



**SIMPLE, POWERFUL, ACCESSIBLE.
FULL SPECTRUM FLOW CYTOMETRY**

9+ color assays, together with high throughput or extended warranty, for just \$69.9K

ACT NOW



186 (5)

J Immunol 2011; 186:2689-3276; ;
<http://www.jimmunol.org/content/186/5>

This information is current as of September 28, 2020.

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.



2689 IN THIS ISSUE

PILLARS OF IMMUNOLOGY

- 2691 T Cell Costimulation Blockade and Organ Transplantation: A Change of Philosophy for Transplant Immunologists?

Daniel R. Goldstein

- 2693 Pillars Article: Long-Term Acceptance of Skin and Cardiac Allografts after Blocking CD40 and CD28 Pathways. *Nature*. 1996. 381: 434–438

Christian P. Larsen, Eric T. Elwood, Diane Z. Alexander, Shannon C. Ritchie, Rose Hendrix, Carol Tucker-Burden, Hong Rae Cho, Alejandro Aruffo, Diane Hollenbaugh, Peter S. Linsley, Kevin J. Winn, and Thomas C. Pearson

BRIEF REVIEWS

- 2699 Functional Characteristics of the High Affinity IgG Receptor, FcγRI

Cees E. van der Poel, Robbert M. Spaapen, Jan G. J. van de Winkel, and Jeanette H. W. Leusen

CUTTING EDGE

- 2705 Cutting Edge: Persistently Open Chromatin at Effector Gene Loci in Resting Memory CD8⁺ T Cells Independent of Transcriptional Status

Valerie P. Zediak, Jonathan B. Johnnidis, E. John Wherry, and Shelley L. Berger

- 2710 Cutting Edge: Tubulin α Functions as an Adaptor in NFAT–Importin β Interaction

Kazuhiro Ishiguro, Takafumi Ando, Osamu Maeda, Osamu Watanabe, and Hidemi Goto

- 2714 Cutting Edge: Cyclic Polypeptide and Aminoglycoside Antibiotics Trigger IL-1 β Secretion by Activating the NLRP3 Inflammasome

Ramanjaneyulu Allam, Murthy Narayana Darisipudi, Khader Valli Rupanagudi, Julia Lichtnekert, Jurg Tschopp, and Hans-Joachim Anders

CELLULAR IMMUNOLOGY AND IMMUNE REGULATION

- 2719 Basophils Are the Major Producers of IL-4 during Primary Helminth Infection

Nicholas van Panhuys, Melanie Prout, Elizabeth Forbes, Booki Min, William E. Paul, and Graham Le Gros

On the cover: Fascin1, an actin-bundling protein, is greatly induced upon dendritic cell maturation. Characterization of fascin1 knockout dendritic cells revealed that it is critical for cell migration into draining lymph nodes: Fascin1-null cells are flatter, fail to disassemble podosomes, exhibit severely reduced veil-like dorsal rufflings, and showed decreased chemotaxis. Yamakita, Y., F. Matsumura, M. W. Lipscomb, P.-c. Chou, G. Werlen, J. K. Burkhardt, and S. Yamashiro. 2011. Fascin1 promotes cell migration of mature dendritic cells. *J. Immunol.* 186: 2850–2859.

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 © 2011 by The American Association of Immunologists, Inc.

