

Optimization of Violacein Biosynthesis for Enhanced Antimicrobial Properties

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Background

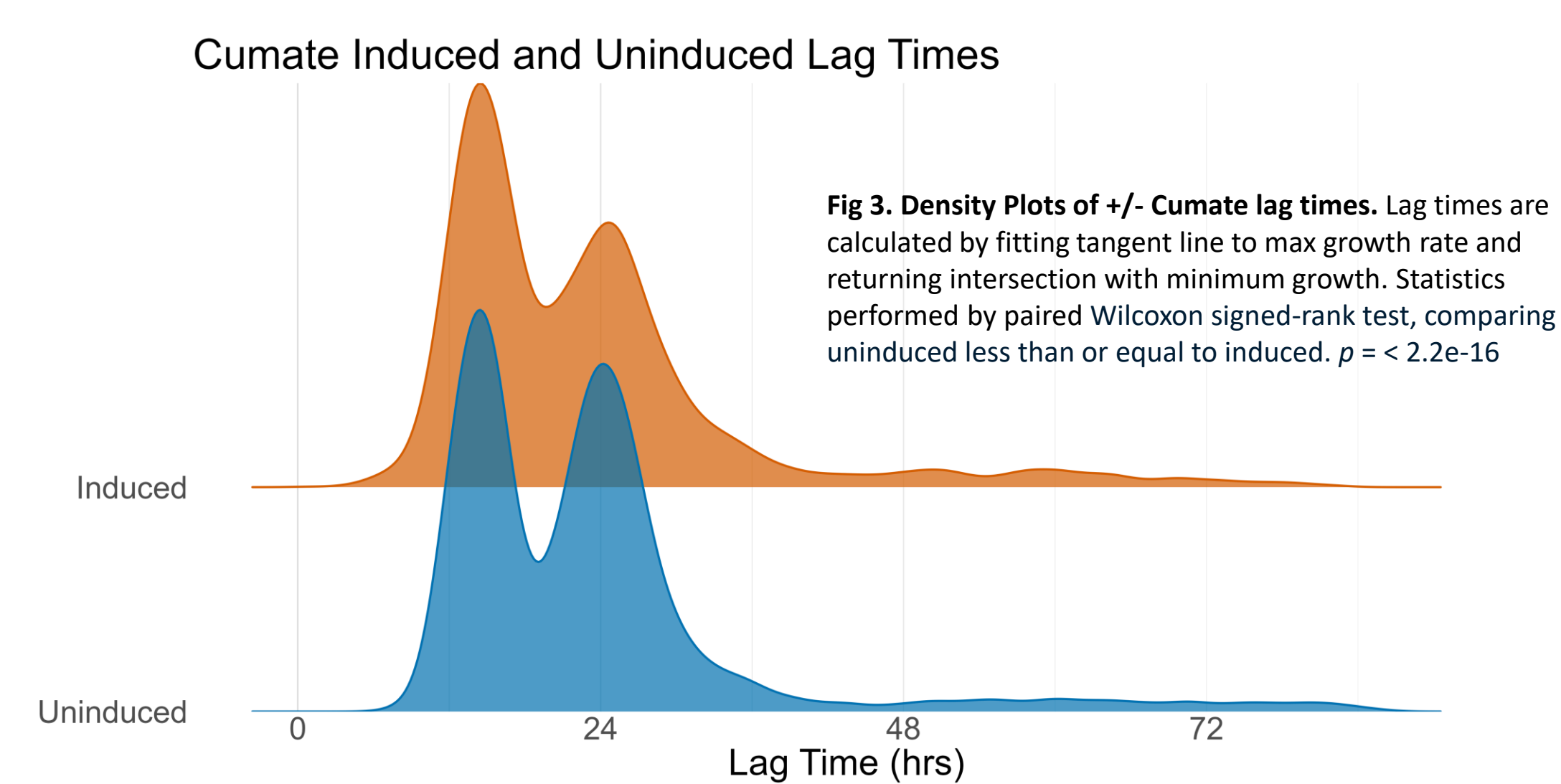
Violacein is a purple pigmented bisindole with antimicrobial properties. The production of violacein is regulated by the *vioABEDC* genes. We hypothesize that different gene expression levels will affect the growth and antimicrobial properties of violacein. Being able to harness violacein and its antimicrobial properties could have benefits in gut health and soil science research.

