



IMMUNOLOGY

THE JOURNAL OF

TABLE OF CONTENTS

5699 IN THIS ISSUE

LETTERS TO THE EDITOR

- 5703 Comment on “Human White Blood Cells Synthesize Morphine: CYP2D6 Modulation”
Chotima Boettcher, Wibke Fischer, and Meinhard H. Zenk

- 5704 Response to Comment on “Human White Blood Cells Synthesize Morphine: CYP2D6 Modulation”
Wei Zhu, Patrick Cadet, Kirk J. Mantione, Richard M. Kream, and George B. Stefano

BRIEF REVIEWS

- 5707 TCR *Trans*-Rearrangements: Biological Significance in Antigen Recognition vs the Role as Lymphoma Biomarker
Atef Allam and Dieter Kabelitz

CUTTING EDGE

- 5715 Cutting Edge: Constitutive B Cell Receptor Signaling Is Critical for Basal Growth of B Lymphoma
Murali Gururajan, C. Darrell Jennings, and Subbarao Bondada
- 5720 Cutting Edge: Apoptosis-Regulating Signal Kinase 1 Is Required for Reactive Oxygen Species-Mediated Activation of IFN Regulatory Factor 3 by Lipopolysaccharide
Edward Chiang, Oanh Dang, Keith Anderson, Atsushi Matsuzawa, Hidenori Ichijo, and Michael David
- 5725 Cutting Edge: Monovalency of CD28 Maintains the Antigen Dependence of T Cell Costimulatory Responses
Kevin M. Dennehy, Fernando Elias, Gabrielle Zeder-Lutz, Xin Ding, Danièle Altschub, Fred Lühder, and Thomas Hünig
- 5730 Cutting Edge: CD1a⁺ Antigen-Presenting Cells in Human Dermis Respond Rapidly to CCR7 Ligands
Catherine E. Angel, Elizabeth George, Anna E. S. Brooks, Lena L. Ostrovsky, Tim La H. Brown, and P. Rod Dunbar
- 5735 Cutting Edge: Nonproliferating Mature Immune Cells Form a Novel Type of Organized Lymphoid Structure in Idiopathic Pulmonary Fibrosis
Joëlle Marchal-Sommé, Yurdagul Uzunhan, Sylvain Marchand-Adam, Dominique Valeyre, Vassili Soumelis, Bruno Crestani, and Paul Soler

On the cover: Knee joint section of a TNF-deficient mouse with IL-17-accelerated arthritis, stained with safranin O. IL-17 overexpression enhances K/B×N serum transfer arthritis independent of TNF- α . Note the influx of inflammatory cells, destaining of the cartilage as a marker for proteoglycan depletion, and areas with erosion of articular cartilage. Koenders, M. I., E. Lubberts, F. A. J. van de Loo, B. Oppers-Walgreen, L. van den Bersselaar, M. M. Helsen, J. K. Kolls, F. E. Di Padova, L. A. B. Joosten, and W. B. van den Berg. 2006. Interleukin-17 acts independently of TNF- α under arthritic conditions. *J. Immunol.* 176: 6262–6269.

The Journal of Immunology (ISSN 0022-1767) is published twice each month by The American Association of Immunologists, Inc., 9650 Rockville Pike, Bethesda, MD 20814-3994. Subscription term: New subscriptions and renewals begin January 1 and expire one year later (see <http://www.jimmunol.org/subscriptions> for prices and details). A special rate is available to members of The American Association of Immunologists, Inc. (see <http://www.aai.org/membership>). Periodicals postage paid at Bethesda, MD 20814-3998, and at additional mailing offices. Country of origin U.S.A. Printed on acid-free recyclable paper. Postmaster: Send address changes to *The Journal of Immunology*, Subscription Department, Room L-2407A, 9650 Rockville Pike, Bethesda, MD 20814-3998. Copyright © 2006 by The American Association of Immunologists, Inc.

