# UNIVERSITI TEKNOLOGI MARA

# CHARACTERIZATION OF ENVIRONMENTAL BACTERIA ISOLATED FROM DIFFERENT SURFACES AT THE FACULTY OF DENTISTRY IN UiTM SUNGAI BULOH

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Thesis submitted in fulfillment of the requirements for
the degree of
**Bachelor of Medical Laboratory Technology**
**(Hons.)**

**Faculty of Health Sciences**

July 2019

# DECLARATION BY STUDENT

Project entitled "Characterization of Environmental Bacteria Isolated from Different Surfaces at the Faculty of Dentistry in UiTM Sungai Buloh" is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisors, Madam Hartini Yusuf and Dr. Nurul 'Izzah Mohd Sarmin. It has been submitted to the Faculty of Health Sciences in partial fulfillment of the requirement for the Degree of Bachelor in Medical Laboratory Technology (Hons).

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# ACKNOWLEDGEMENT

*In the name of Allah, The Most Gracious, The Most Merciful.*

First and foremost, Alhamdulillah praise to Allah for endowing me with good health and patience to complete my research work within limited time frame. I wish to express my sincere thanks and appreciation to the people who helped me completed this thesis. I would like to express my deep gratitude to the Department of Medical Laboratory Technology, UiTM for providing the research facilities. This research allows me to obtain some valuable experience, technique and also gain knowledge to be implemented for my future.

I would like to express my great appreciation to my project supervisors, Madam Hartini Yusof and Dr. Nurul 'Izzah Mohd Sarmin for their help and guidance, useful critiques and also enthusiastic encouragement for the present research work. I am grateful to them for their great inspiration in providing me with an invaluable experience throughout the research period. I also wish to thank the following individuals who provided their helping hand at various stages; all the laboratory staffs for their advice and also assistance throughout the research period and my FYP group members, Nurina Hannani, Nurul Najwa, Emiriatulemni and Fatin Nadira for their encouragement, ideas and synergy that helped me achieve my objectives. The support and consultations from all my classmates have been a source of strength and are highly appreciated. I would like to acknowledge my family for all their caring love, support and understanding during my research work.

Lastly, my special thanks go to those who involved directly and indirectly and contribute in this research work until I have successfully completed my thesis. Thank You.

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# ABSTRACT

The environmental bacteria are known as the microorganisms that are able to survive in the outside environment with few of them (10%) are disease-causing while the other 90% are non-pathogenic. In dental healthcare settings, inanimate surfaces are highly found to be contaminated with these environmental bacteria, thus, causing bacterial contamination and subsequently source of infections to the people. Therefore, the present study aimed to identify the morphology of bacteria isolated from different surfaces and to determine the bacterial species by sequence analysis of 16S rDNA. Bacteria samples were collected at the air conditioning units, walls, and windows in 6 various sampling rooms at the Faculty of Dentistry in UiTM Sungai Buloh by using sterile cotton swabs. The macromorphology of the isolates was identified on nutrient agar and the micromorphology was identified by Gram staining. Species identification was performed using PCR with universal 16S rDNA primers and was sent for sequencing. The sequence data obtained were then compared to BLAST software, according to a 98% minimum identity. In this study, 11 bacteria samples were successfully isolated. The bacterial genus identified for Isolate 1, Isolate 2, Isolate 3, Isolate 4, Isolate 5, Isolate 6, Isolate 7, Isolate 8, Isolate 9, Isolate 10 and Isolate 11 were *Bacillus cereus* (100%), *Staphylococcus cohnii* (100%), *Kocuria palustris* (100%), *Bacillus cereus* (100%), *Bacillus thuringiensis* (100%), *Staphylococcus cohnii* (100%), *Bacillus cereus* (100%), *Bacillus subtilis* (100%), *Staphylococcus cohnii* (100%), *Staphylococcus hominis* (100%), *Staphylococcus cohnii* (100%) respectively. In conclusion, combination of macromorphology, micromorphology and molecular approach is useful for characterization of environmental bacteria.



**Keywords:** Environmental bacteria, bacterial contamination, infections, PCR, 16S rDNA sequencing