

**“STUDY ON THE ROLE OF OXIDATIVE STRESS IN SMAD4  
ACTIVATION AND TGF- $\beta$  PARADOX IN HUMAN BREAST  
CANCER”**

*Dissertation submitted to University of Kerala in partial fulfilment of the  
requirement for the Degree of*

MASTER OF SCIENCE

IN

BIOTECHNOLOGY

SUBMITTED BY

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## CENTER FOR RESEARCH ON MOLECULAR AND APPLIED SCIENCES

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### CERTIFICATE

This is to certify that the work entitled “STUDY ON THE ROLE OF OXIDATIVE STRESS IN SMAD4 ACTIVATION AND TGF- $\beta$  PARADOX IN HUMAN BREAST CANCER” is a bonafide project work done by AVANY. V. ROY, student of SREE NARAYANA COLLEGE, KOLLAM (Affiliated to UNIVERSITY OF KERALA), in partial fulfilment of Masters Degree in BIOTECHNOLOGY.

Under the guidance and supervision



  
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