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High-resolution structural data: Any paper submitted to *The JI* that contains new high-resolution structural data requires an accession number from the Protein Data Bank (www.rcsb.org/pdb/Welcome.do) and assurance that unrestricted release will occur at or before the time of publication. The accession number should be accompanied by the Web site address of the databank.

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General style conventions: In general, *The JI* follows *Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers, 7th Edition*, published by the Council of Science Editors, Inc., in instances where style issues are not directly addressed.

Abbreviations for references: PubMed (<http://www.ncbi.nlm.nih.gov/journals>) is the primary source for journal name abbreviations.

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Allergen nomenclature: Nomenclature for allergens should be assigned in cooperation with the International Union of Immunological Societies (IUIS) Allergen Sub-Committee. Authors of accepted manuscripts that describe novel allergens will be requested to complete a brief standard form available at IUIS Allergen Nomenclature (<http://www.allergen.org/Allergen.aspx>).

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Submit online at <http://ji.msubmit.net>. For the initial submission of full-length manuscripts, either a PDF of the entire manuscript (text, figures, and tables), or individual manuscript, figure, and table files may be uploaded to the system. If individual files are uploaded, the system then creates a single PDF for review purposes. For all *Cutting Edge* submissions and for all revised manuscripts, individual manuscript, high-resolution figure, and table files must be uploaded to the system. Authors should save copies for themselves of all the files in their original formats. See *Author Instructions* at <http://ji.msubmit.net> for online submission requirements. See the *Figures* section for help with preparing digital art. *The JI's* online submission system requires browsers where cookies and Javascript are enabled.

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Å, angstrom

aa, amino acid (only with numbers)

Ab, antibody

ABTS, 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid)

ADP, adenosine 5'-diphosphate

Ag, antigen

AIDS, acquired immunodeficiency syndrome

AMP, adenosine 5'-monophosphate

ANOVA, analysis of variance

AP-1, activator protein 1

APC, Ag-presenting cell

ATP, adenosine triphosphate

BALB/c, a mouse strain

BALT, bronchus-associated lymphoid tissue

BAPTA-AM, 1,2-bis(2-aminophenoxy)ethane-*N,N,N',N'*-tetraacetic acid acetoxymethyl ester

BCR, B cell receptor

bp, base pair (only with numbers)

BrdU, 5-bromo-2'-deoxyuridine

BSA, bovine serum albumin

C, complement

C region, constant region of Ig

cAMP, cyclic AMP

C terminus, carboxyl terminus

C-terminal, carboxyl-terminal

CCL, CC chemokine ligand

CCR, CC chemokine receptor

CD40L, CD40 ligand

cDNA, complementary DNA

CDP, cytidine 5'-diphosphate

CDR, complementarity determining region

C/EBP, CCAAT/enhancer-binding protein

CFA, complete Freund's adjuvant

CFSE, 5-(and 6-)-carboxyfluorescein diacetate succinimidyl ester

CFU, colony-forming unit

cGMP, guanosine 3',5'-cyclic monophosphate

CHAPS, 3-[(3-cholamidopropyl)dimethylammonio]-1-propanesulfonate

Ci, curie

CIITA, class II transactivator

CLIP, class II-associated invariant-chain peptide

cM, centiMorgan(s)

CMP, cytidine 5'-monophosphate

CMV, cytomegalovirus

CNS, central nervous system

CoA, coenzyme A

Con A, concanavalin A

CpG, cytosine guanine dinucleotide

cpm, counts per minute

CREB, cAMP response binding protein

cRNA, complementary RNA

CSF, colony-stimulating factor

CTL, cytotoxic T lymphocyte

CTLA, cytolytic T lymphocyte-associated Ag

CTP, cytidine 5'-triphosphate

CXCL, CXC chemokine ligand

CXCR, CXC chemokine receptor

d, deoxy; distilled (as in dH₂O)

D region, diversity region of Ig or T cell receptor for Ag

Da, dalton (only with numbers)

