

List of Abbreviations

AACE	American Association of Clinical Endocrinology
ACC1	Acetyl-CoA Carboxylase 1
ACE	Angiotensin Convertase Enzyme
ADA	American Diabetes Association
AgRP/NPY	Agouti-related protein/neuropeptide Y
AIF	Apoptosis Inducing Factor
AKT/PKB	Protein Kinase B
AMPK	AMP-Activated Protein Kinase
ARMS-PCR	Amplification Refractory Mutation System-Polymerase Chain Reaction
ARX	Aristaless-Related Homeobox
AT	Adipose Tissue
ATGL	Adipose Triglyceride Lipase
ATM	Adipose Tissue Macrophage
AUC	Area Under Curve
BAX	BCL2 associated X protein
BCL2	B-cell lymphoma 2
BCAA	Branched-chain amino acids
BMI	Body Mass Index
BrdU	5-Bromo-2'-Deoxyuridine
BSA	Bovine Serum Albumin
BW	Body Weight
Caspase-3	Cysteine–aspartic acid protease
CREB	cAMP response element-binding protein
CVD	Cardiovascular disease
CTL	Cytotoxic T cell
DAG	Diacyl Glycerol
DAPI	4',6-Diamidino-2-Phenylindole
DEPC	Diethylpyrocarbonate
DPP-4	Dipeptidyl Peptidase-4
DM	Diabetes Mellitus
EDTA	Ethylenediaminetetraacetic acid
ELISA	Enzyme-linked immunoassay
ER	Endoplasmic Reticulum
EtBr	Ethidium bromide
ETC	Electron Transport Chain
FBG	Fasting Blood Glucose
FBPase	Fructose 1,6-Bisphosphatase
FBS	Fetal Bovine Serum
FFA	Free Fatty Acid
FOXO1	Forkhead box protein O1
GABA/G	γ -Aminobutyric acid
GAD	Glutamate decarboxylase
GABA _A R	GABA A receptor

GABA _B R	GABA B receptor
GCK	Glucokinase
GDM	Gestation Diabetes Mellitus
GLUT2	Glucose Transporter 2
GLUT4	Glucose Transporter 4
GP	Glycogen Phosphorylase
G6Pase	Glucose 6-Phosphatase
GS	Glycogen Synthase
GSIS	Glucose Stimulated Insulin Secretion
GSK3B	Glycogen Synthase Kinase 3 Beta
GWAS	Genome Wide Association Studies
HDL	High Density Lipoproteins
HFD	High Fat Diet
HLA	Human Leukocyte Antigen
HWE	Hardy-Weinberg Equation
IDDM	Insulin-Dependent Diabetes Mellitus
IDF	International Diabetes Federation
IGF1	Insulin-like growth factor 1
IL	Interleukin
IFG	Impaired Fasting Glucose
IGT	Impaired Glucose Tolerance
IPGTT	Intraperitoneal Glucose Tolerance Test
IPITT	Intraperitoneal Insulin Tolerance Test
IP3	Inositol trisphosphate
INSR	Insulin Receptor
IR	Insulin Resistance
IR1 β	Insulin Receptor 1- Beta
IRE1	Inositol-requiring enzyme 1
IRS1/2	Insulin Receptor Substrate 1/2
JNK	c Jun N-Terminal Kinase
LEP	Leptin
LEPR	Leptin Receptor
LD	Linkage disequilibrium
LDL	Low Density Lipoproteins
mRNA	Messenger RNA
M	Melatonin
M+G	Melatonin + GABA
MCP1	Monocyte Chemoattractant Protein-1
NCD	Normal Chow Diet
NADP	Nicotinamide adenine dinucleotide phosphate
NF κ B	Nuclear Factor kappa-light-chain-enhancer of activated B cells
NFW	Nuclease Free Water
NGN3	Neurogenin-3
NIDDM	Non-insulin-dependent diabetes mellitus
NOD	Non-obes diabetic
NPY	Neuro Peptide Y
OGTT	Oral Glucose Tolerance Test

OCR	Oxygen Consumption Rate
OR	Odds Ratio
PAGE	Polyacrylamide gel electrophoresis
PAX4	Paired Box 4
PBMC	Peripheral Blood Mononuclear Cells
PCR	Polymerase Chain Reaction
PDX1	Pancreas/Duodenum Homeobox Protein 1
PEPCK	Phosphoenolpyruvate Carboxykinase
PGC1 α	PPAR γ Coactivator 1- Alpha
PI3K	Phosphoinositide 3-Kinase
PIP3	Phosphatidylinositol-3,4,5-triphosphate
PKA	Protein kinase A
PKC	Protein kinase C
POMC	Pro-opiomelanocortin
PPAR	Peroxisome Proliferator- Activated Receptor
PPAR γ	Peroxisome Proliferator-Activated Receptor- Gamma
RCR	Respiratory Control Ratio
RE	Restriction Enzyme
RFLP	Restriction Fragment Length Polymorphism
ROS	Reactive Oxygen Species
SEM	Standard Error Mean
SIRT1/3	Sirtuin 1/3
SNP	Single Nucleotide Polymorphism
SOCS1/3	Suppressor of Cytokine Signaling 1/3
sOb-R	Soluble-leptin Receptor
STZ	Streptozotocin
T1D	Type 1 Diabetes
T2D	Type 2 Diabetes
TC	Total Cholesterol
TCA	Tricarboxylic acid
TFAM	Transcription Factor A, Mitochondrial
TG	Triglyceride
Th1/2	Type-1/2 T helper cell
Tregs	Regulatory T cells
UPR	Unfolded Protein Response
TNF α	Tumor Necrosis Factor- Alpha
TUNEL	Terminal Deoxynucleotidyl Transferase dUTP Nick End Labelling
WAT	White Adipose Tissue
WHO	World Health Organization

Note: The full forms of several rarely used abbreviations have been described within the text.