DEVELOPMENT OF MESENCHYMAL STEM CELLS (MSCs) FROM DENTAL PULP OF *Macaca fascicularis*

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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Dr. drh. Joko Pamungkas, M.Sc. Date

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Dr.rer.nat Maruli Pandjaitan Date

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Chairman of the Examination Steering Committee Date

ABSTRACT

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The dental pulp of *Macaca fascicularis* was isolated and cultured to develop Mesenchymal Stem Cells (MSCs). The morphology of fibroblast-like cells and protein surface markers, including CD44, CD73, CD90, and CD105 were used to determine the characteristics of MSCs. Markers tests were conducted using RT-PCR. Afterwards, the dental pulp stem cells (DPSCs) were cultured in certain differentiation media to differentiate them into osteocytes, chondrocytes, and adipocytes. The research showed that morphologically all of those differentiations were formed.

In addition, hematopoietic characteristics were also tested by CD34 and CD45 surface markers which were negatively expressed. Furthermore, pluripotent ability of stem cells also analyzed by Nanog, Oct4, and Sox2 markers which were negatively expressed too. Ultimately, the DPSCs of *Macaca fascicularis* as a non-human primate might be used as a model of human diseases.

Keywords: mesenchymal stem cells, dental pulp stem cells, Macaca fascicularis, protein surface markers, growth factors.

DEDICATION

This thesis is dedicated to my family

for the support and encouragement throughout my graduate study.

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Finally, I really hope that this thesis could give benefits and contributions or academic purpose, readers, and general society.

Bogor, July 2011

Ricky Fong

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