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General Guidelines: A 12-point serif font, preferably Times New Roman, is required. Do not use compressed type format. Double-space entire manuscript. Each of the following components should begin on a separate page:

1. The **Title Page** must include the full title; a running title (not to exceed 60 characters); each author's full name (first name, middle initial, last name); and the affiliations of all authors and their institutions, departments, or organizations (use the following symbols in this order: *, †, ‡, §, ¶, I, #, **, ††, ‡‡, §§, ¶¶, ||, ###). List the phone number, fax number, and e-mail address of the corresponding author on the title page.

2. The **Abstract** must be 250 words or less for full-length manuscripts. Reference citations should not be included in the *Abstract*. The species of animals or species of origin of cells used in the manuscript must be clearly stated in the *Abstract*.

3. The **Introduction, Materials and Methods, Results, and Discussion** sections should begin on separate pages in that order. Do not combine the *Results* and *Discussion* sections for full-length papers.

4. **Acknowledgments** appear immediately after the *Discussion* and before *References*.

5. **Grant support** must not be included in the *Acknowledgments* but should be cited as a footnote to the title.

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Format for references:

Periodicals: Wells, A. D., M. C. Walsh, D. Sankaran, and L. A. Turka. 2000. T cell effector function and anergy avoidance are quantitatively linked to cell division. *J. Immunol.* 165: 2432–2443.

Books: McIntyre, T. M., and W. Strober. 1999. Gut-associated lymphoid tissue: regulation of IgA B-cell development. In *Mucosal Immunology*, 2nd ed. P. L. Ogra, J. Mestecky, E. Lamm, W. Strober, J. Bienenstock, and J. R. McGhee, eds. Academic Press, San Diego, CA. 319–356.

7. **Footnotes** should be used to designate the source of support, new or special abbreviations used, correspondence address, current address, etc. Footnotes should be numbered consecutively and will appear on the title page, but for submission are grouped together and placed on a separate page between the *References* and the *Figure Legends*.

8. **Abbreviations** that may be used without definition are provided in the Standard Abbreviations list. Spell out nonstandard abbreviations used less than three times. Nonstandard abbreviations used three or more times must be defined in a footnote. Abbreviations and their definitions must be consistent throughout the text.

9. **Tables** must be numbered with Roman numerals in order of appearance in the text. All tables must have a title. Table legends are prepared as footnotes to the table and are included with the table. Tables must be in DOC file format. Each table should be submitted as a separate file.

10. **Figure legends** must be numbered with Arabic numerals in order of appearance in the text and should include a short title after the figure number. Where possible, symbols and patterns used to distinguish data should be defined in a key placed within the graphic rather than in the figure legend.

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Nucleotide sequences: Sequences of nucleotides or amino acids longer than 50 bases/residues should not be presented in the text or in table form, but rather should be submitted as a publication-quality figure. Original nucleotide sequences, and determined nucleotide sequences encoding reported amino acid sequences, described in the manuscript must be submitted to GenBank or EMBL DataLibrary at the time of manuscript submission. An accession number and sequence availability are required at the time of publication. The accession number should be accompanied by the Website address of the databank. Instructions on submission of data may be obtained directly from GenBank (Mail Stop K710, Los Alamos National Laboratory, Los Alamos, NM 87545) or from the European Molecular Biology Library, Nucleotide Sequence Library (Postfach 10.2209, Meyerhofstrasse 1, 6900 Heidelberg, Germany) or see NCBI's GenBank site (ncbi.nlm.nih.gov/Genbank/index.html).

Microarray data: *The JI* will not publish descriptive manuscripts that report microarray data, unless such information can be considered of unusual immunological significance and/or include functional experiments that provide novel insight into mechanism. As with other scientific approaches, current experimental, quantitation, verification, and statistical analyses are expected. Microarray experiments should be Minimum Information About a Microarray Experiment (MIAME) compliant (for guidelines see www.mged.org). Whereas limited online space may be available for supplemental tables associated with the manuscript, complete microarray data must be deposited in the appropriate public database (e.g., GEO (ncbi.nlm.nih.gov/geo/), ArrayExpress (www.ebi.ac.uk/arrayexpress/), or CIBEX (cibex.nig.ac.jp/index.jsp), and must be accessible without restriction from the date of publication. An entry name or accession number must be included in the paper before publication. The accession number should be accompanied by the Website 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: BIOSIS is the primary source for journal name abbreviations; *Index Medicus* is the secondary source.

