



Determining the Growth Rate of Various *Escherichia coli* Cell Lines in Different Broths

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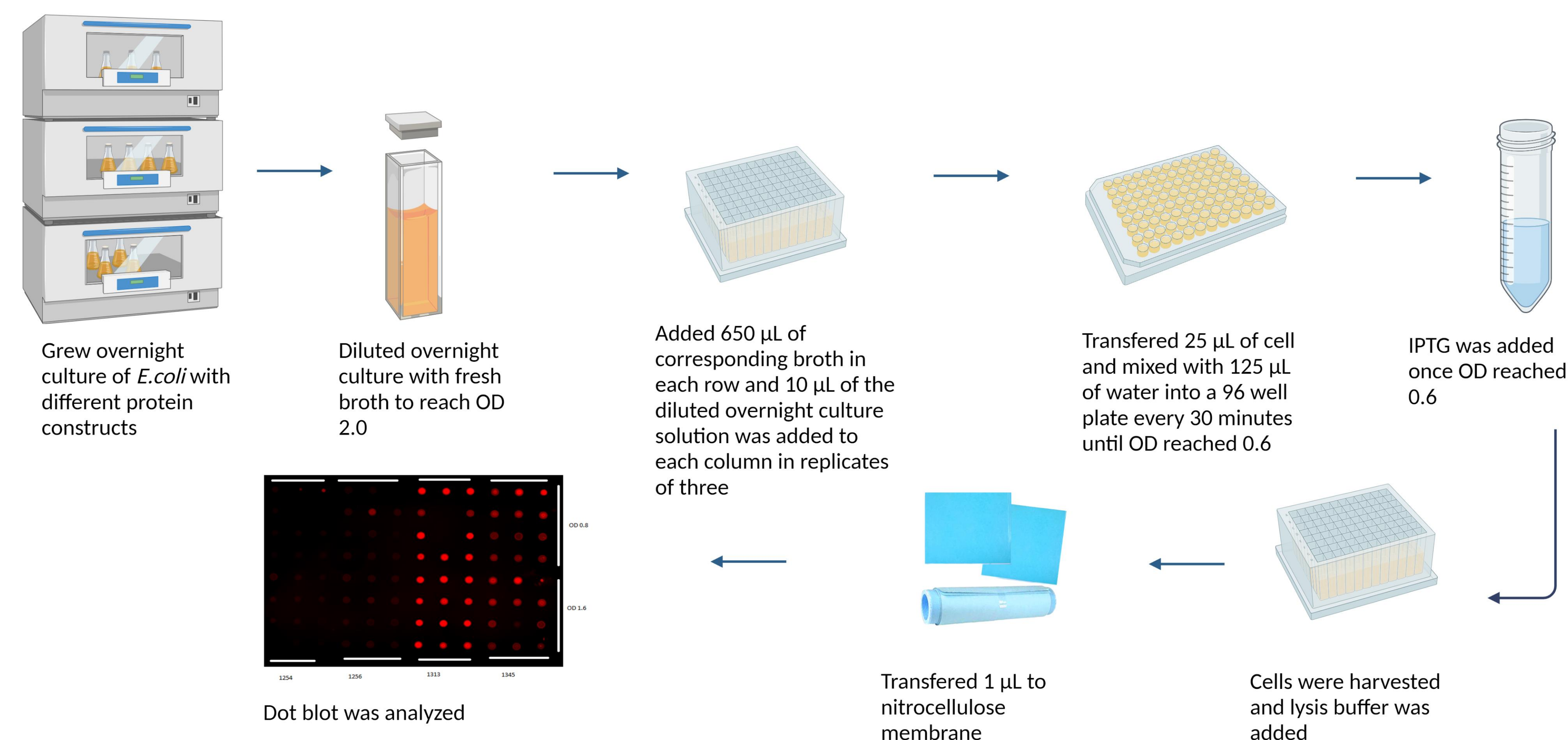
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Introduction

One of several organisms of choice for producing proteins is *Escherichia coli*. It is the most common method for protein expression. We wanted to determine the growth rate and expression level of select protein constructs in four *E.coli* cell lines utilizing various broths. We utilized optical density (OD) measurements at 600 nm to monitor the growth. This enables us to standardize the initial cells added to start the growth and the time required to reach an OD 0.6 for induction. In this study, we analyzed growth rates in the following cell lines: BL21 (DE3), BL21 Star 905, BL21 Star 906, and BL21 Star 907. The broths that were tested include TB, 2XY, Superior, Hyper, LB, Power, Glucose, and Auto induction.