- 2729 Intrinsic IL-21 Signaling Is Critical for CD8 T Cell Survival and Memory Formation in Response to Vaccinia Viral Infection
Patricia Novy, Xiaopei Huang, Warren J. Leonard, and Yiping Yang
- 2739 Host APCs Augment In Vivo Expansion of Donor Natural Regulatory T Cells via B7H1/B7.1 in Allogeneic Recipients
Tangsheng Yi, Xiaofan Li, Sheng Yao, Lin Wang, Yuhong Chen, Dongchang Zhao, Heather F. Johnston, James S. Young, Hongjun Liu, Ivan Todorov, Stephen J. Forman, Lieping Chen, and Defu Zeng
- 2750 Anaphylaxis and Mortality Induced by Treatment of Mice with Anti-VLA-4 Antibody and Pertussis Toxin
Niannian Ji, Nagarjun Rao, Neal M. Guentzel, Bernard P. Arulanandam, and Thomas G. Forsthuber
- 2757 2B4 Engagement Mediates Rapid LFA-1 and Actin-Dependent NK Cell Adhesion to Tumor Cells as Measured by Single Cell Force Spectroscopy
Sabrina C. Hoffmann, André Cohen, Thomas Ludwig, and Carsten Watzl
- 2765 Activation Receptor-Induced Tolerance of Mature NK Cells In Vivo Requires Signaling through the Receptor and Is Reversible
Fred D. Bolanos and Sandeep K. Tripathy
- 2772 IFN- α Directly Promotes Programmed Cell Death-1 Transcription and Limits the Duration of T Cell-Mediated Immunity
Seigo Terawaki, Shunsuke Chikuma, Shiro Shibayama, Tamon Hayashi, Takao Yoshida, Taku Okazaki, and Tasuku Honjo
- 2780 Human Cord Blood CD4⁺CD25^{hi} Regulatory T Cells Suppress Prenatally Acquired T Cell Responses to *Plasmodium falciparum* Antigens
Maria S. Mackroth, Indu Malhotra, Peter Mungai, Davy Koech, Eric Muchiri, and Christopher L. King
- 2792 Induction and Maintenance of IL-4 Expression Are Regulated Differently by the 3' Enhancer in CD4 T Cells
M. Hanief Sofi, Yu Qiao, K. Mark Ansel, Masato Kubo, and Cheong-Hee Chang
- 2800 CXCR4 Expression on Activated B Cells Is Downregulated by CD63 and IL-21
Nobuya Yoshida, Daisuke Kitayama, Masafumi Arima, Akemi Sakamoto, Ayako Inamine, Haruko Watanabe-Takano, Masahiko Hatano, Takao Koike, and Takeshi Tokuhisa
- 2809 Regulatory T Cells Require Mammalian Target of Rapamycin Signaling To Maintain Both Homeostasis and Alloantigen-Driven Proliferation in Lymphocyte-Replete Mice
Ying Wang, Geoffrey Camirand, Yan Lin, Monica Froicu, Songyan Deng, Warren D. Shlomchik, Fadi G. Lakkis, and David M. Rothstein
- 2819 Intrinsic Requirement for the Vitamin D Receptor in the Development of CD8 α -Expressing T Cells
Danny Bruce and Margherita T. Cantorna
- 2826 Deletion of Tristetraprolin Caused Spontaneous Reactive Granulopoiesis by a Non-Cell-Autonomous Mechanism Without Disturbing Long-Term Hematopoietic Stem Cell Quiescence
Ian M. Kaplan, Sebastien Morisot, Diane Heiser, Wen-Chih Cheng, Min Jung Kim, and Curt I. Civin
- 2835 Stromal Cell Networks Regulate Thymocyte Migration and Dendritic Cell Behavior in the Thymus
Stephanie L. Sanos, Jonathan Nowak, Mathieu Fallet, and Marc Bajenoff
- 2842 Lung Effector Memory and Activated CD4⁺ T Cells Display Enhanced Proliferation in Surfactant Protein A-Deficient Mice during Allergen-Mediated Inflammation
Amy M. Pastva, Sambuddho Mukherjee, Charles Giamberardino, Bethany Hsia, Bernice Lo, Gregory D. Sempowski, and Jo Rae Wright
- 2850 Fascin1 Promotes Cell Migration of Mature Dendritic Cells
Yoshihiko Yamakita, Fumio Matsumura, Michael W. Lipscomb, Po-chien Chou, Guy Werlen, Janis K. Burkhardt, and Shigeko Yamashiro

