VOL. 189 | NO. 5 | September 1, 2012 | Pages 2067–2686

2067 IN THIS ISSUE

PILLARS OF IMMUNOLOGY

2069 Cytokine Mimicry with an Immunologic Reformation: The Discovery of a Decade
Kenneth M. Murphy

2072 Pillars Article: Homology of Cytokine Synthesis Inhibitory Factor (IL-10) to the Epstein-Barr Virus Gene BCRFI. Science. 1990. 248: 1230–1234
Kevin W. Moore, Paulo Vieira, David F. Fiorentino, Mary L. Trounstine, Tariq A. Khan, and Timothy R. Moslmann

CUTTING EDGE

2079 Cutting Edge: Suppression of GM-CSF Expression in Murine and Human T Cells by IL-27
Andrew Young, Eimear Linehan, Emily Hams, Aisling C. O'Hara Halti, Angela McClurg, James A. Johnston, Christopher A. Hunter, Padraic G. Fallon, and Denise C. Fitzgerald

2084 Cutting Edge: Influence of Tmevgg1, a Long Intergenic Noncoding RNA, on the Expression of Ifng by Th1 Cells
Sarah P. Collier, Patrick L. Collins, Christopher L. Williams, Mark R. Boothby, and Thomas M. Aune

2089 Cutting Edge: IL-10–Mediated Tristetraprolin Induction Is Part of a Feedback Loop That Controls Macrophage STAT3 Activation and Cytokine Production
Anthony Gaba, Sergei I. Grivnenkov, Mahn Vu Do, Deborah J. Stumpe, Perry J. Blackshear, and Michael Karin

2094 Cutting Edge: Lymphoid Tissue Inducer Cells Maintain Memory CD4 T Cells within Secondary Lymphoid Tissue
David R. Withers, Fabrina M. Gaspal, Emma C. Mackley, Clare L. Marriott, Ewan A. Ross, Guillaume E. Desanti, Natalie A. Roberts, Andrea J. White, Adriana Flores-Langarica, Fiona M. McConnell, Graham Anderson, and Peter J. L. Lane

NK Cells Regulate CD8+ T Cell Priming and Dendritic Cell Migration during Influenza A Infection by IFN-γ and Perforin-Dependent Mechanisms

Moyar Qing Ge, Adrian W. S. Ho, Yafang Tang, Kenneth H. S. Wong, Benson Y. L. Chua, Stephan Gauer, and David Michael Kemeny

Immune Suppression and Resistance Mediated by Constitutive Activation of Wnt/β-Catenin Signaling in Human Melanoma Cells

Tomonori Yaguchi, Yasufumi Goto, Kenji Kido, Hiroshi Mochimaru, Tosibaru Sakurai, Nobuo Tsukamoto, Chie Kudo-Sato, Tomonobu Fujita, Hidetoshi Sumimoto, and Yutaka Kawakami

CD8+CD45RA+CCR7+FOXP3+ T Cells with Immunosuppressive Properties: A Novel Subset of Inducible Human Regulatory T Cells

Masaatatsu Suzuki, Ann L. Jagger, Christine Konya, Yasuhiro Shinojima, Sergey Pryshchep, Jörg J. Goronzy, and Cornelia M. Weyand

A Genetically Encoded IL-1β Bioluminescence Resonance Energy Transfer Sensor To Monitor Inflammasome Activity

Vincent Compan, Alberto Baroja-Mazo, Laricia Bragg, Alexei Verkhratsky, Julie Perroy, and Pablo Pelegrin

The 3BP2 Adapter Protein Is Required for Chemoattractant-Mediated Neutrophil Activation

Grace Chen, Ioannis Dimitriou, Laura Milne, Karl S. Lang, Philipp A. Lang, Noah Fine, Pamela S. Ohashi, Paul Kubes, and Robert Rottapel

Inhibition of Mechanistic Target of Rapamycin Promotes Dendritic Cell Activation and Enhances Therapeutic Autologous Vaccination in Mice

Eyal Amiel, Bart Everts, Tori C. Freitas, Irab L. King, Jonathan D. Curtis, Erika L. Pearce, and Edward J. Pearce

Cytokine Secretion by CD4+ T Cells at the Immunological Synapse Requires Cdc42-Dependent Local Actin Remodeling but Not Microtubule Organizing Center Polarity

Karine Chemin, Armelle Bohineust, Stéphanie Dogniaux, Marie Tourret, Sarah Guégan, Francesc Miro, and Claire Hivroz