Objective

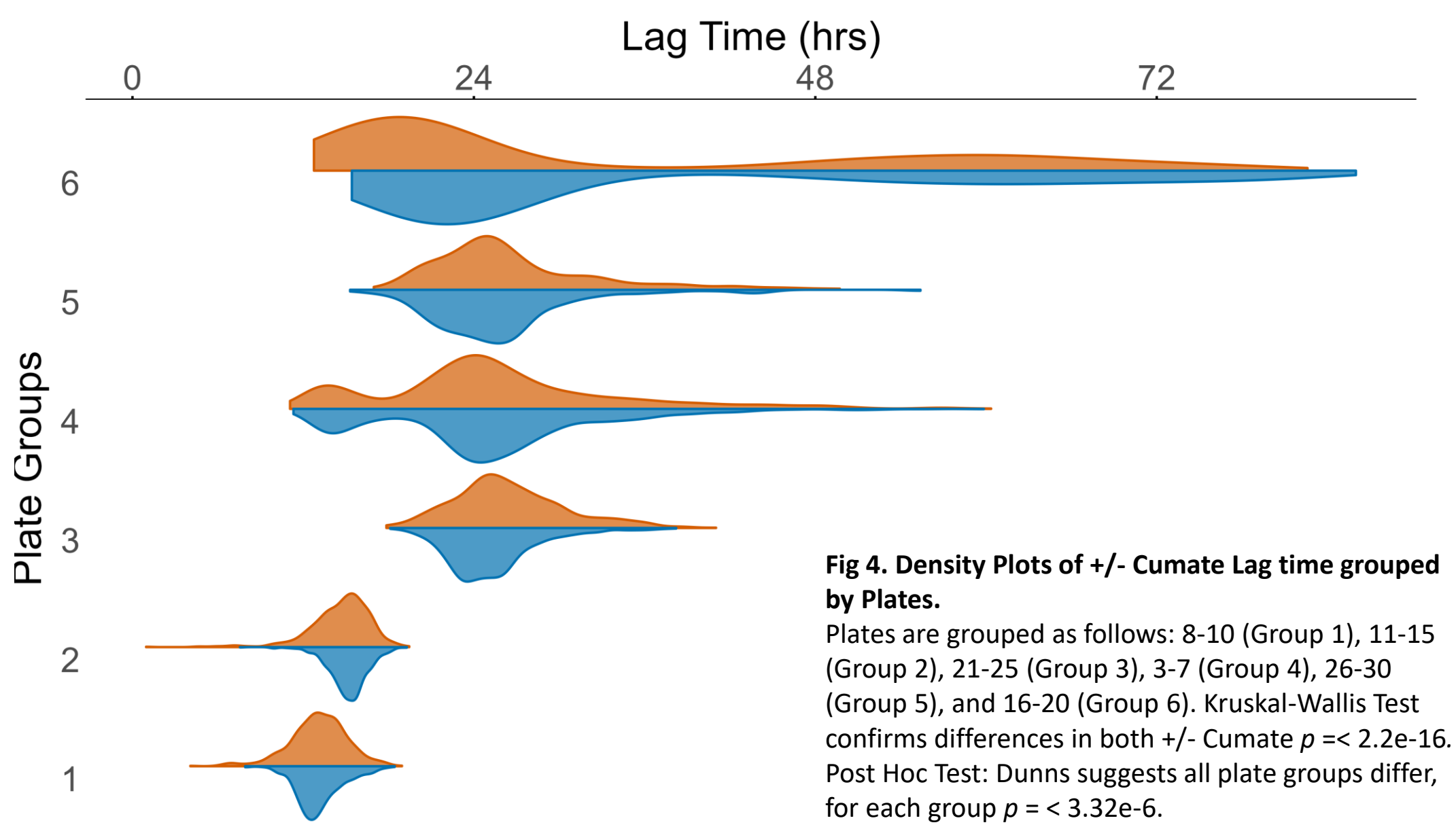
Each sample presents a unique gene expression combination, allowing us to create a large genomic library. Testing the library against optical density and area of inhibition data we can further understand the link between genotype and phenotype.

