

Luminex
complexity simplified.



**Capabilities for Today.
Flexibility for Tomorrow.**

Amnis[®] CellStream[®] Flow Cytometry Systems.

LEARN MORE >



184 (1)

J Immunol 2010; 184:1-520; ;
<http://www.jimmunol.org/content/184/1>

This information is current as
of September 15, 2019.

Why *The JI*? [Submit online.](#)

- **Rapid Reviews! 30 days*** from submission to initial decision
- **No Triage!** Every submission reviewed by practicing scientists
- **Fast Publication!** 4 weeks from acceptance to publication

**average*

Subscription Information about subscribing to *The Journal of Immunology* is online at:
<http://jimmunol.org/subscription>

Permissions Submit copyright permission requests at:
<http://www.aai.org/About/Publications/JI/copyright.html>

Email Alerts Receive free email-alerts when new articles cite this article. Sign up at:
<http://jimmunol.org/alerts>

The Journal of Immunology is published twice each month by
The American Association of Immunologists, Inc.,
1451 Rockville Pike, Suite 650, Rockville, MD 20852
All rights reserved.
Print ISSN: 0022-1767 Online ISSN: 1550-6606.



1 IN THIS ISSUE

PILLARS OF IMMUNOLOGY

- 3 The Discovery of Immunological Tolerance: Now More Than Just a Laboratory Solution
Kathryn J. Wood, Andrew R. Bushell, and Nick D. Jones
- 5 Pillars Article: ‘Actively Acquired Tolerance’ of Foreign Cells. *Nature*. 1953. 172: 603–606.
Rupert E. Billingham, Leslie Brent, and Peter B. Medawar

BRIEF REVIEWS

- 9 Proteases in MHC Class I Presentation and Cross-Presentation
Kenneth L. Rock, Diego J. Farfán-Arribas, and Lianjun Shen

CUTTING EDGE

- 17 Cutting Edge: Resistance to *Bacillus anthracis* Infection Mediated by a Lethal Toxin Sensitive Allele of *Nalp1b/Nlrp1b*
Jill K. Terra, Christopher K. Cote, Bryan France, Amy L. Jenkins, Joel A. Bozue, Susan L. Welkos, Steven M. LeVine, and Kenneth A. Bradley
- 21 Cutting Edge: TNF-Induced MicroRNAs Regulate TNF-Induced Expression of E-Selectin and Intercellular Adhesion Molecule-1 on Human Endothelial Cells: Feedback Control of Inflammation
Yajaira Suárez, Chen Wang, Thomas D. Manes, and Jordan S. Pober
- 26 Cutting Edge: Limited Specialization of Dendritic Cell Subsets for MHC Class II-Associated Presentation of Viral Particles
Susanne A. Keller, Monika Bauer, Vania Manolova, Simone Muntwiler, Philippe Saudan, and Martin F. Bachmann
- 30 Cutting Edge: The Th1 Response Inhibits the Generation of Peripheral Regulatory T Cells
David Caretto, Shoshana D. Katzman, Alejandro V. Villarino, Eugenio Gallo, and Abul K. Abbas

CELLULAR IMMUNOLOGY AND IMMUNE REGULATION

- 35 IL-15 Regulates Both Quantitative and Qualitative Features of the Memory CD8 T Cell Pool
Michelle M. Sandau, Jacob E. Kohlmeier, David L. Woodland, and Stephen C. Jameson

On the cover: Absence of the principal PGE₂ synthesizing enzyme permits marked remodeling of the pulmonary vasculature in response to dust mite allergen-induced lung inflammation. Image shows a ×200 magnification of a section of the lung of a *ptges*^{-/-} mouse stained with an antibody against α-smooth muscle actin. Lundquist, A., S. N. Nallamshetty, W. Xing, C. Feng, T. M. Laidlaw, S. Uematsu, S. Akira, and J. A. Boyce. 2010. Prostaglandin E₂ exerts homeostatic regulation of pulmonary vascular remodeling in allergic airway inflammation. *J. Immunol.* 184: 433–441.

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 © 2009 by The American Association of Immunologists, Inc.

