



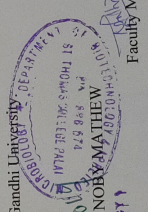
ST. THOMAS COLLEGE, PALAI

Re-accredited with A grade by NAAC

UGC approved College with Potential for excellence

CERTIFICATE

Certified that this is a bonafide report of the project work entitled "ISOLATION, IDENTIFICATION AND OPTIMIZED PRODUCTION OF POLYHYDROXYBUTYRATE (PHB) PRODUCED BY SOIL BACTERIA" Carried out by Miss. AKHILA BABU, Reg. No:170011019351 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of **NOBY MATHEW** during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University



Prof. JAMES JOSEPH
Prof. JAMES JOSEPH NOBY MATHEW
Faculty Member

ST. THOMAS COLLEGE
Applied Dept of Applied Microbiology & Biotechnology
PALAI - 686 514.

St. Thomas College Pala

Examiner 1 *[Signature]* 26/7/19

Examiner 2 *[Signature]* 26/7/19

Dr. Lucy Sara Vargha

Blessen Santhosh George



St. Thomas College, Pala

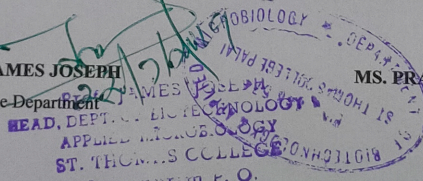
UGC APPROVED College with Potential for Excellence

CERTIFICATE

This is to certify that the thesis entitled "STUDY ON THE DEVELOPMENT OF FRUCTO OLIGOSACCHARIDES INCORPORATED CASSAVA STARCH MEMBRANE FOR PREVENTING POST HARVEST LOSS" submitted to them MG University, in partial fulfilment of the requirement for the award of the Degree of Master of Science is a record of bonafide research work done by AKHILA KURIAN, during the period from April 2019 to June 2019 of her study in the Department of Applied Microbiology at ST Thomas College, Pala under my supervision and guidance and the thesis has not formed the basis for the award of any Degree / Diploma / Associate ship / Fellowship or other similar title to any candidate of any University so far.

PROF. JAMES JOSEPH
Head of the Department

MS. PRAVEENA GEORGE



External Examiner Arunpuzham P. O. PALA - 686 574.

1: [Signature]
26/7/19
Dr. Lincy Sara Varghese.

2: [Signature]
26/7/19
Blessan Sandesh George.



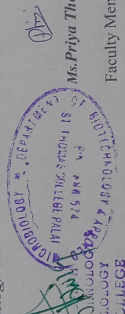
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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "Experimental investigation and extraction of bioactive compounds from polyherbal formulations for antibacterial and antifungal potential" carried out by Miss. AMALA JOSE, Reg. No:170011019353 in the Department of Applied microbiology & Biotechnology St. Thomas College, Palai, under the internal guidance of Ms.Priya Thomas during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph
HEAD, DEPARTMENT OF APPLIED MICROBIOLOGY
Course Co-ordinator, Applied Microbiology & Biotechnology
PALAI 686374



Ms. Priya Thomas
Faculty Member

St. Thomas College Palai.

Examiner 1
Dr. Lincy Sara Vargese

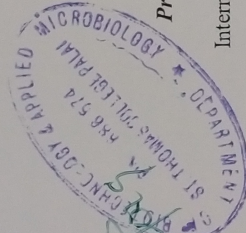
Examiner 2
Blessen Sankish George



St. Thomas College, Pala

UGC APPROVED College with Potential for Excellence

Certified that this is a bonafide report of the project work entitled "SCREENING, IDENTIFICATION AND OPTIMIZATION OF EXOGENOUS INDOLE ACETIC ACID PRODUCING SOIL BACTERIA FOR ENHANCED PLANT GROWTH" Carried out by Miss. AMALU SAJI, Reg. No:170011019354 in the Department of Applied Microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Priya Thomas during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.