Results

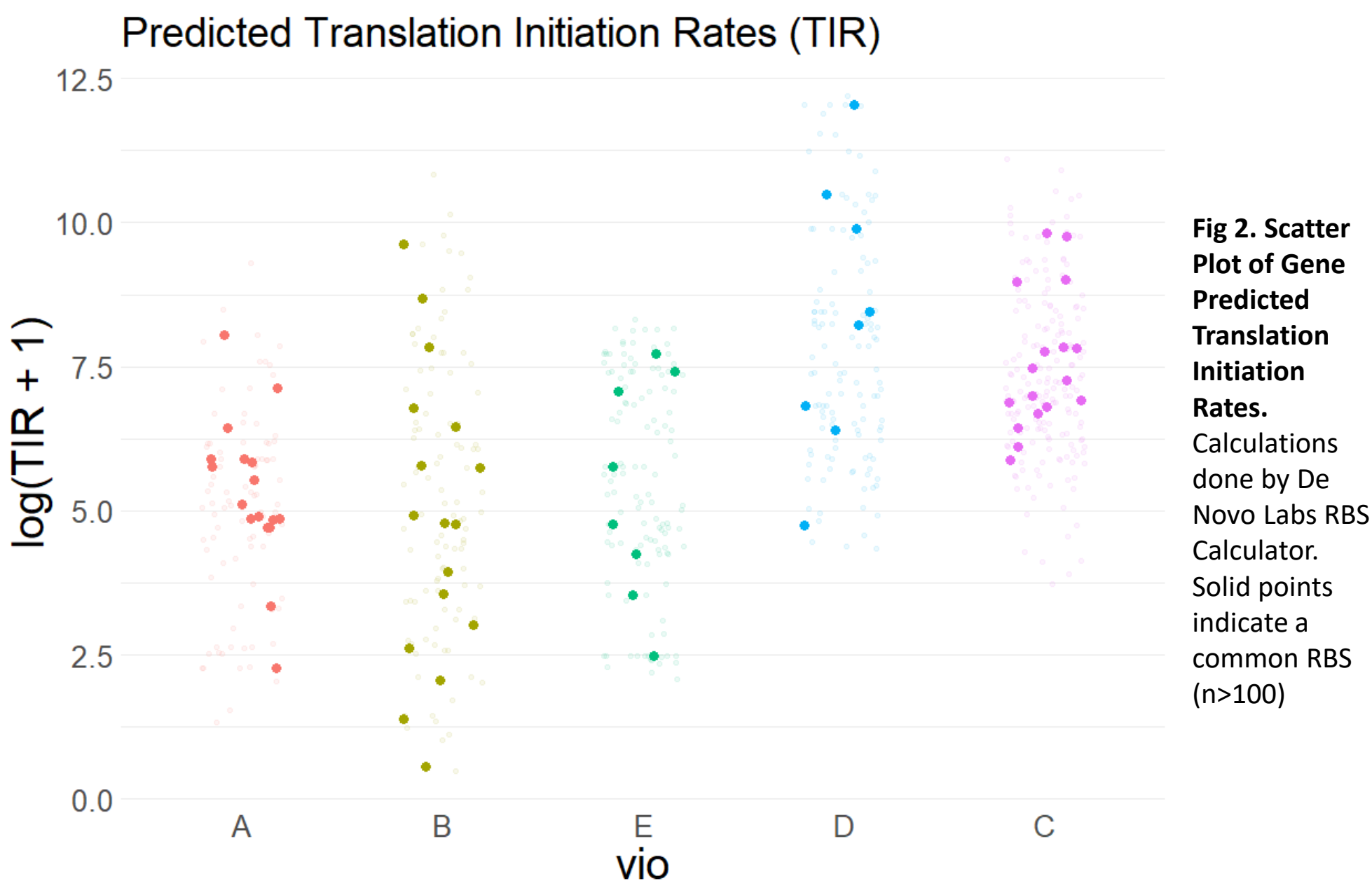
