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PILLARS OF IMMUNOLOGY

1909  Interference with Virus Infection
     Michael Gale, Jr.

     A. Isaacs and J. Lindenmann

     A. Isaacs, J. Lindenmann, and R. C. Valentine

BRIEF REVIEWS

1927  Donor Unrestricted T Cells: A Shared Human T Cell Response
     Ildiko Van Rhijn and D. Branch Moody

1933  Age-Associated B Cells: A T-bet–Dependent Effector with Roles in Protective and Pathogenic Immunity
     Kira Rubtsova, Anatoly V. Rubtsov, Michael P. Cancro, and Philippa Marrack

CUTTING EDGE

1939  Cutting Edge: cGAS Is Required for Lethal Autoimmune Disease in the Trex1-Deficient Mouse Model of
     Aicardi–Goutières Syndrome
     Elizabeth E. Gray, Piper M. Treuting, Joshua J. Woodward, and Daniel B. Stetson

On the cover: Head of a juvenile medaka fish carrying fluorescent markers for chemokine receptors ccr9a (green) and ccr9b
(red). ccr9a+ cells are located in the thymus, skin, and other tissues, whereas ccr9b+ cells are preferentially located in the
thymus. Both receptors are involved in guiding thymocytes and triggering steps in their maturation. Bajoghli, B., P. Kuri,
AUTOIMMUNITY

1945 Radiosensitive Hematopoietic Cells Determine the Extent of Skin Inflammation in Experimental Epidermolysis Bullosa Acquisita

1955 Genetic Interaction between Lyn, Ets1, and Btk in the Control of Antibody Levels
Jessica Mayeux, Brian Skang, Wei Luo, Lisa M. Ruziell, Shinni John, Prontip Saelee, Hanuva Abbasi, Quan-Zhen Li, Lee Ann Garrett-Sinba, and Anne B. Satterthwaite

1964 The T Cell Repertoire–Diversifying Enzyme TSSP Contributes to Thymic Selection of Diabeticogenic CD4 T Cell Specificities Reactive to ChgA and IAPP Autoantigens
Christophe Viret, Karim Mahiddine, Rocky Lee Baker, Kathryn Hashkins, and Sylvie Guerder

1974 IL-7/IL-7 Receptor Signaling Differentially Affects Effector CD4+ T Cell Subsets Involved in Experimental Autoimmune Encephalomyelitis
Carlos A. Arbelaez, Simon Glatigny, Rebekka Duben, Gerard Eberl, Mohamed Oukka, and Estelle Bettelli

CLINICAL AND HUMAN IMMUNOLOGY

1984 Au-ACRAMTU-PEt3 Alters Redox Balance To Inhibit T Cell Proliferation and Function
P. Kent Langston, Mu Yang, Ulrich Bierbach, Derek Parsonage, Leslie B. Poole, Madeline J. Price, and Jason M. Grayson

1995 The Raf Kinase Inhibitor Sorafenib Inhibits JAK–STAT Signal Transduction in Human Immune Cells

2006 Chronic Psoriatic Skin Inflammation Leads to Increased Monocyte Adhesion and Aggregation
Jackelyn B. Golden, Sarah G. Grofi, Michael V. Squeri, Sara M. Debanne, Nicole L. Ward, Thomas S. McCormick, and Kevin D. Cooper

2019 γ-Tilmanocept, a New Radiopharmaceutical Tracer for Cancer Sentinel Lymph Nodes, Binds to the Mannose Receptor (CD206)
Abul K. Azad, Murugesan V. S. Rajaram, Wendy L. Metz, Frederick O. Cope, Michael S. Blue, David R. Vera, and Larry S. Schlesinger

2030 Phenotypic Complexity of the Human Regulatory T Cell Compartment Revealed by Mass Cytometry
Gavin M. Mason, Katie Lowe, Rosella Meltchiott, Richard Ellis, Emanuelle de Rinaldis, Mark Peakman, Susanne Heck, Giovanna Lombardi, and Timothy I. M. Tree