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

Allergen nomenclature: Nomenclature for allergens should be assigned in cooperation with the 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 (www.allergen.org/).

CD nomenclature: For the purpose of consistency, *The JI* will follow CD nomenclature. For murine molecules, *The JI* will follow the nomenclature previously published (*J. Immunol.* 160: 3861–3868, 1998). For human molecules, standard CD nomenclature will be followed as updated (*J. Immunol.* 168: 2083–2086, 2002). See also <http://www.HCDM.org>

Chemical names: The *JI* uses *The Merck Index* (library.dialog.com/bluesheets/html/bl0304.html) and the *IUPAC-IUB Commission on Biochemical Nomenclature-Chemical Abstracts* (www.chem.qmul.ac.uk/iupac/bibliog/white.html) as the primary references for proper spelling and style of chemical names.

Chemokine/chemokine receptor nomenclature: The systematic name for chemokines and chemokine receptors should be used. The original name may be given in parenthesis if desired. See *Cytokine* 21:48–9, 2003.

Enzyme nomenclature (www.chem.qmul.ac.uk/iubmb/enzyme/) is *The JI* source for style and spelling of enzyme names.

Gene nomenclature: The HUGO guidelines for gene nomenclature (www.genenames.org) may be used for naming human genes. Mouse Genome Informatics (www.informatics.jax.org/) is a reference source for naming mouse genes.

Genetic nomenclature for mice: *The JI* uses the revisions for standardized genetic nomenclature for mice published periodically in *Mouse Genome*. A current listing of inbred strains of mice and rats is available at Mouse Genome Informatics. Authors are encouraged to deposit their mapping data with the Mouse Genome Database (MGD) (www.informatics.jax.org/) before publication and to include the assigned MGD accession numbers in their manuscripts. Data may be submitted electronically by e-mail. Information about electronic submission of datasets can be obtained at the Data and Nomenclature Submissions page. Gene symbols should be reserved with MGD in advance of publication. An electronic nomenclature submission form is available from the MGD Website.

HLA nomenclature: HLA nomenclature is updated periodically by the WHO Nomenclature Committee for Factors of the HLA System. A recent reference is *Hum. Immunol.* 64: 919–20, 2003. Annual comprehensive revisions are published in *Human Immunology*, usually in the spring. See also: <http://www.ebi.ac.uk/imgt/hla/>

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Supplemental Data: The print version of the paper must stand on its own without the Supplemental Data. All supplemental material accompanying an article must be submitted with the original paper for peer review. Upload the file as “Supplemental Data” during the online submission. Supplemental material is primarily intended for short videos (must be no longer than 30 seconds and under 10 MB, with no sound or voice-over) or large tables, large sequence alignments, or large data sets. Additional supplemental data that supports for the interpretation and conclusions drawn in the manuscript may, however, also be submitted for review with the manuscript.

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2. The *Abstract* is limited to 150 words.
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4. Authors may combine the *Results* and *Discussion* sections.

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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 either yellow highlighting or the font color red (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 should be submitted. Figures must be in **TIFF** or **EPS** format and prepared as described under *Figures*.

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All potential reviewers are contacted individually to determine availability. Manuscript files are sent to at least two expert reviewers. Reviewers are asked to complete the review of the manuscript within two weeks and to return a short review form. Based on the reviewers' comments, the Section Editor recommends a course of action and communicates the reviews and recommendations to the Deputy Editor for a final decision.

The Deputy Editor considers the comments made by the reviewers and the recommendation of the Section Editor, selects those comments to be shared with the authors, makes a final decision concerning the manuscript, and prepares the decision letter for signature by the Editor-in-Chief. If revisions of the manuscript are suggested, the Deputy Editor also recommends who should review the revised paper when resubmitted. Authors are informed of the decision by e-mail; appropriate comments from reviewers and editors are appended.

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Submissions of previously published research, as defined by the criteria, must contain a disclosure statement; it is at the Editor-in-Chief's discretion whether to allow peer review of the work in these instances.