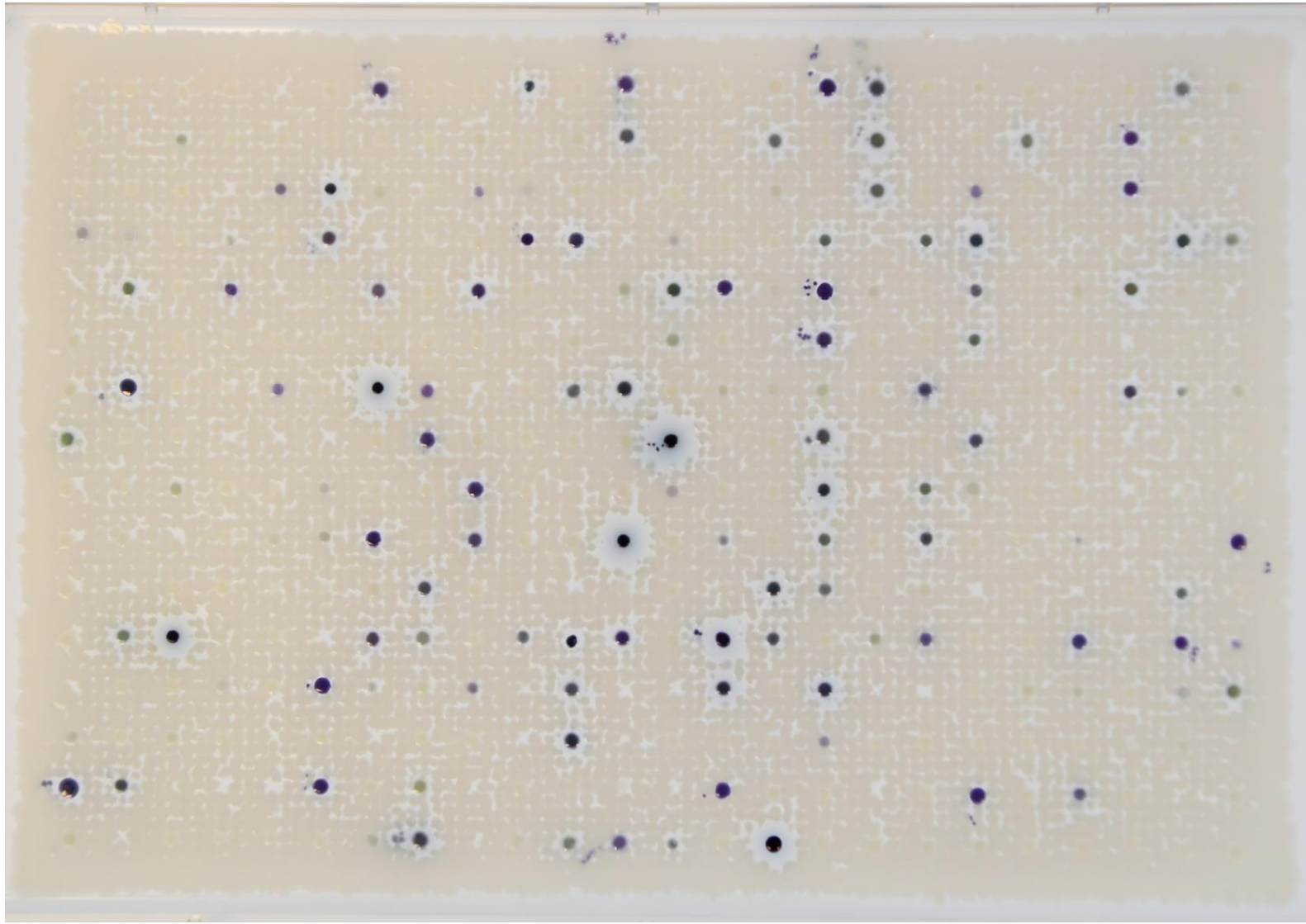