2038 mTOR Inhibition Per Se Induces Nuclear Localization of FOXP3 and Conversion of Invariant NKT (iNKT) Cells into Imnosuppressive Regulatory iNKT Cells
Charlotte M. Huijts, Famke L. Schneiders, Juan J. Garcia-Vallejo, Henk M. Verheul, Tanja D. de Gruijl, and Hans J. van der Vliet

IMMUNE REGULATION

2046 Identification of a New Exo-Endocytic Mechanism Triggered by Corticotropin-Releasing Hormone in Mast Cells
Santiago Balseiro-Gomez, Juan A. Flores, Jorge Acosta, M. Pilar Ramirez-Ponce, and Eva Ales

2057 Nucleotide-Induced Membrane-Proximal Proteolysis Controls the Substrate Specificity of T Cell Ecto-ADP-Ribosyltransferase ARTC2.2
Stephan Menzel, Björn Risiek, Peter Banna, Thomas Jakoby, Maria Miksiezic, Nicole Schwarz, Marion Nisen, Friedrich Haag, Andreas Tholey, and Friedrich Koch-Nolte

2067 The Contained Self-Reactive Peripheral T Cell Repertoire: Size, Diversity, and Cellular Composition
David M. Richards, Eliana Ruggero, Ann-Cathrin Hofer, Julian P. Sefrin, Manfred Schmid, Christof von Kalle, and Markus Feuerer
# An Inhibitory Role for the Transcription Factor Stat3 in Controlling IL-4 and Bcl6 Expression in Follicular Helper T Cells

Hao Wu, Lin-Lin Xu, Paulla Teuscher, Hong Liu, Mark H. Kaplan, and Alexander L. Dent

# B Lymphocyte–Specific Loss of Ric-8A Results in a Gα Protein Deficit and Severe Humoral Immunodeficiency

Cedric Boularan, Il-Young Huang, Olena Kamnyeva, Chung Park, Kathleen Harrison, Zhen Huang, and John H. Kehrl

# Id3 Controls Cell Death of 2B4+ Virus-Specific CD8+ T Cells in Chronic Viral Infection

Alexandra J. Menner, Katharina S. Rauch, Peter Aichele, Hanspeter Pircher, Christian Schachtrup, and Kristina Schachtrup

# The Neonatal CD4+ T Cell Response to a Single Epitope Varies in Genetically Identical Mice

Ryan W. Nelson, Miriam N. Rajpal, and Marc K. Jenkins

# Store-Operated Ca2+ Release-Activated Ca2+ Channels Regulate PAR2-Activated Ca2+ Signaling and Cytokine Production in Airway Epithelial Cells

Amit Jairaman, Megumi Yamashita, Robert P. Schleimer, and Murali Prakriya

# MicroRNAs miR-155 and miR-16 Decrease AID and E47 in B Cells from Elderly Individuals

Daniela Frasca, Alain Diaz, Maria Romero, Franco Ferracci, and Bonnie B. Blomberg

# Regulatory Dendritic Cells Restrain NK Cell IFN-γ Production through Mechanisms Involving NKp46, IL-10, and MHC Class I–Specific Inhibitory Receptors


## IMMUNE SYSTEM DEVELOPMENT

# Role of SHIP1 in Invariant NKT Cell Development and Functions


# Cardif (MAVS) Regulates the Maturation of NK Cells

LaTeira D. Haynes, Silshi Verma, Bryan McDonald, Runpei Wu, Robert Tacke, Heba N. Nowyshed, Jennifer Ekstein, Ariana Feuvrier, Chris A. Benedict, and Catherine C. Hedrick

# Frizzled-6 Regulates Hematopoietic Stem/Progenitor Cell Survival and Self-Renewal

Belma Melda Abidin, Edward Owusu Kwarteng, and Krista M. Heinonen

# Noninvasive In Toto Imaging of the Thymus Reveals Heterogeneous Migratory Behavior of Developing T Cells

Baubak Bajoghli, Paola Kuri, Daigo Inoue, Narges Aghaallaei, Marleen Hanelt, Thomas Thumberger, Matteo Rauzi, Joachim Wittbrodt, and Maria Leptin