CELLULAR IMMUNOLOGY AND IMMUNE REGULATION

- 5741 Regulation of T Cell Responses in the Developing Human Fetus
Jakob Michaëlsson, Jeff E. Mold, Joseph M. McCune, and Douglas F. Nixon
- 5749 Redundant Role of Chemokines CCL25/TECK and CCL28/MEC in IgA⁺ Plasmablast Recruitment to the Intestinal Lamina Propria After Rotavirus Infection
Ningguo Feng, Maria C. Jaimes, Nicole H. Lazarus, Denise Monak, Caiqui Zhang, Eugene C. Butcher, and Harry B. Greenberg
- 5760 CD16⁺ Monocyte-Derived Macrophages Activate Resting T Cells for HIV Infection by Producing CCR3 and CCR4 Ligands
Petronela Ancuta, Patrick Autissier, Alyse Wurcel, Tauheed Zaman, David Stone, and Dana Gabuzda
- 5772 Deficit of CD47 Results in a Defect of Marginal Zone Dendritic Cells, Blunted Immune Response to Particulate Antigen and Impairment of Skin Dendritic Cell Migration
Sven Hagnerud, Partha Pratim Manna, Marina Cella, Åsa Stenberg, William A. Frazier, Marco Colonna, and Per-Arne Oldenborg
- 5779 Regulatory T Cells Inhibit Protein Kinase C θ Recruitment to the Immune Synapse of Naive T Cells with the Same Antigen Specificity
Adriana Sumoza-Toledo, Alfred D. Eaton, and Adelaida Sarukhan
- 5788 ERK1^{-/-} Mice Exhibit Th1 Cell Polarization and Increased Susceptibility to Experimental Autoimmune Encephalomyelitis
Anshu Agrawal, Stephanie Dillon, Timothy L. Denning, and Bali Pulendran
- 5797 Highly Oligomeric Procyanidins Ameliorate Experimental Autoimmune Encephalomyelitis via Suppression of Th1 Immunity
Mika Miyake, Katsunori Sasaki, Kazuki Ide, Yasuko Matsukura, Kumiko Shijima, and Daisuke Fujiwara
- 5805 Th2 Cytokines Down-Regulate TLR Expression and Function in Human Intestinal Epithelial Cells
Tobias Mueller, Tomohiro Terada, Ian M. Rosenberg, Oren Shibolet, and Daniel K. Podolsky
- 5815 Features of Medullary Thymic Epithelium Implicate Postnatal Development in Maintaining Epithelial Heterogeneity and Tissue-Restricted Antigen Expression
Geoffrey O. Gillard and Andrew G. Farr
- 5825 Novel Function of Alternatively Activated Macrophages: Stabilin-1-Mediated Clearance of SPARC
Julia Kzhyshkowska, Gail Workman, Marina Cardó-Vila, Wadih Arap, Renata Pasqualini, Alexei Gratchev, Liis Krusell, Sergij Goerd, and E. Helene Sage
- 5833 CD64-Directed Immunotoxin Inhibits Arthritis in a Novel CD64 Transgenic Rat Model
Anneke J. van Vuuren, Joel A. G. van Roon, Vanessa Walraven, Ilonka Stuij, Martin C. Harmsen, Pamela M. J. McLaughlin, Jan G. J. van de Winkel, and Theo Thepen
- 5839 Regulatory T Cell Responses Develop in Parallel to Th Responses and Control the Magnitude and Phenotype of the Th Effector Population
Justin J. Taylor, Markus Mohrs, and Edward J. Pearce
- 5848 Human Metapneumovirus Elicits Weak IFN- γ Memory Responses Compared with Respiratory Syncytial Virus
Renée N. Douville, Nathalie Bastien, Yan Li, Pierre Pochard, F. Estelle R. Simons, and Kent T. HayGlass
- 5856 TLR4 Signaling Attenuates Ongoing Allergic Inflammation
John W. Hollingsworth, Gregory S. Whitehead, Kaifeng Lisa Lin, Hideki Nakano, Michael D. Gunn, David A. Schwartz, and Donald N. Cook
- 5863 Increased Expression of *Ifi202*, an IFN-Activatable Gene, in B6.Nba2 Lupus Susceptible Mice Inhibits p53-Mediated Apoptosis
Hong Xin, Sanjay D'Souza, Trine N. Jørgensen, Andrew T. Vaughan, Peter Lengyel, Brian L. Kotzin, and Divaker Choubey

