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BAppSc(Hons) QUT

Thesis Title:

Cystine-mediated oxidative defence in *Lactobacillus reuteri* BR11

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Citation:

This project is a further investigation on a novel mechanism of oxidative stress defence in *Lactobacillus reuteri* BR11 mediated by an abundant transporter of cystine, a sulfur-containing amino acid. It was found that the CGL enzyme linked to the cystine transporter contributes to this mechanism in multiple ways, one of which is the conversion of cystine to the reduced form. The reduced cystine is present at an unusually high concentration in the cell compared to other bacteria. Inactivation of the cystine transporter alone abolishes the ability of BR11 to grow in highly oxygenated environments. In contrast, when six other genes involved in oxidative defence in other bacteria were inactivated individually, BR11 suffered from no growth defects. The importance of cystine uptake in oxidative defence in BR11 and the unique linkage between the cystine transporter and CGL prompt further research in these areas.