

Gut Microbiome Diversity in *Apis mellifera*: Insights from Culture-Dependent and Culture-Independent Methods"

Urmila R, Parvati Sharma

Ph.D. Scholar, Department of Zoology, CBLU, Bhiwani, Haryana, India
Assistant Professor, Department of Zoology, CBLU, Bhiwani, Haryana, India

INTRODUCTION & AIM

The intricate and ever-changing gut microbiota of *Apis mellifera* bees is an essential component of their overall health and welfare. A wide variety of probiotic bacteria make up this microbiome, which helps with immunity, aids with digestion, and guards against infections. Various factors, like as nutrition, ambient conditions, and interactions with other microbes, determine the diversification of these gut bacteria.

METHOD

A combination of culture-dependent and culture-independent methodologies are used to study the biodiversity of probiotic bacteria in the gut of honey bees. Culture-dependent techniques entail separating bacteria on certain media, but culture-independent techniques like 16S rRNA gene sequencing offer a thorough picture of bacterial communities. In order to extract DNA for sequencing, worker bee stomach samples are collected and processed. Sequencing data is analysed, bacterial species are identified, and relative abundances are evaluated using bioinformatic methods.

RESULTS & DISCUSSION

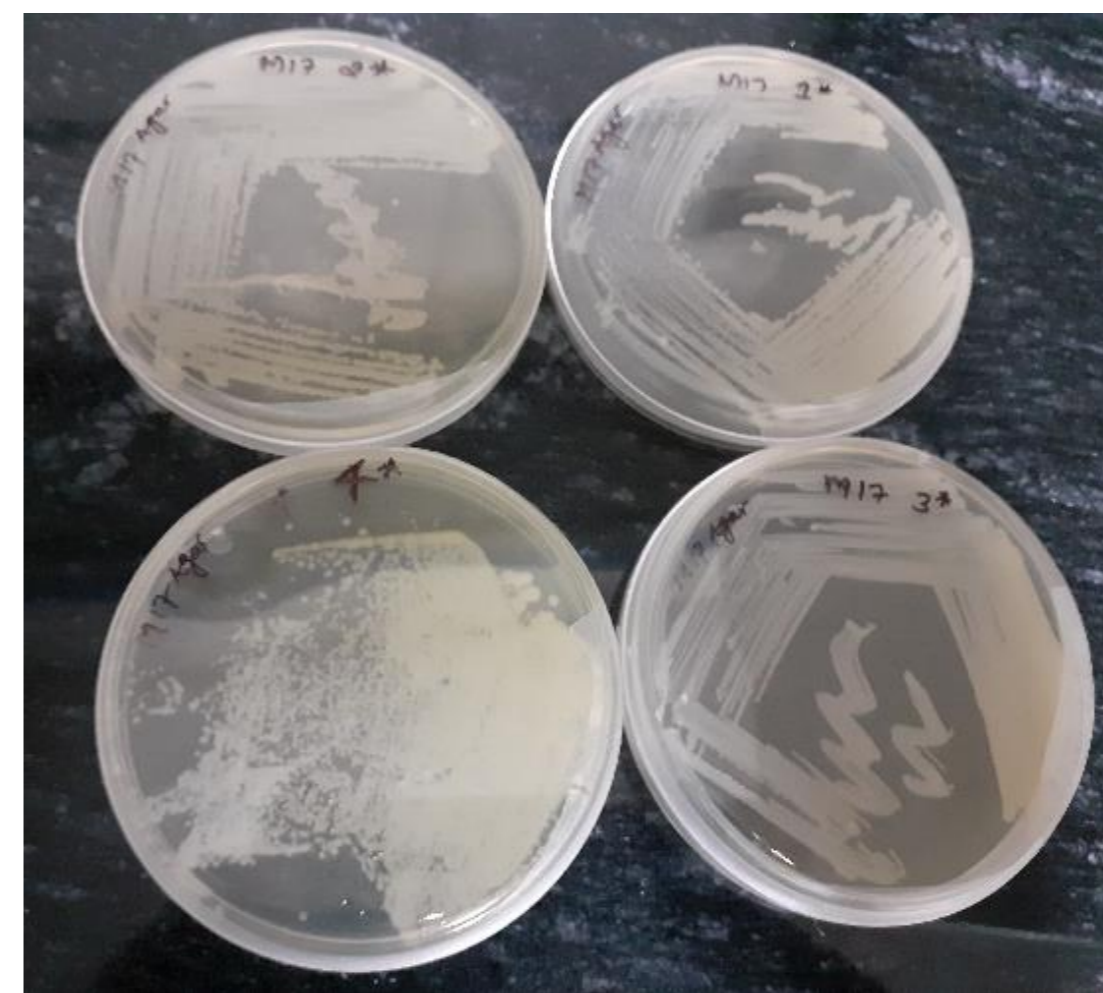


Fig1: Subculturing to obtain a pure bacterial colony

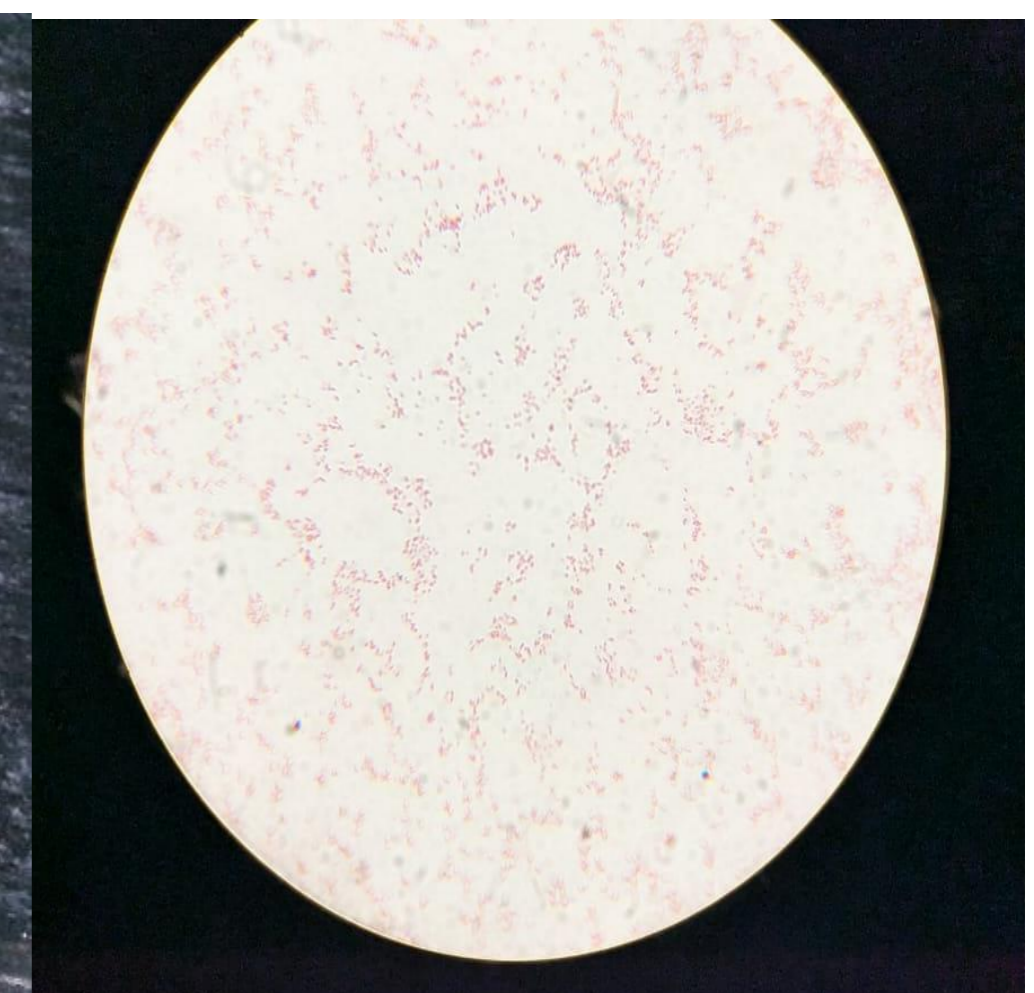


Fig 2: Gram negative Cocci (Magnification : 100X Objective lens)