Material and Methods



Results

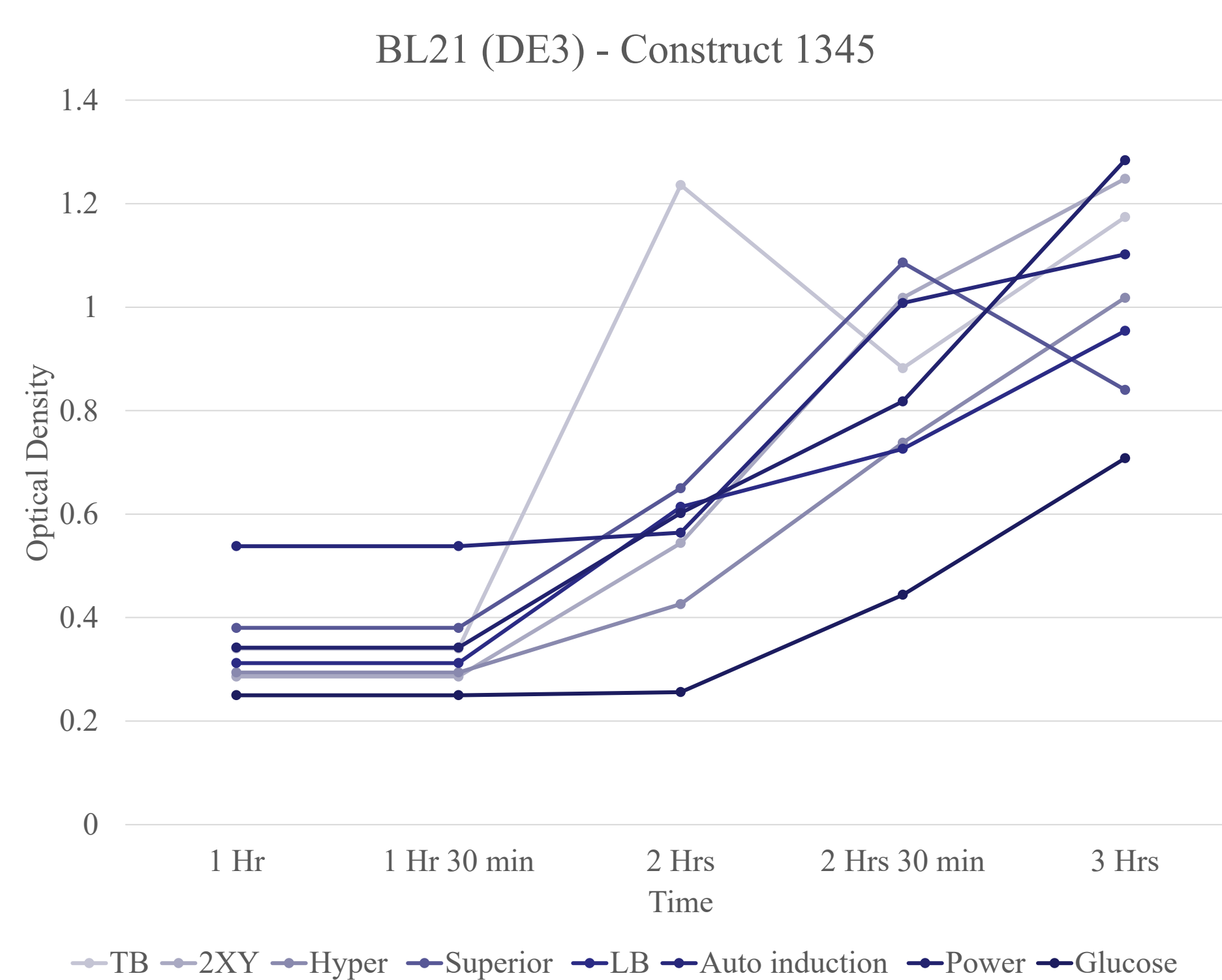


Fig. 1 Comparison of growth rates in cell line BL21 (DE3).

