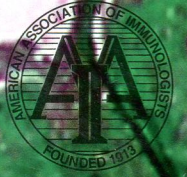


TU
J80/61



The Journal of **Immunology**

VOLUME 191, NUMBER 7 • OCTOBER 1, 2013 • WWW.JIMMUNOL.ORG



VOL. 191 | NO. 7 | October 1, 2013 | Pages 3483–3970

PRESIDENT'S ADDRESS

- 3483 The Many Faces of TRAF Molecules in Immune Regulation
Gail A. Bishop

IN THIS ISSUE

- 3487 **Appraising Autoantibodies** *See article p. 3594*
p53 Pumps Up Regulatory T cells *See article p. 3614*
Tempering T Cell Telomerase *See article p. 3744*
CagA Guts Th17 Responses *See article p. 3838*
Competing for Cytosolic DNA *See article p. 3876*

PILLARS OF IMMUNOLOGY

- 3489 Inhibitory Receptors and Their Mode of Action: Key Insights from NK Cells
Werner Held
- 3491 Pillars Article: Recruitment of Tyrosine Phosphatase HCP by the Killer Cell Inhibitory Receptor.
Immunity. 1996. 4: 77–85
Deborah N. Burshtyn, Andrew M. Scharenberg, Nicolai Wagtmann, Sumati Rajagopalan, Karim Berrada, Taolin Yi, Jean-Pierre Kinet, and Eric O. Long

BRIEF REVIEWS

- 3501 IL-21–Producing Th Cells in Immunity and Autoimmunity
Sue M. Liu and Cecile King

CUTTING EDGE

- 3509 Cutting Edge: DNA Sensing via the STING Adaptor in Myeloid Dendritic Cells Induces Potent Tolerogenic Responses
Lei Huang, Lingqian Li, Henrique Lemos, Phillip R. Chandler, Gabriela Pacholczyk, Babak Baban, Glen N. Barber, Yoshihiro Hayakawa, Tracy L. McGaha, Buvana Ravishankar, David H. Munn, and Andrew L. Mellor

On the cover: Micrograph of a hind paw section from a rheumatic rat (collagen-induced arthritis model) orally dosed with GLPG0634 (10mg/kg), a selective JAK1 inhibitor. Treatment resulted in decreased inflammation and protection of articular cartilage and bone (Goldner trichrome staining, original magnification $\times 20$). Van Rompaey, L., R. Galien, E. M. van der Aar, P. Clement-Lacroix, L. Nelles, B. Smets, L. Lepescheux, T. Christophe, K. Conrath, N. Vandeghinste, B. Vayssiere, S. De Vos, S. Fletcher, R. Brys, G. van 't Klooster, J. H. M. Feyen, and C. Menet. 2013. Preclinical characterization of GLPG0634, a selective inhibitor of JAK1, for the treatment of inflammatory diseases. *J. Immunol.* 191: 3568–3577.

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 © 2013 by The American Association of Immunologists, Inc.

- 3514 Cutting Edge: *Mycobacterium tuberculosis* but Not Nonvirulent Mycobacteria Inhibits IFN- β and AIM2 Inflammation-Dependent IL-1 β Production via Its ESX-1 Secretion System
Swati Shah, Amro Bohsali, Sarah E. Ahlbrand, Lalitha Srinivasan, Vijay A. K. Rathinam, Stefanie N. Vogel, Katherine A. Fitzgerald, Fayyaz S. Sutterwala, and Volker Briken

ALLERGY AND OTHER HYPERSENSITIVITIES

- 3519 Exacerbation of Allergen-Induced Eczema in TLR4- and TRIF-Deficient Mice
Eric B. Brandt, Aaron M. Gibson, Stacey Bass, Carolyn Rydyznski, and Gurjit K. Khurana Hershey
- 3526 IgG Antibodies in Food Allergy Influence Allergen-Antibody Complex Formation and Binding to B Cells: A Role for Complement Receptors
Laura A. P. M. Meulenbroek, Renske J. de Jong, Constance F. den Hartog Jager, Hanneke N. Monsuur, Diana Wouters, Alma J. Nauta, Léon M. J. Knippels, R. J. Joost van Neerven, Bert Ruiter, Jeanette H. W. Leusen, C. Erik Hack, Carla A. F. M. Bruijnzeel-Koomen, André C. Knulst, Johan Garssen, and Els van Hoffen