## IMMUNOGENETICS

# CXCR3 Polymorphism and Expression Associate with Spontaneous Preterm Birth


# Cattle NK Cell Heterogeneity and the Influence of MHC Class I

Alasdair J. Allan, Nicholas D. Sanderson, Simon Gubkins, Shirley A. Ellis, and John A. Hammond

## IMMUNOTHERAPY AND VACCINES

# Localized Store-Operated Calcium Influx Represses CD95-Dependent Apoptotic Effects of Rituximab in Non-Hodgkin B Lymphomas

Pierre Vacher, Anne-Marie Vacher, Raphael Pineau, Simon Latour, Isabelle Soubeiran, Céline Pangault, Karin Tarte, Pierre Soubeiran, Thomas Ducret, and Laurence Bresson-Bepoldin

# Cholesterol Modification of p40-Specific Small Interfering RNA Enables Therapeutic Targeting of Dendritic Cells

Jürgen Brück, Steve Pascolo, Kerstin Fuchs, Christina Kellerer, Ivana Glacova, Julia Geisel, Katja Dengler, Amir S. Yazdi, Martin Röcken, and Kamran Ghoreschi
IgG-Mediated Immune Suppression to Erythrocytes by Polyclonal Antibodies Can Occur in the Absence of Activating or Inhibitory Fcγ Receptors in a Full Mouse Model
Lidice Bernardo, Honghui Yu, Alaa Amash, James C. Zimring, and Alan H. Lazarus

**INFECTIOUS DISEASE AND HOST RESPONSE**

A Metalloproteinase Mirolysin of Tannerella forsythia Inhibits All Pathways of the Complement System
Monika Juko, Jan Potempa, Danuta Mizgalska, Ewa Bielecka, Miroslaw Ksiazek, Kristian Riebeck, Peter Garred, Sigrun Eick, and Anna M. Blom

Parasite Antigen-Specific Regulation of Th1, Th2, and Th17 Responses in Strongyloides stercoralis Infection
Rajamanickam Anuradha, Saravanan Munisankar, Chandrakumar Dolla, Paul Kumaran, Thomas B. Nutman, and Subash Babu

MicroRNA-15b Modulates Japanese Encephalitis Virus–Mediated Inflammation via Targeting RNF125
Bibo Zhu, Jing Ye, Yanru Nis, Usama Ashraf, Ali Zohash, Xiaodong Duan, Zhen F. Fu, Yunfeng Song, Huanchun Chen, and Shengbo Cao

Extent of Systemic Spread Determines CD8⁺ T Cell Immunodominance for Laboratory Strains, Smallpox Vaccines, and Zoonotic Isolates of Vaccinia Virus
Inge E. A. Flesch, Natasha A. Hollett, Yik Chun Wong, Bárbara Resende Quinan, Debbie Howard, Flávio G. da Fonseca, and David C. Tschayke

Restoration of CD4⁺ Responses to Copathogens in HIV-Infected Individuals on Antiretroviral Therapy Is Dependent on T Cell Memory Phenotype
Catherine Riou, Ramla F. Tanko, Andreia P. Soares, Lindi Mason, Lise Werner, Nigel J. Garrett, Natasha Samsunder, Quarraisha Abdool Karim, Salim S. Abdool Karim, and Wendy A. Burgers

**INNATE IMMUNITY AND INFLAMMATION**

Small Ubiquitin-like Modifier Alters IFN Response
Ghizlane Maarifi, Mohamed Ali Maroui, Jacques Dutrieux, Laurent Dianoux, Sébastien Nisole, and Mounira K. Chelbi-Alix

Phosphocholine-Modified Macromolecules and Canonical Nicotinic Agonists Inhibit ATP-Induced IL-1β Release

Langerhans Cells Suppress CD49a⁺ NK Cell–Mediated Skin Inflammation
Felix Schola, Shruti Naik, Fayyaz S. Sutterwala, and Daniel H. Kaplan

Selective Targeting of a Disease-Related Conformational Isoform of Macrophage Migration Inhibitory Factor Ameliorates Inflammatory Conditions
IL-15 Superagonist–Mediated Immunotoxicity: Role of NK Cells and IFN-γ
Yin Guo, Liming Luan, Whitney Rabacal, Julia K. Bohannon, Benjamin A. Fensterheim, Antonio Hernandez, and Edward R. Sherwood