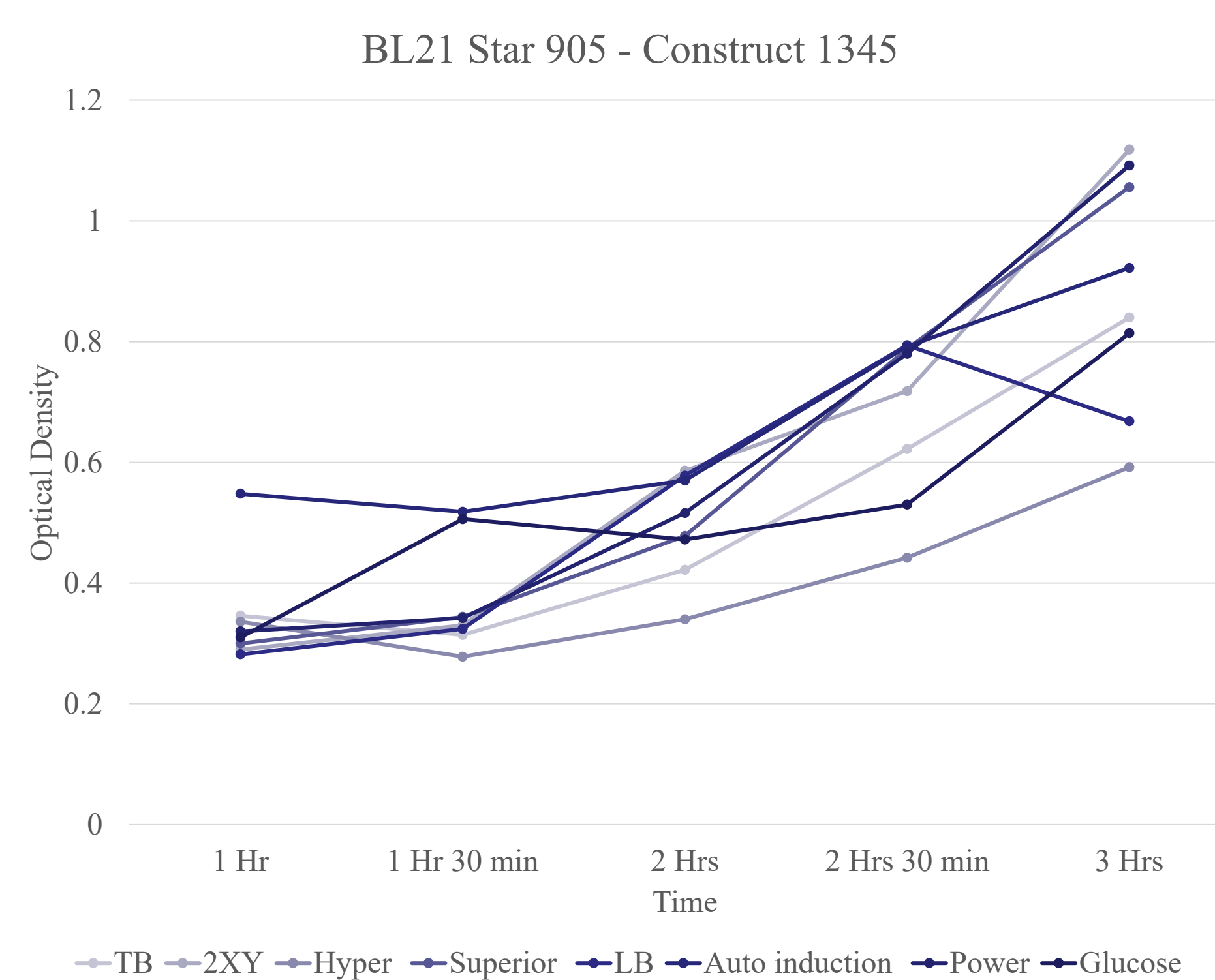


Fig. 2 Comparison of growth rates in cell line BL21 Star 905.

