

VOL. 184 | NO. 5 | March 1, 2010 | Pages 2229–2740

2229 IN THIS ISSUE

PILLARS OF IMMUNOLOGY

- 2231 Innate and Adaptive Receptors Interact to Balance Humoral Immunity
Thomas F. Tedder
- 2233 Pillars Article: CD19: Lowering the Threshold for Antigen Receptor Stimulation of B Lymphocytes.
Science, 1992. 256: 105–107.
Robert H. Carter and Douglas T. Fearon

BRIEF REVIEWS

- 2237 Different Bacterial Pathogens, Different Strategies, Yet the Aim Is the Same: Evasion of Intestinal Dendritic Cell Recognition
Sammy Bedoui, Andreas Kupz, Odilia L. Wijburg, Anna K. Walduck, Maria Rescigno, and Richard A. Strugnell

CUTTING EDGE

- 2243 Cutting Edge: Priming of CD8 T Cell Immunity to Herpes Simplex Virus Type 1 Requires Cognate TLR3 Expression InVivo
Gayle M. Davey, Magdalena Wojtasik, Anna I. Proietto, Francis R. Carbone, William R. Heath, and Sammy Bedoui
- 2247 Cutting Edge: Bacterial Infection Induces Hematopoietic Stem and Progenitor Cell Expansion in the Absence of TLR Signaling
Philip O. Scumpia, Kindra M. Kelly-Scumpia, Matthew J. Delano, Jason S. Weinstein, Alex G. Cuenca, Samer Al-Quran, Ian Bovio, Shizuo Akira, Yutaro Kumagai, and Lyle L. Moldawer

CELLULAR IMMUNOLOGY AND IMMUNE REGULATION

- 2253 FcγRIIB Inhibits the Development of Atherosclerosis in Low-Density Lipoprotein Receptor-Deficient Mice
Ming Zhao, Maria Wigren, Pontus Dunér, Daniel Kolbus, Katarina E. Olofsson, Harry Björkbacka, Jan Nilsson, and Gunilla Nordin Fredrikson

On the cover: Human colonic biopsy stained for single IgG IL-1-related receptor (Sigirr) and the tight junction protein claudin-3. Sigirr (red) immunoreactivity and claudin-3 (green) immunoreactivity localize to intestinal epithelial cells on the crypt surface. Note that nuclei are stained with DAPI (blue). Khan, M., T. S. Steiner, H. P. Sham, K. S. Bergstrom, J. T. Huang, K. Assi, B. Salh, I. T. Tai, X. Li, and B. A. Vallance. 2010. The single IgG IL-1-related receptor controls TLR responses in differentiated human intestinal epithelial cells. *J. Immunol.* 184: 2305–2313.

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, Phone: 301-634-7197, Fax: 301-634-7829. Subscription terms: 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>). The American Association of Immunologists, Inc., is not responsible for undeliverable issues. Replacement issues can be obtained, if available, at the regular price of single issues (see http://www.jimmunol.org/pdf/single_issue_purchase.pdf). Reprints of individual articles are available only from authors. Periodicals postage paid at Bethesda, MD 20814-3994, and at additional mailing offices. Country of origin U.S.A. Printed on acid-free recyclable paper. Postmaster: Send address changes 60 days in advance to *The Journal of Immunology*, Subscription Department, 9650 Rockville Pike, Bethesda, MD 20814-3994. Copyright © 2010 by The American Association of Immunologists, Inc.