- 2860 Human Serum Amyloid P Functions as a Negative Regulator of the Innate and Adaptive Immune Responses to DNA Vaccines
Yue Wang, Yingjun Guo, Xiaobui Wang, Jinfeng Huang, Jingli Shang, and Shuhan Sun
- 2871 The Critical Role of IL-1 Receptor-Associated Kinase 4-Mediated NF- κ B Activation in Modified Low-Density Lipoprotein-Induced Inflammatory Gene Expression and Atherosclerosis
Tae Whan Kim, Maria Febbraio, Peggy Robinet, Brandon DuGar, Diane Greene, Anna Cerny, Eicke Latz, Raymond Gilmour, Kirk Staschke, Guy Chisolm, Paul L. Fox, Paul E. DiCorleto, Jonathan D. Smith, and Xiaoxia Li
- 2881 Identification of Semaphorin 4B as a Negative Regulator of Basophil-Mediated Immune Responses
Yukinobu Nakagawa, Hyota Takamatsu, Tatsusada Okuno, Sujin Kang, Satoshi Nojima, Tetsuya Kimura, Tatsuki R. Kataoka, Masahito Ikawa, Toshihiko Toyofuku, Ichiro Katayama, and Atsushi Kumanogoh
- 2889 Memory CD4 T Cells That Express CXCR5 Provide Accelerated Help to B Cells
Megan K. L. MacLeod, Alexandria David, Amy S. McKee, Frances Crauford, John W. Kappler, and Philippa Marrack
- 2897 Dysregulation of TIM-3–Galectin-9 Pathway in the Cystic Fibrosis Airways
Isabel Vega-Carrascal, Emer P. Reeves, Toshiro Niki, Tomohiro Arikawa, Paul McNally, Shane J. O'Neill, Mitsuomi Hirashima, and Noel G. McElvaney
- 2910 Activated Invariant NKT Cells Regulate Osteoclast Development and Function
Ming Hu, J. H. Duncan Bassett, Lynett Danks, Peter G. T. Howell, Ke Xu, Emmanouil Spanoudakis, Ioannis Kotsianidis, Alan Boyde, Graham R. Williams, Nikki Horwood, Irene A. G. Roberts, and Anastasios Karadimitris
- 2918 Genetic Labeling Reveals Altered Turnover and Stability of Innate Lymphocytes in Latent Mouse Cytomegalovirus Infection
Andreas Busche, Susanne Schmitz, Henrike Fleige, Scott H. Robbins, Thierry Walzer, Charles A. Stewart, Reinhold Förster, Martin Messerle, and Immo Prinz
- 2926 Role of Two Adaptor Molecules SLP-76 and LAT in the PI3K Signaling Pathway in Activated T Cells
Eun Kyung Shim, Seung Hee Jung, and Jong Ran Lee
- 2936 Computational and Experimental Analysis Reveals a Requirement for Eosinophil-Derived IL-13 for the Development of Allergic Airway Responses in C57BL/6 Mice
Elizabeth R. Walsh, Juilee Thakar, Kindra Stokes, Fei Huang, Reka Albert, and Avery August
- MOLECULAR AND STRUCTURAL IMMUNOLOGY**
- 2950 Conformational Melding Permits a Conserved Binding Geometry in TCR Recognition of Foreign and Self Molecular Mimics
Oleg Y. Borbulevych, Kurt H. Piepenbrink, and Brian M. Baker
- 2959 Ubiquitylation of an Internalized Killer Cell Ig-Like Receptor by Triad3A Disrupts Sustained NF- κ B Signaling
S. M. Shahjahan Miah, Amanda K. Purdy, Nicholas B. Rodin, Alexander W. MacFarlane, IV, Jennifer Osbinsky, Diana A. Alvarez-Arias, and Kerry S. Campbell
- 2970 Naive T Cell Repertoire Skewing in HLA-A2 Individuals by a Specialized Rearrangement Mechanism Results in Public Memory Clonotypes
Maryam Yassai, Dmitry Bosenko, Melissa Unruh, Gregory Zacharias, Erica Reed, Wendy Demos, Andrea Ferrante, and Jack Gorski
- 2978 Class IA Phosphoinositide 3-Kinase β and δ Regulate Neutrophil Oxidase Activation in Response to *Aspergillus fumigatus* Hyphae
Keith B. Boyle, David Gyori, Anca Sindrilaru, Karin Scharffetter-Kochanek, Philip R. Taylor, Attila Mócsai, Len R. Stephens, and Phillip T. Hawkins
- 2990 HLA Class I Allelic Sequence and Conformation Regulate Leukocyte Ig-Like Receptor Binding
Des C. Jones, Vasilis Kosmoliaptis, Richard Apps, Nicolas Lapaque, Isobel Smith, Azumi Kono, Chiwen Chang, Louise H. Boyle, Craig J. Taylor, John Trowsdale, and Rachel L. Allen

- 2998 β_2 Integrin Induces TCR ζ -Syk-Phospholipase C- γ Phosphorylation and Paxillin-Dependent Granule Polarization in Human NK Cells
Michael E. March and Eric O. Long
- 3006 The Dual Functions of IL-1 Receptor-Associated Kinase 2 in TLR9-Mediated IFN and Proinflammatory Cytokine Production
Youzhong Wan, Tae Whan Kim, Minjia Yu, Hao Zhou, Michifumi Yamashita, Zizhen Kang, Weiguo Yin, Jian-an Wang, James Thomas, Ganes C. Sen, George R. Stark, and Xiaoxia Li

- 3015 GCN5 Regulates the Superoxide-Generating System in Leukocytes Via Controlling gp91-phox Gene Expression
Hidehiko Kikuchi, Futoshi Kuribayashi, Naomi Kiwaki, Yasunari Takami, and Tatsuo Nakayama

- 3023 TANK-Binding Kinase 1 Attenuates PTAP-Dependent Retroviral Budding through Targeting Endosomal Sorting Complex Required for Transport-I
Qi Da, Xuanming Yang, Youli Xu, Guangxia Gao, Genhong Cheng, and Hong Tang