Decoding the Regulation of Mast Cell Exocytosis by Networks of Rab GTPases

Nurit P. Azouz, Takahide Matsui, Mitsunori Fukuda, and Ronit Sagi-Eisenberg

Impaired Humoral Immunity and Tolerance in K14-VEGFR-3-Ig Mice That Lack Dermal Lymphatic Drainage

Susan N. Thomas, Joseph M. Rutkowski, Miriella Pasquier, Emma L. Kuan, Kari Alitalo, Gwendalyn J. Randolph, and Melody A. Swartz

Neutrophil Expression of Fas Ligand and Perforin Directs Effector CD8 T Cell Infiltration into Antigen-Challenged Skin

Danielle D. Kish, Anton V. Gorbachev, Neetha Parameswaran, Neetu Gupta, and Robert L. Fairchild

The Protein Tyrosine Phosphatase SHP-1 Regulates Phagolysosome Biogenesis

Carolina P. Gómez, Marina Tiemi Shio, Pascale Duplay, Martin Olivier, and Albert Descoteaux

GB Virus C Envelope Protein E2 Inhibits TCR-Induced IL-2 Production and Alters IL-2–Signaling Pathways

Nirjal Bhattarai, James H. McLinden, Jinhua Xiang, Thomas M. Kaufman, and Jack T. Stapleton

Airway Epithelial Expression of TLR5 Is Downregulated in Healthy Smokers and Smokers with Chronic Obstructive Pulmonary Disease

Rui Wang, Joumana Ahmed, Guoqing Wang, Ibrahim Hasan, Yael Strulovici-Barel, Jacqueline Salit, Jason G. Mezey, and Ronald G. Crystal

Inhibition of CD73 Improves B Cell-Mediated Anti-Tumor Immunity in a Mouse Model of Melanoma

Giovanni Forte, Rosalinda Sorrentino, Antonella Montinaro, Antonio Luciano, Ian M. Adcock, Piera Maiolino, Claudio Arra, Carla Cicala, Aldo Pinto, and Silvana Morello
Resolution of Experimental Lung Injury by Monocyte-Derived Inducible Nitric Oxide Synthase
Franco R. D’Alessio, Kenji Tsushima, Neil R. Aggarwal, Jason R. Mock, Yoshihi Eto, Brian T. Gariboldi,
Daniel C. Files, Claudia R. Avalos, Jackie V. Rodriguez, Adam T. Waickman, Sekhar P. Reddy, David B. Pearse,
Venkataramana K. Sidhaye, Paul M. Hasoun, Michael T. Crow, and Landon S. King

Antibodies Generated against Conserved Antigens Expressed by Bacteria and Allergen-Bearing Fungi Suppress Airway Disease
Nicholas W. Kim, Emily K. Stefanov, Brian L. P. Dizon, and John F. Kearney

Rapid Differentiation of Monocytes into Type I IFN-Producing Myeloid Dendritic Cells as an Antiviral Strategy against Influenza Virus Infection
Weiping Cao, Andrew K. Taylor, Renata E. Biber, William G. Davis, Jun Hyang Kim, Adrian J. Reber, Tatiana Chirkova,
Juan A. De La Cruz, Aseem Pandey, Priya Ranjan, Jacqueline M. Katz, Shivaprapaksh Gangappa,
and Suryaprapaksh Sambhara

rapid Differentiation of Monocytes into Type 1 IFN-Producing Myeloid Dendritic Cells as an Antiviral Strategy against Influenza Virus Infection
Weiping Cao, Andrew K. Taylor, Renata E. Biber, William G. Davis, Jun Hyang Kim, Adrian J. Reber, Tatiana Chirkova,
Juan A. De La Cruz, Aseem Pandey, Priya Ranjan, Jacqueline M. Katz, Shivaprapaksh Gangappa,
and Suryaprapaksh Sambhara

Acquisition of MHC:Peptide Complexes by Dendritic Cells Contributes to the Generation of Antiviral CD8+ T Cell Immunity In Vivo
Lesley A. Smyth, Catherine Hervouet, Thomas Hayday, Pablo D. Becker, Richard Ellis, Robert I. Lechler,
Giovanna Lombardi, and Linda S. Klavins