DAPI, 4',6'-diamidino-2-phenylindole

DEAE, diethylaminoethyl

df, degrees of freedom

DMEM, Dulbecco's modified Eagle's medium

DMSO, dimethylsulfoxide

DNA, deoxyribonucleic acid

DNase, deoxyribonuclease

DNP, dinitrophenyl

dpm, disintegrations per minute

ds, double-stranded (as dsDNA)

DTT, dithiothreitol

E, erythrocyte

EBV, Epstein-Barr virus

EC₅₀, 50% effective concentration

ECL, enhanced chemiluminescence

ED₅₀, 50% effective dose

EDTA, ethylenediaminetetraacetic acid

EGTA, ethylene glycol-bis(β-aminoethyl ester)-*N,N,N',N'*-tetraacetic acid

ELISA, enzyme-linked immunosorbent assay

ELISPOT, enzyme-linked immunospot

EMSA, electrophoretic mobility shift assay

ERK, extracellular signal-regulated kinase

E:T ratio, effector to target ratio

Fab, Ag-binding fragment

F(ab')₂

F-actin, filamentous actin

FACS, fluorescence-activated cell sorting

FAM, 6-carboxyfluorescein

FBS, fetal bovine serum

- FcR, Fc receptors (e.g., Fc γ RI)
 FCS, fetal calf serum
 FITC, fluorescein isothiocyanate
 FLICE, Fas-associated death domain-like IL-1 β -converting enzyme
 FLIP, FLICE inhibitory protein
 FLT3, *fms*-related tyrosine kinase 3
 fMLF, formyl-methionyl-leucyl-phenylalanine
 fura 2-AM, fura 2-acetoxymethyl ester
 g, gram (only with numbers)
 GALT, gut-associated lymphoid tissue
 GAPDH or G3PDH, glyceraldehyde-3-phosphate dehydrogenase
 G-CSF, granulocyte CSF
 GDP, guanosine 5'-diphosphate
 GFP, green fluorescent protein
 GM-CSF, granulocyte-macrophage CSF
 GMP, guanosine 5'-monophosphate
 gp, glycoprotein (e.g., gp100)
 GPI, glycosylphosphatidylinositol
 GST, glutathione S-transferase
 GTP, guanosine 5'-triphosphate
 h, hour (only with numbers)
 H chain, heavy chain
 H&E, hematoxylin and eosin
 HBSS, Hanks' balanced salt solution
 HEPES, *N*-2-hydroxyethylpiperazine-*N'*-2-ethanesulfonic acid
 HIV, human immunodeficiency virus
 HLA, human histocompatibility leukocyte Ag
 HPLC, high performance liquid chromatography
 HRP, horseradish peroxidase
 HSV, herpes simplex virus
 HUVEC, human umbilical vein endothelial cell
 IC₅₀, 50% inhibition/inhibitory concentration
 ICAM, intercellular adhesion molecule
 ICOS, inducible costimulator
 Id, idiotype; idiotypic determinant
 ID₅₀, 50% infective dose or 50% inhibiting dose
 IDO, indoleamine 2,3-dioxygenase
 IFA, incomplete Freund's adjuvant
 IFN, interferon (e.g., IFN- γ)
 Ig, immunoglobulin
 IgH, Ig heavy chain
 I κ B or I- κ B, inhibitory NF- κ B
 IL, interleukin (e.g., IL-2)
 i.m., intramuscular
 IMDM, Iscove's modified Dulbecco's medium
 IMEM, Iscove's minimal essential medium
 i.p., intraperitoneal
 ITAM, immunoreceptor tyrosine-based activation motif
 ITIM, immunoreceptor tyrosine-based inhibitory motif
 IU, international unit
 i.v., intravenous
 J region, joining region of Ig or T cell receptor for Ag
 JAK or Jak, Janus kinase
 JNK, c-Jun N-terminal kinase
 kb, kilobase (only with numbers)
 kbp, kilobase pair (only with numbers)
 K_a , association constant
 K_d , distribution coefficient; dissociation constant
 K_D , affinity constant
 kDa, kilodalton (only with numbers)
 L chain, light chain
 LD₅₀, 50% lethal dose
 LFA, leukocyte (lymphocyte) function-associated Ag
 LIF, leukemia inhibitory factor
 LPS, lipopolysaccharide
 LU, lytic unit
 2-ME, 2-mercaptoethanol
 mAb, monoclonal Ab
 2-ME, 2-mercaptoethanol
 MACS, magnetic-activated cell sorting
 MALDI, matrix-assisted laser desorption ionization
 MALDI-TOF, matrix-assisted laser desorption ionization-time of flight
 MALT, mucosa-associated lymphoid tissue
 MAPK, mitogen-activated protein kinase
 MCP, monocyte chemoattractant protein
 M-CSF, macrophage CSF
 2-ME, 2-mercaptoethanol
 MEK, mitogen-activated protein kinase kinase
 MEM, minimum essential medium
 MES, 2-(*N*-morpholino)ethanesulfonic acid
 mg, milligram (only with numbers)
 MHC, major histocompatibility complex
 min, minute (only with numbers)
 MIP, macrophage-inflammatory protein
 ml, milliliter (only with numbers)
 MLC, mixed lymphocyte culture
 MLR, mixed leukocyte reaction
 mo, month(s) (only with numbers)
 MOPS, 4-morpholinepropanesulfonic acid
 M_r , relative molecular mass
 mRNA, messenger RNA
 MTT, 3-(4,5-dimethylthiazol-2-yl)-2,5-dimethyltetrazolium bromide
 μ g, microgram (only with numbers)
 μ l, microliter (only with numbers)
 m.w., molecular weight
 MyD88, myeloid differentiating factor 88
n, number in study or group
 NAD, nicotinamide adenine dinucleotide
 NADH, reduced NAD
 NaDodSO₄, sodium dodecyl sulfate
 NADP, NAD phosphate
 NADPH, reduced NAD phosphate
 NBT, nitroblue tetrazolium
 ND, not determined
 NDP, nucleoside 5'-diphosphate
 NF, nuclear factor
 NFAT or NF-AT, nuclear factor of activated T cells
 NF- κ B, nuclear factor κ B
 Ni-NTA, nickel-nitrilotriacetic acid
 NK cell, natural killer cell
 NMP, nucleoside 5'-monophosphate
 NO, nitric oxide
 NOD, nonobese diabetic
 NS, not significant
 nt, nucleotide (only with numbers)
 N-terminal, NH₂-terminal or amino-terminal
 N terminus, NH₂ terminus or amino terminus
 NTP, nucleoside 5'-triphosphate
 OCT, octamer-binding factor
 OD, optical density
 OVA, ovalbumin
p, probability
 PAGE, polyacrylamide gel electrophoresis
 PBL, peripheral blood lymphocyte