IMMUNOGENETICS

- 3031 Molecular Characterization of *Caveolin-1* in Pigs Infected with *Haemophilus parasuis*
Xiang-Dong Liu, Hong-Bo Chen, Qin Tong, Xin-Yun Li, Meng-Jin Zhu, Zhen-Fang Wu, Rui Zhou, and Shu-Hong Zhao
- 3047 Transcriptomes of the B and T Lineages Compared by Multiplatform Microarray Profiling
Michio W. Painter, Scott Davis, Richard R. Hardy, Diane Mathis, Christophe Benoist, and The Immunological Genome Project Consortium
- 3058 A Common Haplotype of the TNF Receptor 2 Gene Modulates Endotoxin Tolerance
Benjamin P. Fairfax, Emma E. Davenport, Seiko Makino, Adrian V. S. Hill, Fredrik O. Vannberg, and Julian C. Knight

HOST DEFENSE

- 3066 Distinct Different Contributions of the Alternative and Classical Complement Activation Pathway for the Innate Host Response during Sepsis
Katja Dahlke, Christiane D. Wrann, Oliver Sommerfeld, Maik Soßdorf, Peter Recknagel, Svea Sachse, Sebastian W. Winter, Andreas Klos, Gregory L. Stabl, Yuanyuan Xu Ma, Ralf A. Claus, Konrad Reinhart, Michael Bauer, and Niels C. Riedemann
- 3076 5-Lipoxygenase-Deficient Mice Infected with *Borrelia burgdorferi* Develop Persistent Arthritis
Victoria A. Blaho, Yan Zhang, Jennifer M. Hughes-Hanks, and Charles R. Brown
- 3085 Recognition of Cytoplasmic RNA Results in Cathepsin-Dependent Inflammasome Activation and Apoptosis in Human Macrophages
Johanna Rintabaka, Niina Lietzén, Tiina Öhman, Tuula A. Nyman, and Sampsa Matikainen
- 3093 Cross-Talk between Programmed Death-1 and Suppressor of Cytokine Signaling-1 in Inhibition of IL-12 Production by Monocytes/Macrophages in Hepatitis C Virus Infection
Ying Zhang, Cheng J. Ma, Lei Ni, Chun L. Zhang, Xiao Y. Wu, Uday Kumaraguru, Chuan F. Li, Jonathan P. Moorman, and Zhi Q. Yao
- 3104 Conventional Dendritic Cells Mount a Type I IFN Response against *Candida* spp. Requiring Novel Phagosomal TLR7-Mediated IFN- β Signaling
Christelle Bourgeois, Olivia Majer, Ingrid E. Frohner, Iwona Lesiak-Markowicz, Kwang-Soo Hildering, Walter Glaser, Silvia Stockinger, Thomas Decker, Shizuo Akira, Mathias Müller, and Karl Kuchler
- 3113 A Novel Human IgA Monoclonal Antibody Protects against Tuberculosis
Sucharitha Balu, Rajko Reljic, Melanie J. Lewis, Richard J. Pleass, Richard McIntosh, Cees van Kooten, Marjolein van Egmond, Stephen Challacombe, Jenny M. Woof, and Juraj Ivanyi
- 3120 Immune Evasion of *Moraxella catarrhalis* Involves Ubiquitous Surface Protein A-Dependent C3d Binding
Teresia Hallström, Therése Nordström, Thuan Tong Tan, Taras Manolov, John D. Lambris, David E. Isenman, Peter F. Zipfel, Anna M. Blom, and Kristian Riesbeck
- 3130 Nonhematopoietic Cells Are Key Players in Innate Control of Bacterial Airway Infection
Salomé LeibundGut-Landmann, Kerstin Weidner, Hubert Hilbi, and Annette Oxenius

3138 Type III IFNs in Pteropid Bats: Differential Expression Patterns Provide Evidence for Distinct Roles in Antiviral Immunity
Peng Zhou, Chris Couled, Shawn Todd, Gary Cramer, Elena R. Virtue, Glenn A. Marsh, Reuben Klein, Zhengli Shi, Lin-Fa Wang, and Michelle L. Baker

3148 HIV Replication in CD4⁺ T Lymphocytes in the Presence and Absence of Follicular Dendritic Cells: Inhibition of Replication Mediated by α -1-Antitrypsin through Altered I κ B α Ubiquitination
Xueyuan Zhou, Leland Shapiro, Gilbert Fellingham, Barry M. Willardson, and Gregory F. Burton

