

## Declaration

I, hereby declare that the work presented in this Thesis titled "*Promising Molecular Modulations of E3 Ubiquitin Ligases Regulate Cellular Proliferation and Suppresses Misfolded Proteins Accumulation*" submitted to the Indian Institute of Technology Jodhpur in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy, is a bonafide record of the research work carried out under the supervision of Dr. Amit Kumar Mishra. The contents of this thesis in full or in parts, have not been submitted to, and will not be submitted by me to, any other Institute or University in India or abroad for the award of any degree or diploma.

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## Certificate

This is to certify that the Thesis titled *Promising Molecular Modulations of E3 Ubiquitin Ligases Regulate Cellular Proliferation and Suppresses Misfolded Proteins Accumulation*, submitted by *Vibhuti Joshi* (PG201384014) to the Indian Institute of Technology Jodhpur for the award of the degree of *Doctor of Philosophy*, is a bonafide record of the research work done by her under my supervision. To the best of my knowledge, the contents of this report, in full or in parts, have not been submitted to any other Institute or University for the award of any degree or diploma.

*Dr. Amit Kumar Mishra*  
Ph.D. Thesis Supervisor

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## List of Symbols

Symbol	Description
$\alpha$	Alpha
$\beta$	Beta
$\gamma$	Gamma
$\Omega$	Omega
g	Gram
$\Delta$	Delta
$\mu$	Micro
$\mu\text{M}$	Micro Molar
L	Litre
$^{\circ}$	Degree
%	Percentage
C	Celsius
Hrs	Hours
ml	Millilitres
m	Meter
M	Molar
nm	Nanometre
pH	Hydrogen Ion Concentration
R	Recovery



## List of Abbreviations

<i>Abbreviation</i>	<i>Full form</i>
AD	Alzheimer's Disease
ALS	Amyotrophic Lateral Sclerosis
AMFR	Autocrine Motility Factor Receptor
ATP	Adenosine Triphosphahate
Bax	Bcl-2-Associated X Protein
BSA	Bovine Serum Albumin
CAG	Cytosine Adenine Guanine
CDKs	Cyclin Dependent Kinase
CFTR	Cystic Fibrosis Transmembrane Conductance Regulator
CUE	Coupling of Ubiquitin Conjugation to the ER Degradation
DAPI	4', 6-Diamidino-2-Phenylindole
DGAT2	Diacylglycerol Acyltransferase Isoform 2
DMEM	Dulbecco's Modified Eagle's Medium
DMSO	Dimethyl Sulphoxide
DNA	Deoxyribonucleic Acid
EDTA	Ethylene Diamine Tetra Acetate
ER	Endoplasmic Reticulum
ERAD	ER Associated Degradation
E6-AP	E6-Associated Protein
FDA	Food and Drug Administration
FITC	Fluorescein Isothiocyanate
GFP	Green Fluorescence Protein
Gp78	Glycoprotein 78
G2BR	Ube2g2 Binding Region
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide
HD	Huntington's Disease
HECT	Homologous to E6-AP Carboxyl Terminal
HMGCR	3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase
HS	Heat Shock
HSE	Heat Shock Regulatory Element
HSF1	Heat-Shock Transcription Factor 1
Hsp70	Heat Shock Protein 70
JNK	C-Jun N-Terminal Kinase
KAI1	Kangai1
kDa	Kilo Dalton
MAPK	Mitogen-Activated Protein Kinase
mRNA	Messenger Ribonucleic Acid
MSVMDCK	Moloney Sarcoma Virus (Mos)-Transformed MDCK
MTT	3-(4, 5-Dimethylthiazol-2-yl)-2, 5-Diphenyltetrazoliumbromide
MTOC	Microtubule-Organizing Centre
NRF2	Nuclear Factor Erythroid 2-Related Factor 2
PBS	Phosphate Buffered Saline
PCR	Polymerase Chain Reaction
PHD	Plant Homeodomain
PQC	Protein Quality Control System
Q	Glutamine
QC	Quality Control
RA	Retinoic Acid
RING	Really Interesting New Gene
RNF45	RING Finger Protein 45
ROCK2	Rho-Associated Coiled-Coil Protein Kinase 2
SCA	Spinocerebellar Ataxia

SD	Standard Deviation
SDS-PAGE	Sodium Dodecyl Sulfate-Polyacrylamide Gel Electrophoresis
siRNA	Small Interfering RNA
SOD1	Superoxide Dismutase 1
STING	Stimulator of Interferon Gene
TBST	Tris- Buffered Saline with Tween-20
TUNEL	Terminal Deoxynucleotidyl Transferase dUTP Nick End-Labeling
Ub	Ubiquitin
UPR	Unfolded Protein Response
UPS	Ubiquitin Proteasome System
VLDL	Very Low-Density Lipoproteins