

Plant Physiology Symbols and Abbreviations

Abbreviations for Units of Measure (Standard Abbreviations)

ampere	A
Ångstrom	Å
atmosphere	atm
base pair	bp
becquerel	Bq
calorie	cal
centimeter	cm
counts per min	cpm
curie	Ci
dalton	D
day	d
days post anthesis	DPA
degrees Celsius	°C
degrees Kelvin	K
disintegrations per min	dpm
einstein	E
electron volt	eV
farad	F
gauss	G
gram	g
hectare	ha
hertz	Hz
hour	h
international unit	IU
joule	J
katal	kat
kilobase pair	kb
kilodalton	kD
kilogram	kg
liter	L
meter	m
microgram	µg
microliter	µL
micrometer	µm
micromolar	µM
milliequivalent	meq
milligram	mg
milliliter	mL
millimeter	mm
millimolar	mM

minute	min
molar	M
mole	mol
nanogram	ng
nanometer	nm
nanomolar	nM
normal	N
ohm	Ω
osmolal	osmol
pascal	Pa
percent	%
per mil	‰
revolutions per min	rpm
seconds	s
volt	V
watt	W

ALPHABETICAL LISTS

Standard Abbreviations (always change)

# = Do not use; change to "number" (or "no." in parens/tables) or delete	
1,4-piperazinediethanesulfonic acid	PIPES
2-(<i>N</i> -morpholilino)ethanesulfonic acid	MES
2-[bis(2-hydroxyethyl)amino]ethanesulfonic acid	BES
2-[bis(hydroxyethyl)amino]-2-(hydroxymethyl)-1-propane-1,3-diol	BisTris
3-(<i>N</i> -morpholino)propanesulfonic acid	MOPS
3-[(3-cholamidopropyl)dimethylammonio]-1-propanesulfonic acid	CHAPS
4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid	HEPES
absorbance at 340 nm	A_{340}
adenosine 5'-mono-, di-, or triphosphate	AMP, ADP, ATP
analysis of variance	ANOVA
Basic Local Alignment Search Tool	BLAST
charge-coupled device	CCD
Coenzyme A and its derivative	CoA
cyclic adenosine 3':5'-monophosphate	cAMP
cytidine 5'-mono-, di-, or triphosphate	CMP, CDP, CTP
deoxyadenosine 5'-mono-, di-, or triphosphate	dAMP, dADP, dATP
deoxycytidine 5'-mono-, di-, or triphosphate	dCMP, dCDP, dCTP

deoxyguanosine 5'-mono-, di-, or triphosphate	dGMP, dGDP, dGTP
deoxyribonucleic acid	DNA
diethylaminoethyl	DEAE
enzyme-linked immunosorbent assay	ELISA
equilibrium constant	K
ethylenediaminetetraacetate	EDTA
ethyleneglycol-bis(aminoethyl ether)- <i>N,N'</i> -tetraacetic acid	EGTA
fast-protein liquid chromatography	FPLC
flavin adenine dinucleotide	FAD
flavin mononucleotide	FMN
gibberellic acid	GA ₃
gibberellin	GA
gravity	<i>g</i> (e.g. 5000 <i>g</i>)
gravity	<i>g</i> (e.g. 5,000 <i>g</i>)
guanosine 5'-mono-, di-, or triphosphate	GMP, GDP, GTP
high-performance liquid chromatography	HPLC
immunoglobulin G, M, etc.	IgG, IgM, etc.
infrared spectra	IR spectra
inner diameter	i.d.
isoelectric point	pI
least significant difference	LSD
logarithm, common, base 10	log
logarithm, natural	ln
messenger RNA	mRNA
Michaelis constant	K_m
molecular weight (relative)	M_r
<i>N,N'</i> -bis(2-hydroxyethyl)glycine	Bicine
<i>N</i> -[tris(hydroxymethyl)methyl]glycine	Tricine
nicotinamide adenine dinucleotide	NAD, NAD ⁺
nicotinamide adenine dinucleotide phosphate	NADP, NADP ⁺
nicotinamide adenine dinucleotide phosphate, reduced	NADPH
nicotinamide adenine dinucleotide, reduced	NADH
<i>N</i> -tris(hydroxymethyl)methyl-2-aminoethanesulfonic acid	TES
nuclear magnetic resonance	NMR
outer diameter	o.d.
photosystem I	PSI
photosystem II	PSII
phytochrome, far-red-absorbing form	Pfr
phytochrome, red-absorbing form	Pr
polyacrylamide gel electrophoresis	PAGE

polymerase chain reaction	PCR
rapid amplification of cDNA ends	RACE
rate constant	k
restriction fragment-length polymorphism	RFLP
retardation factor	R_F
ribonucleic acid	RNA
ribulose-1,5-bisphosphate carboxylase/oxygenase	Rubisco
Soluble <i>N</i> -Ethylmaleimide- Sensitive Fusion Protein Attachment Protein Receptors	SNARE
sodium dodecyl sulfate	SDS
standard deviation	SD
standard error	SE
transfer RNA	tRNA
tris(hydroxymethyl)-aminomethane	Tris
ultraviolet	UV
uridine 5'-mono-, di-, or triphosphate	UMP, UDP, UTP
velocity, maximum initial	V_{\max}

Amino Acids

Ala (A)	alanine
Arg (R)	arginine
Asn (N)	asparagine
Asp (D)	aspartic acid or aspartate
Cys (C)	cysteine
Gln (Q)	glutamine
Glu (E)	glutamic acid or glutamate
Gly (G)	glycine
His (H)	histidine
Hyl	hydroxylysine
Hyp (O)	hydroxyproline
Ile (I)	isoleucine
Leu (L)	leucine
Lys (K)	lysine
Met (M)	methionine
Orn	ornithine
Phe (F)	phenylalanine
Pro (P)	proline

Ser (S)	serine
Thr (T)	threonine
Trp (W)	tryptophan
Tyr (Y)	tyrosine
Val (V)	valine

Buffers

These buffers are used WITHOUT their definition

2-[bis(2-hydroxyethyl)amino]ethanesulfonic acid BES
N,N'-bis(2-hydroxyethyl)glycine Bicine
 2-[bis(hydroxyethyl)amino]-2-(hydroxymethyl)-1-propane-1,3-diol
 BisTris
 3-[(3-cholamidopropyl)dimethylammonio]-1-propanesulfonic acid
 CHAPS
 ethylenediaminetetraacetate EDTA
 ethyleneglycol-bis(aminoethyl ether)-*N,N'*-tetraacetic acid EGTA
 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid HEPES
 2-(*N*-morpholilino)ethanesulfonic acid MES
 3-(*N*-morpholino)propanesulfonic acid MOPS
 1,4-piperazinediethanesulfonic acid PIPES
N-tris(hydroxymethyl)methyl-2-aminoethanesulfonic acid TES
N-[tris(hydroxymethyl)methyl]glycine Tricine
 tris(hydroxymethyl)-aminomethane Tris

Sugars

GlcNAc	<i>N</i> -acetylglucosamine
Ara	arabinose
Gal	galactose
GalA	galacturonic acid
Glc	glucose
GlcA	glucuronic acid
Man	mannose
Fru	fructose
Fuc	fucose
Rha	rhamnose
Rib	ribose
Suc	sucrose
Xyl	xylose
UDP-/GDP-Man	nucleotide diphosphate sugars