Faculty of science
Microbiology Department

Metallo-β-lactamase genes as Determinants of resistance to Carbapenems By clinical isolates of *Pseudomonas aeruginosa*

Thesis

Submitted in partial fulfillment for the requirements of the degree of PhD of Science in Microbiology

Submitted By

Bassem Aly Mahmoud El- Biaa

(M. Sc degree in Microbiology, 2012)

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Approval date : / /2018

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

صَدَقَ اللهُ العَظِيم

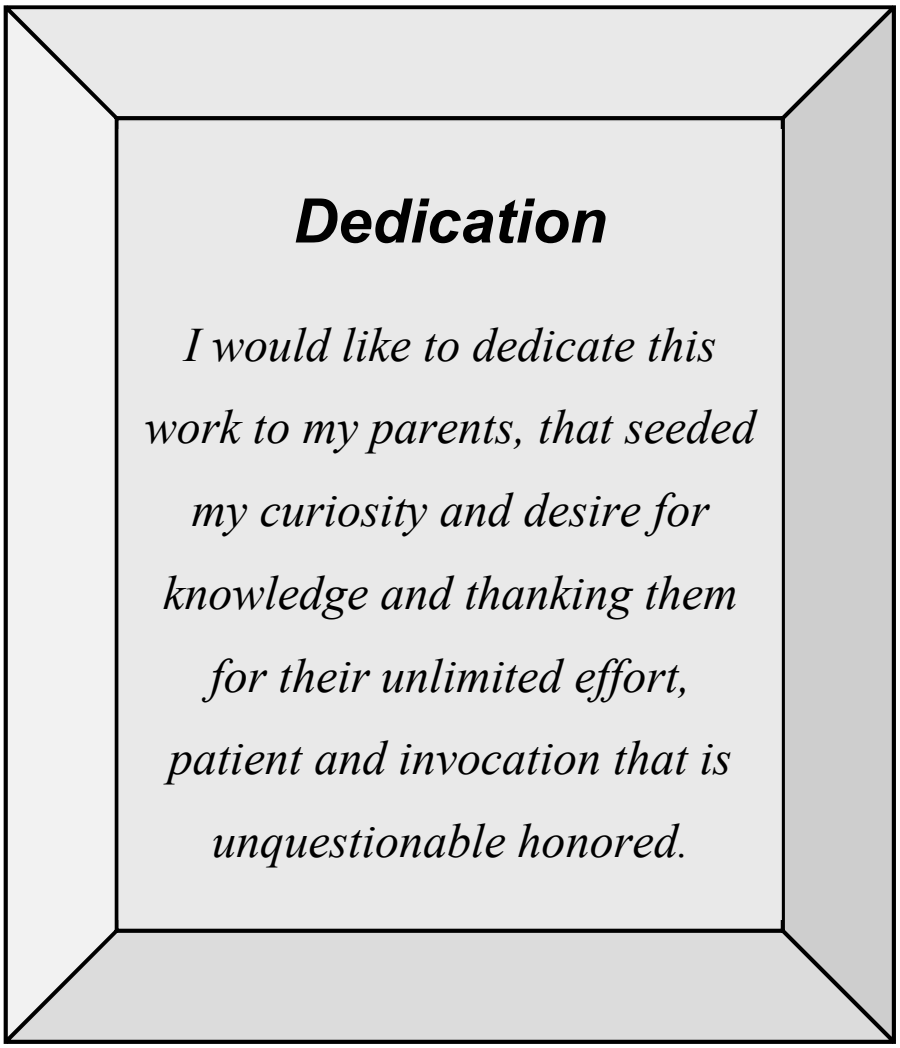
سورة البقرة، آية (٣٢)

Acknowledgment

At first, I would like to thank Allah that allows me to achieve this work, without his bless any great effort is invaluable.

I wish to express my highest appreciation and sincere thanks to Prof Dr. Hala Abu Shady, Ph.D., Professor of Microbiology, Faculty of Science, Ain Shams University for her continuous valuable advice, constant support and encouragement throughout my work. I will always be in debt for her guidance and kindness.

I am particularly indebted to Dr. Ayman Kamal El-Essawy, Ph.D., Fellow of Microbiology, Specialized Hospital, Ain Shams University, for his actual guidance in fulfilling the practical part of this thesis and in guiding me through all parts of this work.


Dedication
I would like to dedicate this work to my parents, that seeded my curiosity and desire for knowledge and thanking them for their unlimited effort, patient and invocation that is unquestionable honored.

Contents

Tables Index

Figures List

List of Abbreviations

API	Active Pharmaceutical Ingredient
°C	celsius
A. baumannii	*Acinetobacter baumannii*
BC-GN	Blood culture –gram negative
BC-GP	Blood culture –gram positive
BHI	Brain Heart Infusion
bp	Base pair
BSAC	British Society for Antimicrobial Chemotherapy
C	final concentration of solution
CI	Confidence interval
CLSI	Clinical Laboratory Standards Institute
CNS	carbapenem-nonsusceptible
COSHH	Control of Substances Hazardous to Health
CROs	Carbapenem-resistant organisms
CRPA	Carbapenem-resistant Pseudomonas aeruginosa
CS	carbapenem-susceptible
DIP	Doripenem
DNA	Deoxyribonucleic acid
E. cloacae	Enterobacter cloacae
E. Coli	Escherichia coli
EDTA	Ethylenediamine tetra-acetic acid
ERT	Ertapenem