Priya Thomas
Priya Thomas
Internal Guide, Lecturer

Prof. James Joseph
Prof. J. J. JOSEPH
HEAD DEPT. OF APPLIED MICROBIOLOGY & BIOTECHNOLOGY
ST. THOMAS COLLEGE
Armapuram Dept. of Applied Microbiology & Biotechnology
PALA - 686 574

St. Thomas College Palai

Examiner 1 .. *[Signature]*
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Dr. Divy Sans Varghese

Examiner 2 *[Signature]* 26/11/19
Blessan Sankush George



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "A Study on gut microbiota of Papilio polytes romulus inhabiting on Citrus aurantifolia and its microbial potential" carried out by Miss. Anit Francis, Reg. No:170011019355 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Ms. Priya Thomas during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph

Course Coordinator
HEAD, DEPT. OF APPLIED MICROBIOLOGY & BIOTECHNOLOGY
APPLIED MICROBIOLOGY
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Arunapuram P. O.
PALA - 686 574



Priya
Ms. Priya Thomas

Faculty Member

Examiner 1 : *[Signature]* 26/7/19

Dr. Lucy Sara Varghese

Examiner 2 : *[Signature]* 26/7/19

Blessan Sankosh George



ST. THOMAS COLLEGE, PALAI

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CERTIFICATE

Certified that this is a bonafide report of the project work entitled
"BACTERIOLOGICAL PROFILE AND ANTIBIOTIC SUSCEPTIBILITY PATTERN OF METHICILLIN RESISTANT
Staphylococcus aureus IN INFECTED DIABETIC FOOT ULCER PATIENTS" carried out by
Miss. ANITA JAMES, Reg. No: 170011019356 *in the Department of Applied*
microbiology & Biotechnology St. Thomas College, Pala, under the internal
guidance of Ms. Anupama during the academic year 2017- 2019 towards the
partial fulfilment of the requirement for the award of Masters Degree in Applied
microbiology under Mahatma Gandhi University.

Prof. James Joseph

Course Coordinator

Prof. Aradhana Cherian

Faculty Member

ST. Dept. of Applied Microbiology & Biotechnology

Arunapuram
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Examiner 1 ...
26/11/19

Dr. Divya Sara Varughese

Examiner 2 ...
26/11/19

Blessen Samkud George



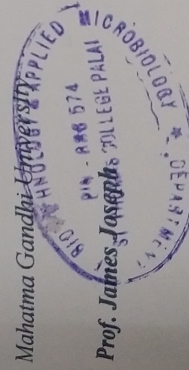
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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "Evaluation Of Diagnostic Potential Of Immunochromatographic Test And Real-Time PCR For Rabies Virus in Decayed Brain Samplecarried out by Miss. ANITA PHILIP, Reg. No:170011019357 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Prof JAMES JOSEPH during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University



Prof. James Joseph
Coordinator, Applied Microbiology
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686 574

Dept. of Applied Microbiology & Biotechnology

St. Thomas College Palai

Examiner 1 : *[Signature]*
26/11/19

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26/12/19
Blaxson *[Signature]*

Dr. Liny Sara Varghese



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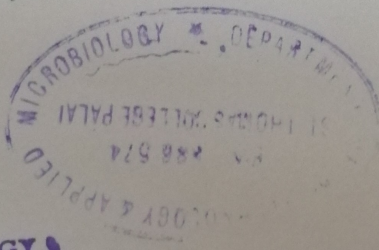
CERTIFICATE

Certified that this is a bonafide report of the project work entitled "A Study on gut microbiota of *Papilio polytes romulus* inhabiting on *Citrus aurantifolia* and its microbial potential" carried out by Miss. Anit Francis, Reg. No:170011019355 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Ms. Priya Thomas during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph

Course Coordinator
HEAD, DEPT. OF APPLIED MICROBIOLOGY & BIOTECHNOLOGY
ST. THOMAS COLLEGE

Arunapurem P. O
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Ms. Priya Thomas

Faculty Member

Examiner 1 :

Dr. Lincy Sara Varghese

Examiner 2 :

Blessan Santhosh George



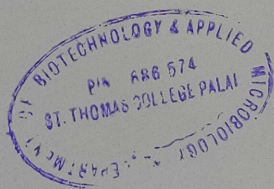
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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "SYNTHESIS AND CHARACTERIZATION OF COPPER NANOPARTICLES AGAINST MAJOR FOODBORNE PATHOGENS" Carried out by Miss. ARUNIMA THOMAS, Reg. No:170011019358 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Prof. JAMES JOSEPH, Head of the Department, during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.