- 2261 Regulatory T Cells Attenuate Th17 Cell-Mediated Nigrostriatal Dopaminergic Neurodegeneration in a Model of Parkinson's Disease
Ashley D. Reynolds, David K. Stone, Jessica A. L. Hutter, Eric J. Benner, R. Lee Mosley, and Howard E. Gendelman
- 2272 Distinct Phenotype and Function of NK Cells in the Pancreas of Nonobese Diabetic Mice
Hanna Brauner, Marjet Elemans, Sara Lemos, Christian Broberger, Dan Holmberg, Malin Flodström-Tullberg, Klas Kärre, and Petter Höglund
- 2281 IL-17 Promotes Tumor Development through the Induction of Tumor Promoting Microenvironments at Tumor Sites and Myeloid-Derived Suppressor Cells
Donggou He, Hui Li, Nabiha Yusuf, Craig A. Elmets, Jun Li, John D. Mountz, and Hui Xu
- 2289 IL-17 Activates the Canonical NF- κ B Signaling Pathway in Autoimmune B Cells of BXD2 Mice To Upregulate the Expression of Regulators of G-Protein Signaling 16
Shutao Xie, Jun Li, John H. Wang, Qi Wu, PingAr Yang, Hui-Chen Hsu, Lesley E. Smythies, and John D. Mountz
- 2297 Nod1 and Nod2 Are Expressed in Human and Murine Renal Tubular Epithelial Cells and Participate in Renal Ischemia Reperfusion Injury
Alana A. Shigeoka, Amanpreet Kambo, John C. Mathison, Andrew J. King, Wesley F. Hall, Jean da Silva Correia, Richard J. Ulevitch, and Dianne B. McKay
- 2305 The Single IgG IL-1-Related Receptor Controls TLR Responses in Differentiated Human Intestinal Epithelial Cells
Mohammed A. Khan, Theodore S. Steiner, Ho Pan Sham, Kirk S. Bergstrom, Jingtian T. Huang, Kiran Assi, Bill Salb, Isabella T. Tai, Xiaoxia Li, and Bruce A. Vallance
- 2314 Absence of SHIP-1 Results in Constitutive Phosphorylation of Tank-Binding Kinase 1 and Enhanced TLR3-Dependent IFN- β Production
Joan Ni'Gabbann, Rowan Higgs, Kiva Brennan, Warren Thomas, Jacqueline E. Damen, Nadia Ben Larbi, Gerald Krystal, and Caroline A. Jeffries
- 2321 Inflammatory Cytokine-Induced Intercellular Adhesion Molecule-1 and Vascular Cell Adhesion Molecule-1 in Mesenchymal Stem Cells Are Critical for Immunosuppression
Guangwen Ren, Xin Zhao, Liying Zhang, Jimin Zhang, Andrew L'Huillier, Weifang Ling, Arthur I. Roberts, Anh D. Le, Songtao Shi, Changshun Shao, and Yufang Shi
- 2329 NK Cell Patrolling and Elimination of Donor-Derived Dendritic Cells Favor Indirect Alloreactivity
Kym R. Garrod, Feng-Chun Liu, Luette E. Forrest, Ian Parker, Sang-Mo Kang, and Michael D. Cahalan
- 2337 Anti-Programmed Cell Death 1 Antibody Reduces CD4 $^{+}$ PD-1 $^{+}$ T Cells and Relieves the Lupus-Like Nephritis of NZB/W F1 Mice
Shimpei Kasagi, Seiji Kawano, Taku Okazaki, Tasuku Honjo, Akio Morinobu, Saori Hatachi, Kenichiro Shimatani, Yoshimasa Tanaka, Nagahiro Minato, and Shunichi Kumagai
- 2348 IL-12 and IL-27 Sequential Gene Therapy via Intramuscular Electroporation Delivery for Eliminating Distal Aggressive Tumors
Shiguo Zhu, Dean Anthony Lee, and Shulin Li
- 2355 Evolution of Recognition of Ligands from Gram-Positive Bacteria: Similarities and Differences in the TLR2-Mediated Response between Mammalian Vertebrates and Teleost Fish
Carla M. S. Ribeiro, Trudi Hermsen, Anja J. Taverne-Thiele, Huub F. J. Savelkoul, and Geert F. Wiegertjes
- 2369 MicroRNA Regulation of IFN- β Protein Expression: Rapid and Sensitive Modulation of the Innate Immune Response
Kenneth W. Witwer, Jeanne M. Sisk, Lucio Gama, and Janice E. Clements
- 2377 Pollen-Induced Oxidative Stress Influences Both Innate and Adaptive Immune Responses via Altering Dendritic Cell Functions
Aniko Csillag, Istvan Boldogh, Kitti Pazmandi, Zoltan Magyarics, Peter Gogolak, Sanjiv Sur, Eva Rajnavolgyi, and Attila Bacsi

