



This information is current as
of May 20, 2022.

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>

IN THIS ISSUE

- 1 **Gut Microbiota Shape Lung Immunity** *See article p. 97*
Ron Regulates Reparative Macrophages *See article p. 256*
Clarifying Complement with Crystals *See article p. 337*
Nod2 Needed To Curb Intestinal Inflammation *See article p. 345*

PILLARS OF IMMUNOLOGY

- 3 TCGF: How Much? Oh, and by the Way, How Many?
Frank W. Fitch
- 5 Pillars Article: T Cell Growth Factor: Parameters of Production and a Quantitative Microassay for Activity.
J. Immunol. 1978. 120: 2027–2032
Steven Gillis, Mary M. Ferm, Winny Ou, and Kendall A. Smith

BRIEF REVIEWS

- 11 Evolution of Cytokine Receptor Signaling
Clifford Liongue, Robert Sertori, and Alister C. Ward

CUTTING EDGE

- 21 Cutting Edge: A Cullin-5–TRAF6 Interaction Promotes TRAF6 Polyubiquitination and Lipopolysaccharide Signaling
Ziyang Zhu, Lili Wang, Rui Hao, Bo Zhao, Lei Sun, and Richard D. Ye

AUTOIMMUNITY

- 27 Regulatory T Cells Control Th2-Dominant Murine Autoimmune Gastritis
Jessica Harakal, Claudia Rival, Hui Qiao, and Kenneth S. Tung

On the cover: The cover illustrates the electron density obtained by crystallography at the intermolecular interface for a Fab fragment of the therapeutic Ab eculizumab caught in action while inhibiting its Ag complement C5. Eculizumab is used clinically to treat paroxysmal nocturnal hemoglobinuria and atypical hemolytic uremic syndrome. Schatz-Jakobsen, J. A., Y. Zhang, K. Johnson, A. Neill, D. Sheridan, and G. R. Andersen. 2016. Structural basis for eculizumab-mediated inhibition of the complement terminal pathway. *J. Immunol.* 197: 337–344.

The Journal of Immunology (ISSN 0022-1767) is published twice each month by The American Association of Immunologists, Inc., 1451 Rockville Pike, Suite 650, Rockville, MD 20852, 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 Rockville, MD 20852, 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, 1451 Rockville Pike, Suite 650, Rockville, MD 20852. Copyright © 2016 by The American Association of Immunologists, Inc.

- 42 Type I IFNs Regulate Inflammation, Vasculopathy, and Fibrosis in Chronic Cutaneous Graft-versus-Host Disease
Tracy A. Delaney, Chris Morehouse, P. Zachary Brohawn, Christopher Groves, Marco Colonna, Yihong Yao, Miguel Sanjuan, and Anthony J. Coyle
- 51 Lung Injury Combined with Loss of Regulatory T Cells Leads to De Novo Lung-Restricted Autoimmunity
Stephen Chiu, Ramiro Fernandez, Vijay Subramanian, Haiying Sun, Malcolm M. DeCamp, Daniel Kreisel, Harris Perlman, G. R. Scott Budinger, Thalachallour Mohanakumar, and Ankit Bharat
- 58 Enhanced Expression of Bruton's Tyrosine Kinase in B Cells Drives Systemic Autoimmunity by Disrupting T Cell Homeostasis
Odilia B. J. Corneth, Marjolein J. W. de Bruijn, Jasper Rip, Patrick S. Asmawidjaja, Laurens P. Kil, and Rudi W. Hendriks

CLINICAL AND HUMAN IMMUNOLOGY

- 68 Direct TLR-2 Costimulation Unmasks the Proinflammatory Potential of Neonatal CD4⁺ T Cells
Brian D. Sinnott, Byung Park, Mardi C. Boer, Deborah A. Lewinsohn, and Christina L. Lancioni
- 78 Human Lymphoid Tissues Harbor a Distinct CD69⁺CXCR6⁺ NK Cell Population
Gertjan Lugthart, Janine E. Melsen, Carly Vervat, Monique M. van Ostaïjen-ten Dam, Willem E. Corver, Dave L. Roelen, Jeroen van Bergen, Maarten J. D. van Tol, Arjan C. Lankester, and Marco W. Schilham