ANTIGEN RECOGNITION AND RESPONSES

- 3534 Rapid Deletion and Inactivation of CTLs upon Recognition of a Number of Target Cells over a Critical Threshold
Sandro Prato, Yifan Zhan, Justine D. Mintern, and Jose A. Villadangos
- 3545 Lysis-on-Chip of Single Target Cells following Forced Interaction with CTLs or NK Cells on a Dielectrophoresis-Based Array
Melanie Abonnenc, Monica Borgatti, Enrica Fabbri, Riccardo Gavioli, Cinzia Fortini, Federica Destro, Luigi Altomare, Nicolò Manaresi, Gianni Medoro, Aldo Romani, Marco Tartagni, Elisa Lo Monaco, Patrizio Giacomini, Roberto Guerrieri, and Roberto Gambari
- 3553 HLA-F and MHC Class I Open Conformers Are Ligands for NK Cell Ig-like Receptors
Jodie P. Goodridge, Aura Burian, Ni Lee, and Daniel E. Geraghty

AUTOIMMUNITY

- 3563 T Cell CD3 ζ Deficiency Enables Multiorgan Tissue Inflammation
Guo-Min Deng, Jessica Beltran, Chen Chen, Cox Terhorst, and George C. Tsokos
- 3568 Preclinical Characterization of GLPG0634, a Selective Inhibitor of JAK1, for the Treatment of Inflammatory Diseases
Luc Van Rompaey, René Galien, Ellen M. van der Aar, Philippe Clement-Lacroix, Luc Nelles, Bart Smets, Lièn Lepescheux, Thierry Christophe, Katja Conrath, Nick Vandeghinste, Béatrice Vayssiere, Steve De Vos, Stephen Fletcher, Reginald Brys, Gerben van 't Klooster, Jean H. M. Feyen, and Christel Menet
- 3578 Fibrosis and Subsequent Cytopenias Are Associated with Basic Fibroblast Growth Factor-Deficient Pluripotent Mesenchymal Stromal Cells in Large Granular Lymphocyte Leukemia
Adam W. Mailloux, Ling Zhang, Lynn Moscinski, John M. Bennett, Lili Yang, Sean J. Yoder, Gregory Bloom, Cody Wei, Sheng Wei, Lubomir Sokol, Thomas P. Loughran, Jr., and Pearlie K. Epling-Burnette
- 3594 Distinction and Temporal Stability of Conformational Epitopes on Myelin Oligodendrocyte Glycoprotein Recognized by Patients with Different Inflammatory Central Nervous System Diseases
Marie C. Mayer, Constanze Breithaupt, Markus Reindl, Kathrin Schanda, Kevin Rostásy, Thomas Berger, Russell C. Dale, Fabienne Brilot, Tomas Olsson, Dieter Jenne, Anne-Katrin Pröbstel, Klaus Dornmair, Hartmut Wekerle, Reinhard Hohlfeld, Brenda Banwell, Amit Bar-Or, and Edgar Meinl
- 3605 Multiple Checkpoint Breach of B Cell Tolerance in *Rasgrp1*-Deficient Mice
Amber Bartlett, Janet E. Buhlmann, James Stone, Bing Lim, and Robert A. Barrington
- 3614 Tumor Suppressor p53 Inhibits Systemic Autoimmune Diseases by Inducing Regulatory T Cells
Hirotohi Kawashima, Hiroaki Takatori, Kotaro Suzuki, Arifumi Iwata, Masaya Yokota, Akira Suto, Tobru Minamino, Koichi Hirose, and Hiroshi Nakajima