- 2386 Transient Receptor Potential Melastatin 2 Is Required for Lipopolysaccharide-Induced Cytokine Production in Human Monocytes
Janine Wehrhahn, Robert Kraft, Christian Harteneck, and Sunna Hauschmidt
- 2394 Intracellular MHC Class II Controls Regulatory Tolerance to Allogeneic Transplants
Christian LeGuern, Yoshinobu Akiyama, Sharon Germana, Katsunori Tanaka, Luis Fernandez, Yoshiko Iwamoto, Stuart Houser, and Gilles Benichou
- 2401 Stimulation of Naive CD8⁺ T Cells by a Variant Viral Epitope Induces Activation and Enhanced Apoptosis
Rebecca M. Ream, Jie Sun, and Thomas J. Braciale
- 2410 Transient CD86 Expression on Hepatitis C Virus-Specific CD8⁺ T Cells in Acute Infection Is Linked to Sufficient IL-2 Signaling
Henry Radziewicz, Chris C. Ibegbu, Huiming Hon, Nathalie Bédard, Julie Bruneau, Kimberly A. Workowski, Stuart J. Knechtle, Allan D. Kirk, Christian P. Larsen, Naglaa H. Shoukry, and Arash Grakoui
- 2423 Distinct Protease Requirements for Antigen Presentation In Vitro and In Vivo
Stephen P. Matthews, Ingrid Werber, Jan Deussing, Christoph Peters, Thomas Reinheckel, and Colin Watts
- 2432 Differential Geminin Requirement for Proliferation of Thymocytes and Mature T Cells
Dimitris Karamitros, Panorea Kotantaki, Zoi Lygerou, Henrique Veiga-Fernandes, Vassilis Pachnis, Dimitris Kioussis, and Stavros Taraviras
- 2442 Receptor Activator of NF-κB (RANK) Ligand Induces Ectodomain Shedding of RANK in Murine RAW264.7 Macrophages
Akihiro Hakozaiki, Masaki Yoda, Takahide Tohmonda, Mitsuru Furukawa, Tomohiro Hikata, Shinichi Uchikawa, Hironari Takaishi, Morio Matsumoto, Kazuhiro Chiba, Keisuke Horiuchi, and Yoshiaki Toyama
- 2449 Improving Survival Rates in Two Models of Spontaneous Postoperative Metastasis in Mice by Combined Administration of a β-Adrenergic Antagonist and a Cyclooxygenase-2 Inhibitor
Ariella Glasner, Roi Avraham, Ella Rosenne, Marganit Benish, Oded Zmora, Shaily Shemer, Hadas Metboom, and Shamgar Ben-Eliyahu
- 2458 Control of α4β7 Integrin Expression and CD4 T Cell Homing by the β1 Integrin Subunit
Christopher C. DeNucci, Antonio J. Pagán, Jason S. Mitchell, and Yoji Shimizu
- 2468 CD72 Negatively Regulates KIT-Mediated Responses in Human Mast Cells
Tatsuki R. Kataoka, Atsushi Kumanogoh, Geethani Bandara, Dean D. Metcalfe, and Alasdair M. Gilfillan

MOLECULAR AND STRUCTURAL IMMUNOLOGY

- 2476 The Role of the LAT–PLC-γ1 Interaction in T Regulatory Cell Function
Mariana I. Chuck, Minghua Zhu, Shudan Shen, and Weiguo Zhang
- 2487 Activation-Induced Cytidine Deaminase Splice Variants Are Defective Because of the Lack of Structural Support for the Catalytic Site
Febe van Maldegem, R. Aarti Jibodh, Remco van Dijk, Richard J. Bende, and Carel J. M. van Noesel
- 2492 Five HLA-DP Molecules Frequently Expressed in the Worldwide Human Population Share a Common HLA Supertypic Binding Specificity
John Sidney, Amiyah Steen, Carrie Moore, Sandy Ngo, Jolan Chung, Bjoern Peters, and Alessandro Sette
- 2504 Structural Basis for Lipid-Antigen Recognition in Avian Immunity
Hay Dvir, Jing Wang, Nary Ly, Christopher C. Dascher, and Dirk M. Zajonc

IMMUNOGENETICS

- 2512 Functionally Significant Differences in Expression of Disease-Associated IL-7 Receptor α Haplotypes in CD4 T Cells and Dendritic Cells
Edwin Hoe, Fiona C. McKay, Stephen D. Schibeci, Kaushal Gandhi, Rob N. Heard, Graeme J. Stewart, and David R. Booth

