

**LOW-COST AUTOMATION OF
GRAM'S MICROBIOLOGY STAINING PROCEDURE**

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT**LOW-COST AUTOMATION OF
GRAM'S MICROBIOLOGY STAINING PROCEDURE**

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Gram stain is a differential stain which distinguishes bacteria into 2 large groups; Gram-negative and Gram-positive. Similar to other staining methods, Gram stain is purposed to make the morphology and arrangement of cells more visible during investigation. Moreover, the differentiation ability of Gram stain makes it the most essential and valuable microbiological staining procedure available. However, the procedure of Gram stain involves waiting phases and takes reasonable time. The main objective of this thesis is to design and construct a low-cost automatic apparatus to perform Gram staining. This thesis is significant while most hospitals in Indonesia are still performing Gram stain manually and thus, it is not time-, cost- and labor-efficient. Optimistically, the proposed thesis device would increase laboratory efficiency while cutting the cost, as well as raising patients throughput and in turn, profit.

Keywords: Gram stain, low-cost, automation

DEDICATION

I dedicate this thesis to my beloved parents and family. Without their supports and encouragement it would have been impossible for me to finish my bachelor study



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6. Many other persons that have helped the author completing the thesis and are not mentioned.

The author realized and acknowledged that this thesis was far from being perfect. Hence, any comments and critics are welcomed for improvement of this thesis.

In conclusion, the author wishes that this thesis could give benefits and contributions for any academic purposes, readers and general society.

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