The Inflammatory Caspases-1 and -11 Mediate the Pathogenesis of Dermatitis in Sharpin-Deficient Mice
Todd Douglas, Claudia Champagne, Alexandre Morizor, Jean-Martin Lapointe, and Maya Saleh

B Cell–Intrinsic IDO1 Regulates Humoral Immunity to T Cell–Independent Antigens
Rahul Shinde, Michiko Shimoda, Kapil Chaudhary, Haiyun Liu, Eslam Mohamed, Jillian Bradley, Sridhar Kandala, Xia Li, Kebin Liu, and Tracy L. McGaha

The Src-Family Kinases Hck and Fgr Regulate Early Lipopolysaccharide-Induced Myeloid Cell Recruitment into the Lung and Their Ability To Secret Chemokines
Paola Mazzi, Elena Caveggion, José A. Lapinet-Vera, Clifford A. Lowell, and Giorgio Berton

A Detailed Characterization of the Dysfunctional Immunity and Abnormal Myelopoiesis Induced by Severe Shock and Trauma in the Aged

Endothelial LSP1 Modulates Extravascular Neutrophil Chemotaxis by Regulating Nonhematopoietic Vascular PECAM-1 Expression
Mokarram Hossain, Syed M. Qadri, Najia Xu, Yang Su, Francis C. S. Cayabyab, Bryan Heit, and Lixin Liu

Contribution of MINCLE–SYK Signaling to Activation of Primary Human APCs by Mycobacterial Cord Factor and the Novel Adjuvant TDB
Jenny Ostrop, Katrin Jozefowski, Stephanie Zimmermann, Katharina Hofmann, Erwin Strasser, Bernd Lepenies, and Roland Lang

The TNF Family Molecules LIGHT and Lymphotoxin αβ Induce a Distinct Steroid-Resistant Inflammatory Phenotype in Human Lung Epithelial Cells
Ricardo da Silva Antunes, Lisa Madge, Pejman Soroosh, Joel Tocker, and Michael Croft

Reshaping of Human Macrophage Polarization through Modulation of Glucose Catabolic Pathways
Elena Izquierdo, Victor Delgado Cuevas, Salvador Fernández-Arroyo, Marta Riera-Borrull, Emmanuel Orta-Zavalza, Jorge Joven, Eduardo Rial, Angel L. Corbi, and María M. Escrivá

Proteolytic Cleavage of AMPKα and Intracellular MMP9 Expression Are Both Required for TLR4-Mediated mTORC1 Activation and HIF-1α Expression in Leukocytes
Zhiyong Zhang, Louis F. Amorosa, Susette M. Coyle, Marie A. Macor, Sara E. Lubitz, Jeffrey L. Carson, Morris J. Birnbaum, Leonard Y. Lee, and Beatrice Haimovich

Salmonella Typhimurium Co-Opts the Host Type I IFN System To Restrict Macrophage Innate Immune Transcriptional Responses Selectively
Darren J. Perkins, Rajesh Rajaiah, Sharon M. Tennant, Girish Ramachandran, Ellen E. Higginson, Tristan N. Dyson, and Stefanie N. Vogel

MUCOSAL IMMUNOLOGY

Programming of Influenza Vaccine Broadness and Persistence by Mucoadhesive Polymer-Based Adjuvant Systems
Hyun Jong Noh, Mohammed Y. E. Chowdhury, Seonghun Cho, Jae-Hoon Kim, Hye Sun Park, Chul-Joong Kim, Haryoung Poo, Moon-Hee Sung, Jong-Soo Lee, and Yong Taik Lim

TUMOR IMMUNOLOGY

IL-18 Is Involved in Eosinophil-Mediated Tumoricidal Activity against a Colon Carcinoma Cell Line by Upregulating LFA-1 and ICAM-1
Séline Catanouli, Marie Debekhe, Virginie Driss, Aurore Sarazin, Arnaud Dendooven, Jean-Emmanuel Kahn, Guillaume Lefèvre, and Monique Capron
Exclusive Transduction of Human CD4+ T Cells upon Systemic Delivery of CD4-Targeted Lentiviral Vectors