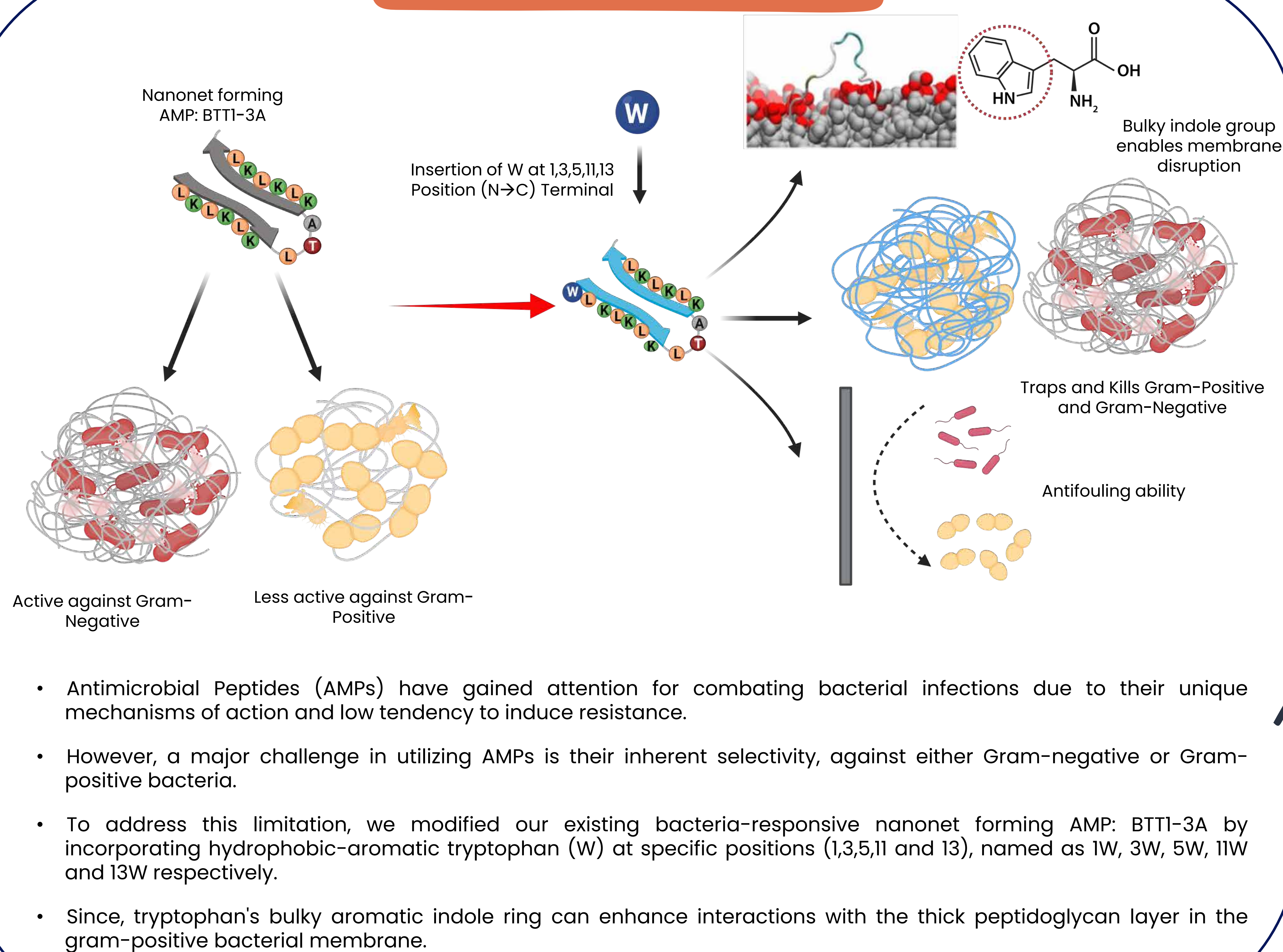


# Influence of tryptophan insertion on the fibrillation capacity and antimicrobial efficacy of $\beta$ -Hairpin Antimicrobial Peptides