CLINICAL AND HUMAN IMMUNOLOGY

- 3624 Retinoic Acid Improves Defective TLR9/RP105-Induced Immune Responses in Common Variable Immunodeficiency–Derived B Cells
Randi L. Indrevar, Kristine L. Holm, Pål Aukrust, Liv T. Osnes, Elin H. Naderi, Børre Fevang, and Heidi K. Blomhoff
- 3634 Recombinant Human IL-15 *Trans*-Presentation by B Leukemic Cells from Chronic Lymphocytic Leukemia Induces Autologous NK Cell Proliferation Leading to Improved Anti-CD20 Immunotherapy
Emilie Laprevotte, Gregory Voisin, Loïc Ysebaert, Christian Klein, Camille Daugrois, Guy Laurent, Jean-Jacques Fournie, and Anne Quillet-Mary

IMMUNE REGULATION

- 3641 Antibodies Targeting Human OX40 Expand Effector T Cells and Block Inducible and Natural Regulatory T Cell Function
Kui S. Voo, Laura Bover, Megan L. Harline, Long T. Vien, Valeria Facchinetti, Kazubiko Arima, Larry W. Kwak, and Yong J. Liu
- 3651 HLA-G5 Induces IL-4 Secretion Critical for Successful Pregnancy through Differential Expression of ILT2 Receptor on Decidual CD4⁺ T Cells and Macrophages
Letizia Lombardelli, Maryse Aguerre-Girr, Federica Logiodice, Ornella Kullolli, Ysabel Casart, Beata Polgar, Alain Berrebi, Sergio Romagnani, Enrico Maggi, Philippe Le Bouteiller, and Marie-Pierre Picinni
- 3663 A Cell-Intrinsic Requirement for NF- κ B–Inducing Kinase in CD4 and CD8 T Cell Memory
Alexander M. Rowe, Susan E. Murray, Hans-Peter Raué, Yoshinobu Koguchi, Mark K. Slifka, and David C. Parker
- 3673 The CD226/CD155 Interaction Regulates the Proinflammatory (Th1/Th17)/Anti-Inflammatory (Th2) Balance in Humans
Ester Lozano, Nicole Joller, Yonghao Cao, Vijay K. Kuchroo, and David A. Hafler
- 3681 ICAM-1–Dependent Homotypic Aggregates Regulate CD8 T Cell Effector Function and Differentiation during T Cell Activation
Nicholas A. Zumwalde, Eisuke Domae, Matthew F. Mescher, and Yoji Shimizu
- 3694 Differential Response of Regulatory and Conventional CD4⁺ Lymphocytes to CD3 Engagement: Clues to a Possible Mechanism of Anti-CD3 Action?
Li Li, Junko Nishio, André van Maurik, Diane Mathis, and Christophe Benoist
- 3705 Insights into the Role of Bcl6 in Follicular Th Cells Using a New Conditional Mutant Mouse Model
Kristin Hollister, Saritha Kusam, Hao Wu, Ninah Clegg, Arpita Mondal, Deepali V. Sawant, and Alexander L. Dent
- 3712 Active STAT5 Regulates T-bet and Eomesodermin Expression in CD8 T Cells and Imprints a T-bet–Dependent Tc1 Program with Repressed IL-6/TGF- β 1 Signaling
Magali Grange, Grégory Verdeil, Fanny Arnoux, Aurélien Griffon, Salvatore Spicuglia, Julien Maurizio, Michel Buferne, Anne-Marie Schmitt-Verhulst, and Nathalie Auphan-Anezin
- 3725 Retinoid X Receptor Agonists Modulate Foxp3⁺ Regulatory T Cell and Th17 Cell Differentiation with Differential Dependence on Retinoic Acid Receptor Activation
Hajime Takeuchi, Aya Yokota-Nakatsuma, Yoshiharu Ohoka, Hiroyuki Kagechika, Chieko Kato, Si-Young Song, and Makoto Iwata
- 3734 Macrophage-Derived IL-33 Is a Critical Factor for Placental Growth
Valerie Fock, Mario Mairhofer, Gerlinde R. Otti, Ursula Hiden, Andreas Spittler, Harald Zeisler, Christian Fiala, Martin Knöfler, and Jürgen Pollheimer
- 3744 IFN- α Inhibits Telomerase in Human CD8⁺ T Cells by Both hTERT Downregulation and Induction of p38 MAPK Signaling
Alessio Lanna, Elias Coutavas, Lauretta Levati, Judith Seidel, Malcolm H. A. Rustin, Sian M. Henson, Arne N. Akbar, and Ornella Franzese
- 3753 Expression of the Immune Regulator Tripartite-Motif 21 Is Controlled by IFN Regulatory Factors
Maria Sjöstrand, Aurélie Ambrosi, Susanna Brauner, Jenna Sullivan, Stephen Malin, Vijay K. Kuchroo, Alexander Espinosa, and Marie Wahren-Herlenius