Prof. James Joseph

Course Coordinator & Internal Guide
HEAD, DEPT. OF BIOTECHNOLOGY &
APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE
Arundapuram P. O
PALAI - 686 574

St. Thomas College, Palai

Examiner 1

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26/7/19
Dr. Liney Sara Varghese

Examiner 2 26/7/19.

[Signature]
Blessan Sanctush George



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BONAFIDE CERTIFICATE

Certified that this is a bonafide report of the project work entitled "A study on the role of microbes and weed derived biochar towards enhancement of soil fertility and water purification" Carried out by Miss. ARYA MURALEEDHARAN, Reg.No:170011019359 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Miss, Jyothymol Joy, during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied Microbiology under Mahatma Gandhi University

Prof. James Joseph MEB JOSEPH
HEAD, DEPT. OF BIOTECHNOLOGY
Course Coordinator
ST. THOMAS COLLEGE
Atunapuram P. O.
PALA - 686574
Miss Jyothymol Joy
Faculty Member
Dept. of Applied Microbiology & Biotechnology
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P.O. - 686574
CHANDRODARA
245 944

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Examiner 1

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Dr. Lucy Sara Varghese

Examiner 2

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26/7/19
Blessan Santhosh George



St. Thomas College, Pala

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CERTIFICATE

This is to certify that the thesis entitled "STUDY ON THE EFFECT OF COLLAGEN AND POLYVINYL ALCOHOL ENCAPSULATION ON PROBIOTIC ACTIVITY OF *Lactobacillus spp*" submitted to them MG University, in partial fulfilment of the requirement for the award of the Degree of Master of Science is a record of bonafide research work done by ATHIRA SANAL, during the period from April 2019 to June 2019 of her study in the Department of Applied Microbiology at ST Thomas College, Pala under my supervision and guidance and the thesis has not formed the basis for the award of any Degree / Diploma / Associate ship / Fellowship or other similar title to any candidate of any University so far.

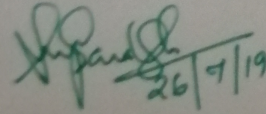
Prof. James Joseph

HEAD OF THE DEPARTMENT
APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE
ARUNAPURAM P. O.
PALA - 686 574

Ms. Jyothy Mol Joy

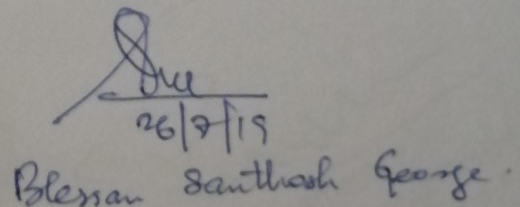
External Examiner

1:


26/7/19

Dr Lincy Sara Varghese

2:


26/7/19
Blessan Santhosh George



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "IDENTIFICATION OF BACTERIAL PROFILE OF BLOOD STREAM INFECTIONS AND THEIR ANTIBIOTIC SUSCEPTIBILITY PATTERNS BY AUTOMATION" carried out by Miss. DONA BABU, Reg. No: 170011019361 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Ms. Anupama during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph
HEAD, DEPT. OF BIOTECHNOLOGY
APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE
DEPT. OF APPLIED MICROBIOLOGY & BIOTECHNOLOGY
PALAI - 686 574

St. Thomas College Palai.

Examiner 1 : *[Signature]*
26/12/19

Dr. Lincy Sara Varghese

Examiner 2 : *[Signature]*
26/12/19

Blessan Santhosh George



ST. THOMAS COLLEGE, PALAI

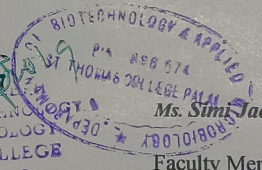
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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "An experimental study on evaluating the sensitivity of conventional and real-time PCR in rabies diagnosis" carried out by Miss. DONA BENNY, Reg. No: 170011019362 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Ms. Simi Jacob during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph
HEAD, DEPT. OF APPLIED MICROBIOLOGY & BIOTECHNOLOGY
ST. THOMAS COLLEGE
Attunapuram P. O.

Dept. of Applied Microbiology & Biotechnology
St. Thomas College Palai.