- 45 Altered CD8⁺ T Cell Immunodominance after Vaccinia Virus Infection and the Naive Repertoire in Inbred and F₁ Mice
Inge E. A. Flesch, Wai-Ping Woo, Yang Wang, Vijay Panchanathan, Yik-Chun Wong, Nicole L. La Gruta, Tania Cukalac, and David C. Tschärke
- 56 CD4⁺ CD25⁺ Foxp3⁺ T Regulatory Cells with Limited TCR Diversity in Control of Autoimmunity
Dennis Adeegbe, Takaji Matsutani, Jing Yang, Norman H. Altman, and Thomas R. Malek
- 67 Robust, Vaccine-Induced CD8⁺ T Lymphocyte Response against an Out-of-Frame Epitope
Nicholas J. Maness, Nancy A. Wilson, Jason S. Reed, Shari M. Piaskowski, Jonah B. Sacha, Andrew D. Walsh, Elizabeth Thoryk, Gwendolyn J. Heidecker, Michael P. Citron, Xiaoping Liang, Andrew J. Bett, Danilo R. Casimiro, and David I. Watkins
- 73 Absence of Tapasin Alters Immunodominance against a Lymphocytic Choriomeningitis Virus Polytope
Denise S. M. Boulanger, Roberta Oliveira, Lisa Ayers, Stephen H. Prior, Edward James, Anthony P. Williams, and Tim Elliott
- 84 A Minor Catalytic Activity of Src Family Kinases Is Sufficient for Maximal Activation of Mast Cells via the High-Affinity IgE Receptor
Michael Poderycki, Yoshiaki Tomimori, Tomoaki Ando, Wenbin Xiao, Mari Maeda-Yamamoto, Karsten Sauer, Yuko Kawakami, and Toshiaki Kawakami
- 94 CD4⁺CD25⁺ Regulatory T Cells Resist a Novel Form of CD28- and Fas-Dependent p53-Induced T Cell Apoptosis
Nagendra Singh, Mutsumi Yamamoto, Mariko Takami, Yoichi Seki, Mayuko Takezaki, Andrew L. Mellor, and Makio Iwashima
- 105 Ablation of Tumor Progression Locus 2 Promotes a Type 2 Th Cell Response in Ovalbumin-Immunized Mice
Wendy T. Watford, Chun-Chi Wang, Christos Tsatsanis, Lisa A. Mielke, Aristides G. Eliopoulos, Constantine Daskalakis, Nicolas Charles, Sandra Odom, Juan Rivera, John O'Shea, and Philip N. Tsichlis
- 114 Dynamics and Consequences of IL-21 Production in HIV-Infected Individuals: A Longitudinal and Cross-Sectional Study
Alexandre Iannello, Mohamed-Rachid Boulassel, Suzanne Samarani, Olfa Debbeche, Cécile Tremblay, Emil Toma, Jean-Pierre Routy, and Ali Ahmad
- 127 Protective Roles of B and T Lymphocyte Attenuator in NKT Cell-Mediated Experimental Hepatitis
Arifumi Iwata, Norihiko Watanabe, Yoshihiro Oya, Takayoshi Owada, Kei Ikeda, Akira Suto, Shin-ichiro Kagami, Koichi Hirose, Hiroko Kanari, Saki Kawashima, Toshinori Nakayama, Masaru Taniguchi, Itsuo Iwamoto, and Hiroshi Nakajima
- 134 $\gamma\delta$ T Lymphocytes Count Is Normal and Expandable in Peripheral Blood of Patients with Follicular Lymphoma, Whereas It Is Decreased in Tumor Lymph Nodes Compared with Inflammatory Lymph Nodes
Mounia Sabrina Braza, Anouk Caraux, Thérèse Rousset, Sylvie Lafaye de Micheaux, Hélène Sicard, Patrick Squiban, Valérie Costes, Bernard Klein, and Jean-François Rossi
- 141 Mechanisms for Glycolipid Antigen-Driven Cytokine Polarization by V α 14i NKT Cells
Barbara A. Sullivan, Niranjana A. Nagarajan, Gerhard Wingender, Jing Wang, Iain Scott, Moriya Tsuji, Richard W. Franck, Steven A. Porcelli, Dirk M. Zajonc, and Mitchell Kronenberg
- 154 Differentiation Stage-Specific Requirement in Hypoxia-Inducible Factor-1 α -Regulated Glycolytic Pathway during Murine B Cell Development in Bone Marrow
Hidefumi Kojima, Ayano Kobayashi, Daisuke Sakurai, Yumiko Kanno, Hidenori Hase, Riichi Takahashi, Yoshikazu Totsuka, Gregg L. Semenza, Michail V. Sitkovsky, and Tetsuji Kobata
- 164 The Pleckstrin Homology Domain Adaptor Protein Bam32/DAPP1 Is Required for Germinal Center Progression
Ting-ting Zhang, Monther Al-Alwan, and Aaron J. Marshall