- 5871 Expression of TCR $\alpha\beta$ Partly Rescues Developmental Arrest and Apoptosis of $\alpha\beta$ T cells in *Bcl11b*^{-/-} Mice
Jun Inoue, Tsutomu Kanefuji, Kiyoshi Okazuka, Hisami Watanabe, Yukio Mishima, and Ryo Kominami
- 5880 CD25⁺ Foxp3⁺ Regulatory T Cells Facilitate CD4⁺ T Cell Clonal Anergy Induction during the Recovery from Lymphopenia
Tracy L. Vanasek, Sarada L. Nandiwada, Marc K. Jenkins, and Daniel L. Mueller
- 5890 Differential Effects of IL-27 on Human B Cell Subsets
Frédérique Larousserie, Pascaline Charlot, Emilie Bardel, Josy Froger, Robert A. Kastelein, and Odile Devergne
- 5898 CD2BP1 Modulates CD2-Dependent T Cell Activation via Linkage to Protein Tyrosine Phosphatase (PTP)-PEST
Hailin Yang and Ellis L. Reinherz
- 5908 Striking Immunodominance Hierarchy of Naturally Occurring CD8⁺ and CD4⁺ T Cell Responses to Tumor Antigen NY-ESO-1
Heather Jackson, Nektaria Dimopoulos, Nicole A. Mifsud, Tsin Yee Tai, Qiyan Chen, Suzanne Svobodova, Judy Browning, Immanuel Luescher, Lisa Stockert, Lloyd J. Old, Ian D. Davis, Jonathan Cebon, and Weisan Chen
- 5918 Arginine Transport via Cationic Amino Acid Transporter 2 Plays a Critical Regulatory Role in Classical or Alternative Activation of Macrophages
Andrée Yeramian, Lorena Martin, Neus Serrat, Luis Arpa, Concepció Soler, Joan Bertran, Carol McLeod, Manuel Palacin, Manuel Modolell, Jorge Lloberas, and Antonio Celada
- 5925 Further Differentiation of Murine Double-Positive Thymocytes Is Inhibited in Adenosine Deaminase-Deficient Murine Fetal Thymic Organ Culture
C. Justin Van De Wiele, Michelle L. Joachims, Amy M. Fesler, James G. Vaughn, Michael R. Blackburn, Stephanie T. McGee, and Linda F. Thompson
- 5934 Annexin V Associates with the IFN- γ Receptor and Regulates IFN- γ Signaling
Carlos Leon, Devki Nandan, Martin Lopez, Alireza Moenrezakhanlou, and Neil E. Reiner
- 5943 Class I and III Phosphatidylinositol 3'-Kinase Play Distinct Roles in TLR Signaling Pathway
Cheng-Chin Kuo, Wen-Ting Lin, Chi-Ming Liang, and Shu-Mei Liang
- 5950 Peripheral Tolerance Via the Anterior Chamber of the Eye: Role of B Cells in MHC Class I and II Antigen Presentation
Hossam M. Ashour and Jerry Y. Niederkorn
- 5958 Adiponectin Is a Negative Regulator of NK Cell Cytotoxicity
Kun-yong Kim, Jae Kwang Kim, Seung Hyun Han, Jong-Seok Lim, Keun Il Kim, Dae Ho Cho, Myeong-Sok Lee, Jeong-Hyung Lee, Do-Young Yoon, Suk Ran Yoon, Jin Woong Chung, Inpyo Choi, Eunjoon Kim, and Young Yang
- 5965 Inducible Costimulator: A Modulator of IFN- γ Production in Human Tuberculosis
Maria F. Quiroga, Virginia Pasquinelli, Gustavo J. Martinez, Javier O. Jurado, Liliana Castro Zorrilla, Rosa M. Musella, Eduardo Abbate, Peter A. Sieling, and Verónica E. García
- 5975 OX40-OX40 Ligand Interaction through T Cell-T Cell Contact Contributes to CD4 T Cell Longevity
Pejman Soroosh, Shouji Ine, Kazuo Sugamura, and Naoto Ishii
- 5988 CD4⁺ T Regulatory Cell Induction and Function in Transplant Recipients after CD154 Blockade Is TLR4 Independent
Yuan Zhai, Lingzhong Meng, Feng Gao, Yue Wang, Ronald W. Busuttil, and Jerzy W. Kupiec-Weglinski
- 5995 In vivo and In vitro Regulation of Type I IFN Synthesis by Synergistic Effects of CD40 and Type II IFN
Jennifer A. Greene, Jennifer L. DeVecchio, Meetha P. Gould, Jeffery J. Auletta, and Frederick P. Heinzel
- 6004 Defective IgG2a/2b Class Switching in PKC α ^{-/-} Mice
Christa Pfeiffer, Thomas Gruber, Thomas Letschka, Nikolaus Thuille, Christina Lutz-Nicoladoni, Natascha Hermann-Kleiter, Uschi Braun, Michael Leitges, and Gottfried Baier
- 6012 Trem-Like Transcript 2 Is Expressed on Cells of the Myeloid/Granuloid and B Lymphoid Lineage and Is Up-Regulated in Response to Inflammation
R. Glenn King, Brantley R. Herrin, and Louis B. Justement