HOST DEFENSE

- 2518 Age-Associated Decrease in TLR Function in Primary Human Dendritic Cells Predicts Influenza Vaccine Response
Alexander Panda, Feng Qian, Subhasis Mohanty, David van Duin, Frances K. Newman, Lin Zhang, Shu Chen, Virginia Towle, Robert B. Belshe, Erol Fikrig, Heather G. Allore, Ruth R. Montgomery, and Albert C. Shaw
- 2528 Differential Effector Pathways Regulate Memory CD8 T Cell Immunity against *Plasmodium berghei* versus *P. yoelii* Sporozoites
Noah S. Butler, Nathan W. Schmidt, and John T. Harty
- 2539 Synthetic Cationic Peptide IDR-1002 Provides Protection against Bacterial Infections through Chemokine Induction and Enhanced Leukocyte Recruitment
Anastasia Nijnik, Laurence Madera, Shuhua Ma, Matthew Waldbrook, Melissa R. Elliott, Donna M. Easton, Matthew L. Mayer, Sarah C. Mullaly, Jason Kindrachuk, Håvard Jenssen, and Robert E. W. Hancock
- 2551 Stimulator of IFN Gene Is Critical for Induction of IFN- β during *Chlamydia muridarum* Infection
Daniel Prantner, Toni Darville, and Uma M. Nagarajan
- 2561 A Novel HLA (HLA-A*0201) Transgenic Rabbit Model for Preclinical Evaluation of Human CD8 $^{+}$ T Cell Epitope-Based Vaccines against Ocular Herpes
Aziz A. Chentoufi, Gargi Dasgupta, Neil D. Christensen, Jiafen Hu, Zareen S. Choudhury, Arfan Azeem, James V. Jester, Anthony B. Nesburn, Steven L. Wechsler, and Lbachir BenMohamed
- 2572 Arginase II Restricts Host Defense to *Helicobacter pylori* by Attenuating Inducible Nitric Oxide Synthase Translation in Macrophages
Nuruddeen D. Lewis, Mohammad Asim, Daniel P. Barry, Kshipra Singh, Thibaut de Sablet, Jean-Luc Boucher, Alain P. Gobert, Rupesh Chaturvedi, and Keith T. Wilson
- 2583 Therapeutic Glucocorticoid-Induced TNF Receptor-Mediated Amplification of CD4 $^{+}$ T Cell Responses Enhances Antiparasitic Immunity
Ashraful Haque, Amanda C. Stanley, Fiona H. Amante, Fabian de Labastida Rivera, YongHong Zhou, Rachel D. Kuns, Vanessa Yardley, Shimon Sakaguchi, Geoffrey R. Hill, and Christian R. Engwerda

INFLAMMATION

- 2593 NFAT1 Mediates Placental Growth Factor-Induced Myelomonocytic Cell Recruitment via the Induction of TNF- α
Yanping Ding, Yujie Huang, Nan Song, Xiaobin Gao, Shaopeng Yuan, Xiaofeng Wang, Hongchen Cai, Yan Fu, and Yongzhang Luo
- 2602 Mice Deficient in MyD88 Develop a Th2-Dominant Response and Severe Pathology in the Upper Genital Tract following *Chlamydia muridarum* Infection
Lili Chen, Lei Lei, Xiaotong Chang, Zhibong Li, Chunxue Lu, Xiaoyun Zhang, Yimou Wu, I-Tien Yeh, and Guangming Zhong
- 2611 Anti-Inflammatory Role of the Murine Formyl-Peptide Receptor 2: Ligand-Specific Effects on Leukocyte Responses and Experimental Inflammation
Neil Dufion, Robert Hannon, Vincenzo Brancaleone, Jesmond Dalli, Hetal B. Patel, Mohini Gray, Fulvio D'Acquisto, Julia C. Buckingham, Mauro Perretti, and Roderick J. Flower
- 2620 IL-33 Exacerbates Autoantibody-Induced Arthritis
Damo Xu, Hui-Rong Jiang, Yubin Li, Peter N. Pushparaj, Mariola Kurowska-Stolarska, Bernard P. Leung, Rong Mu, Hwee Kee Tay, Andrew N. J. McKenzie, Iain B. McInnes, Alirio J. Melendez, and Foo Y. Liew
- 2627 C-Type Lectin SIGN-R1 Has a Role in Experimental Colitis and Responsiveness to Lipopolysaccharide
Sean P. Saunders, Jillian L. Barlow, Caitriona M. Walsh, Agustin Bellsoi, Philip Smith, Andrew N. J. McKenzie, and Padraig G. Fallon
- 2638 Dendritic Cell (DC)-Specific Targeting Reveals Stat3 as a Negative Regulator of DC Function
Jessica A. Melillo, Li Song, Govind Bhagat, Ana Belen Blazquez, Courtney R. Plumlee, Carolyn Lee, Cecilia Berin, Boris Reizis, and Christian Schindler

