

List of Abbreviations

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|------------------------|--|------------------------------|--|
| 1-HOP | 1-hydroxypyrene | CDK | cyclin-dependent kinase |
| 4-ABP | 4-aminobiphenyl | CETP | cholesterol ester transfer protein |
| 4-HNE | 4-hydroxy-2-nonenal | CHD | coronary heart disease |
| 8-oxo-dG | 7-hydroxy-8-oxo-2'-deoxyguanosine | CI | confidence interval |
| 8-OH-dG | 8-hydroxy-2'-deoxyguanosine | CNS | central nervous system |
| 8-OH-DPAT | 8-hydroxy-2-dipropylaminotetralin | CO | carbon monoxide |
| AAT | α 1-antitrypsin | CO₂ | carbon dioxide |
| ACE | angiotensin-converting enzyme | COPD | chronic obstructive pulmonary disease |
| ACh | acetylcholine | CPS-I | Cancer Prevention Study I |
| ACTH | adrenocorticotropic hormone | CPS-II | Cancer Prevention Study II |
| ADMA | asymmetric dimethylarginine | CREB | cyclic adenosine monophosphate-response element binding protein |
| AGT | <i>O</i> ⁶ -alkylguanine-DNA alkyltransferase | CRP | C-reactive protein |
| AH | aryl hydrocarbon | CS | conditioned stimulus |
| AHH | aryl hydrocarbon hydroxylase | CSE | cigarette smoke extract |
| AKT | protein kinase B | CT | computed tomography |
| AOR | adjusted odds ratio | CUZNSOD | copper zinc superoxide dismutase |
| AP | apurinic/apyrimidinic | CVD | cardiovascular disease |
| AP-1 | activator protein-1 | DEB | diepoxybutane |
| APA | American Psychiatric Association | DHBMA | dihydroxybutyl mercapturic acid |
| APO | apolipoprotein | DHβE | [³ H]dihydro-beta-erythroidine |
| APO A-I | apolipoprotein A-I | dL | deciliter |
| APO B | apolipoprotein B | DMBA | 7,12-dimethybenz[<i>a</i>]anthracene |
| APO E | apolipoprotein E | DRC | DNA repair capacity |
| ATP | adenosine triphosphate | DRZ | diagonal radioactive zone |
| B[<i>a</i>]P | benzo[<i>a</i>]pyrene | DSB | double-strand break |
| B[<i>b</i>]F | benzo[<i>b</i>]fluoranthene | DSBR | double-strand break repair |
| B[<i>k</i>]F | benzo[<i>k</i>]fluoranthene | DSM-III-R | <i>Diagnostic and Statistical Manual of Mental Disorders</i> , 3rd ed. (rev) |
| BAL | bronchoalveolar lavage | DSM-IV | <i>Diagnostic and Statistical Manual of Mental Disorders</i> , 4th ed. |
| BER | base excision repair | EB | 3,4-epoxybutene |
| BH | BCL-2 homology | ECSOD | extracellular superoxide dismutase |
| BMI | body mass index | EF | etiological fraction |
| BPDE | benzo[<i>a</i>]pyrene-7,8-diol-9,10-epoxide | ELF | epithelial lining fluid |
| BSID | Bayley Scales of Infant Development | ENOS | endothelial nitric oxide synthase |
| Ca²⁺ | calcium ion | EPA | U.S. Environmental Protection Agency |
| Cal/EPA | California Environmental Protection Agency | EPC | endothelial progenitor cell |
| CAM | chorioallantoic membrane | EPO | eosinophil-specific peroxidase |
| CaMKII | Ca ²⁺ calmodulin-dependent protein kinase II | ERK | extracellular signal-regulated kinase |
| CAN | Canadian Intense | F-344 | Fischer-344 |
| CAT | chloramphenicol acetyltransferase | | |
| CB₁ | cannabinoid subtype 1 | | |
| CDC | Centers for Disease Control and Prevention | | |