- 3764 Inhibition of Endogenous Activated Protein C Attenuates Experimental Autoimmune Encephalomyelitis by Inducing Myeloid-Derived Suppressor Cells
Leah M. Alabanza, Naomi L. Esmon, Charles T. Esmon, and Margaret S. Bynoe
- 3778 Calpastatin Prevents NF- κ B–Mediated Hyperactivation of Macrophages and Attenuates Colitis
Zhi Huang, Aaron H. Rose, FuKun W. Hoffmann, Ann S. Hashimoto, Pietro Bertino, Tobias Denk, Jiro Takano, Nobuhisa Iwata, Takaomi C. Saïdo, and Peter R. Hoffmann

IMMUNE SYSTEM DEVELOPMENT

- 3789 Integrin- α FG-GAP Repeat-Containing Protein 2 Is Critical for Normal B Cell Differentiation and Controls Disease Development in a Lupus Model
Amin Al-Shami, Jeannette Crisostomo, Carrie Wilkins, Nianhua Xu, Juliane Humphries, Wei C. Chang, Stephen J. Anderson, and Tamas Oravecz
- 3799 Lectin-like Receptor Ly49s3 on Dendritic Cells Contributes to the Differentiation of Regulatory T Cells in the Rat Thymus
Toshiyuki Yamada, Naoki Nanashima, Miki Akita, Takeshi Shimizu, Takuya Miura, Daisuke Yamana, Takeyuki Sawano, Takuya Sakurai, and Shigeki Tsuchida

INFECTIOUS DISEASE AND HOST RESPONSE

- 3810 Induction of Cyclooxygenase-2 Signaling by *Stomatococcus mucilaginosus* Highlights the Pathogenic Potential of an Oral Commensal
Zhihong Yuan, Dipti Panchal, Mansoor Ali Syed, Hiren Mehta, Myungsoo Joo, Walid Hadid, and Ruxana T. Sadikot
- 3818 Mycobacteria-Infected Dendritic Cells Attract Neutrophils That Produce IL-10 and Specifically Shut Down Th17 CD4 T Cells through Their IL-10 Receptor
Emilie Doz, Robin Lombard, Florence Carreras, Dominique Buzoni-Gatel, and Nathalie Winter
- 3827 Parasite Infections in Multiple Sclerosis Modulate Immune Responses through a Retinoic Acid–Dependent Pathway
Jorge Correale and Mauricio F. Farez
- 3838 CagA-Dependent Downregulation of B7-H2 Expression on Gastric Mucosa and Inhibition of Th17 Responses during *Helicobacter pylori* Infection
Taslina T. Lina, Irina V. Pinchuk, Jennifer House, Yoshio Yamaoka, David Y. Graham, Ellen J. Beswick, and Victor E. Reyes