IMMUNE REGULATION

- 85 IL-21-Induced MHC Class II⁺ NK Cells Promote the Expansion of Human Uncommitted CD4⁺ Central Memory T Cells in a Macrophage Migration Inhibitory Factor-Dependent Manner
Romain Loyon, Emilie Picard, Olivier Mauvais, Lise Queiroz, Virginie Mougey, Jean-René Pallandre, Jeanne Galaine, Patricia Mercier-Letondal, Guillaume Kellerman, Nathalie Chaput, John Wijdenes, Olivier Adotévi, Christophe Ferrand, Pedro Romero, Yann Godet, and Christophe Borg
- 97 Pulmonary Th17 Antifungal Immunity Is Regulated by the Gut Microbiome
Jeremy P. McAleer, Nikki L. H. Nguyen, Kong Chen, Pawan Kumar, David M. Ricks, Matthew Binnie, Rachel A. Armentrout, Derek A. Pociask, Aaron Hein, Amy Yu, Amit Vikram, Kyle Bibby, Yoshinori Umesaki, Amariliz Rivera, Dean Sheppard, Wenjun Ouyang, Lora V. Hooper, and Jay K. Kolls
- 108 LFA-1/ICAM-1 Ligation in Human T Cells Promotes Th1 Polarization through a GSK3 β Signaling-Dependent Notch Pathway
Navin K. Verma, M. H. U. Turabe Fazil, Seow Theng Ong, Madhavi Latha S. Chalasani, Jian Hui Low, Amuthavalli Kottaiswamy, Praseetha P, Atish Kizhakeyil, Sunil Kumar, Aditya K. Panda, Michael Freeley, Sinead M. Smith, Bernhard O. Boehm, and Dermot Kelleher
- 119 LAG-3 Confers a Competitive Disadvantage upon Antiviral CD8⁺ T Cell Responses
Kevin D. Cook and Jason K. Whitmire
- 128 Ly49C Impairs NK Cell Memory in Mouse Cytomegalovirus Infection
Catherine A. Forbes, Anthony A. Scalzo, Mariapia A. Degli-Esposti, and Jerome D. Coudert

IMMUNE SYSTEM DEVELOPMENT

- 141 mTORC2 in Thymic Epithelial Cells Controls Thymopoiesis and T Cell Development
Hong-Xia Wang, Joyce S. Cheng, Shuai Chu, Yu-Rong Qiu, and Xiao-Ping Zhong

IMMUNOGENETICS

- 151 Characterization of SIGIRR/IL-1R8 Homolog from Zebrafish Provides New Insights into Its Inhibitory Role in Hepatic Inflammation
Wei Feng, Yi-Feng Gu, Li Nie, Dong-Yang Guo, Li-xin Xiang, and Jian-zhong Shao

IMMUNOTHERAPY AND VACCINES

- 168 IL-15 *Trans*-Signaling with the Superagonist RLI Promotes Effector/Memory CD8⁺ T Cell Responses and Enhances Antitumor Activity of PD-1 Antagonists
Mélanie Desbois, Pauline Le Vu, Clélia Coutzac, Elie Marcheteau, Coralie Béal, Magali Terme, Alain Gey, Sébastien Morisseau, Géraldine Teppaz, Lisa Boselli, Yannick Jacques, David Béchar, Eric Tartour, Lydie Cassard, and Nathalie Chaput

- 179 CSF-1R–Dependent Lethal Hepatotoxicity When Agonistic CD40 Antibody Is Given before but Not after Chemotherapy
Katelyn T. Byrne, Nathan H. Leisenring, David L. Bajor, and Robert H. Vonderheide
- 188 Low-Dose IL-2 Induces Regulatory T Cell–Mediated Control of Experimental Food Allergy
Benjamin Bonnet, James Vigneron, Béatrice Levacher, Thomas Vazquez, Fabien Pitoiset, Faustine Brimaud, Guillaume Churlaud, David Klatzmann, and Bertrand Bellier

