



Plasmodium-mosquito midgut interactions: Role of peritrophins and digestive proteases

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1 INTRODUCTION AND AIM

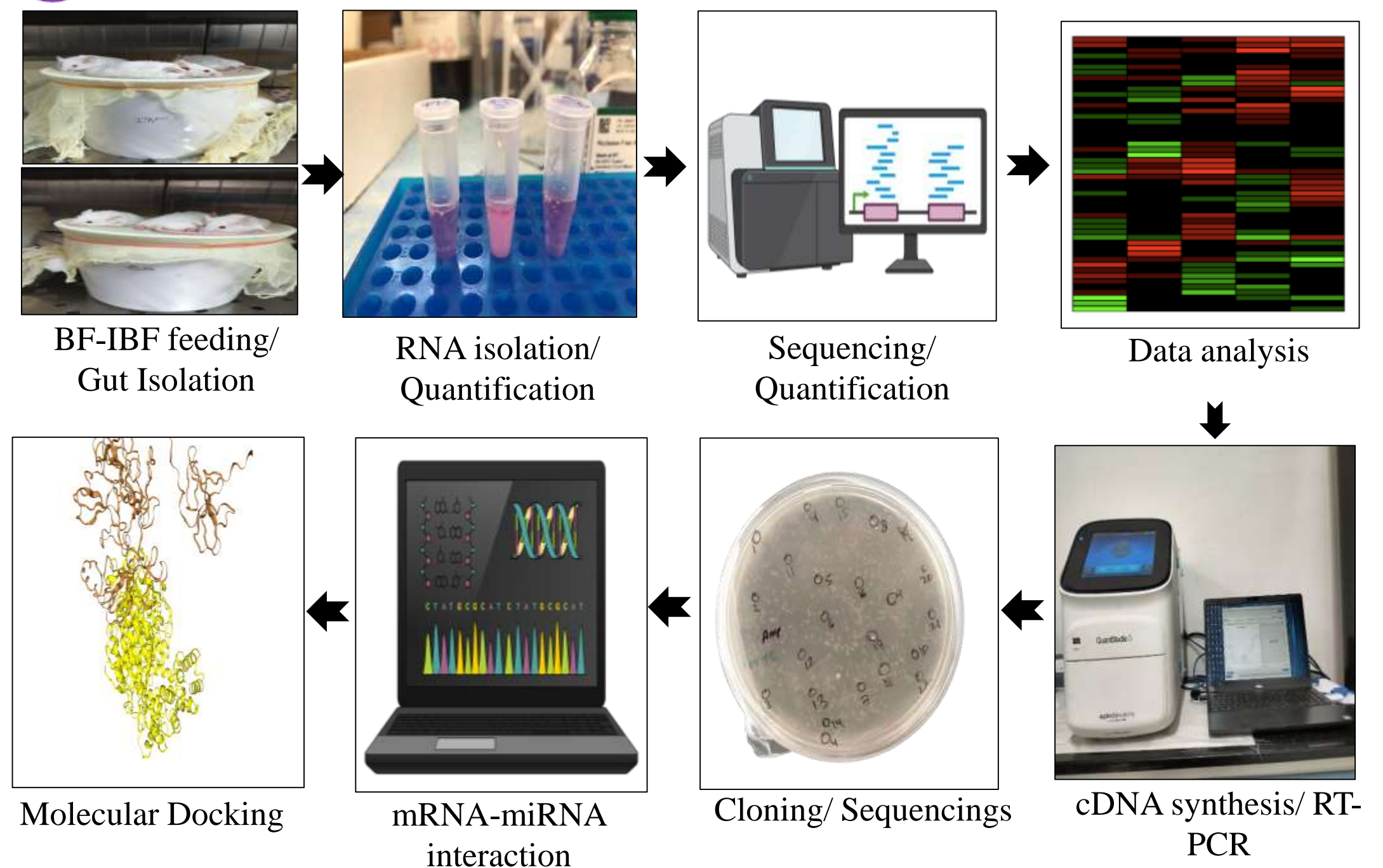
- Malaria remains a major global health burden, with transmission intricately dependent on the interactions between *Plasmodium* parasites and the *Anopheles* midgut.
- Post-infected blood meal in 1st 24-hour period is a critical bottleneck, during which gametogenesis, fertilization, ookinete development, and digestion occurs
- Digestion is mediated by proteases and peritrophic containing peritrophin

AIM

To identify significantly peritrophins and digestive proteases during the early-stage infection