INNATE IMMUNITY AND INFLAMMATION

- 3847 ASC Controls IFN- γ Levels in an IL-18–Dependent Manner in Caspase-1–Deficient Mice Infected with *Francisella novicida*
Roberto Pierini, Magali Perret, Sophia Djebali, Carole Juruj, Marie-Cécile Michallet, Irmgard Förster, Jacqueline Marvel, Thierry Walzer, and Thomas Henry
- 3858 Induction of Complement C3a Receptor Responses by Kallikrein-Related Peptidase 14
Katerina Oikonomopoulou, Robert A. DeAngelis, Hui Chen, Eleftherios P. Diamandis, Morley D. Hollenberg, Daniel Ricklin, and John D. Lambris
- 3867 TLR4 Signaling Shapes B Cell Dynamics via MyD88-Dependent Pathways and Rac GTPases
Laura Barrio, Julia Saez de Guinoa, and Yolanda R. Carrasco
- 3876 Synthetic Oligodeoxynucleotides Containing Suppressive TTAGGG Motifs Inhibit AIM2 Inflammasome Activation
John J. Kaminski, Stefan A. Schattgen, Te-Chen Tzeng, Christian Bode, Dennis M. Klinman, and Katherine A. Fitzgerald
- 3884 Modulation of Inflammasome-Mediated Pulmonary Immune Activation by Type I IFNs Protects Bone Marrow Homeostasis during Systemic Responses to *Pneumocystis* Lung Infection
Steve Searles, Katherine Gauss, Michelle Wilkison, Teri R. Hoyt, Erin Dobrinen, and Nicole Meissner
- 3896 Type I IFN Inhibits Innate IL-10 Production in Macrophages through Histone Deacetylase 11 by Downregulating MicroRNA-145
Li Lin, Jin Hou, Feng Ma, Pin Wang, Xingguang Liu, Nan Li, Jianli Wang, Qingqing Wang, and Xuetao Cao

- 3905 Tyrosine Phosphorylation of CD13 Regulates Inflammatory Cell–Cell Adhesion and Monocyte Trafficking
Jaganathan Subramani, Mallika Ghosh, M. Mamunur Rahman, Leslie A. Caromile, Claire Gerber, Karim Rezaul, David K. Han, and Linda H. Shapiro
- 3913 IFIT2 Is an Effector Protein of Type I IFN–Mediated Amplification of Lipopolysaccharide (LPS)-Induced TNF- α Secretion and LPS-Induced Endotoxin Shock
Alexandra Siegfried, Susanne Berchtold, Birgit Manncke, Eva Deuschle, Julia Reber, Thomas Ott, Michaela Weber, Ulrich Kalinke, Markus J. Hofer, Bastian Hatesuer, Klaus Schughart, Valérie Gailus-Durner, Helmut Fuchs, Martin Hrabě de Angelis, Friedemann Weber, Mathias W. Hornef, Ingo B. Autenrieth, and Erwin Bohn
- 3922 Suppression of IL-12 Production by Tristetraprolin through Blocking NF- κ B Nuclear Translocation
Ling Gu, Huan Ning, Xuesong Qian, Qi Huang, Rong Hou, Rajaa Almourani, Mingui Fu, Perry J. Blakeshear, and Jianguo Liu

MOLECULAR AND STRUCTURAL IMMUNOLOGY

- 3931 Distorted Secretory Granule Composition in Mast Cells with Multiple Protease Deficiency
Mirjana Grujić, Gabriela Calounova, Inger Eriksson, Thorsten Feyerabend, Hans-Reimer Rodewald, Elena Tchougounova, Lena Kjellén, and Gunnar Pejler
- 3939 Tapasin Facilitation of Natural HLA-A and -B Allomorphs Is Strongly Influenced by Peptide Length, Depends on Stability, and Separates Closely Related Allomorphs
Linda Geironson, Camilla Thuring, Mikkel Harndahl, Michael Rasmussen, Søren Buus, Gustav Røder, and Kajsa M. Paulson

MUCOSAL IMMUNOLOGY

- 3948 Stable CD4 Expression and Local Immune Activation in the Ectocervical Mucosa of HIV-Infected Women
Taha Hirbod, Joshua Kimani, Annelie Tjernlund, Juliana Cheruiyot, Anna Petrova, Terry B. Ball, Nelly Mugo, Walter Jaoko, Francis A. Plummer, Rupert Kaul, and Kristina Broliden

TUMOR IMMUNOLOGY

- 3955 Comparison of Vaccine-Induced Effector CD8 T Cell Responses Directed against Self- and Non–Self-Tumor Antigens: Implications for Cancer Immunotherapy
Sara R. Pedersen, Maria R. Sørensen, Søren Buus, Jan P. Christensen, and Allan R. Thomsen
- 3968 AUTHOR INDEX