**Introduction**

Grafting is an old technique that has been used for the production of individuals with higher resistance to stresses, precocious flowering plants, controlling of plant architecture, and or …. (Kondhare et al., 2021; Yang et al., 2015). Potato/tomato heterografting, watermelon/bottle gourd, or fruit grafting are some examples that heterografting could help plants to survive under stresses or have better growth in different situations (Wang et al., 2020; Zhang et al., 2022). Grafting causes changes in the heterograft traits but the molecular mechanisms behind that had been unknown for decades (Kondhare et al., 2021). There must exist a communication system between different compartments within cells, adjacent cells, and different organs that could transport the environmental or developmental signals that also transport back and forward signals among rootstock and scion in heterografts (Spiegelman et al., 2013; Turnbull & Lopez‐Cobollo, 2013; Xia & Zhang, 2020). Long-distance transportation occurs in the vasculature system transporting different molecules, including sugars, hormones, proteins, amino acids, and RNAs (Turgeon & Wolf, 2009). Unlike other long-distance transport molecules, the biological functions of mobile RNAs have not been completely identified. Different methods have been utilized to detect the mobile RNAs (small RNAs or mRNAs), however, transcriptome profiling of scions and rootstocks has efficiently appeared (Li et al., 2022).

**Material and method**

De novo assembly

Before running analysis on the raw sequence data, the quality control of samples were checked for adaptor pollination and the law quality bases using FastQC package. Afterwards, trimming of the raw sequences were conducted using Trimmomatic with parameters: SLIDINGWINDOW:4:15, CROP:50, and HEADCROP:10.

To have an assembly for SNP calling and RNAsrq analysis, we created two assemblies, one using only homograft samples from both root and shoot, and another from all samples of root and shoot.

Kondhare, K. R., Patil, N. S., & Banerjee, A. K. (2021). A historical overview of long-distance signalling in plants. *Journal of experimental Botany*, *72*(12), 4218-4236.

Li, W., Chen, S., Liu, Y., Wang, L., Jiang, J., Zhao, S., Fang, W., Chen, F., & Guan, Z. (2022). Long-distance transport RNAs between rootstocks and scions and graft hybridization. *Planta*, *255*(5), 96.

Spiegelman, Z., Golan, G., & Wolf, S. (2013). Don’t kill the messenger: long-distance trafficking of mRNA molecules. *Plant Science*, *213*, 1-8.

Turgeon, R., & Wolf, S. (2009). Phloem transport: cellular pathways and molecular trafficking. *Annual review of plant biology*, *60*, 207-221.

Turnbull, C. G., & Lopez‐Cobollo, R. M. (2013). Heavy traffic in the fast lane: long‐distance signalling by macromolecules. *New phytologist*, *198*(1), 33-51.

Wang, Y., Wang, L., Xing, N., Wu, X., Wu, X., Wang, B., Lu, Z., Xu, P., Tao, Y., & Li, G. (2020). A universal pipeline for mobile mRNA detection and insights into heterografting advantages under chilling stress. *Horticulture research*, *7*.

Xia, C., & Zhang, C. (2020). Long-distance movement of mRNAs in plants. *Plants*, *9*(6), 731.

Yang, Y., Mao, L., Jittayasothorn, Y., Kang, Y., Jiao, C., Fei, Z., & Zhong, G.-Y. (2015). Messenger RNA exchange between scions and rootstocks in grafted grapevines. *BMC Plant Biology*, *15*(1), 1-14.

Zhang, G., Zhou, J., Song, J., Guo, X., Nie, X., & Guo, H. (2022). Grafting-induced transcriptome changes and long-distance mRNA movement in the potato/Datura stramonium heterograft system. *Horticulture, Environment, and Biotechnology*, *63*(2), 229-238.