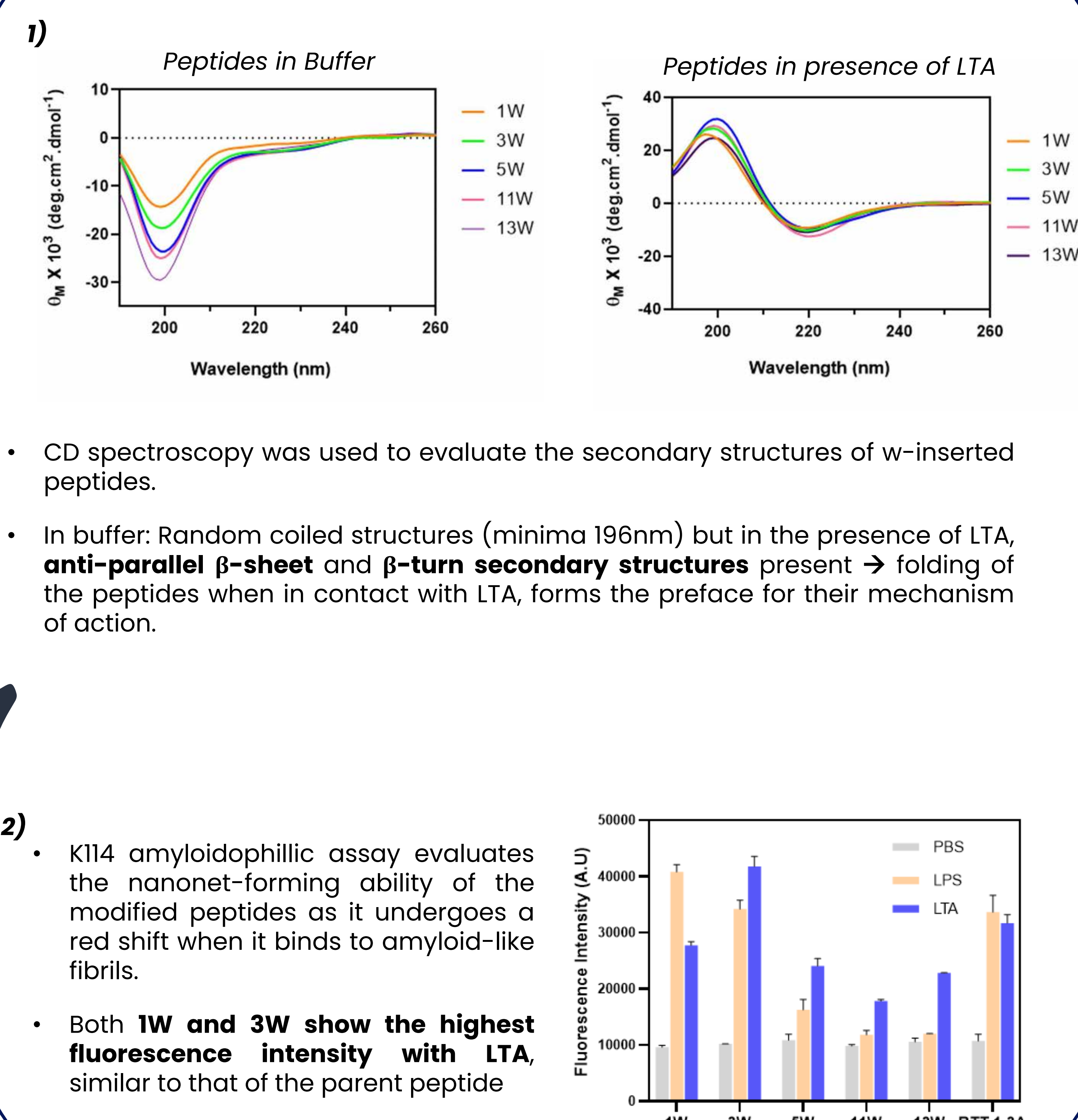
Dhanya Mahalakshmi Murali, Jian Xu, Dai Thien Nhan Tram and Pui Lai Rachel Ee

Department of Pharmacy and Pharmaceutical Science, National University of Singapore, Singapore