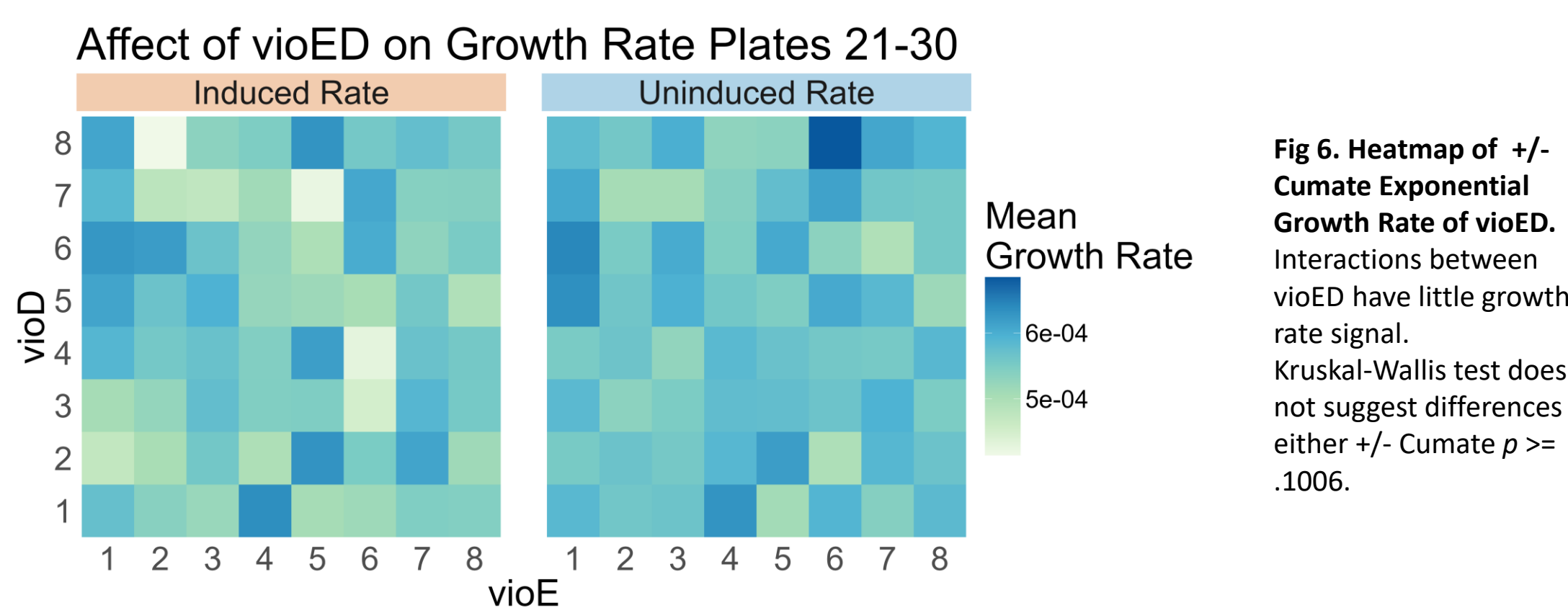
Variation in growth data