Ms. Simi Jacob
Faculty Member

Examiner 1: Dr. Lincy Sara Varghese
26/7/19

Examiner 2: Blessen Sankosh George
26/7/19

Dr. Lincy Sara Varghese

Blessen Sankosh George



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "HYPOGLYCEMIC, ANTIOXIDANT, ANTI-INFLAMMATORY AND ANTIMICROBIAL PROPERTIES OF *Psidium guajava*" Carried out by Miss. E S SUMAYYA, Reg.No:170011019363 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Mrs.SIMI JACOB during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph
Course Coordinator

Mrs. SIMI JACOB
Faculty Member

Dept. of Applied Microbiology & Biotechnology

St. Thomas College Palai

Examiner 1

Examiner 2

Dr. Lincy Sara Varghese

Blessan Santos de George



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "STABILITY STUDY ON PESTE DES PETITES (PPR) RUMINANT VACCINE" Carried out by **Miss.GOPIKA RAJEEV, Reg. No:170011019364** in the Department of Applied microbiology &Biotechnology St. Thomas College, Pala, under the internal guidance of **Mr.PRAVEENA GEORGE** during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph

Course Coordinator

Mr.PRAVEENA GEORGE

Faculty Member

APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE

Dept. of Applied Microbiology & Biotechnology
PALA - 686 674.

St. Thomas College Palai

Examiner 1

Examiner 2

29/7/19

29/7/19

Dr. Lincy Sara Varghese

Blessa Santhosh George



St. Thomas College, Pala

UGC APPROVED College with Potential for Excellence

Certified that this is a bonafide report of the project work entitled "RAPID IDENTIFICATION OF E.coli PATHOTYPES BY VIRULENCE GENE BASED MULTIPLEX PCR" Carried out by Miss. HARIPRIYA H, Reg. No:170011019370 in the Department of Applied Microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Ms.Jyothy Joy during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

[Signature]
Prof. James Joseph

Course Coordinator

25/7/2019

[Signature]
Jyothy Joy

Internal Guide, Lecturer

Dept. of Applied Microbiology & Biotechnology

St. Thomas College Palai

Examiner 1

[Signature]
29/7/19

Dr. Lincy Sara Varghese

Examiner 2

[Signature]
29/7/19

Blessa Santhosh George



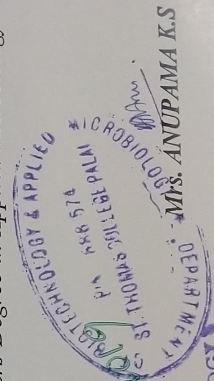
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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "SYNTHESIS, CHARACTERIZATION AND FORMULATION OF CHITOSAN NANOPARTICLE AS TOPICAL DRUG DELIVERY FOR CANDIDIASIS" Carried out by Miss. JEMIMA JOSEPH, Reg. No: 1700111019366 in the Department of Applied microbiology & Biotechnology St. Thomas College, Palai, under the internal guidance of Mrs. ANUPAMA K.S during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.



Prof. James Joseph
HEAD, DEPT. OF BIOTECHNOLOGY
Course Coordinator
ST. THOMAS COLLEGE
Dep. of Applied Microbiology & Biotechnology
PALAI - 686 574

Faculty Member

St. Thomas College Palai

Examiner 1
Dr. Divya Sara Varughese

Examiner 2
Blessan Santhosh George



St. Thomas College, Pala

UGC APPROVED College with Potential for Excellence

This is to certify that the thesis entitled "BACTERIOCIN ADMINISTRATION ATTENUATES COLITIS BY INHIBITING COX 2 AND IL 10 EXPRESSION IN HUMAN COLORECTAL CELLS" submitted to them MG University, in partial fulfilment of the requirement for the award of the Degree of Master of science is a record of bonafide research work done by Jisha P S, during the period from April 2019 to June 2019 of her study in the Department of Applied Microbiology at ST Thomas College, Pala under my supervision and guidance and the thesis has not formed the basis for the award of any Degree / Diploma / Associate ship / Fellowship or other similar title to any candidate of any University so far.