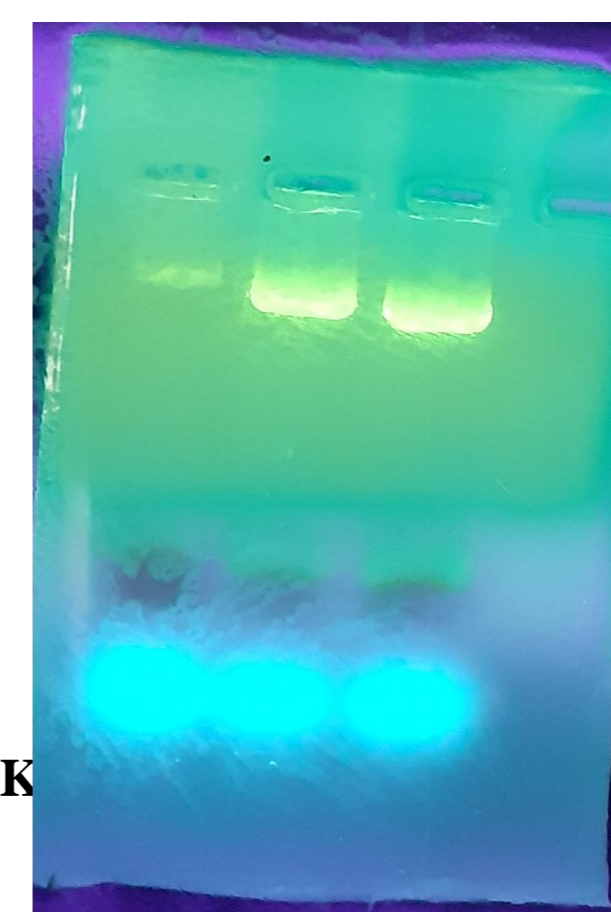
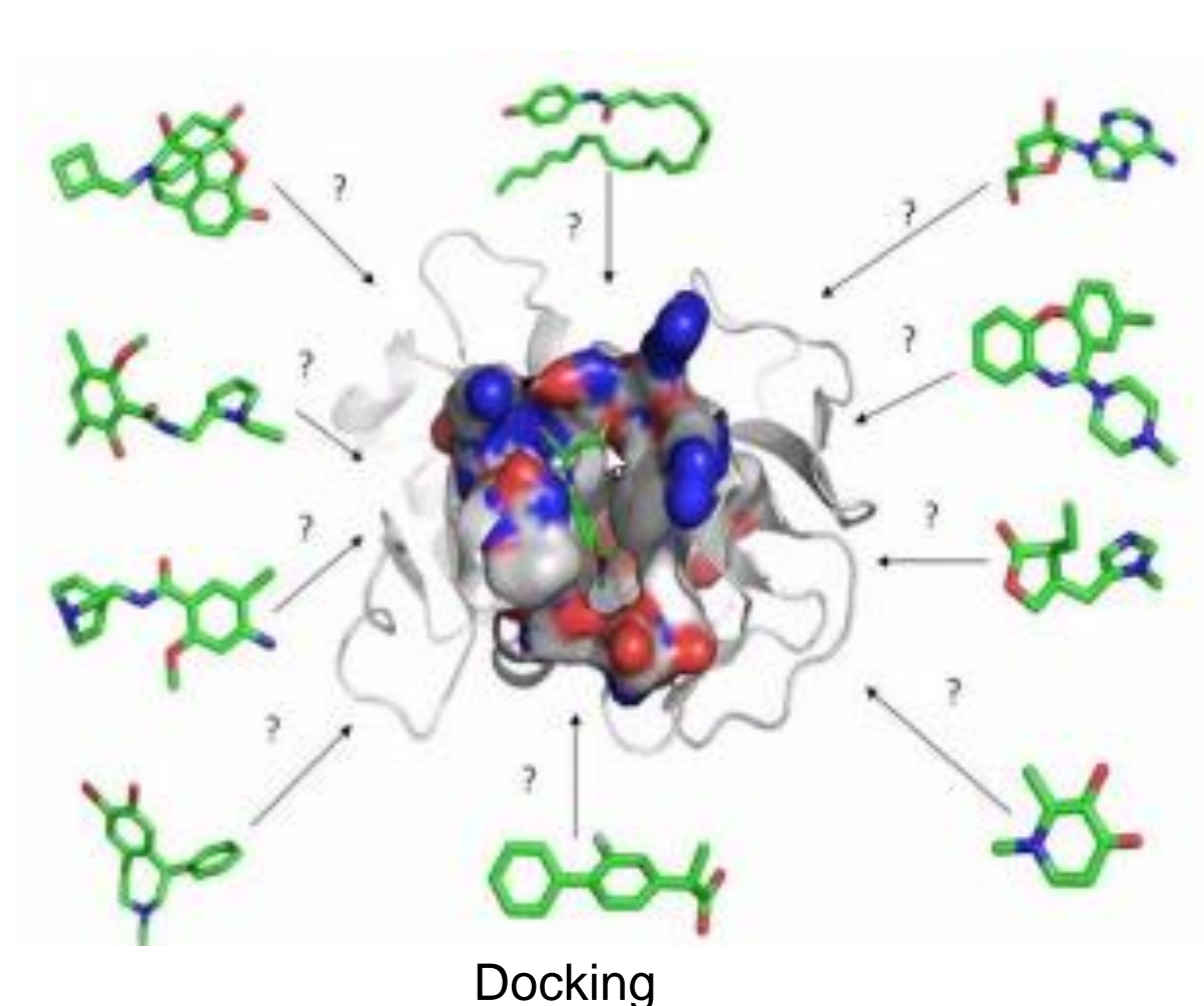


Fig 3: Genomic DNA



CONCLUSION

Maintaining a diverse and balanced gut microbiome helps bees withstand environmental stresses and enhances their immunity against diseases. Future research should focus on understanding the specific roles of different bacterial strains and developing strategies to support and enhance the gut microbiome through probiotic supplements modifications.

FUTURE WORK / REFERENCES

This could aid in improving bee health and sustaining their populations, which are vital for global pollination and agricultural productivity.

