Colony Collapse Disorder

- The sudden decline in successful bee colonies is known as Colony Collapse Disorder (CCD).
- This loss is believed to be caused by the disappearance of the colonies worker bees.
- Since the 1990s, bee populations have gradually declined.
- There was also a 30.7% loss in US managed bee populations.
- Apidae is one of the seven bee families that is home to the ever important Apis mellifera, known as the Western Honey bee.

Background

- Apidae is one of the seven bee families that is home to the ever important A. mellifera, Western Honey Bee. Bees are the single most important pollinators and are critical to maintaining the stability of the ecosystems.

Methodology

- In late development, collect blood samples from emerging honey bee larvae.
- Isolate DNA from infected adult bees.
- Isolate AmFV DNA from infected adult bees.
- Transfect V. destructor with AmFV virus.
- Infection of V. destructor with AmFV virus.
- In late development, collect blood samples for viral DNA testing.

Specific Aim

- This study aims to further investigate the increase of viral replication of DWV via V. destructor feeding on emerging honey bees.
- This study will investigate whether DNA viral replication should increase the rate of viral replication for AmFV.

Potential Conclusions

- The virus combined with mite feeding may have a similar outcome as did in the study with V. destructor.
- The virus combined with mite feeding may be too high a burden for bee larvae.

Potential Pitfalls

- Since AmFV attacks the blood directly, viral replication should be higher than that with the DWV virus.
- This could provide Viash insights on how better combat parasite-viral infestations in honey bee larvae.

References

- 1) Greenpeace [Internet]. 2018. Amsterdam, AZ: Greenpeace International; [cited 2019 Feb 7].

Importance

- Honey bee pollination is valued around $14.6 billion for wild and agricultural crops.
- One third of all our crops depend on honey bee pollination.
- Bees are an indicator species and bee population health directly reflects the ecosystem health.

Potential Conclusions

- The virus combined with mite feeding may have a similar outcome as did in the study with V. destructor.
- The virus combined with mite feeding may not be able to feed as efficiently on the thick, infected blood.

Potential Pitfalls

- Since AmFV attacks the blood directly, viral replication should be higher than that with the DWV virus.
- This could provide Viash insights on how better combat parasite-viral infestations in honey bee larvae.