- 6022 Costimulation of Chemokine Receptor Signaling by Matrix Metalloproteinase-9 Mediates Enhanced Migration of IFN- α Dendritic Cells
Yang Hu and Lionel B. Ivashkiv

MOLECULAR AND STRUCTURAL IMMUNOLOGY

- 6034 Dual Effects of Sprouty1 on TCR Signaling Depending on the Differentiation State of the T Cell
Heonsik Choi, Sung-Yup Cho, Ronald H. Schwartz, and Kyungho Choi
- 6046 Targeting Melanoma Cells with Human High Molecular Weight-Melanoma Associated Antigen-Specific Antibodies Elicited by a Peptide Mimotope: Functional Effects
Wei Luo, Eric Ko, Jeff Chi-feng Hsu, Xinhui Wang, and Soldano Ferrone

IMMUNOGENETICS

- 6055 Advanced Intercross Line Mapping of *Eae5* Reveals *Ncf-1* and *CLDN4* as Candidate Genes for Experimental Autoimmune Encephalomyelitis
Kristina Becanovic, Maja Jagodic, Jian Rong Sheng, Ingrid Dahlman, Fahmy Aboul-Enein, Erik Wallstrom, Peter Olofsson, Rikard Holmdahl, Hans Lassmann, and Tomas Olsson

HOST DEFENSE

- 6065 Induction of Primary Human T Cell Responses against Hepatitis C Virus-Derived Antigens NS3 or Core by Autologous Dendritic Cells Expressing Hepatitis C Virus Antigens: Potential for Vaccine and Immunotherapy
Wen Li, Deepa K. Krishnadas, Jie Li, D. Lorne J. Tyrrell, and Babita Agrawal
- 6076 Monoclonal Antibodies for *Bacillus anthracis* Spore Detection and Functional Analyses of Spore Germination and Outgrowth
Melissa K. Swiecki, Mark W. Lisanby, Fengyu Shu, Charles L. Turnbough, Jr., and John F. Kearney
- 6085 Cross-Neutralization of Human and Palm Civet Severe Acute Respiratory Syndrome Coronaviruses by Antibodies Targeting the Receptor-Binding Domain of Spike Protein
Yuxian He, Jingjing Li, Wenhui Li, Sara Lustigman, Michael Farzan, and Shibo Jiang
- 6093 The Proteasome Pathway Destabilizes *Yersinia* Outer Protein E and Represses Its Antihost Cell Activities
Klaus Ruckdeschel, Gudrun Pfaffinger, Konrad Trülsch, Gerhardt Zenner, Kathleen Richter, Jürgen Heesemann, and Martin Aepfelbacher
- 6103 Defective Adhesion in Tumor Infiltrating CD8⁺ T Cells
Mythili Koneru, Ngozi Monu, David Schaer, Justine Barletta, and Alan B. Frey
- 6112 Roles of the Alternative Complement Pathway and C1q during Innate Immunity to *Streptococcus pyogenes*
Jose Yuste, Sifot Ali, Shiranee Sriskandan, Catherine Hyams, Marina Botto, and Jeremy S. Brown
- 6121 CD94/NKG2A Expression Is Associated with Proliferative Potential of CD8 T Cells during Persistent Polyoma Virus Infection
Anthony M. Byers, Nicolas P. Andrews, and Aron E. Lukacher
- 6130 HIV-1 Epitope-Specific CD8⁺ T Cell Responses Strongly Associated with Delayed Disease Progression Cross-Recognize Epitope Variants Efficiently
Emma L. Turnbull, A. Ross Lopes, Nicola A. Jones, David Cornforth, Phillipa Newton, Diana Aldam, Pierre Pellegrino, Jo Turner, Ian Williams, Craig M. Wilson, Paul A. Goepfert, Mala K. Maini, and Persephone Borrow
- 6147 B Cells Are Required for Generation of Protective Effector and Memory CD4 Cells in Response to *Pneumocystis* Lung Infection
Frances E. Lund, Melissa Hollifield, Kevin Schuer, J. Louise Lines, Troy D. Randall, and Beth A. Garvy
- 6155 Anthrax Lethal Toxin Has Direct and Potent Inhibitory Effects on B Cell Proliferation and Immunoglobulin Production
Hui Fang, Lixin Xu, Trina Y. Chen, Julianne M. Cyr, and David M. Frucht

