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Although manipulation of images should be kept to an absolute minimum, there are some circumstances when manipulations are necessary. If, however, the quality of an image is too poor to clearly convey the conclusion, the experiment should be repeated.

- **Collecting Images:** If multiple images are compared to one another, collect each image in the same manner. Any post-collection processing should be applied in a uniform manner to all images. If differences in collection/postcollection are necessary, these need to be described in the legend or *Materials and Methods* section.

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- **Cloning Tools:** Images should not be “airbrushed” (with Clone Stamp Tool/Clone Brush) to remove “blemishes.” Do not use cloning tools to insert something into an image from elsewhere.

- **Gels/Blots:** All gels should contain a positive and a negative control, and a set of molecular weight markers. For Western blots, control panels (actin, GAPDH, etc.) should come from a stripped and reprobed membrane of the experimental blot shown. If this is not possible, the control blots should be derived from the same samples and this should be indicated in the figure legend.

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- band(s) of interest must be clearly labeled
- molecular weight marker positions should be shown in all gels/blots

- **Splicing:** Occasionally, images are spliced to rearrange the order of samples for the sake of presentation, such as those in

a Western blot. If splicing of data from a single experiment is necessary, draw contrasting (black or white) lines to indicate where the images were joined and state the manipulation in the legend. It would be preferable to rerun the gel so the order is correct. Images from different experiments should not be spliced to form a new single image.

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Estimating Manuscript Length: One printed page in *The JI* contains approximately 8,000 characters, including spaces. Thus, an eight-page, full-length article would contain approximately 64,000 characters. Each line in a table occupies about 60 characters for a single-column table (120 characters for a double-column table). Figures occupy about 180 characters per centimeter height for single-column figures (360 characters for double-column figures). Determine the total character count for the text of your manuscript and add the character-equivalents for the tables and figures. This will provide a reasonable estimate for the printed length of a manuscript.

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

Nomenclature: The most current links for nomenclature guidelines are posted online.

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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Supplemental Data:

- Supporting data that are not essential to understanding the material presented in the manuscript may be submitted with the original paper for peer review; however, the print version of the paper must stand on its own without the Supplemental Data.
- Supplemental material is primarily intended for short videos or large tables, large sequence alignments, or large data sets. Additional supplemental figures and tables that support the interpretation and conclusions drawn in the manuscript may, however, also be submitted for review with the manuscript.
- Supplemental Data must be submitted as separate files from the rest of the manuscript during the online submission; select “Supplemental Data” as the “File Type” when uploading the files.
- For *Cutting Edge* manuscripts, no more than two supplemental figures and/or tables may be submitted; for Full-Length manuscripts, no more than four supplemental figures and/or tables may be submitted.
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Videos must be 320 × 480 pixels or smaller for best viewing within a browser. Videos must be no longer than 30 seconds and under 10MB, with no sound or voice-over. Submit videos in MPG or QuickTime format. Change QuickTime file extensions to “.mov” so that Web browsers will recognize the file type and play the movie. Compress videos as much as possible to help control file size. Name videos by order of citation appearance (e.g., video1.mov). Select “Video” as the “File Type” when uploading the files during online submission. Authors will be notified if problems exist with videos as submitted and will be asked to take responsibility for modifications. No editing will be done to videos at the Editorial Office. A legend or short explanation must accompany the video.

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Manuscripts submitted to the *Cutting Edge* section should conform to the *General Guidelines* for full-length manuscripts as well as the additional guidelines below:

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for estimating the number of pages is provided in Manuscript Preparation.

2. The *Abstract* is limited to 150 words.
3. The *Materials and Methods* section may be sharply limited, but should be sufficient to allow the evaluation of results and conclusions.
4. Authors may combine the *Results* and *Discussion* sections.

PREPARATION OF THE REVISED MANUSCRIPT

Follow *The JI* Editorial Office instructions contained in the previous decision letter carefully and thoroughly. A revised manuscript not returned within 9 months of the date of the decision letter will be considered a new manuscript and subject to a new, complete review.

Individual manuscript files, files for each figure and table (even if they are unchanged from the previous submission), and a point-by-point reply to all referee comments must be uploaded to the system. The revised manuscript text must be marked to show changes using yellow highlighting (Microsoft Word files preferred). Do not show deletions, because if the manuscript is accepted, this version will be immediately sent for publication. High-resolution figure files must be submitted. Figures must be in **TIFF**, **EPS**, or **PDF** format and prepared as described under *Figures*.

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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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STANDARD ABBREVIATIONS

The abbreviations listed here are used without definition in articles published in *The JI*. The form may be used for both singular and plural, or made plural with "s" at the author's option.

- 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., FcγRI)
 FCS, fetal calf serum
 FITC, fluorescein isothiocyanate
 FLICE, Fas-associated death domain-like IL-1β-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/Anergy
 Transplantation
 Tumor Immunity
 Vaccination

Techniques

Gene Therapy
 Molecular Biology
 Transgenic/Knockout Mice

Tissues

Lung
 Mucosa
 Skin
 Spleen & Lymph Nodes
 Thymus

GRIP

Grant Review for Immunologists Program

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