A GpC-Rich Oligonucleotide Acts on Plasmacytoid Dendritic Cells To Promote Immune Suppression
Claudia Volpi, Francesca Fallarino, Roberta Bianchi, Ciriana Orabona, Antonella De Luca, Carmine Vacca,
Luigina Romani, Bruno Gran, Ursula Grohmann, Paolo Puccetti, and Maria L. Belladonna

An NKp30-Based Chimeric Antigen Receptor Promotes T Cell Effector Functions and Antitumor Efficacy In Vivo
Tong Zhang, Ming-Ru Wu, and Charles L. Sentman

Dynamics of the Splenic Innate-like CD19+CD45Rlo Cell Population from Adult Mice in Homeostatic and Activated Conditions
Belén de Andrés, Carmen Prado, Beatriz Palacios, Mario Alía, Sharmili Jagtap, Natalia Serrano, Isabel Cortegano,
Miguel Angel R. Marcos, and María Luisa Gaspar

A TCR Affinity Threshold Regulates Memory CD4 T Cell Differentiation following Vaccination
Christina K. Baumgartner, Hideo Yagita, and Laurent P. Malherbe

A c-Myc and Surface CD19 Signaling Amplification Loop Promotes B Cell Lymphoma Development and Progression in Mice
Jonathan C. Poe, Veronique Minard-Colin, Evgenii I. Kountikov, Karen M. Haas, and Thomas F. Tedder

Phospholipase Cγ2 Plays a Role in TCR Signal Transduction and T Cell Selection
Guoping Fu, Yuhong Chen, James Schuman, Demin Wang, and Renren Wen

The Bone Marrow Functions as the Central Site of Proliferation for Long-Lived NK Cells
Mary J. G. van Helden, Natascha de Graaf, Claire J. P. Boog, David J. Topham, Dietmar M. W. Zais, and Alice J. A. M. Sijts

B7-DC-Ig Enhances Vaccine Effect by a Novel Mechanism Dependent on PD-1 Expression Level on T Cell Subsets
Mikayel Mkrtichyan, Yana G. Najjar, Estella C. Raulfs, Linda Liu, Solomon Langerman, Geoffrey Guittard,
Laurent Ozbun, and Samir N. Khleif

Stability and Function of Secondary Th1 Memory Cells Are Dependent on the Nature of the Secondary Stimulus
Chulwoo Kim, David C. Jay, and Matthew A. Williams
MOLECULAR AND STRUCTURAL IMMUNOLOGY

2356 V(D)J Recombinase-Mediated TCR β Locus Gene Usage and Coding Joint Processing in Peripheral T Cells during Perinatal and Pediatric Development
Janet M. Murray, Terri Messier, Jami Rivers, J. Patrick O’Neill, Vernon E. Walker, Pamela M. Vacek, and Barry A. Finette

2365 Identification of a Catalytic Exosite for Complement Component C4 on the Serine Protease Domain of C1s

2374 Activation-Induced Cytidine Deaminase-Initiated Off-Target DNA Breaks Are Detected and Resolved during S Phase
Muneer G. Hasham, Kathy J. Snow, Nina M. Donghia, Jane A. Branca, Mark D. Lesiard, Janet Stavnezer, Lindsay S. Shopland, and Kevin D. Mills

2383 A Common Single Nucleotide Polymorphism in Endoplasmic Reticulum Aminopeptidase 2 Induces a Specificity Switch That Leads to Altered Antigen Processing
Irini Evnouchidou, James Birtley, Sergey Seregin, Athanasios Papakryiakou, Efthalia Zervoudi, Martina Samiotaki, George Panaystou, Petros Giastas, Olivia Petrakis, Dimitris Georgiadis, Andrea Amalfitano, Emmanuel Saridakis, Irene M. Mavridis, and Efstratios Stratikos

2393 ZBTB32 Is an Early Repressor of the CIITA and MHC Class II Gene Expression during B Cell Differentiation to Plasma Cells
Hye Suk Yoon, Christopher D. Scherer, Parimal Majumder, Carl W. Davis, Royce Butler, Wendy Zinzow-Kramer, Ioanna Skountzou, Dimitrios G. Koutsonanos, Rafi Ahmed, and Jeremy M. Boss

IMMUNOGENETICS

2404 Recombinatorial Biases and Convergent Recombination Determine Interindividual TCRβ Sharing in Murine Thymocytes
Hanjie Li, Congting Ye, Guoli Ji, Xiaohui Wu, Zhe Xiang, Yuanyue Li, Yonghao Cao, Xiaolong Liu, Daniel C. Douek, David A. Price, and Jiahuai Han

