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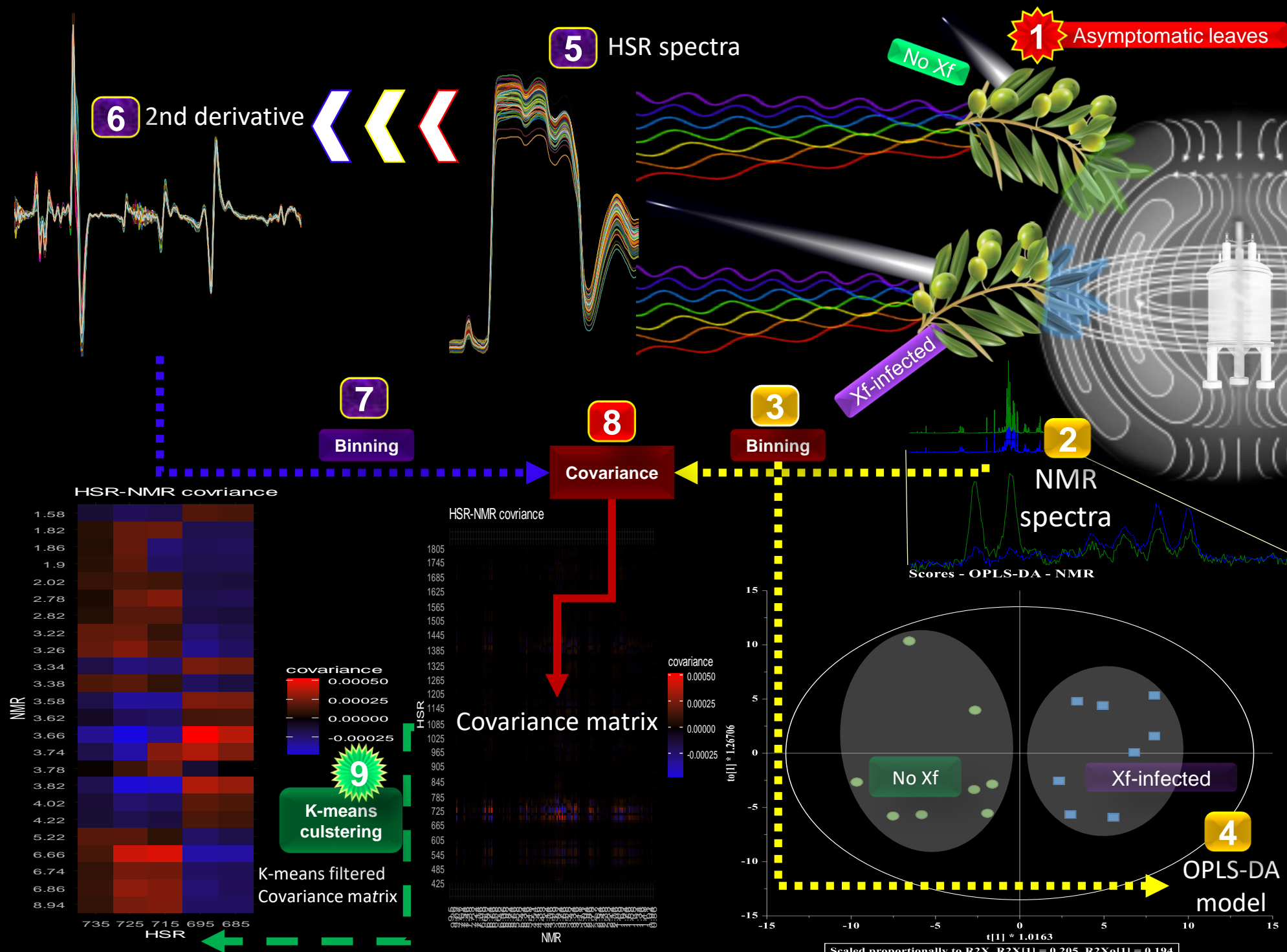
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Introduction

The goal of this study is to identify biomarkers for the early detection of *Xylella fastidiosa* (Xf) subsp. pauca [1], which impacted severely the olive groves of Apulia region of Italy, whereby about 11 million olive trees were infected. Over the Xf-infection, olive trees experience phenotypic and metabolic fluctuations. Nevertheless, at early stages of infection trees could remain asymptomatic for years.

Materials and Methods

Asymptomatic leaves of artificially Xf-infected olive plants of “Cellina di Nardò” (a susceptible cultivar) were analysed using ¹H NMR, hyperspectral reflectance (HSR), and chemometrics [2]. Systematically, the covariance matrices between NMR and HSR were also investigated for linking HSR features to diagnostic NMR signals.



Conclusions and References

This linking revealed different wavelength-regions with diverse association to the corresponding NMR diagnostic signals. The diagnostic wavelengths are a keystone to developing sensors for early-detection of Xf-infected trees.

[1] M. Saponari et al. *Sci. Rep.* **7**, 1–13 (2017); [2] A. Rizzuti et al. *Phytopathol. Mediterr.* **57**, 241–52 (2018)