

**DEVELOPMENT OF EXOSOME-FUNCTIONALIZED CARBONATE
APATITE NANOPARTICLES AS AN IMMUNOMODULATORY
MUCOSAL ADJUVANT FOR TRANS-BUCCAL DELIVERY**

(In Vitro Study)

In partial fulfilment of the requirements for the degree
of Doctor of Philosophy in Dental Science



Submitted by:
Andari Sarasati
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DOCTORAL STUDY PROGRAM IN DENTAL SCIENCE
FACULTY OF DENTISTRY, UNIVERSITAS GADJAH MADA
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APPROVAL PAGE

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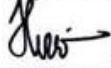
has been defended in front of the Examination Board on July 18th, 2025

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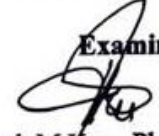
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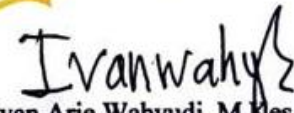
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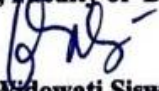
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