

Declaration

I hereby declare that the thesis entitled **Understanding Immune Suppression of Natural Killer cells in Head and Neck Squamous Cell Carcinoma**, submitted to School of Sciences, Tezpur University, in partial fulfillment for the award of the degree of Doctor of Philosophy in Molecular Biology and Biotechnology, has been carried out by me at Department of Molecular Biology and Biotechnology, Tezpur University, Assam, India, under the supervision of Prof. Shashi Baruah. The work is original and has not been submitted in part or full in any other University or institute for any degree, diploma, associateship, fellowship or any other similar title or recognition.

Date: 28/12/2022

Place: Tezpur University, Assam, India



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CERTIFICATE OF THE PRINCIPAL SUPERVISOR

This is to certify that the thesis entitled **Understanding Immune Suppression of Natural Killer cells in Head and Neck Squamous Cell Carcinoma**, submitted to School of Sciences, Tezpur University, in partial fulfillment for the award of the degree of Doctor of Philosophy in Molecular Biology and Biotechnology, is a record of research work carried out by **Mr. Saurav Phukan** under my supervision and guidance.

All help received by him from various sources have been acknowledged. No part of the thesis has been submitted elsewhere for award of any other degree.

Date: 28.12.2022

Place: Tezpur University, Assam, India

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CERTIFICATE OF EXTERNAL EXAMINER AND ODEC

This is to certify that the thesis entitled **Understanding Immune Suppression of Natural Killer cells in Head and Neck Squamous Cell Carcinoma**, submitted by Mr. Saurav Phukan to Tezpur University in the Department of Molecular Biology and Biotechnology under the School of Sciences in partial fulfillment of the requirement for award of the degree of Doctor of Philosophy in Molecular Biology and Biotechnology has been examined by us on and found to be satisfactory.

The committee recommends for the award of the degree of Doctor of Philosophy

Signature

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Acknowledgment

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Date:

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(Saurav Phukan)

List of Abbreviations

ADCC	Antibody-dependent cell-mediated cytotoxicity
APC	Antigen presenting cell
BDCA3	Blood Dendritic Cell Antigen 3
BAT3	B-associated transcript 3
BCL	B-cell lymphoma
cDC	Conventional/classical dendritic cell
CMP	Common myeloid progenitors
CLP	Common lymphoid progenitors
COX2	Cyclooxygenas-2
CCL	Chemokine (C-C motif) ligand
CTL	Cytotoxic T lymphocytes
CMV	Cytomegalovirus
CLL	Chronic lymphocytic leukemia
CTLA-4	Cytotoxic T-Lymphocyte Antigen 4
CAR	Chimeric antigen receptor
DC	Dendritic cells
DNAM-1	DNAX Accessory Molecule-1
DR	Death receptor
DcR	Decoy receptor
ER	Endoplasmic reticulum
EGFR	Epidermal growth factor receptor
EP	Prostaglandin E2 receptor
FoxP3	Fork head box P3
GM-CSF	Granulocyte macrophage colony-stimulating factor
GMP	Granulocyte/macrophage progenitors
HLA	Human Leucocyte Antigen
HSC	Hematopoietic stem cell
HA	Hemagglutinin
IFN	Interferon
Ig	Immunoglobulin

LPS	Lipopolysaccharides
LC	Langerhans cells
KIR	Killer-cell immunoglobulin-like receptor
LAK	Lymphokine-activated killer cell
M-CSF	Macrophage colony-stimulating factor
mDC	Monocyte-derived dendritic cells
MHC I, II	Major histocompatibility complex class I or II
MPP	Multipotent progenitors
MDP	Macrophage-DC progenitors
MICA/B	Major histocompatibility complex class I-related chain A/B
MCA	3'-methylcholanthrene
MDSC	Myeloid-derived suppressor cells
mAB	Monoclonal antibodies
NK	Natural killer cells
NCR	Natural cytotoxic receptor
NKG2D	Natural killer group 2, member D
PGE2	Prostaglandin E2
PD	Programmed cell death
PD-L1	Programmed cell death-ligand 1
TLR	Toll-like receptor
TCR	T cell receptor
Th	T helper cell
TNF	Tumor necrosis factor
TGF	Transforming growth factor
HPV	Human papilloma virus
CNV	Copy number variation
VEGF	Vascular endothelial growth factor

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