- PBMC, peripheral blood mononuclear cell
 PBS, phosphate-buffered saline
 PCR, polymerase chain reaction
 PE, phycoerythrin
 PECAM-1, platelet endothelial cell adhesion molecule-1
 PerCP, peridinin chlorophyll protein
 PFU, plaque-forming unit
 PG, prostaglandin
 PHA, phytohemagglutinin
 PI3K, phosphatidylinositol 3-kinase
 PIPES, piperazine-*N,N'*-bis(2-ethane sulfonic acid)
 PMA, phorbol myristate acetate
 PMSF, phenylmethylsulfonyl fluoride
 PWM, pokeweed mitogen
 r, recombinant (e.g., rIFN- γ)
 R, receptor (e.g., IL-2R)
 RACE, rapid amplification of cDNA end
 RAG, recombination-activating gene
 RANTES, regulated upon activation, normal T cell expressed and secreted
 RBC, red blood cell
 RFLP, restriction fragment length polymorphism
 RIA, radioimmunoassay
 RNA, ribonucleic acid
 RNase, ribonuclease
 rpm, revolutions per minute
 RPMI, (usually RPMI 1640)
 rRNA, ribosomal RNA
 RT-PCR, reverse transcriptase polymerase chain reaction
 s, second (use only with numbers)
 s.c., subcutaneous
 SCID, severe combined immunodeficiency
 SD, standard deviation
 SDS, sodium dodecyl sulfate
 SDS-PAGE, sodium dodecyl sulfate-polyacrylamide gel electrophoresis
 SE, standard error
 SEM, standard error of the mean
 SHIP, src homology 2-containing inositol 5'-phosphatase
 SIV, simian immunodeficiency virus
 sp. act., specific activity
 SRBC, sheep red blood cell
 ss, single-stranded (e.g., ssDNA)
 SSC, standard saline citrate
 STAT, signal transducer and activator of transcription
 SV40, simian virus 40
 $t_{1/2}$, half-life, half-time
 TAMRA, 5-(and 6)-carboxytetramethylrhodamine
 TAP, transporter associated with Ag processing
 Tat, terminal deoxynucleotidyltransferase
 TBS, Tris-buffered saline
 TBST, TBS with Tween 20
 TCA, trichloroacetic acid
 TCR, T cell receptor for Ag
 TDP, thymidine 5'-diphosphate
 TdT, terminal deoxynucleotidyltransferase
 TGF, transforming growth factor
 Th cell, T helper cell
 TLC, thin layer chromatography
 TLR, Toll-like receptor
 TMP, thymidine 5'-monophosphate
 TNF, tumor necrosis factor
 TNP, trinitrophenyl
 TRAIL, TNF-related apoptosis-inducing ligand
 Tris, tris(hydroxymethyl)aminomethane
 tRNA, transfer RNA
 TTP, thymidine 5'-triphosphate
 TUNEL, Tdt-mediated dUTP nick end labeling
 U, unit (only with numbers)
 UDP, uridine 5'-diphosphate
 UMP, uridine 5'-monophosphate
 UTP, uridine 5'-triphosphate
 UV, ultraviolet
 v/v, volume to volume ratio (%)
 v/w, volume to weight ratio (%)
 V region, variable region of Ig
 VCAM, vascular cell adhesion molecule
 V(D)J or VDJ, variable diversity joining
 VLA, very late activation Ag
 W, watt (only with numbers)
 WBC, white blood cell
 WEHI medium
 wk, week (only with numbers)
 xid, X-linked immunodeficiency
 Zap70, ζ -associated protein 70 (or ζ -chain-associated protein 70)