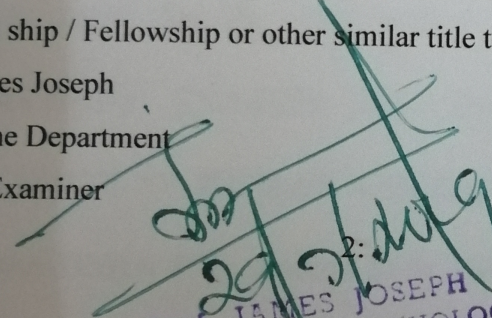
Prof. James Joseph

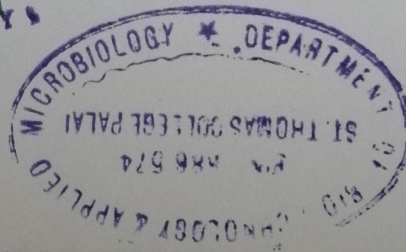
Head of the Department

External Examiner

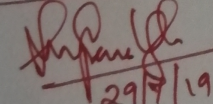
1:

Mrs Archana Cherian


Prof. JAMES JOSEPH
HEAD, DEPT. OF BIOTECHNOLOGY &
APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE
Arunapuram P. O.
PALA - 686 574.

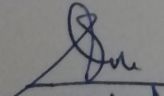


Valued

1. 
29/7/19

Dr. Liny Sara Varghese

2. Blessan Senthil George


29/7/19



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "Screening and molecular identification of *Enterobacter* species and its Quorum quenching activity against *Chromobacterium violaceum* by various methods" Carried out by Miss. **KEERTHI KANNAN**, Reg. No: 170011019368 in DRP Molecules Pvt. LTD, KINFRA HITECH Park under the guidance of Dr. Ganga.G during the academic year 2017- 2019 towards the partial fulfilment of the requirement for the award of Master's Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph
Prof. JAMES JOSEPH
HEAD, DEPT. OF BIOTECHNOLOGY
APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE
Arunapuram P. O
PALAI - 686 574
Dept. of Applied Microbiology & Biotechnology

Faculty Member

St. Thomas College Palai

Examiner 1 *Dr. Lucy Sara Varghese*
29/7/19

Examiner 2 *Blessan Santhosh George*
29/7/19

Dr. Lucy Sara Varghese

Blessan Santhosh George



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "PARTIAL PURIFICATION AND ENZYME CHARACTERIZATION OF ALKALINE PROTEASE FROM BACILLUS SP. ISOLATED FROM DETERGENT CONTAMINATED SOIL." Carried out by Miss. MINNUMOL RAJU, Reg. No: 170011019369 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of PRAVEENA GEORGE during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University

Prof. JAMES JOSEPH

Course Coordinator

Prof. JAMES JOSEPH
HEAD, DEPT. OF APPLIED MICROBIOLOGY & BIOTECHNOLOGY
ST. THOMAS COLLEGE
PALAI

Dept. of Applied Microbiology & Biotechnology

St. Thomas College Palai

PRAVEENA GEORGE

Faculty Member

Examiner 1

Dr. Lucy Sara Varghese
29/7/19

Examiner 2

Blessa Sandosh George
29/7/19



St. Thomas College, Pala

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Certified that this is a bonafide report of the project work entitled "ISOLATION AND ENZYME CHARACTERIZATION OF PECTINASE PRODUCING BACTERIA FOR INDUSTRIAL APPLICATIONS "Carried out by Miss. NEENA SREEDHARAN, Reg. No:170011019370 in the Department of Applied Microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Simi Jacob during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.



Prof. James Joseph
Course Coordinator
THOMAS COLLEGE
Dept. of Applied Microbiology & Biotechnology
PALA - 686 574.

Simi Jacob

Internal Guide, Lecturer

St. Thomas College Palai

Examiner 1

26/7/19

Dr. Liny Sara Varghese

Examiner 2

26/7/19

Blessan Sandesh George



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CERTIFICATE

Certified that this is a bonafide report of the project work entitled "EVALUATION OF THE EFFECT OF TWO CULTURE MEDIA ON THE SPORULATION OF BACILLUS ANTHRACIS"- STERNE STRAIN Carried out by Miss. **RUKSANA SULAIMAN**, Reg. No:170011019371 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of **Mr. NOBY MATHEW** during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