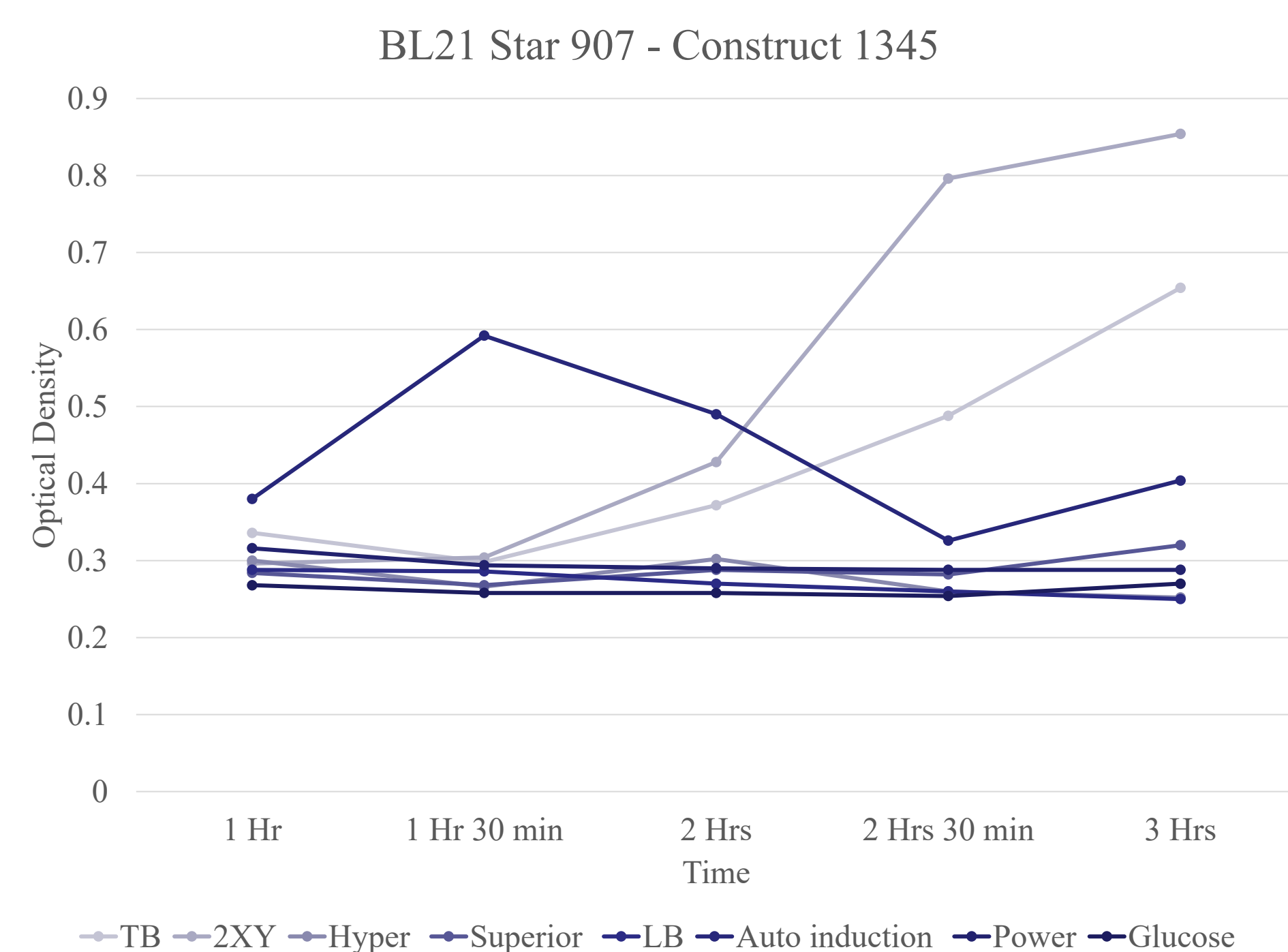


Fig. 3 Comparison of growth rates in cell line BL21 Star 907.