To characterize Per16, 44 and 48 & check its potential for transmission blocking

2 METHODS



3 RESULTS

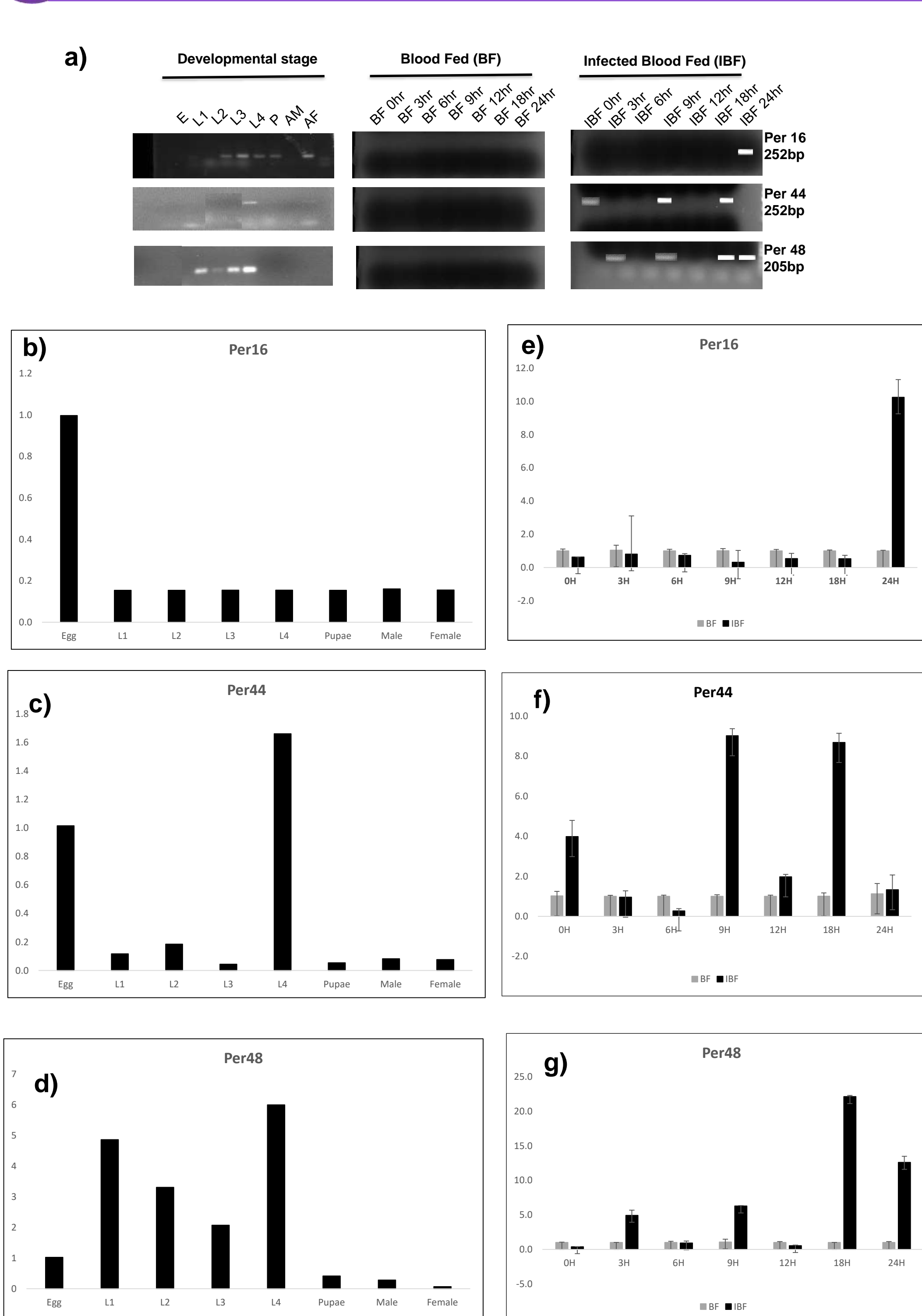


Fig 1: a) Semi-quantitative agarose gel (1.5%) of BF-IBF Per 16(252bp), 44(252bp), 48(205bp), b) Semi-quantitative agarose gel (1.5%) of Developmental stage Per 16-48, c) Developmental stage relative mRNA characterization of Per16, 44, and 48 c-e respectively, d) Bf-IBF relative mRNA characterization of Per16, 44, and 48 f-h respectively