sh
Prof. James Joseph

Course Coordinator

HEAD OF DEPARTMENT
APPLIED MICROBIOLOGY
ST. THOMAS COLLEGE
Arunapuram P. O.
686 574

Mr. Noby Mathew
Mr. NOBY MATHEW

Faculty Member

Dept. of Applied Microbiology & Biotechnology

St. Thomas College Palai

Examiner 1

Valued
Dr. Lincy Sara Varghese
29/7/19

Examiner 2

Blessan Sambroshi George
29/7/19



St. Thomas College, Pala

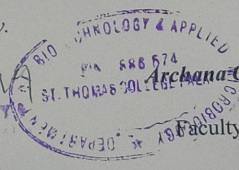
UGC APPROVED College with Potential for Excellence

CERTIFICATE

Certified that this is a bonafide report of the project work entitled ISOLAT AND INVITRO EVALUATION OF PROBIOTIC POTENTIAL OF LACTOBACILLUS AGANIST KLEBSIELLA PNEUMONIAE” Carried out by Miss.SARANYA MOHANAN, Reg.No:170011019372 in the Department of Applied microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Archana cheriyan during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

Prof. James Joseph

Course Coordinator



Archana Cherian

Faculty Member

Dept. of Applied Microbiology & Biotechnology
PALA - 688 571.

St. Thomas College Palai

Examiner 1 . *[Signature]* 29/7/19 Dr. Linij Sara Varghese

.Examiner 2 *[Signature]* 29/7/19
Blessan Sankhsh George



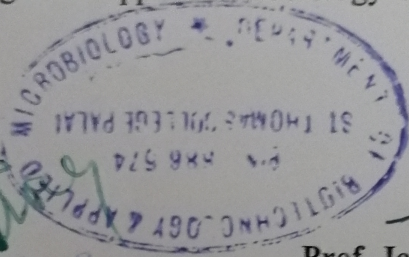
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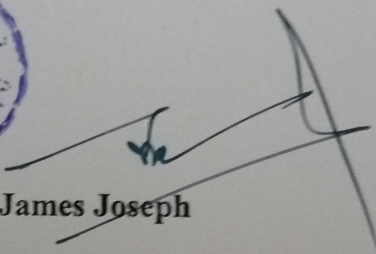
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Certified that this is a bonafide report of the project work entitled "Effect of various stabilizers on physical appearance of lyophilized cell culture vaccine in terms of its visual acceptability Carried out by Miss. SREEKUTTY P. S, Reg.

No:170011019373 in the Department of Applied Microbiology & Biotechnology St. Thomas College, Pala, under the internal guidance of Priya Thomas during the academic year 2017- 2019 towards the partial fulfillment of the requirement for the award of Masters Degree in Applied microbiology under Mahatma Gandhi University.

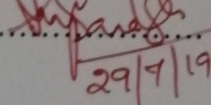

Prof. JAMES JOSEPH
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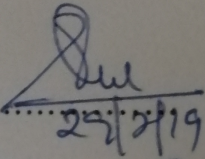

Prof. James Joseph

Internal Guide

St. Thomas College Palai

Examiner 1

29/7/19

Dr. Lucy Sara Varghese

Examiner 2

29/7/19

Blessan Santhosh George



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CERTIFICATE

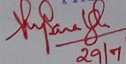
This is to certify that the thesis entitled "DESIGN AND DEVELOPMENT OF SILVER NANOPARTICLE INCORPORATED WOUND DRESSING MATERIAL" submitted to the MG University, in partial fulfilment of the requirement for the award of the Degree of Master of Science is a record of bonafide research work done by SWATHY KRISHNA, during the period from April 2019 to June 2019 of her study in the Department of Applied Microbiology at ST Thomas College, Pala under my supervision and guidance and the thesis has not formed the basis for the award of any Degree / Diploma / Associate ship / Fellowship or other similar title to any candidate of any University so far.

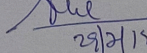
PROF. JAMES JOSEPH
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External Examiner

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29/7/19
Dr. Lucy Sara Varghese

2: 
29/7/19
Blessan Santhosh George.



St. Thomas College, Pala

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CERTIFICATE

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PROF. JAMES JOSEPH

Head of the Department

Mr. NOBY MATHEW

External Examiner

1:

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Dr. Lucy Sara Varghese

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[Signature]
29/7/19
Blessan Santhosh George