- 6162 MyD88-Dependent IFN- γ Production by NK Cells Is Key for Control of *Legionella pneumophila* Infection
Roman Spörri, Nicole Joller, Urs Albers, Hubert Hilbi, and Annette Oxenius
- 6172 Immature Human Dendritic Cells Infected with *Leishmania infantum* Are Resistant to NK-Mediated Cytolysis but Are Efficiently Recognized by NKT Cells
Yolanda Campos-Martín, María Colmenares, Beatriz Gozalbo-López, Marta López-Núñez, Paul B. Savage, and Eduardo Martínez-Naves
- 6180 MyD88-Dependent Signaling for IL-15 Production Plays an Important Role in Maintenance of CD8 $\alpha\alpha$ TCR $\alpha\beta$ and TCR $\gamma\delta$ Intestinal Intraepithelial Lymphocytes
Qingsheng Yu, Ce Tang, Sun Xun, Toshiki Yajima, Kiyoshi Takeda, and Yasunobu Yoshikai

INFLAMMATION

- 6186 IL-17 Receptor Knockout Mice Have Enhanced Myelotoxicity and Impaired Hemopoietic Recovery Following Gamma Irradiation
Weihong Tan, Weitao Huang, Qiu Zhong, and Paul Schwarzenberger
- 6194 TLR5-Mediated Phosphoinositide 3-Kinase Activation Negatively Regulates Flagellin-Induced Proinflammatory Gene Expression
Yimin Yu, Shigenori Nagai, Huixia Wu, Andrew S. Neish, Shigeo Koyasu, and Andrew T. Gewirtz
- 6202 Modulation of Dendritic Cell Function by Naïve and Regulatory CD4⁺ T Cells
Marc Veldhoen, Halima Moncrieffe, Richard J. Hocking, Christopher J. Atkins, and Brigitta Stockinger
- 6211 Regulatory Roles for MD-2 and TLR4 in Ligand-Induced Receptor Clustering
Makiko Kobayashi, Shin-ichiroh Saitoh, Natsuko Tanimura, Koichiro Takahashi, Kiyoshi Kawasaki, Masahiro Nishijima, Yukari Fujimoto, Koichi Fukase, Sachiko Akashi-Takamura, and Kensuke Miyake
- 6219 TLRs Mediate IFN- γ Production by Human Uterine NK Cells in Endometrium
Mikael Eriksson, Sarah K. Meadows, Satarupa Basu, Teddy F. Mselle, Charles R. Wira, and Charles L. Sentman
- 6225 Re-Evaluation of P-Selectin and α_4 Integrin as Targets for the Treatment of Experimental Autoimmune Encephalomyelitis
Steven M. Kerfoot, M. Ursula Norman, Benoit M. Lapointe, Claudine S. Bonder, Lori Zbytnuik, and Paul Kubes
- 6235 Fas Ligand Is Responsible for CXCR3 Chemokine Induction in CD4⁺ T Cell-Dependent Liver Damage
Michael W. Cruise, John R. Lukens, Aileen P. Nguyen, Matthew G. Lassen, Stephen N. Waggoner, and Young S. Hahn
- 6245 C/EBP Homologous Protein (CHOP) Is Crucial for the Induction of Caspase-11 and the Pathogenesis of Lipopolysaccharide-Induced Inflammation
Motoyoshi Endo, Masataka Mori, Shizuo Akira, and Tomomi Gotoh
- 6254 Targeted Disruption of Leukotriene B₄ Receptors BLT1 and BLT2: A Critical Role for BLT1 in Collagen-Induced Arthritis in Mice
Wen-Hai Shao, Annalisa Del Prete, Cheryl B. Bock, and Bodduluri Haribabu
- 6262 Interleukin-17 Acts Independently of TNF- α under Arthritic Conditions
Marije I. Koenders, Erik Lubberts, Fons A. J. van de Loo, Birgitte Oppers-Walgreen, Liduine van den Bersselaar, Monique M. Helsen, Jay K. Kolls, Franco E. Di Padova, Leo A. B. Joosten, and Wim B. van den Berg