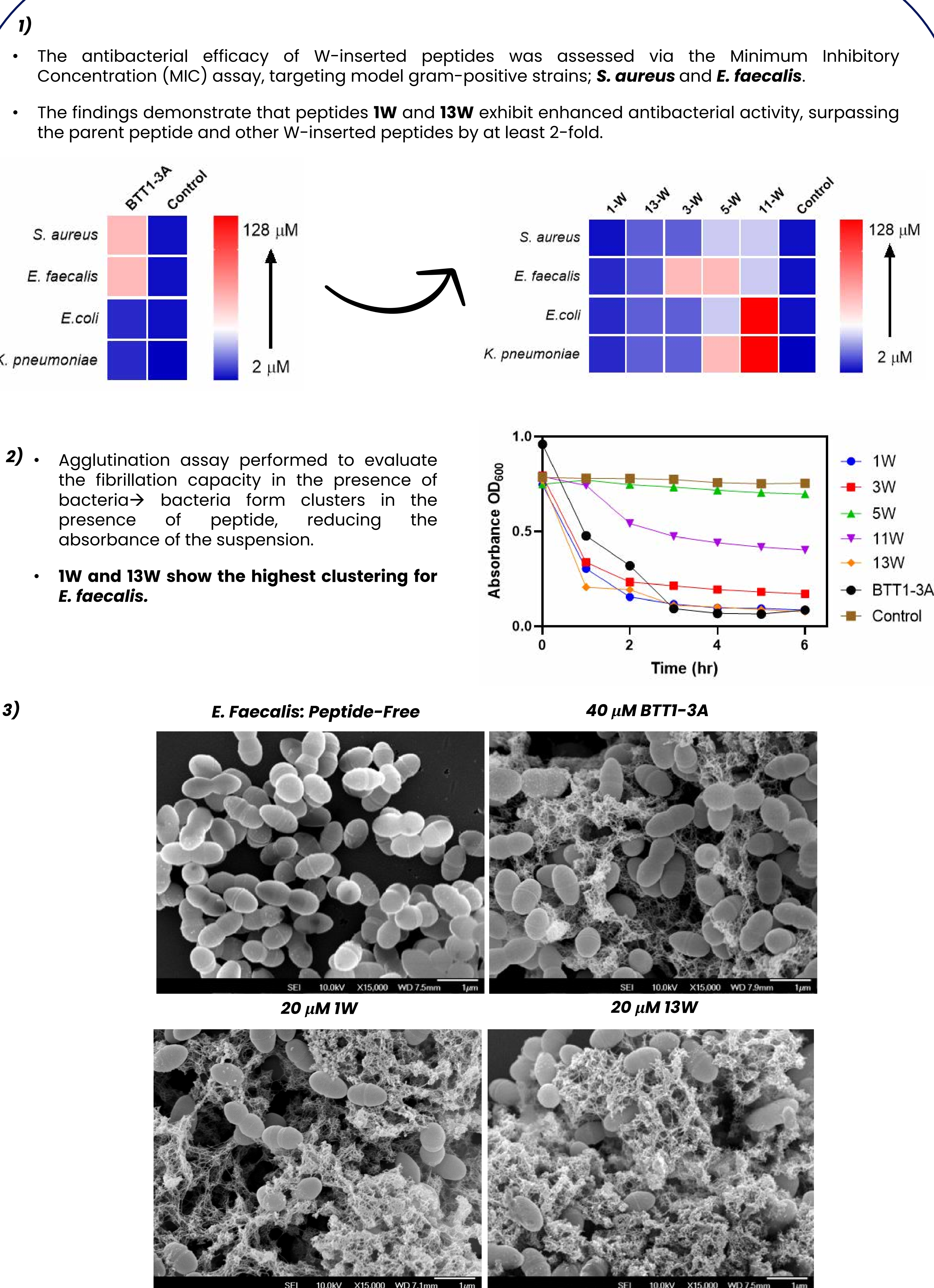
## Introduction



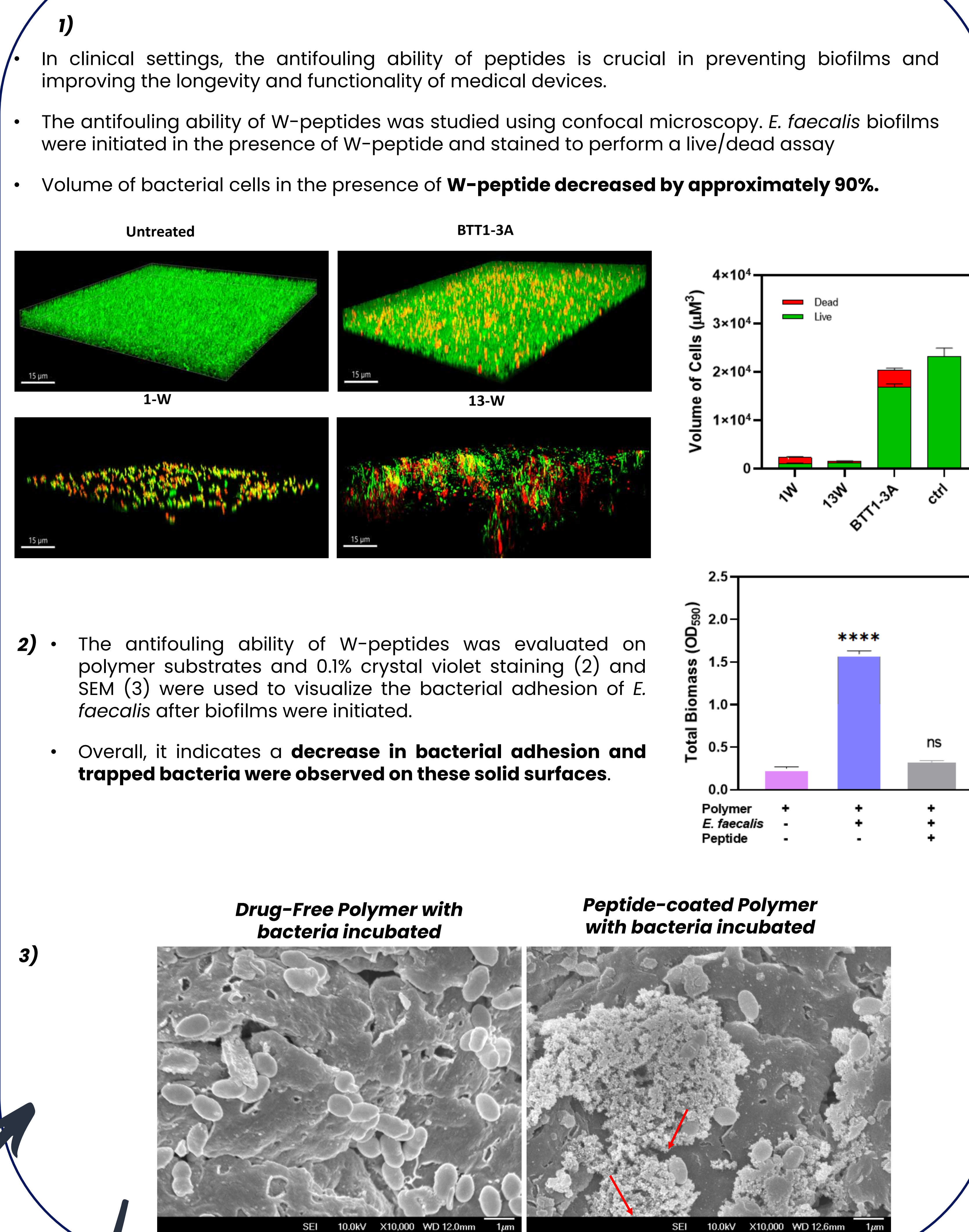
## Fibrillation of W-Peptides



## Expansion of Bacteria Spectrum



## Antifouling Ability



## Key Insights

- Incorporating tryptophan into BTTI-3A significantly enhances its antimicrobial activity against Gram-positive bacteria while maintaining efficacy against Gram-negative bacteria.
- The strategic incorporation of tryptophan enhances fibrillation capacity against gram-positive compared to the parent peptide.
- Additionally, the modified W-peptides show potential antifouling ability and may act as an effective solution for preventing biofilm-related complications in medical settings.

## Contact Information

National University of Singapore Email: phaeplr@nus.edu.sg  
Department of Pharmacy (A/Prof Rachel Ee)  
18 Science Drive 4, e0606578@u.nus.edu (Dhanya Murali)  
Singapore 117543

## Reference

- Tram, N. D. T., et. al., Bacteria-Responsive Self-Assembly of Antimicrobial Peptide Nanonets for Trap-and-Kill of Antibiotic-Resistant Strains. *Adv. Funct. Mater.* 2023, 33, 2210858.
- Nhan D.T. Tram, et. Al., Manipulating turn residues on de novo designed  $\beta$ -hairpin peptides for selectivity against drug-resistant bacteria, *Acta Biomaterialia*, Volume 135, 2021
- Drug repurposing for next-generation combination therapies against multidrug-resistant bacteria. *Theranostics*, 2021; 11(10):4910-4928