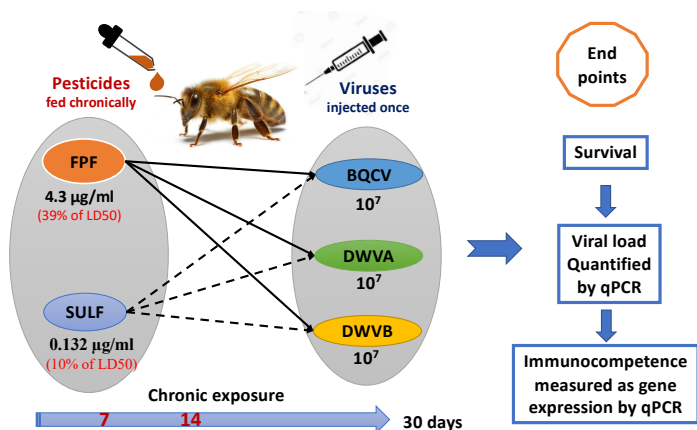


# Novel insecticides and viral pathogens act independently on worker honey bees in the laboratory

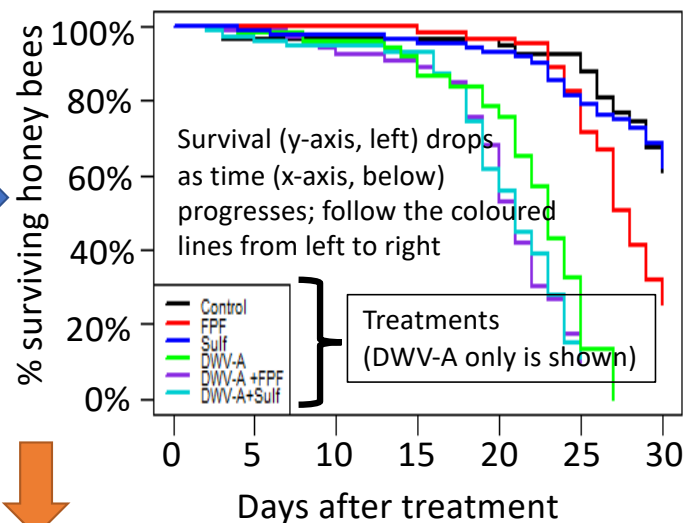
**Background:** The decline of insect pollinators threatens global food security. A major potential cause of decline is considered to be the interaction between environmental stressors, particularly pesticides and pathogens, that may amplify the impact of each.

**Question:** Do novel insecticides flupyradifurone (FPF) and sulfoxaflor (SULF) interact with honey bee viral pathogens: deformed wing virus variant A (DWV-A), variant B (DWV-B) and black queen cell virus (BQCV), to amplify harm to bees?

## Experimental set-up



## Effect on Survival - same pattern for all 3 viruses



**MAJOR RESULT: Pesticide + pathogen: do not interact to amplify bee mortality; viral loads remain unchanged, but bee immunocompetence is modulated (data not shown)**

## Take-home messages

- Sublethal doses of FPF fed for 30 days impact honey bee survival
- Common viral pathogens are a major threat to honey bees
- Co-exposure to novel insecticides **does not significantly amplify** viral impacts

**Source:** Al Naggar, Y., & Paxton, R. J. (2021). The novel insecticides flupyradifurone and sulfoxaflor do not act synergistically with viral pathogens in reducing honey bee (*Apis mellifera*) survival but sulfoxaflor modulates host immunocompetence. *Microbial biotechnology*, **14**(1), 227-240. <https://doi.org/10.1111/1751-7915.13673>