

Cloning of Barley *COBRA* genes and study their functions

by

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Declaration

I declare that this thesis is a record of original work and contains no material which has been accepted for the award of any other degree or diploma in any university. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text.

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Dr. Qisen Zhang

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Preface

This research was performed over 10 months as part of a Masters in Biotechnology (Plant Biotechnology). The literature review was previously assessed and the research focus has not changed. Although the research manuscript contained herein will provide the first draft of a future publication in *the Plant Journal*, due to time constraint, all data relevant to that publication has not been collected. However, additional data were collected and provided within the appendices. The research manuscript presents the cloning of five *COBRA* genes and a study of the features of *COBRA* family genes. It also reports root hair phenotype observation of *Arabidopsis AtCOBRA* mutant lines. The appendices contain all the collected ESTs sequences for a future reference by people continuing the work.

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