- 2646 The CCL3/Macrophage Inflammatory Protein-1 α -Binding Protein Evasin-1 Protects from Graft-versus-Host Disease but Does Not Modify Graft-versus-Leukemia in Mice
Marina G. M. Castor, Bárbara Rezende, Carolina B. Resende, Ana L. Alessandri, Caio T. Fagundes, Lirlândia P. Sousa, Rosa M. E. Arantes, Danielle G. Souza, Tarcília A. Silva, Amanda E. I. Proudfoot, Mauro M. Teixeira, and Vanessa Pinho
- 2655 Transcriptional Regulation of the Endogenous Danger Signal Tenascin-C: A Novel Autocrine Loop in Inflammation
Fui G. Gob, Anna M. Piccinini, Thomas Krausgruber, Irina A. Udalova, and Kim S. Midwood
- 2663 A Physiological Function of Inflammation-Associated SerpinB2 Is Regulation of Adaptive Immunity
Wayne A. Schroder, Thuy T. T. Le, Lee Major, Shayna Street, Joy Gardner, Eleanore Lambley, Kate Markey, Kelli P. MacDonald, Richard J. Fish, Ranjeny Thomas, and Andreas Suhrbier
- 2671 Monocyte Chemoattractant Protein-1 Contributes to Gut Homeostasis and Intestinal Inflammation by Composition of IL-10-Producing Regulatory Macrophage Subset
Yasubiro Takada, Tadakazu Hisamatsu, Nobuhiko Kamada, Mina T. Kitazume, Haruki Honda, Yosuke Oshima, Riko Saito, Tetsuro Takayama, Taku Kobayashi, Hiroshi Chinen, Yohei Mikami, Takanori Kanai, Susumu Okamoto, and Toshifumi Hibi
- 2677 Kinetics of Chemokine–Glycosaminoglycan Interactions Control Neutrophil Migration into the Airspaces of the Lungs
Yoshi Tanino, Deirdre R. Coombe, Sean E. Gill, Warren C. Kett, Osamu Kajikawa, Amanda E. I. Proudfoot, Timothy N. C. Wells, William C. Parks, Thomas N. Wight, Thomas R. Martin, and Charles W. Frevert
- 2686 Complement Component C3 Binds to Activated Normal Platelets without Preceding Proteolytic Activation and Promotes Binding to Complement Receptor 1
Osama A. Hamad, Per H. Nilsson, Diana Wouters, John D. Lambris, Kristina N. Ekdahl, and Bo Nilsson
- 2693 Intrahepatic IL-10 Maintains NKG2A $^+$ Ly49 $^-$ Liver NK Cells in a Functionally Hyporesponsive State
Matthew G. Lassen, John R. Lukens, Joseph S. Dolina, Michael G. Brown, and Young S. Hahn
- 2702 Insulin Modulates Protease-Activated Receptor 2 Signaling: Implications for the Innate Immune Response
Eric Hyun, Rithwik Ramachandran, Nicolas Cenac, Steeve Houle, Perrine Rousset, Amit Saxena, Roland S. Liblau, Morley D. Hollenberg, and Nathalie Vergnolle

CLINICAL IMMUNOLOGY

- 2710 TLR Activation Pathways in HIV-1-Exposed Seronegative Individuals
Mara Biasin, Luca Piacentini, Sergio Lo Caputo, Valentina Naddeo, Piera Pierotti, Manuela Borelli, Daria Trabattoni, Francesco Mazzotta, Gene M. Shearer, and Mario Clerici
- 2718 Histone Deacetylase Inhibitors Suppress Inflammatory Activation of Rheumatoid Arthritis Patient Synovial Macrophages and Tissue
Aleksander M. Grabiec, Sarah Krausz, Wilco de Jager, Tomasz Burakowski, Dion Groot, Marjolein E. Sanders, Berent J. Prakken, Włodzimierz Maslinski, Eric Eldering, Paul P. Tak, and Kris A. Reedquist
- 2729 Sustained Exogenous Expression of Therapeutic Levels of IFN- γ Ameliorates Atopic Dermatitis in NC/Nga Mice via Th1 Polarization
Kayoko Hattori, Makuya Nishikawa, Kanitta Watcharanurak, Akihiko Ikoma, Kenji Kabashima, Hiroyasu Toyota, Yuki Takahashi, Rei Takahashi, Yoshihiko Watanabe, and Yoshinobu Takakura

CORRECTIONS

- 2736 Correction: Cutting Edge: Sympathetic Nervous System Increases Proinflammatory Cytokines and Exacerbates Influenza A Virus Pathogenesis
Kristie M. Grebe, Kazuyo Takeda, Heather D. Hickman, Adam M. Bailey, Alan C. Embry, Jack R. Bennink, and Jonathan W. Yewdell