CLINICAL IMMUNOLOGY

- 6270 Control of Metastasized Pancreatic Carcinomas in SCID/Beige Mice with Human IL-2/TKD-Activated NK Cells
Stefan Stangl, Andreas Wortmann, Ulrich Guertler, and Gabriele Multhoff
- 6277 The Sjögren's Syndrome-Associated Autoantigen Ro52 Is an E3 Ligase That Regulates Proliferation and Cell Death
Alexander Espinosa, Wei Zhou, Monica Ek, Malin Hedlund, Susanna Brauner, Karin Popovic, Linn Horvath, Therese Wallerskog, Mohamed Oukka, Filippa Nyberg, Vijay K. Kuchroo, and Marie Wahren-Herlenius

- 6286 Involvement of CCL18 in Allergic Asthma
Patricia de Nadaï, Anne-Sophie Charbonnier, Cécile Chenivresse, Stéphanie Sénéchal, Clément Fournier, Jules Gilet, Han Vorng, Ying Chang, Philippe Gosset, Benoît Wallaert, André-Bernard Tonnel, Philippe Lassalle, and Anne Tsicopoulos
- 6294 TNF- α Is Necessary for Induction of Coronary Artery Inflammation and Aneurysm Formation in an Animal Model of Kawasaki Disease
Joyce S. Hui-Yuen, Trang T. Duong, and Rae S. M. Yeung
- 6302 Proteasome Inhibition to Maximize the Apoptotic Potential of Cytokine Therapy for Murine Neuroblastoma Tumors
Tahira Khan, Jimmy K. Stauffer, Rebecca Williams, Julie A. Hixon, Rosalba Salcedo, Erin Lincoln, Timothy C. Back, Douglas Powell, Stephen Lockett, Alma C. Arnold, Thomas J. Sayers, and Jon M. Wigginton
- 6313 CXCR3⁺CD4⁺ T Cells Mediate Innate Immune Function in the Pathophysiology of Liver Ischemia/Reperfusion Injury
Yuan Zhai, Xiu-da Shen, Wayne W. Hancock, Feng Gao, Bo Qiao, Charles Lassman, John A. Belperio, Robert M. Strieter, Ronald W. Busuttil, and Jerzy W. Kupiec-Weglinski
- 6323 Galectin-1 Suppresses Autoimmune Retinal Disease by Promoting Concomitant Th2- and T Regulatory-Mediated Anti-Inflammatory Responses
Marta A. Toscano, Alessandra G. Commodaro, Juan M. Ilarregui, Germán A. Bianco, Ana Liberman, Horacio M. Serra, Jun Hirabayashi, Luiz V. Rizzo, and Gabriel A. Rabinovich
- 6333 T Cell Responses Are Better Correlates of Vaccine Protection in the Elderly
Janet E. McElhaney, Dongxu Xie, W. David Hager, Mary Beth Barry, Yazhen Wang, Alison Kleppinger, Catherine Ewen, Kevin P. Kane, and R. Chris Bleackley
- 6340 Influence of CD4⁺CD25⁺ Regulatory T Cells on Low/High-Avidity CD4⁺ T Cells following Peptide Vaccination
Hiroyoshi Nishikawa, Feng Qian, Takemasa Tsuji, Gerd Ritter, Lloyd J. Old, Sacha Gnajatic, and Kunle Odunsi
- 6347 IL-21 Enhances Tumor-Specific CTL Induction by Anti-DR5 Antibody Therapy
Mark J. Smyth, Yoshihiro Hayakawa, Erika Cretney, Nadeen Zerafa, Pallavur Sivakumar, Hideo Yagita, and Kazuyoshi Takeda
- 6356 Author Index
- 6359 AAI Membership Application
- 6360 AAI Trainee Membership Application