3156 Individual Genetic Variations Directly Effect Polarization of Cytokine Responses to Superantigens Associated with Streptococcal Sepsis: Implications for Customized Patient Care
Mohammed M. Nooh, Suba Nookala, Rita Kansal, and Malak Kotb

INFLAMMATION

3164 Mucosal Allergic Sensitization to Cockroach Allergens Is Dependent on Proteinase Activity and Proteinase-Activated Receptor-2 Activation
Narcy G. Arizmendi, Melanie Abel, Koichiro Mihara, Courtney Davidson, Danny Polley, Ahmed Nadeem, Tamer El Mays, Brendan F. Gilmore, Brian Walker, John R. Gordon, Morley D. Hollenberg, and Harissios Vliagoftis

3173 NF- κ B- and AP-1-Mediated DNA Looping Regulates Osteopontin Transcription in Endotoxin-Stimulated Murine Macrophages
Wei Zhao, Lijuan Wang, Meng Zhang, Peng Wang, Lei Zhang, Chao Yuan, Jianni Qi, Yu Qiao, Paul C. Kuo, and Chengjiang Gao

3180 Innate Immune Function of the Adherens Junction Protein p120-Catenin in Endothelial Response to Endotoxin
Yan-lei Wang, Asrar B. Malik, Yu Sun, Sanyuan Hu, Albert B. Reynolds, Richard D. Minshall, and Guochang Hu

3188 The Endocannabinoid 2-Arachidonoyl-Glycerol Activates Human Neutrophils: Critical Role of Its Hydrolysis and De Novo Leukotriene B₄ Biosynthesis
François Chouinard, Julie S. Lefebvre, Pauline Navarro, Line Bouchard, Claudine Ferland, Mélanie Lalancette-Hébert, David Marsolais, Michel Laviolette, and Nicolas Flamand

3197 IL-17A and TNF- α Exert Synergistic Effects on Expression of CXCL5 by Alveolar Type II Cells In Vivo and In Vitro
Yuhong Liu, Junjie Mei, Linda Gonzales, Guang Yang, Ning Dai, Ping Wang, Peggy Zhang, Michael Favara, Kenneth C. Malcolm, Susan Guttentag, and G. Scott Worthen

3206 CX3CR1⁺ Lung Mononuclear Phagocytes Spatially Confined to the Interstitium Produce TNF- α and IL-6 and Promote Cigarette Smoke-Induced Emphysema
Zeyu Xiong, Adriana S. Leme, Prabir Ray, Steven D. Shapiro, and Janet S. Lee

3215 Human TMEM30a Promotes Uptake of Antitumor and Bioactive Choline Phospholipids into Mammalian Cells
Rui Chen, Erin Brady, and Thomas M. McIntyre

3226 IL-6 Trans-Signaling System in Intra-Amniotic Inflammation, Preterm Birth, and Preterm Premature Rupture of the Membranes
Sarah Y. Lee, Irina A. Buhimschi, Antonette T. Dulay, Unzila A. Ali, Guomao Zhao, Sonya S. Abdel-Razeq, Mert O. Bahitayar, Stephen F. Thung, Edmund F. Funai, and Catalin S. Buhimschi

3237 TLR2 Hypersensitivity of Astrocytes as Functional Consequence of Previous Inflammatory Episodes
Anja Henn, Susanne Kirner, and Marcel Leist

3248 Septic Shock Is Associated with Receptor for Advanced Glycation End Products Ligation of LPS
Yasuhiko Yamamoto, Ai Harashima, Hidehito Saito, Koichi Tsuneyama, Seiichi Munesue, So Motoyoshi, Dong Han, Takuo Watanabe, Masahide Asano, Shin Takasawa, Hiroshi Okamoto, Satoshi Shimura, Tadabiro Karasawa, Hideto Yonekura, and Hiroshi Yamamoto

CLINICAL IMMUNOLOGY

- 3258 Chikungunya Virus Envelope-Specific Human Monoclonal Antibodies with Broad Neutralization Potency
Lucile Warter, Chia Yin Lee, Rekha Thiagarajan, Marc Grandadam, Serge Lebecque, Raymond T. P. Lin, Sebastien Bertin-Maghit, Lisa F. P. Ng, Jean-Pierre Abastado, Philippe Desprès, Cheng-I Wang, and Alessandra Nardin
- 3265 TCR Mimic Monoclonal Antibodies Induce Apoptosis of Tumor Cells via Immune Effector-Independent Mechanisms
Bhavna Verma, Rinki Jain, Shannon Caseltine, Aaron Rennels, Raktima Bhattacharya, Maciej M. Markiewski, Amit Rawat, Francisca Neethling, Ulrich Bickel, and Jon A. Weidanz
- 3277 AUTHOR INDEX