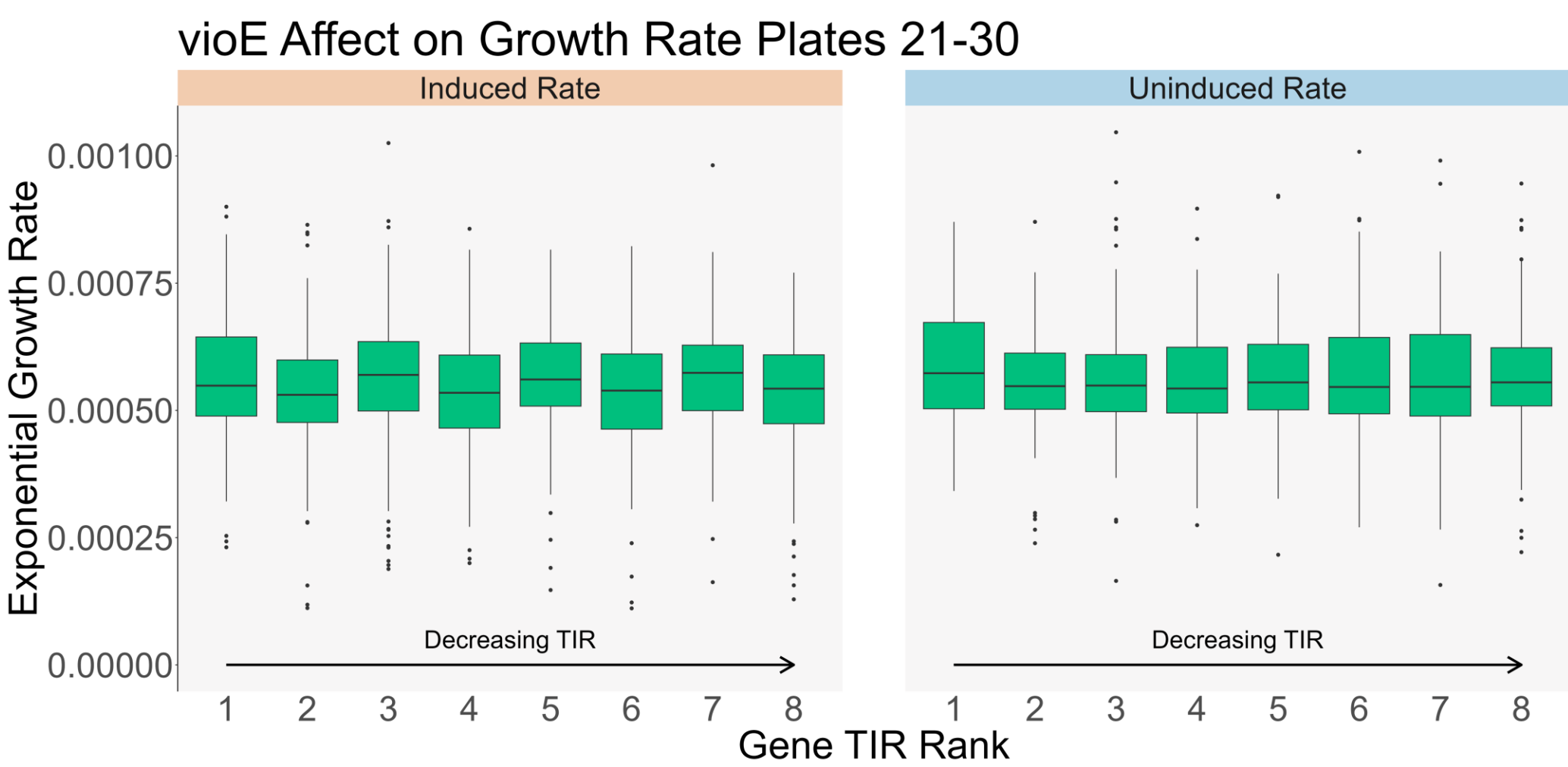
Lag time varies from plate to plate



Gene interaction has little affect on growth rate



No genes translation rate affects growth rate



Conclusion

- Variation in growth data potentially due to experimental errors
- Results suggest different gene expression have little effect on growth rate
 - Recultivate select colonies to confirm
- Work needed to find area of inhibition from clearing plates
- Further work in predicting ideal gene expression combination using machine learning

Acknowledgments

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