectives

The main objectives of the course are to reinforce basic concepts and provide in-depth knowledge of current topics relevant to crop quality and safety. The class will be focused on the cellular, molecular, biochemical, and physiological processes that contribute to desirable crop quality, nutrition, and safety. Undergraduates who are familiar with cell and molecular biology and omics technologies might benefit from this course as well. *Topics will be presented by experts in the field.*

## Topics

1. Molecular and cellular basis of crop quality and safety
2. Plant metabolism associated with crop quality traits
3. Cell wall metabolism associated with crop quality
4. Chemistry of crop quality traits
5. Molecular basis of fruit ripening and senescence
6. Tissue and developmental basis of crop quality traits
7. Breeding for decreased heavy metal accumulation and aflatoxins in crops
8. Non-invasive systems to assess crop quality
9. Biotechnological approaches to improve crop quality and nutrition
10. Breeding for wheat quality and nutritional value
11. Physiological aspects of crop nutrition for human nutrition
12. Genomic of crop quality
13. Crop susceptibility to fungal disease
14. Molecular aspects of microbial safety of crops
15. Student-led discussions (3)