Keywords

Animals

Human
 Rodent
 Other Animals

Cells

B Cells
 Dendritic Cells
 Endothelial Cells
 Eosinophils
 Mast Cells/Basophils
 Monocytes/Macrophages
 Natural Killer Cells
 Neutrophils
 Stem Cells
 Stromal Cells
 T Cells
 T Cells, Cytotoxic
 Th1/Th2 Cells

Diseases

Autoimmunity
 Diabetes
 EAE/MS

Endotoxin Shock

Graft Versus Host Disease
 Immunodeficiency Diseases
 Rheumatoid Arthritis
 Systemic Lupus Erythematosus

Infections

AIDS
 Bacterial
 Fungal
 Parasitic-Helminth
 Parasitic-Protozoan
 Viral

Molecules

AcutePhase Reactants
 Adhesion Molecules
 Antibodies Antigens/Peptides/Epitopes
 Autoantibodies
 Cell Surface Molecules
 Chemokines
 Complement
 Cytokine Receptors
 Cytokines

Fc Receptors

Lipid Mediators
 Lipopolysaccharide
 MHC
 Nitric Oxide
 Protein Kinases/Phosphatases
 Superantigens
 T Cell Receptors
 Transcription Factors

Processes

Allergy
 Antigen Presentation/Processing
 Apoptosis
 Cell Activation
 Cell Differentiation
 Cell Proliferation
 Cell Trafficking
 Chemotaxis
 Comparative Immunology/Evolution
 Costimulation
 Cytotoxicity
 Gene Rearrangement
 Gene Regulation

Hematopoiesis

Inflammation
 Memory
 Neuroimmunology
 Phagocytosis
 Repertoire Development
 Reproductive Immunology
 Signal Transduction
 Tolerance/Suppression/Energy
 Transplantation
 Tumor Immunity
 Vaccination

Techniques

Gene Therapy
 Molecular Biology
 Transgenic/Knockout Mice

Tissues

Lung
 Mucosa
 Skin
 Spleen & Lymph Nodes
 Thymus

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