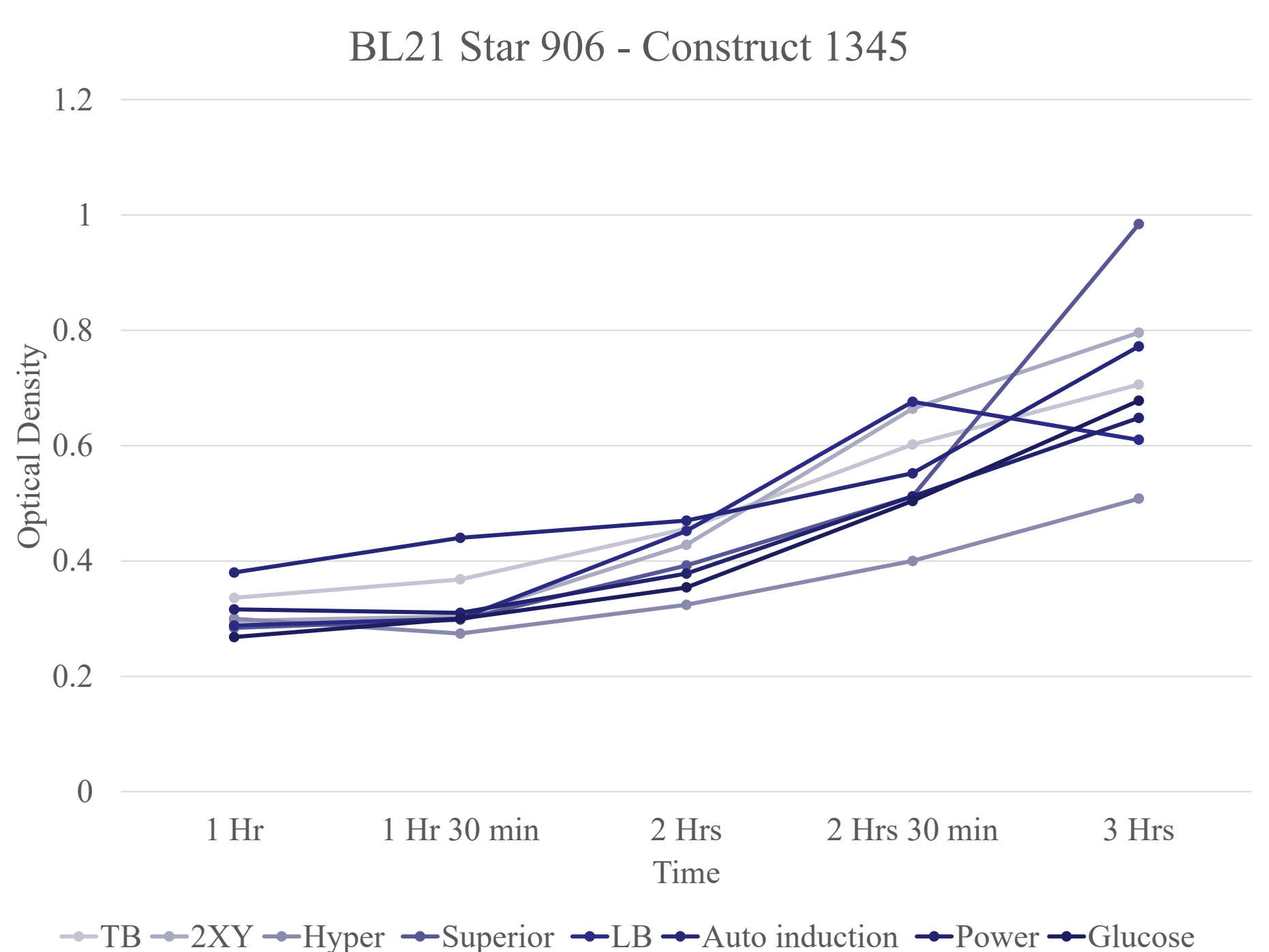


Fig. 4 Comparison of growth rates in cell line BL21 Star 906.