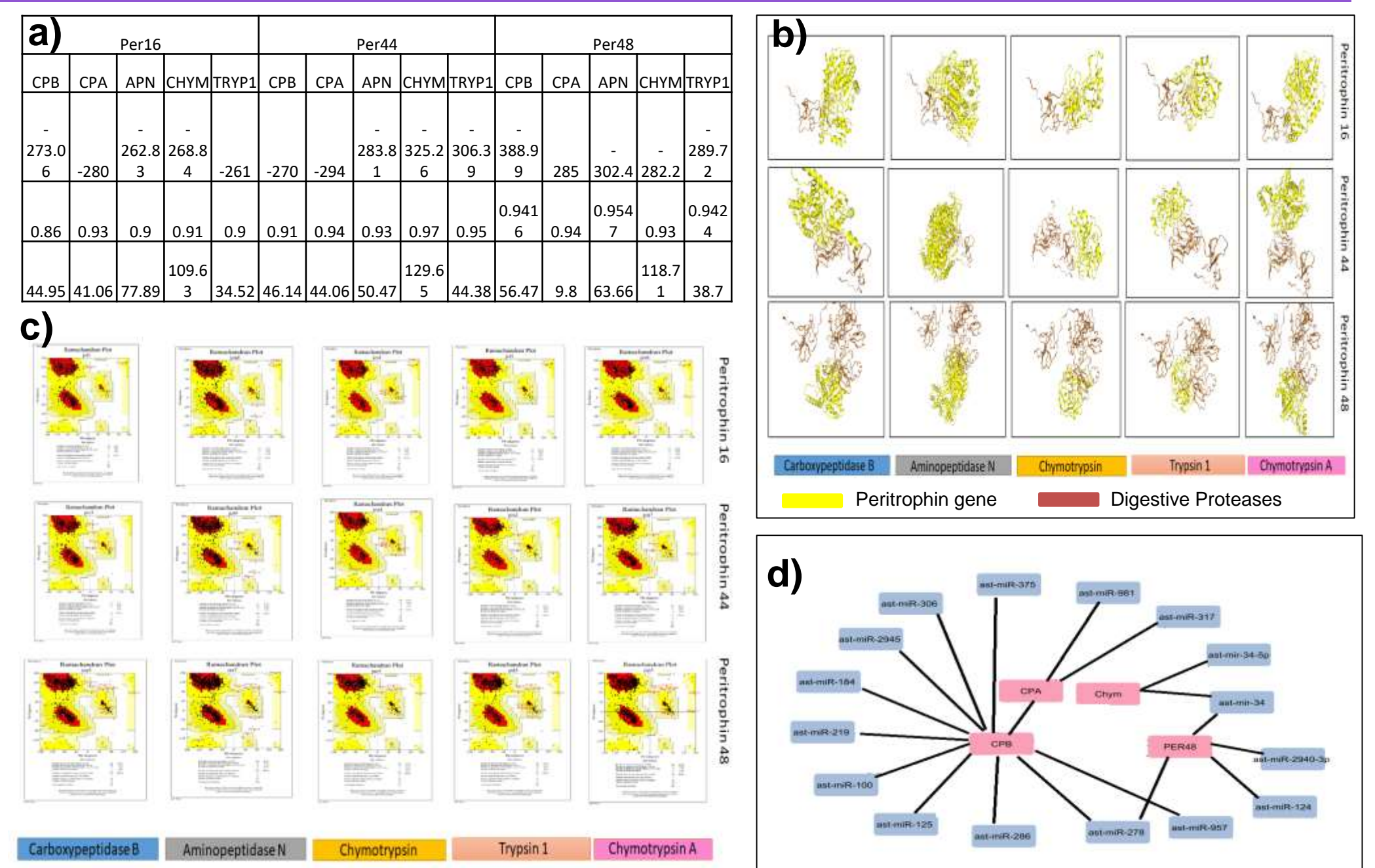


Fig 2: a) Docking of Per16, 44, and 48 with CPB, CPA, Chymotrypsin, Trypsin and APN a-c, b) (d) miRNA-mRNA targeting analysis,

4 CONCLUSION

- Expression of *Per* genes in later larval stages, BF, and IBF stages indicates their potential functional significance across mosquito developmental phases and role in *Plasmodium* transmission
- Molecular interaction signifies the complexity and specificity of these binding events. The observed variations in binding affinities and structural stabilities suggest distinct roles for different peritrophin proteins in their interactions with digestive enzymes, potentially reflecting their diverse biological functions and potential role in transmission-blocking

5 FUTURE WORKS/ REFERENCES

- siRNA and subsequent investigations will be conducted to examine the impact of *per*-gene silencing on *CPB* and vice-versa, as well as to evaluate the influence of gene silencing on the peritrophic matrix, vector proficiency, and the transmission of *Plasmodium*.

References

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