- 173 ATP-Binding Cassette Transporter G1 Negatively Regulates Thymocyte and Peripheral Lymphocyte Proliferation
Allison J. Armstrong, Abraham K. Gebre, John S. Parks, and Catherine C. Hedrick
- 184 Mitochondria Positioning Controls Local Calcium Influx in T Cells
Christian Schwindling, Ariel Quintana, Elmar Krause, and Markus Hoth
- 191 Aldosterone Promotes Autoimmune Damage by Enhancing Th17-Mediated Immunity
Andrés A. Herrada, Francisco J. Contreras, Natacha P. Marini, Cristian A. Amador, Pablo A. González, Claudia M. Cortés, Claudia A. Riedel, Cristián A. Carvajal, Fernando Figueroa, Luis F. Michea, Carlos E. Fardella, and Alexis M. Kalergis
- 203 Biodegradable Polyelectrolyte Microcapsules: Antigen Delivery Tools with Th17 Skewing Activity after Pulmonary Delivery
Stefaan De Koker, Thomas Naessens, Bruno G. De Geest, Pieter Bogaert, Jo Demeester, Stefaan De Smedt, and Johan Grooten
- 212 IL-10 Mediates Resistance to Adoptive Transfer Experimental Autoimmune Encephalomyelitis in MyD88^{-/-} Mice
Shmuel J. Cohen, Irun R. Cohen, and Gabriel Nussbaum
- 222 *Mycobacterium smegmatis* Expressing a Chimeric Protein MPT64-Proteolipid Protein (PLP) 139–151 Reorganizes the PLP-Specific T Cell Repertoire Favoring a CD8-Mediated Response and Induces a Relapsing Experimental Autoimmune Encephalomyelitis
Chiara Nicolò, Michela Sali, Gabriele Di Sante, Maria Concetta Geloso, Emanuela Signori, Romina Penitente, Shashi Uniyal, Monica Rinaldi, Loredana Ingrosso, Vito Michele Fazio, Bosco M. C. Chan, Giovanni Delogu, and Francesco Ria

MOLECULAR AND STRUCTURAL IMMUNOLOGY

- 236 The Herpes Simplex Virus-1 Encoded Glycoprotein B Diverts HLA-DR into the Exosome Pathway
Sebastian Temme, Anna M. Eis-Hübinger, Alexander D. McLellan, and Norbert Koch
- 244 Lysine Acetylation Regulates Bruton's Tyrosine Kinase in B Cell Activation
Zhijian Liu, Antonello Mai, and Jian Sun
- 255 Conserved Amino Acids within the Adenovirus 2 E3/19K Protein Differentially Affect Downregulation of MHC Class I and MICA/B Proteins
Martina Sester, Katja Koebernick, Douglas Owen, Minghui Ao, Yana Bromberg, Ed May, Emily Stock, Lawrence Andrews, Veronika Groh, Thomas Spies, Alexander Steinle, Beatrice Menz, and Hans-Gerhard Burgert

HOST DEFENSE

- 268 Direct CD1d-Mediated Stimulation of APC IL-12 Production and Protective Immune Response to Virus Infection In Vivo
Simon C. Yue, Michael Nowak, Angela Shaulov-Kask, RuoJie Wang, Dominic Yue, Steven P. Balk, and Mark A. Exley
- 277 Early CD4⁺ T Cell Help Prevents Partial CD8⁺ T Cell Exhaustion and Promotes Maintenance of Herpes Simplex Virus 1 Latency
Gregory M. Frank, Andrew J. Lepisto, Michael L. Freeman, Brian S. Sheridan, Thomas L. Cherpes, and Robert L. Hendricks
- 287 CD8⁺ T Cell Control of Hepatitis B Virus Replication: Direct Comparison between Cytolytic and Noncytolytic Functions
Sandra Phillips, Shilpa Chokshi, Antonio Riva, Alexander Evans, Roger Williams, and Nikolai V. Naoumov
- 296 Caveolin-1 Modifies the Immunity to *Pseudomonas aeruginosa*
Mihaela Gadjeva, Catherine Paradis-Bleau, Gregory P. Priebe, Raina Fichorova, and Gerald B. Pier
- 303 Trafficking, Persistence, and Activation State of Adoptively Transferred Allogeneic and Autologous Simian Immunodeficiency Virus-Specific CD8⁺ T Cell Clones during Acute and Chronic Infection of Rhesus Macaques
Diane L. Bolton, Jacob T. Minang, Matthew T. Trivett, Kaimei Song, Jennifer J. Tuscher, Yuan Li, Michael Piatak, Jr., David O'Connor, Jeffrey D. Lifson, Mario Roederer, and Claes Ohlen