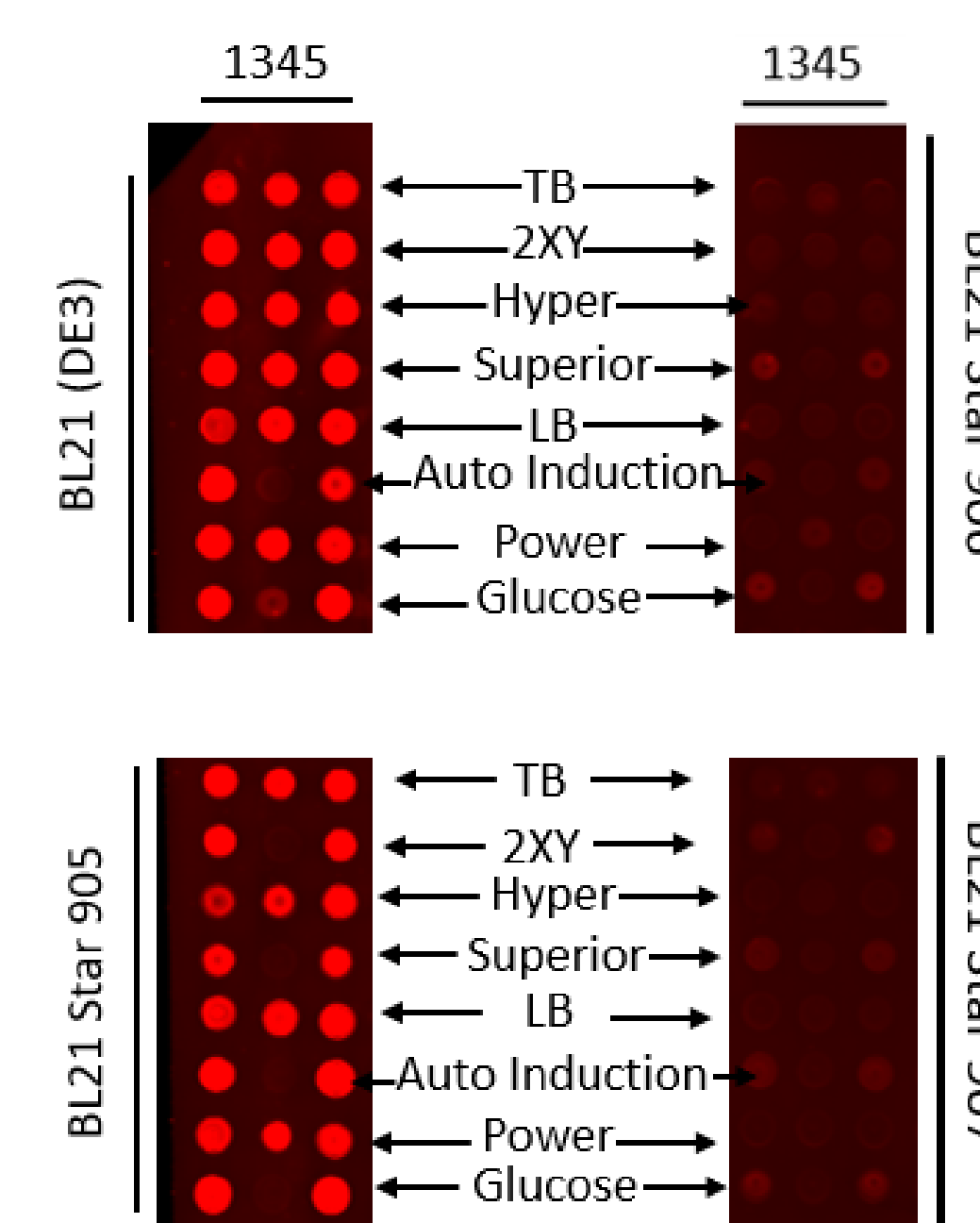


Fig. 5 Protein expression level using dot blot method.

Conclusions

The results revealed that there were significant differences in growth between *E.coli* cell lines. When compared to other broths, TB broth reached the ideal optical density the fastest. The optical density of the BL21 cell line was attained in 2 hours for TB, 2XY, and LB broths. The ideal optical density of the other broths was attained after two hours and thirty minutes. The remaining cell lines achieved optical density between two hours and thirty minutes and three hours.

Acknowledgement

Thank you to the structural chemistry team for assisting me in expanding my research experience.

References

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