

**CRISPR-CAS9-MEDIATED DISRUPTION OF ETHANOL FERMENTATION PATHWAY
IN *KOMAGATAELLA PHAFFII* THROUGH *ADH2* GENE DELETION**



By
Veronica Irina
22010152

School of Health and Life Sciences
i3L University

In partial fulfillment of the requirements for the degree of
Biotechnology
Jakarta, Indonesia
2026