- 315 Distribution, Persistence, and Efficacy of Adoptively Transferred Central and Effector Memory-Derived Autologous Simian Immunodeficiency Virus-Specific CD8⁺ T Cell Clones in Rhesus Macaques during Acute Infection
Jacob T. Minang, Matthew T. Trivett, Diane L. Bolton, Charles M. Trubey, Jacob D. Estes, Yuan Li, Jeremy Smedley, Rhonda Pung, Margherita Rosati, Rashmi Jalab, George N. Pavlakis, Barbara K. Felber, Michael Piatak, Jr., Mario Roederer, Jeffrey D. Lifson, David E. Ott, and Claes Ohlen
- 327 Mechanisms and Consequences of Ebolavirus-Induced Lymphocyte Apoptosis
Steven B. Bradfute, Paul E. Swanson, Mark A. Smith, Eizo Watanabe, Jonathan E. McDunn, Richard S. Hotchkiss, and Sina Bavari
- 336 Murine IgG1 and IgG3 Isotype Switch Variants Promote Phagocytosis of *Cryptococcus neoformans* through Different Receptors
Carolyn A. Saylor, Ekaterina Dadachova, and Arturo Casadevall
- 344 Basophils Protect against Reinfection with Hookworms Independently of Mast Cells and Memory Th2 Cells
Caspar Ohnmacht and David Voehringer
- 351 Dissemination of Mycobacteria to the Thymus Renders Newly Generated T Cells Tolerant to the Invading Pathogen
Claudia Nobrega, Susana Roque, Cláudio Nunes-Alves, Angela Coelho, Irene Medeiros, António Gil Castro, Rui Appelberg, and Margarida Correia-Neves
- 359 A High-Affinity Inhibitor of Human CD59 Enhances Complement-Mediated Virolysis of HIV-1: Implications for Treatment of HIV-1/AIDS
Weiguo Hu, Qigui Yu, Ningjie Hu, Daniel Byrd, Tohti Amet, Cecilia Shikuma, Bruce Shiramizu, Jose A. Halperin, and Xuebin Qin
- 369 The Host Defense Peptide Cathelicidin Is Required for NK Cell-Mediated Suppression of Tumor Growth
Amanda S. Büchau, Shin Morizane, Janet Trowbridge, Jürgen Schaubert, Paul Kotol, Jack D. Bui, and Richard L. Gallo

