

In vivo imaging of viroid RNA and associated host factors

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Viroids are infectious, non-coding circular RNA molecules that can cause severe plant diseases and agricultural losses. Viroids move between cells through plasmodesmata but the mechanism that guides the replicated viroid RNA to these cell wall nanochannels is not known. Insights into this mechanism may lead to new strategies for disease control.

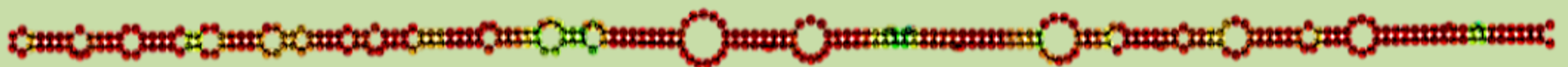


Aim

Visualize viroid RNA in living plant cells and identify host factors involved in viroid trafficking

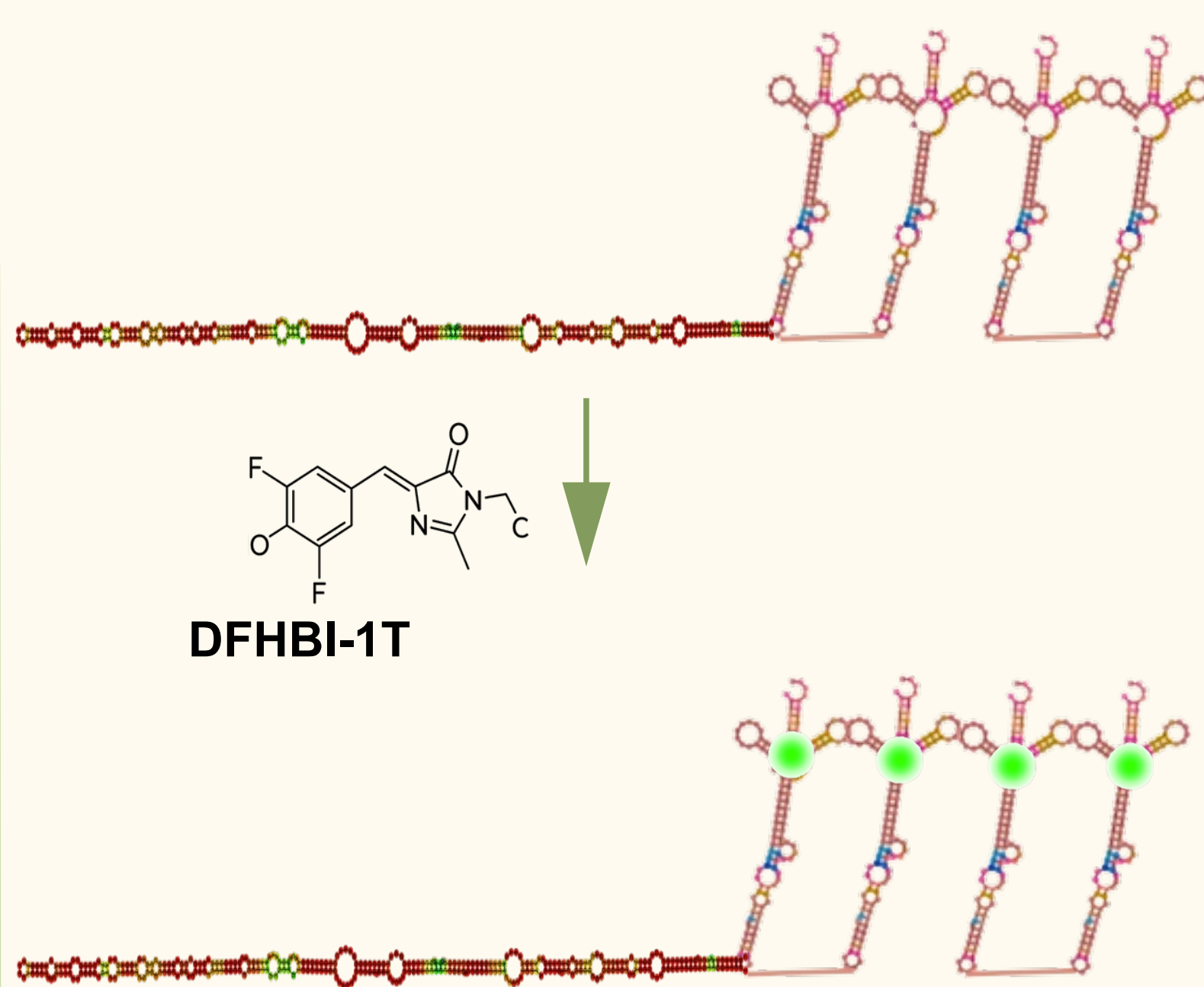
Approaches for viroid imaging

PSTVd



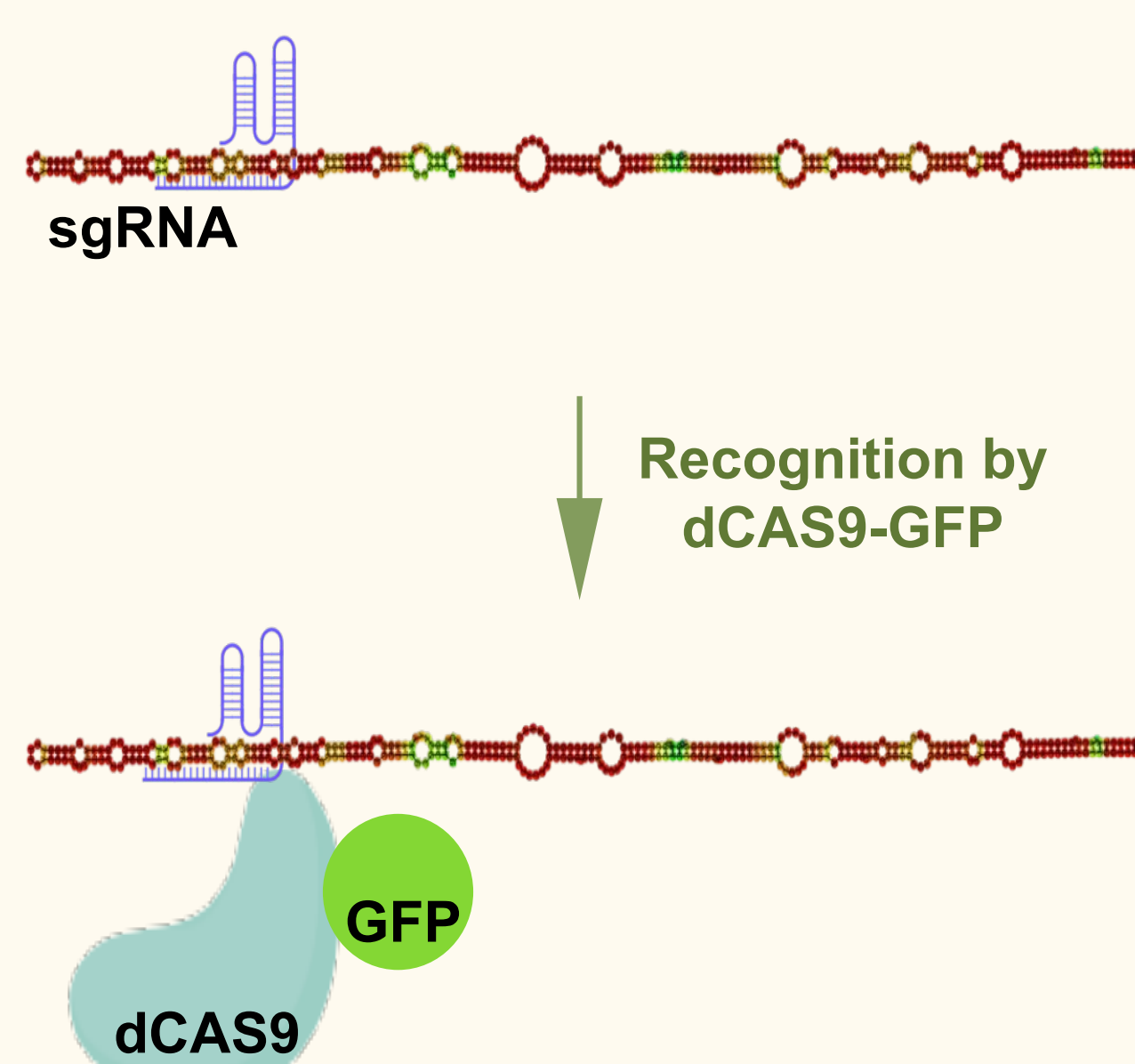
Broccoli aptamer

PSTVd fusion to 3WJ-4xBroccoli



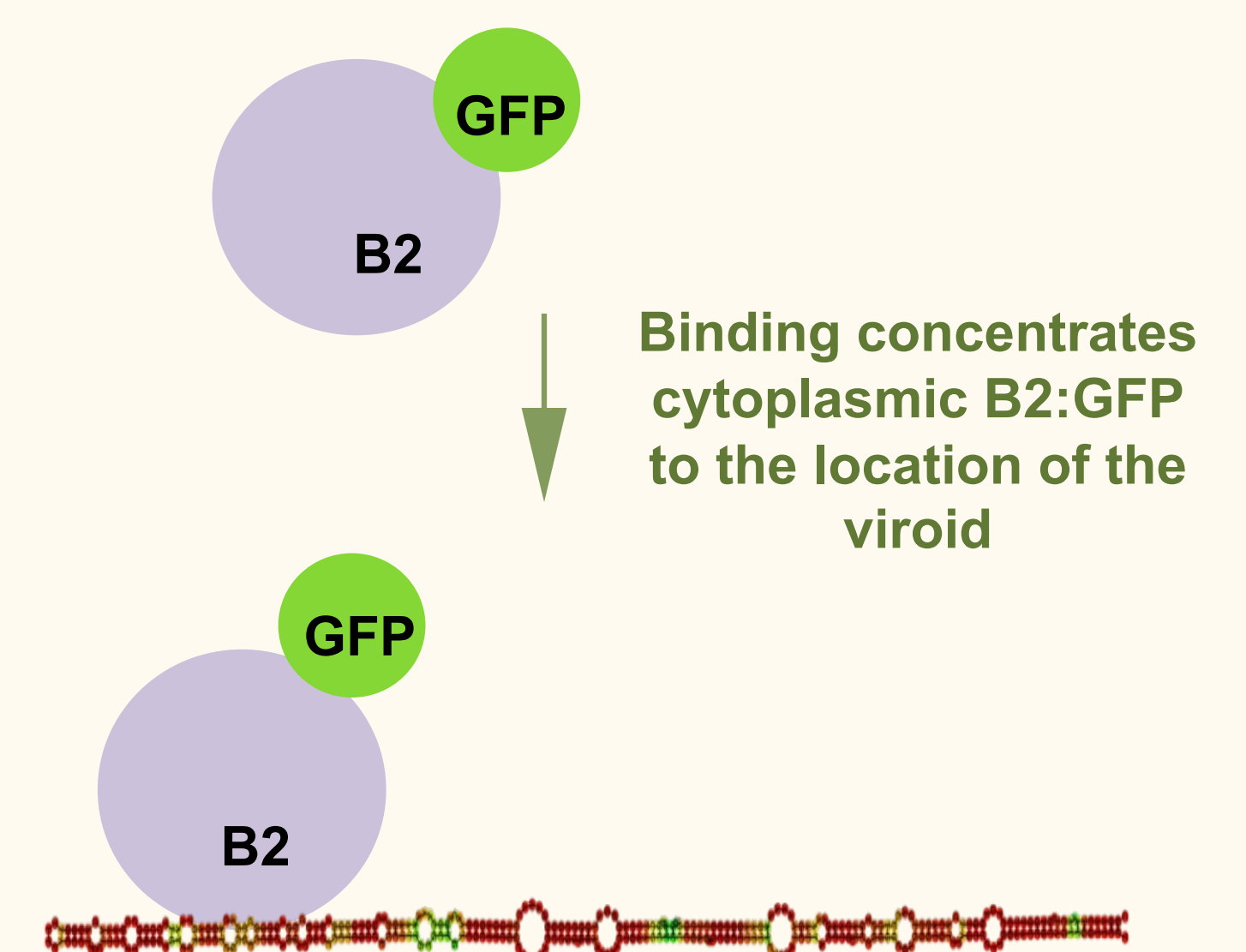
dCAS9-GFP

Target PSTVd with guide RNA



B2:GFP

The FHV dsRNA-binding protein B2 may recognize viroid RNA



Fluorescence will be detected by microscopy



Viroid-associated proteins will be isolated by GFP pull-down and analyzed by mass spectrometry



This project is both challenging and innovative, as it will provide new insights into RNA movement and viroid-host interactions

References

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- Nelles et al. (2016). *Cell*, 165(2), 488–496. <https://doi.org/10.1016/j.cell.2016.02.054>
- Monsion et al. (2018). *Front. Plant Sci.*, 9, 70. <https://doi.org/10.3389/fpls.2018.00070>