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|-----------------------------------|--|----------------------|---|
| FDA | U.S. Food and Drug Administration | HPG | hypothalamic-pituitary-gonadal |
| Fe²⁺ | ferrous ion | HPLC | high-performance liquid chromatography |
| Fe³⁺ | ferric ion | HR23B | homologous recombinational repair group 23B |
| FEV₁ | forced expiratory volume in one second | IARC | International Agency for Research on Cancer |
| FFA | free fatty acid | IBF | intervillous blood flow |
| FR | fecundability ratio | ICAM | intercellular adhesion molecule |
| FSH | follicle-stimulating hormone | ICD-10 | <i>International Statistical Classification of Diseases and Related Health Problems, Tenth Revision</i> |
| FTC | U.S. Federal Trade Commission | Ig | immunoglobulin |
| FTND | Fagerström Test for Nicotine Dependence | IgM | immunoglobulin M |
| FTQ | Fagerström Tolerance Questionnaire | IL | interleukin |
| FVC | forced vital capacity | INOS | inducible nitric oxide synthase |
| g | gram | IOM | Institute of Medicine |
| GABA | γ-aminobutyric acid | ISO | International Organization for Standardization |
| GC | gas chromatography | IUGR | intrauterine growth restriction |
| GCL | glutamate cysteine ligase | IVF | in vitro fertilization |
| GGR | global genomic nucleotide excision repair | kcal | kilocalorie |
| GLu-P-1 | 2-amino-6-methylidipyrido[1,2-a:3',2'-d]imidazole | kg | kilogram |
| GOLD | Global Initiative for Chronic Obstructive Lung Disease | L | liter |
| GPX | glutathione peroxidase | LBW | low birth weight |
| GRX | glutathione reductase | LC | liquid chromatography |
| GSH | glutathione | LDL | low-density lipoprotein |
| GSSG | oxidized glutathione | LDLc | low-density lipoprotein cholesterol |
| GST | glutathione-S-transferase | LH | luteinizing hormone |
| GTP | guanosine triphosphate | LMPCR | ligation-mediated polymerase chain reaction |
| H/R | hypoxia/reperfusion | LOD | logarithm of the odds |
| H₂O | water | LPL | lipoprotein lipase |
| H₂O₂ | hydrogen peroxide | LUC | luciferase |
| H₂S | hydrogen sulfide | m³ | cubic meter |
| HAT | histone acetyltransferase | MAO | monoamine oxidase |
| Hb | hemoglobin | MAPK | mitogen-activated protein kinase |
| HbA_{1c} | hemoglobin A _{1c} | MDM2 | murine double minute 2 |
| HBEC | human bronchial epithelial cell | MDPH | Massachusetts Department of Public Health |
| HCA | heterocyclic amine | MEK | mitogen-activated protein kinase kinase |
| hCG | human chorionic gonadotropin | mg | milligram |
| HCN | hydrogen cyanide | mGluR2/3 | metabotropic glutamate receptor subtype 2/3 |
| HCR | host cell reactivation | mGluR5 | metabotropic glutamate receptor subtype 5 |
| HDAC | histone deacetylase | MHBMA | monohydroxybutenyl mercapturic acid |
| HDL | high-density lipoprotein | MI | myocardial infarction |
| HDLC | high-density lipoprotein cholesterol | mL | milliliter |
| Hg | mercury | mm | millimeter |
| HIV | human immunodeficiency virus | MMP | matrix metalloproteinase |
| HONC | Hooked on Nicotine Checklist | | |
| HOX | hypohalous acids | | |

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|-----------------------|--|-----------------------------------|---|
| MMR | mismatch repair | NST | nonstress test |
| MMS | methyl methanesulfonate | NTCA | <i>N</i> -nitrosothiazolidine 4-carboxylic acid |
| MNSOD | manganese superoxide dismutase | O₂ | oxygen |
| MPEP | 2-methyl-6-(phenylethynyl)pyridine | O₂^{•-} | superoxide anion |
| MPO | myeloperoxidase | OH | hydroxyl radical |
| mRNA | messenger RNA | ONOO⁻ | peroxynitrite |
| MRP | multidrug-resistance protein | ONO OH | peroxynitrous acid |
| MS | mass spectrometry | OR | odds ratio |
| MSCA | McCarthy Scales of Children's Abilities | p | short arm of chromosome |
| MT1 | membrane-type 1 | PAD | peripheral arterial disease |
| MTT | 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide | PAF | platelet-activating factor |
| µg | microgram | PAH | polycyclic aromatic hydrocarbon |
| µm | micrometer | PAI-1 | plasminogen activator inhibitor-1 |
| µmol | micromole | PARP | poly (adenosine diphosphate-ribose) |
| N₂ | nitrogen | PAT | poly AT insertion/deletion polymorphism |
| NAB | <i>N'</i> -nitrosoanabasine | PCASRM | Practice Committee of the American Society for Reproductive Medicine |
| nAChR | nicotinic acetylcholine receptor | PCNA | proliferating cell nuclear antigen |
| NADPH | reduced nicotinamide adenine dinucleotide phosphate | p-CREB | phosphorylated CREB |
| NAT | <i>N</i> -acetyltransferase | PdG | 1, <i>N</i> ² -propanodeoxyguanosine |
| NATB | <i>N'</i> -nitrosoanatabine | PDK1 | 3-phosphoinositide-dependent protein kinase-1 |
| NCI | National Cancer Institute | PET | positron emission tomography |
| NDMA | <i>N</i> -nitrosodimethylamine | pg | picogram |
| NER | nucleotide excision repair | pH_{eff} | effective pH |
| NF-κB | nuclear factor-kappa B | PhIP | 2-amino-1-methyl-6-phenylimidazo[4,5- <i>b</i>]pyridine |
| ng | nanogram | PHS | U.S. Public Health Service |
| NHLBI | National Heart, Lung, and Blood Institute | PI | protease inhibitor |
| NIH | National Institutes of Health | PI-3K | phosphatidylinositol-3 kinase |
| NK | natural killer | PIP3 | phosphatidylinositol 3,4,5-triphosphate |
| nmol | nanomole | PKA | protein kinase A |
| NMTCA | <i>N</i> -nitroso-2-methylthiazolidine 4-carboxylic acid | PKB | protein kinase B (also known as AKT) |
| NNAL | 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol | PKC | protein kinase C |
| NNK | 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone | PK_{cs} | protein kinase catalytic subunit |
| NNN | <i>N'</i> -nitrosonornicotine | PIGF | placental growth factor |
| NO | nitric oxide | PMN | polymorphonuclear neutrophil |
| NO₂ | nitrogen dioxide | pmol | picomole |
| NOS | nitric oxide synthase | p-MPPI | 4-(2'-methoxy-phenyl)-1-[2'-(<i>n</i> -2"-pyridinyl)- <i>p</i> -iodobenzamido]ethyl-piperazine |
| NPRO | <i>N</i> -nitrosoproline | POB | pyridyloxobutyl |
| NRC | National Research Council | pol | polymerase |
| NRT | nicotine replacement therapy | ppm | parts per million |
| NSCLC | non-small-cell lung cancer | PPROM | preterm premature rupture of membranes |