INFLAMMATION

- 379 Autoimmunity against Fibrinogen Mediates Inflammatory Arthritis in Mice
Peggy P. Ho, Lowen Y. Lee, Xiaoyan Zhao, Beren H. Tomooka, Ricardo T. Paniagua, Orr Sharpe, Maya J. BenBarak, Piyanka E. Chandra, Wolfgang Hueber, Lawrence Steinman, and William H. Robinson
- 391 Phagocytosis of Apoptotic Cells by Neutrophil Granulocytes: Diminished Proinflammatory Neutrophil Functions in the Presence of Apoptotic Cells
Lars Esmann, Christian Idel, Arup Sarkar, Lars Hellberg, Martina Behnen, Sonja Möller, Ger van Zandbergen, Matthias Klinger, Jörg Köhl, Uta Bussmeyer, Werner Solbach, and Tamás Laskay
- 401 Requisite Role of the Cholinergic $\alpha 7$ Nicotinic Acetylcholine Receptor Pathway in Suppressing Gram-Negative Sepsis-Induced Acute Lung Inflammatory Injury
Xiao Su, Michael A. Matthay, and Asrar B. Malik
- 411 Sulforaphane Suppresses Oligomerization of TLR4 in a Thiol-Dependent Manner
Hyung Sun Youn, Yoon Sun Kim, Zee Yong Park, So Young Kim, Na Young Choi, Sun Myung Joung, Jung A. Seo, Kyung-Min Lim, Mi-Kyoung Kwak, Daniel H. Hwang, and Joo Young Lee
- 420 Staphylococcal Complement Inhibitor Modulates Phagocyte Responses by Dimerization of Convertases
Ilse Jongerijs, Manon Puister, Jin Wu, Maartje Ruyken, Jos A. G. van Strijp, and Suzan H. M. Rooijackers
- 426 Diesel Exhaust Particles Stimulate Adaptive Immunity by Acting on Pulmonary Dendritic Cells
Sharen Provoost, Tania Maes, Monique A. M. Willart, Guy F. Joos, Bart N. Lambrecht, and Kurt G. Tournoy
- 433 Prostaglandin E₂ Exerts Homeostatic Regulation of Pulmonary Vascular Remodeling in Allergic Airway Inflammation
Anders Lundequist, Samridhi N. Nallamshetty, Wei Xing, Chunli Feng, Tanya M. Laidlaw, Satoshi Uematsu, Shizuo Akira, and Joshua A. Boyce

CLINICAL IMMUNOLOGY

- 442 Marginal Zone Precursor B Cells as Cellular Agents for Type I IFN–Promoted Antigen Transport in Autoimmunity
John H. Wang, Jun Li, Qi Wu, PingAr Yang, Rahul D. Pawar, Shutao Xie, Laura Timares, Chander Raman, David D. Chaplin, Lu Lu, John D. Mountz, and Hui-Chen Hsu
- 452 MART-1–Specific Melanoma Tumor-Infiltrating Lymphocytes Maintaining CD28 Expression Have Improved Survival and Expansion Capability Following Antigenic Restimulation In Vitro
Yufeng Li, Shujuan Liu, Jessica Hernandez, Luis Vence, Patrick Hwu, and Laszlo Radvanyi
- 466 Increased Killing of Liver NK Cells by Fas/Fas Ligand and NKG2D/NKG2D Ligand Contributes to Hepatocyte Necrosis in Virus-Induced Liver Failure
Yong Zou, Tao Chen, Meifang Han, Hongwu Wang, Weiming Yan, Ge Song, Zeguang Wu, Xiaojing Wang, Chuanlong Zhu, Xiaoping Luo, and Qin Ning
- 476 Inhibitory TCR Coreceptor PD-1 Is a Sensitive Indicator of Low-Level Replication of SIV and HIV-1
Nadine C. Salisch, Daniel E. Kaufmann, Amany S. Awad, R. Keith Reeves, Daniel P. Tighe, Yuan Li, Michael Piatak, Jr., Jeffrey D. Lifson, David T. Evans, Florencia Pereyra, Gordon J. Freeman, and R. Paul Johnson
- 488 A Heat Shock Protein 70-Based Vaccine with Enhanced Immunogenicity for Clinical Use
Jianlin Gong, Yunfei Zhang, John Durfee, Desheng Weng, Chunlei Liu, Shigeo Koido, Baizheng Song, Vasso Apostolopoulos, and Stuart K. Calderwood
- 497 Anti-CD3 Antibody Decreases Inflammation and Improves Outcome in a Murine Model of *Pneumocystis* Pneumonia
Samir P. Bhagwat, Terry W. Wright, and Francis Gigliotti
- 503 Selective Mobilization of Cytotoxic Leukocytes by Epinephrine
Stoyan Dimitrov, Tanja Lange, and Jan Born
- 512 Human IgG2 Antibodies against Epidermal Growth Factor Receptor Effectively Trigger Antibody-Dependent Cellular Cytotoxicity but, in Contrast to IgG1, Only by Cells of Myeloid Lineage
Tanja Schneider-Merck, Jeroen J. Lammerts van Bueren, Sven Berger, Kai Rossen, Patrick H. C. van Berkel, Stefanie Derer, Thomas Beyer, Stefan Lohse, Wim K. Bleeker, Matthias Peipp, Paul W. H. I. Parren, Jan G. J. van de Winkel, Thomas Valerius, and Michael Dechant
- 521 CORRECTIONS
- 522 AUTHOR INDEX
- 524 INFORMATION FOR AUTHORS