INFECTIOUS DISEASE AND HOST RESPONSE

- 199 MSX1 Modulates RLR-Mediated Innate Antiviral Signaling by Facilitating Assembly of TBK1-Associated Complexes
Liu-Ting Chen, Ming-Ming Hu, Zhi-Sheng Xu, Yu Liu, and Hong-Bing Shu
- 208 IL-27 Induced by Select *Candida* spp. via TLR7/NOD2 Signaling and IFN- β Production Inhibits Fungal Clearance
Emmanuel C. Patin, Adam V. Jones, Aiysha Thompson, Mathew Clement, Chia-Te Liao, James S. Griffiths, Leah E. Wallace, Clare E. Bryant, Roland Lang, Philip Rosenstiel, Ian R. Humphreys, Philip R. Taylor, Gareth W. Jones, and Selinda J. Orr
- 222 Imatinib Triggers Phagolysosome Acidification and Antimicrobial Activity against *Mycobacterium bovis* Bacille Calmette–Guérin in Glucocorticoid-Treated Human Macrophages
Julia Steiger, Alexander Stephan, Megan S. Inkeles, Susan Realegeno, Heiko Bruns, Philipp Kröll, Juliana de Castro Kroner, Andrea Sommer, Marina Batinica, Lena Pitzler, Rainer Kalscheuer, Pia Hartmann, Georg Plum, Steffen Stenger, Matteo Pellegrini, Bent Brachvogel, Robert L. Modlin, and Mario Fabri
- 233 Multiple Inhibitory Pathways Contribute to Lung CD8⁺ T Cell Impairment and Protect against Immunopathology during Acute Viral Respiratory Infection
John J. Erickson, Meredith C. Rogers, Sharon J. Tollefson, Kelli L. Boyd, and John V. Williams
- 244 Human Xenobiotic Nuclear Receptor PXR Augments *Mycobacterium tuberculosis* Survival
Ella Bhagyaraj, Ravikanth Nanduri, Ankita Saini, Hedwin Kitdorlang Dkhar, Nancy Ahuja, Venika Chandra, Sahil Mahajan, Rashi Kalra, Drishti Tiwari, Charu Sharma, Ashok Kumar Janmeja, and Pawan Gupta

INNATE IMMUNITY AND INFLAMMATION

- 256 The Ron Receptor Tyrosine Kinase Regulates Macrophage Heterogeneity and Plays a Protective Role in Diet-Induced Obesity, Atherosclerosis, and Hepatosteatosis
Shan Yu, Joselyn N. Allen, Adwitia Dey, Limin Zhang, Gayathri Balandaram, Mary J. Kennett, Mingcan Xia, Na Xiong, Jeffrey M. Peters, Andrew Patterson, and Pamela A. Hankey-Giblin
- 266 CysLT₁ Receptor Is Protective against Oxidative Stress in a Model of Irritant-Induced Asthma
Toby McGovern, Madison Goldberger, Michael Chen, Benoit Allard, Yoichiro Hamamoto, Yoshihide Kanaoka, K. Frank Austen, William S. Powell, and James G. Martin
- 278 Phosphoinositide 3-Kinase δ Regulates Dectin-2 Signaling and the Generation of Th2 and Th17 Immunity
Min Jung Lee, Eri Yoshimoto, Shinobu Saijo, Yoichiro Iwakura, Xin Lin, Howard R. Katz, Yoshihide Kanaoka, and Nora A. Barrett
- 288 Defective Association of the Platelet Glycoprotein Ib–IX Complex with the Glycosphingolipid-Enriched Membrane Domain Inhibits Murine Thrombus and Atheroma Formation
Hao Zhou, Yali Ran, Qi Da, Tanner S. Shaw, Dan Shang, Anilkumar K. Reddy, José A. López, Christie M. Ballantyne, Jerry Ware, Huaizhu Wu, and Yuandong Peng
- 296 MMP-25 Metalloprotease Regulates Innate Immune Response through NF- κ B Signaling
Clara Soria-Valles, Ana Gutiérrez-Fernández, Fernando G. Osorio, Dido Carrero, Adolfo A. Ferrando, Enrique Colado, M. Soledad Fernández-García, Elena Bonzon-Kulichenko, Jesús Vázquez, Antonio Fueyo, and Carlos López-Otín
- 303 Bone Marrow CD11c⁺ Cell–Derived Amphiregulin Promotes Pulmonary Fibrosis
Lin Ding, Tianju Liu, Zhe Wu, Biao Hu, Taku Nakashima, Matthew Ullenbruch, Francina Gonzalez De Los Santos, and Sem H. Phan