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|------------------------------|---|--------------------------------|--|
| PREP | potential reduced-exposure product | Th1 | helper T-cell subset 1 |
| PRX | peroxiredoxin | Th2 | helper T-cell subset 2 |
| q | long arm of chromosome | TIMP | tissue inhibitor of metalloproteinase |
| Q•- | semiquinone radical | T_{max} | time to reach maximum blood concentrations of nicotine |
| RCT | reverse cholesterol transport | TNFα | tumor necrosis factor-alpha |
| REC | homologous recombination | tPA | tissue plasminogen activator |
| RI | resistance index | TPM | total particulate matter |
| RNS | reactive nitrogen species | <i>trans, anti-PheT</i> | <i>r-1,t-2,3,c-4-tetrahydroxy-1,2,3,4-tetrahydrophenanthrene</i> |
| ROS | reactive oxygen species | Trp-P-1 | 3-amino-1,4-dimethyl-5 <i>H</i> -pyrido[4,3- <i>b</i>]indole |
| RR | relative risk | Trp-P-2 | 3-amino-1-methyl-5 <i>H</i> -pyrido[4,3- <i>b</i>]indole |
| S/D | systolic/diastolic | TRX | thioredoxin |
| SAB | spontaneous abortion | TSNA | tobacco-specific nitrosamine |
| SARS | severe acute respiratory syndrome | <i>tt-MA</i> | <i>trans,trans</i> -muconic acid |
| SCC | squamous cell carcinoma | TxB₂ | thromboxane B ₂ |
| SCE | sister chromatid exchange | TxM | thromboxane metabolite |
| SCENIHR | Scientific Commission on Emerging and Newly Identified Health Risks | UCSF | University of California at San Francisco |
| SCLC | small-cell lung cancer | UGT | uridine-5'-diphosphate-glucuronosyltransferase |
| SD | standard deviation | US | unconditioned stimulus |
| SES | socioeconomic status | USDHEW | U.S. Department of Health, Education, and Welfare |
| sFlt-1 | soluble vascular endothelial growth factor receptor Flt-1 | USDHHS | U.S. Department of Health and Human Services |
| SGA | small for gestational age | USPSTF | U.S. Preventive Services Task Force |
| sICAM | soluble intercellular adhesion molecule | UV | ultraviolet |
| SIDS | sudden infant death syndrome | VCAM | vascular cell adhesion molecule |
| SNO | S-nitrosothiol | VEGF | vascular endothelial growth factor |
| SNP | single nucleotide polymorphism | VEGFR | vascular endothelial growth factor receptor |
| SOD | superoxide dismutase | VLDL | very-low-density lipoprotein |
| S-PMA | S-phenylmercapturic acid | V_{max} | maximum velocity |
| STR | short tandem repeat | VOC | volatile organic compound |
| sVCAM | soluble vascular cell adhesion molecule | VTA | ventral tegmental area |
| TBARS | thiobarbituric acid reactive substances | WHO | World Health Organization |
| TCR | transcription-coupled repair | XP (A-G) | xeroderma pigmentosum (groups A-G) |
| TFIIH | transcription initiation factor IIH | γGT | γ -glutamyltranspeptidase |
| TGFβ | transforming growth factor-beta | | |
| TGRL | triglyceride-rich lipoprotein | | |