HOST DEFENSE

2414 Sialoadhesin Promotes Rapid Proinflammatory and Type I IFN Responses to a Sialylated Pathogen, Campylobacter jejuni
Mariliis Klaas, Cornelia Oetke, Leanne E. Lewis, Lars P. Erwig, Astrid P. Heikema, Alistair Easton, Hugh J. Willson, and Paul R. Crocker

2423 Anti-Peptidoglycan Antibodies and Fcγ Receptors Are the Key Mediators of Inflammation in Gram-Positive Sepsis
Dawei Sun, Brent Raisley, Marybeth Langer, Janaki K. Iyer, Vidya Vedham, Jimmy L. Ballard, Judith A. James, Jordan Metcalf, and K. Mark Coggeshall

2432 CD8 T Cells Are Essential for Recovery from a Respiratory Vaccinia Virus Infection
John Goulding, Rebecca Bogue, Vikas Tahiliani, Michael Croft, and Shahram Salek-Ardakani

2441 CD4+ T Cells Are Necessary and Sufficient To Confer Protection against Chlamydia trachomatis Infection in the Murine Upper Genital Tract
David C. Gondek, Andrew J. Olive, Georg Stary, and Michael N. Starnbach

2450 Type I Alveolar Epithelial Cells Mount Innate Immune Responses during Pneumococcal Pneumonia
Kazuko Yamamoto, Joseph D. Ferrari, Yuxia Cao, Maria I. Ramirez, Matthew R. Jones, Lee J. Quinton, and Joseph P. Mizgerd

2460 Olfactomedin 4 Inhibits Cathepsin C-Mediated Protease Activities, Thereby Modulating Neutrophil Killing of Staphylococcus aureus and Escherichia coli in Mice
Wenli Liu, Ming Yan, Yueqin Liu, Kenneth R. McLeish, William G. Coleman, Jr., and Griffin P. Rodgers
Integrin $\alpha_\text{v}\beta_2$ is a leukocyte receptor for *Candida albicans* and is essential for protection against fungal infections

Samir Jawhara, Elzbieta Pluskota, Dmitriy Verbovetskiy, Olena Skomorovska-Prokvolit, Edward F. Plow, and Dmitry A. Soloviev

Human H-Ficolin inhibits replication of seasonal and pandemic influenza A viruses


Endothelial cells and fibroblasts amplify the arthritogenic type I IFN response in murine Lyme disease and are major sources of chemokines in *Borrelia burgdorferi*-infected joint tissue

Robert B. Lochhead, F. Lyon Sonderegger, Ying Ma, James E. Brewster, Doug Cornwall, Heather Maylor-Hagen, Jennifer C. Miller, James F. Zachary, John H. Wei, and Janis J. Weis

Differential interaction of the two related fungal species *Candida albicans* and *Candida dubliniensis* with human neutrophils

Eliáša Svobodová, Peter Staib, Josephine Lose, Florian Hennicke, Dagmar Barz, and Mihály Józsi

*Heligmosomoides polygyrus bakeri* induces tolerogenic dendritic cells that block colitis and prevent antigen-specific gut T cell responses

Arthur M. Blum, Long Hang, Tommy Setiawan, Joseph P. Urban, Jr., Korynn M. Stoyanoff, John Leung, and Joel V. Weinstock

Negative impact of IFN-\(\gamma\) on early host immune responses to retroviral infection


CD4\(^+\) T cell-dependent IFN-\(\gamma\) production by CD8\(^+\) effector T cells in *Mycobacterium tuberculosi*s infection

Tyler D. Bold and Joel D. Ernst

Increased susceptibility to *Salmonella* infection in signal regulatory protein \(\alpha\)-deficient mice

Lin-Xi Li, Shaikh M. Asif, Shirdi E. Schmiel, Seung-Joo Lee, and Stephen J. McSorley

**INFLAMMATION**

Chitin elicits CCL2 from airway epithelial cells and induces CCR2-dependent innate allergic inflammation in the lung

René M. Roy, Marcel Wüthrich, and Bruce S. Klein

Endothelial CD47 promotes vascular endothelial-cadherin tyrosine phosphorylation and participates in T cell recruitment at sites of inflammation in vivo

Veronica Azcutia, Michael Stefanidaki, Natoka Tsuboi, Tanya Mayadas, Kevin J. Croce, Daiju Fukuda, Masanori Aikawa, Gail Newton, and Francis W. Lucinskas