- 313 Influenza Vaccination Generates Cytokine-Induced Memory-like NK Cells: Impact of Human Cytomegalovirus Infection
Martin R. Goodier, Ana Rodriguez-Galan, Chiara Lusa, Carolyn M. Nielsen, Alansana Darboe, Ana L. Moldoveanu, Matthew J. White, Ron Behrens, and Eleanor M. Riley

- 326 STAT2 Is Required for TLR-Induced Murine Dendritic Cell Activation and Cross-Presentation
Jun Xu, Michael H. Lee, Marita Chakhtoura, Benjamin L. Green, Kevin P. Kotredes, Robert W. Chain, Uma Sriram, Ana M. Gamero, and Stefania Gallucci

MOLECULAR AND STRUCTURAL IMMUNOLOGY

- 337 Structural Basis for Eculizumab-Mediated Inhibition of the Complement Terminal Pathway
Janus Asbjørn Schatz-Jakobsen, Yuchun Zhang, Krista Johnson, Alyssa Neill, Douglas Sheridan, and Gregers Rom Andersen

MUCOSAL IMMUNOLOGY

- 345 The Cytosolic Microbial Receptor Nod2 Regulates Small Intestinal Crypt Damage and Epithelial Regeneration following T Cell-Induced Enteropathy
Galliano Zanello, Ashleigh Goethel, Sandrine Rouquier, David Prescott, Susan J. Robertson, Charles Maisonneuve, Catherine Streutker, Dana J. Philpott, and Kenneth Croitoru

- 356 Characterization of the Inflammasome in Human Kupffer Cells in Response to Synthetic Agonists and Pathogens
Claudia Zannetti, Guillaume Roblot, Emily Charrier, Michelle Ainouze, Issam Tout, François Briat, Nathalie Isorce, Suzanne Faure-Dupuy, Maud Michelet, Marie Marotel, Semra Kati, Thomas F. Schulz, Michel Rivoire, Alexandra Traverse-Glehen, Souphalone Luangsay, Omran Alatif, Thomas Henry, Thierry Walzer, David Durantel, and Uzma Hasan

- 368 Progesterone Levels Associate with a Novel Population of CCR5⁺CD38⁺ CD4 T Cells Resident in the Genital Mucosa with Lymphoid Trafficking Potential
Alison Swaims-Kohlmeier, Richard E. Haaland, Lisa B. Haddad, Anandi N. Sheth, Tammy Evans-Strickfaden, L. Davis Lupo, Sarah Cordes, Alfredo J. Aguirre, Kathryn A. Lupoli, Cheng-Yen Chen, Igbo Oforokun, Clyde E. Hart, and Jacob E. Kohlmeier

- 377 A Novel Role for TL1A/DR3 in Protection against Intestinal Injury and Infection
Li-Guo Jia, Giorgos Bamias, Kristen O. Arseneau, Linda C. Burkly, Eddy C. Y. Wang, Dennis Gruszka, Theresa T. Pizarro, and Fabio Cominelli

CORRECTIONS

- 387 Correction: SOCS3 Deficiency Promotes M1 Macrophage Polarization and Inflammation
Hongwei Qin, Andrew T. Holdbrooks, Yudong Liu, Stephanie L. Reynolds, Lora L. Yanagisawa, and Etty N. Benveniste

390 AUTHOR INDEX

392 INFORMATION FOR AUTHORS