

A Systematic Review of Gene Mutations Mediating Antimicrobial Resistance

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Introduction

- OUCRU studies antimicrobial resistance (AMR) in gram-positive bacteria to improve the state of public health in Vietnam

Objective of Internship

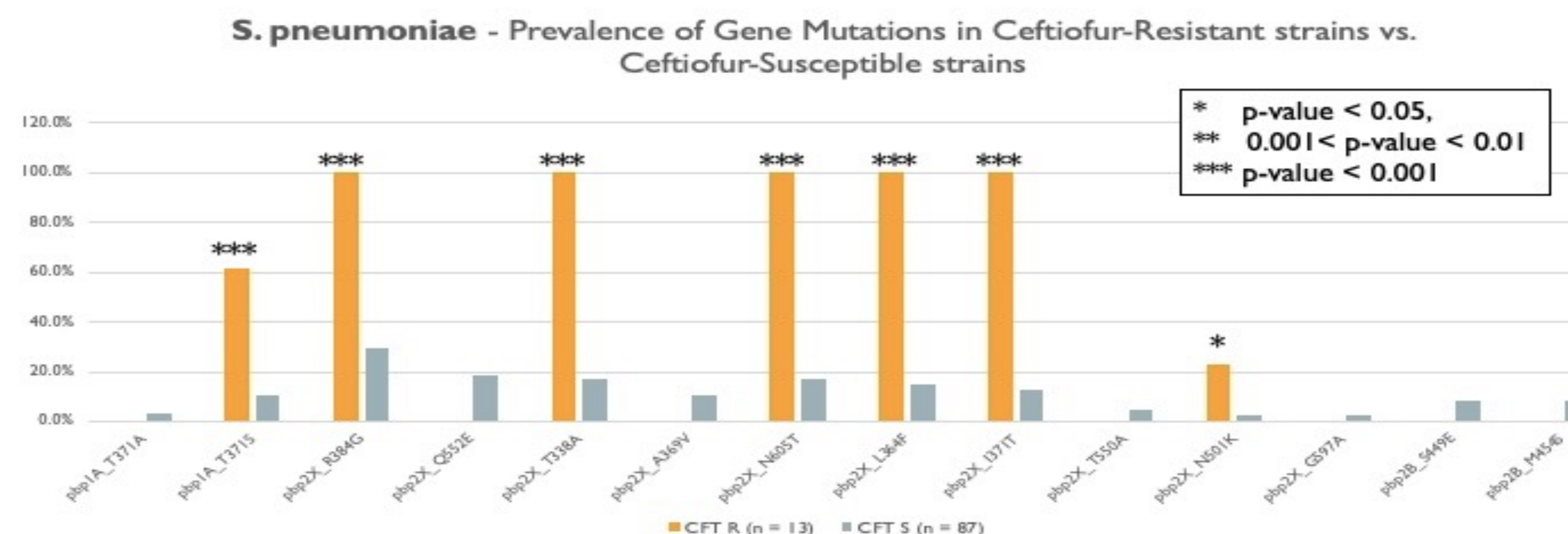
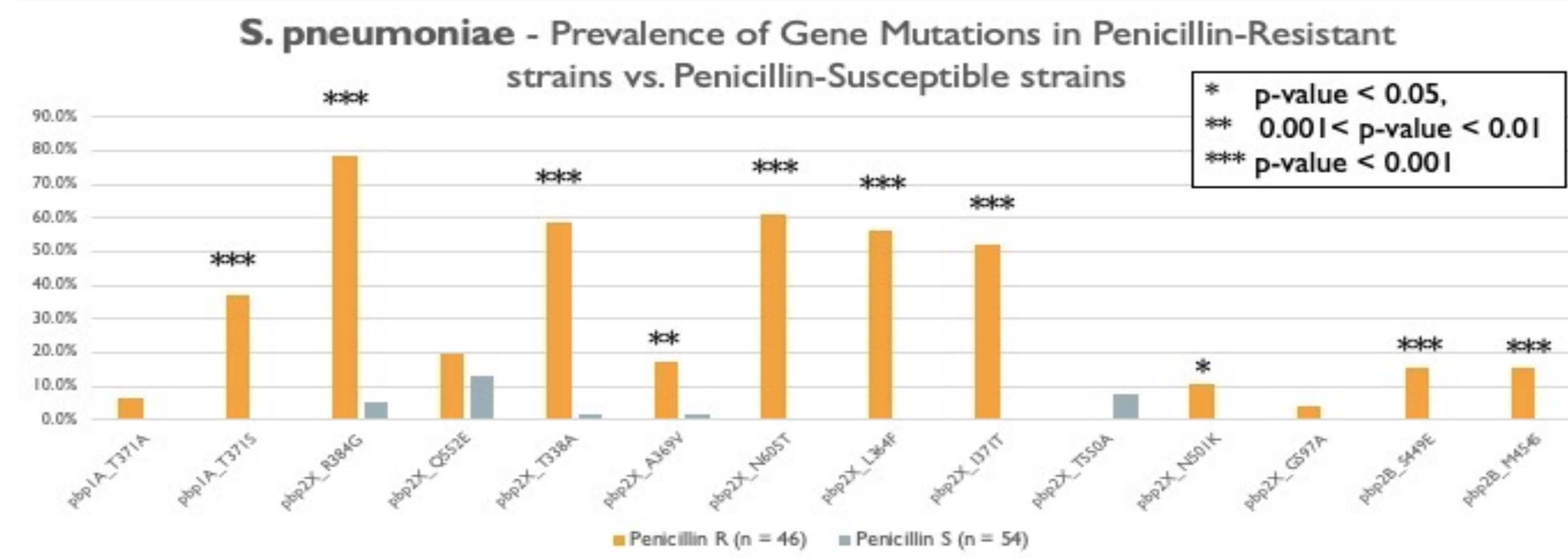
- Utilize literature review to build database of genes and mutations that are associated with antimicrobial resistance of different bacteria
- Statistically analyze database data to find mutations mediating antimicrobial resistance

Methods

- Scraped through PubMed publications that have researched antimicrobial resistance
- Used Excel and R packages to run statistical analysis and find statistically significant differences in genes of AMR strains versus susceptible strains

Results

- pbp2x T371S, R384G, T338A, N605T, L364F, I371T mutations confer antibiotic resistance against all 3 antibiotics studied
- pbp2b S449E, M454S mutations confer antibiotic resistance against penicillin and cefotaxime
- Analysis on ceftiofur may be limited due to small sample size of ceftiofur-resistant strains (n = 13)



Looking ahead

- As a future doctor, I am looking forward to bringing this clinical research experience with me in my future career

Questions

- How can we use this research to find drugs and other novel treatments that can combat AMR?

Conclusion

- There exist some gene mutations and motifs that are significantly more prevalent in AMR strains than susceptible strains.

Acknowledgements

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