Prostaglandin E\(_2\) induces oncostatin M expression in human chronic wound macrophages through Axl receptor tyrosine kinase pathway

Kasturi Ganesh, Amitava Das, Ryan Dickerson, Savita Khanna, Narasimham L. Parinandi, Gayle M. Gordillo, Chandan K. Sen, and Sashwati Roy

Proteinase 3, the autoantigen in granulomatosis with polyangiitis, associates with calreticulin on apoptotic neutrophils, impairs macrophage phagocytosis, and promotes inflammation

Julie Gabillet, Arnaud Millet, Magali Pederzoli-Ribeil, Pascale Tacnet-Delorme, Loïc Guillemin, Luc Mouthon, Philippe Frachet, and Véronique Witcho-Sarsat

Dendritic cell sphingosine 1-phosphate receptor-3 regulates Th1–Th2 polarity in kidney ischemia–reperfusion injury

Amandeep Bajwa, Liping Huang, Hong Ye, Krishna Dondeti, Steven Song, Diane L. Rosin, Kevin R. Lynch, Peter I. Lobo, Li Li, and Mark D. Okusa

Resolvin D1 and resolvin D2 govern local inflammatory tone in obese fat

Joan Clària, Jesmond Dalli, Stephanie Yacoubian, Fei Gao, and Charles N. Serhan
The Role of Properdin in Zymosan- and Escherichia coli-Induced Complement Activation
Morten Harboe, Peter Garred, Julie K. Lindstad, Anne Pharo, Fredrik Muller, Gregory L. Stahl, John D. Lambris, and Tom E. Molnes

Systemic Analysis of PPARγ in Mouse Macrophage Populations Reveals Marked Diversity in Expression with Critical Roles in Resolution of Inflammation and Airway Immunity
Emmanuel L. Gautier, Andrew Chow, Rainer Spanbroek, Genevieve Marcelin, Melanie Greter, Claudia Jakubzick, Milena Bogunovic, Marylene Leboeuf, Nico van Rooijen, Andreas J. Habenicht, Miriam Merad, and Gwendalyn J. Randolph

CLINICAL IMMUNOLOGY

Glioma Big Potassium Channel Expression in Human Cancers and Possible T Cell Epitopes for Their Immunotherapy
Lisheng Ge, Neil T. Hoa, Andrew N. Cornforth, Daniela A. Bota, Anthony Mai, Dong In Kim, Shiuw-Kwei Chiou, Mishelle J. Hickey, Carol A. Kruse, and Martin R. Jadus

Chitinase 1 Is a Biomarker for and Therapeutic Target in Scleroderma-Associated Interstitial Lung Disease That Augments TGF-β1 Signaling

Noncovalent Assembly of Anti-Dendritic Cell Antibodies and Antigens for Evoking Immune Responses In Vitro and In Vivo
Anne-Laure Flamar, Sandra Zurawski, Felix Scholz, Ingrid Gayet, Ling Ni, Xiao-Hua Li, Eynav Klechevsky, John Quinn, SangKon Oh, Daniel H. Kaplan, Jacques Banchereau, and Gerard Zurawski

Intratumoral hu14.18–IL-2 (IC) Induces Local and Systemic Antitumor Effects That Involve Both Activated T and NK Cells As Well As Enhanced IC Retention

Functional Exhaustion of CD4+ T Lymphocytes during Primary Cytomegalovirus Infection
Pierre Antoine, Véronique Olislagers, Ariane Huygens, Sandra Lecomte, Corinne Liesnard, Catherine Donner, and Arnaud Marchant

B Cell Memory to a Serogroup C Meningococcal Conjugate Vaccine in Childhood and Response to Booster: Little Association with Serum IgG Antibody
Kirsten P. Perrett, Celina Jin, Elizabeth Clutterbuck, Tesa M. John, Amy P. Winter, Elizabeth Kibwana, Ly-Mee Yu, Nigel Curtis, and Andrew J. Pollard

CORRECTIONS

Correction: Increased Antigen Presentation Efficiency by Coupling Antigens to MHC Class I Trafficking Signals
Sebastian Kreiter, Abderraouf Selmi, Mustafa Diken, Martin Sebastian, Phillip Osterloh, Hansjörg Schild, Christoph Huber, Özlem Tuğrul, and Ugur Sahin

AUTHOR INDEX