# ISOLATION AND MOLECULAR IDENTIFICATION OF SOIL-BORNE BACTERIA POTENTIAL FOR CELLULOSE DEGRADATION

**JONAVELLE C. FERNANDEZ**

An Undergraduate Thesis Submitted to the Faculty of the Department of Environmental Science, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines
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## APPROVAL AND ACCEPTANCE

The undergraduate thesis entitled **ISOLATION AND MOLECULAR IDENTIFICATION OF SOIL-BORNE BACTERIA POTENTIAL FOR CELLULOSE DEGRADATION** prepared and submitted by **JONAVELLE C. FERNANDEZ** in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE** is hereby

APPROVED:

**JERWIN R. UNDAN, Ph.D.**
Adviser

Date

**KRISTINE GRACE D. WAING, M.Sc.**
Critic

Date

**CESAR V. ORTINERO, Ph.D.**
Department Research Coordinator

6-13-2017
Date

for **LUZVIMINDA S. QUITOS, Ph.D.**
Department Chair

6-13-2017
Date

AND ACCEPTED:

**ANNA MARIA LOURDES S. LATONIO, Ph.D.**
College Research Coordinator

Date

**MYRNA R. UMAGAT, Ph.D.**
Dean

Date

# BIOGRAPHICAL SKETCH

## PERSONAL INFORMATION

Name : **JONAVELLE DELA CRUZ FERNANDEZ**

Date of Birth : July 9, 1995

Place of Birth : Carranglan, Nueva Ecija

## EDUCATIONAL BACKGROUND

Elementary : **CARRANGLAN ELEMENTARY SCHOOL**
Carranglan, Nueva Ecija
March 2008

Secondary : **SAINT NICHOLAS ACADEMY**
Carranglan, Nueva Ecija
March 2012

Tertiary : **CENTRAL LUZON STATE UNIVERSITY**
Science City of Muñoz, Nueva Ecija
**Bachelor of Science in Environmental Science**

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# ISOLATION AND MOLECULAR IDENTIFICATION OF SOIL-BORNE BACTERIA POTENTIAL FOR CELLULOSE DEGRADATION [1]

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## ABSTRACT

**Background:** The study aimed to isolate and identify soil-borne bacteria from composite soil samples in three selected areas of Central Luzon State University with cellulose degradation potential. **Methods:** Isolation of bacteria was conducted using serial dilution and plating technique. The isolates were plated in CMC agar to screen its potential for cellulose degradation. The candidate isolates were then purified and subjected for molecular identification using the 16S Ribosomal RNA gene region. **Results:** There were three (3) bacterial species that were initially screened to have potential to degrade cellulose based on CMC assay. Colony PCR using 16S universal primer followed by sequencing and BLAST analysis identified the confirmed isolate with cellulose degradation potential as *Stenotrophomonas pavanii*, literature suggest that this species has found important for many biotechnological processes such as its ability produce enzymes including nucleases, lipases, chitinases, cellulases and proteases. **Conclusions:** In this study, bacterial species was closely related to *Stenotrophomonas pavanii* (KX778120.1). *In situ* experiments are needed to perform in the future to validate the importance and usefulness of these bacteria in the remediation of environment polluted with organic substances.

***Keywords:*** molecular identification, polymerase chain reaction, cellulose

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