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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'-azinobis(3-ethylbenzthiazoline-6-sulfonic acid)
 Ag, antigen
 AIDS, acquired immunodeficiency syndrome
 ANOVA, analysis of variance
 AP-1, activator protein 1
 APC, Ag-presenting cell
 ATP, adenosine triphosphate (also ADP, AMP, CMP, CTP, GDP, GMP, GTP, ITP, NTP, TMP, UDP and UTP)
 AZT, 3'-azido-2-deoxythymidine
 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
 CCL, CC chemokine ligand
 CCR, CC chemokine receptor
 CD40L, CD40 ligand
 cDNA, complementary DNA
 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-propane sulfonate
 Ci, curie
 CIITA, class II transactivator
 CLIP, class II-associated invariant-chain peptide
 CMV, cytomegalovirus
 CNS, central nervous system
 CoA, coenzyme A
 Con A, concanavalin A
 CpG, cytosine guanine dinucleotide
 cpm, counts per minute
 CREB, cAMP response element binding protein
 cRNA, complementary RNA
 CSF, colony-stimulating factor
 CTL, cytotoxic T lymphocyte
 CTLA, cytolytic T lymphocyte-associated Ag
 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)
 dATP, 2'-deoxyadenosine triphosphate
 DEAE, diethylaminoethyl
 df, degrees of freedom
 DMEM, Dulbecco's modified Eagle's medium
 DMSO, dimethylsulfoxide
 DNA, deoxyribonucleic acid
 DNase, deoxyribonuclease
 DNP, dinitrophenyl
 dNTP, 2'-deoxynucleoside 5'-triphosphate
 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-actin, filamentous actin
 FACS, fluorescence-activated cell sorter
 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
 fMLP or FMLP, 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
 GFP, green fluorescent protein
 GM-CSF, granulocyte-macrophage CSF
 gp, glycoprotein (e.g., gp100)
 GPI, glycosylphosphatidylinositol
 GST, glutathione *S*-transferase
 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 cells
 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, 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; light
 LD₅₀, 50% lethal dose
 LFA, leukocyte (lymphocyte) function-associated Ag
 LIF, leukemia inhibitory factor
 LPS, lipopolysaccharide
 LU, lytic unit
 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-1, monocyte chemoattractant protein-1
 M-CSF, macrophage CSF
 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, NAD phosphate (reduced)
 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
 NS, not significant
 nt, nucleotide (only with numbers)
 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
 rRNA, ribosomal
 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
 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 cells
 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
 TdR, thymidine deoxyribose (also UdR, AdR)
 TdT, terminal deoxynucleotidyltransferase
 TGF, transforming growth factor
 Th cell, T helper cell
 TLC, thin layer chromatography
 TLR, Toll-like receptor
 TNF, tumor necrosis factor
 TNP, trinitrophenyl
 TRAIL, TNF-related apoptosis-inducing ligand
 Tris, tris(hydroxymethyl)aminomethane
 tRNA, transfer RNA
 TUNEL, Tdt-mediated dUTP nick end labeling
 U, unit (only with numbers)
 UV, ultraviolet
 v/v, volume to volume ratio (%)
 V region, variable region of Ig
 VCAM, vascular cell adhesion molecule
 V(D)J, variable diversity joining
 VLA, very late activation Ag
 W, watt (only with numbers)
 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
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 Transplantation
 Tumor Immunity
 Vaccination

Techniques/Approaches

Gene Therapy
 Molecular Biology
 Transgenic/Knockout Mice

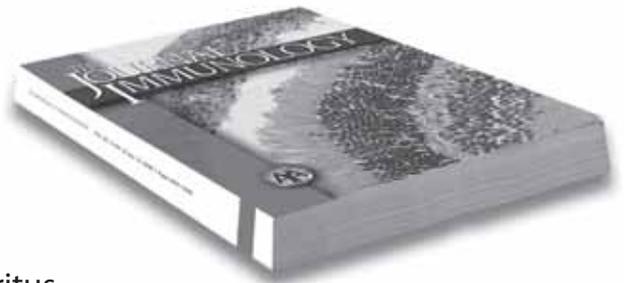
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Lung
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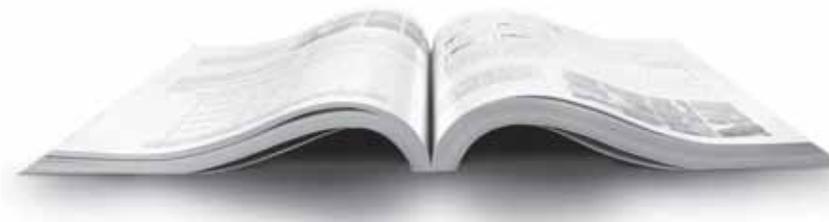
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