

INFECTION AND IMMUNITY

Volume 79

January 2011

No. 1

INSTRUCTIONS TO AUTHORS

2011 Instructions to Authors 1–20

SPOTLIGHT

Articles of Significant Interest Selected from This Issue by the Editors 21–22

MINIREVIEW

Computational Prediction of Type III and IV Secreted Effectors in Gram-Negative Bacteria 23–32
Jason E. McDermott, Abigail Corrigan, Elena Peterson, Christopher Oehmen, George Niemann, Eric D. Cambronne, Danna Sharp, Joshua N. Adkins, Ram Samudrala, and Fred Heffron

MOLECULAR PATHOGENESIS

Impact of Glutamine Transporters on Pneumococcal Fitness under Infection-Related Conditions 44–58
Tobias Härtel, Matthias Klein, Uwe Koedel, Manfred Rohde, Lothar Petruschka, and Sven Hammerschmidt

Region of Difference 2 Contributes to Virulence of *Mycobacterium tuberculosis* 59–66
Robert A. Kozak, David C. Alexander, Reiling Liao, David R. Sherman, and Marcel A. Behr

Role of Purine Biosynthesis in *Bacillus anthracis* Pathogenesis and Virulence 153–166
Amy Jenkins, Christopher Cote, Nancy Twenhafel, Tod Merkel, Joel Bozue, and Susan Welkos

Identification of a Genetic Locus Responsible for Antimicrobial Peptide Resistance in *Clostridium difficile* 167–176
Shonna M. McBride and Abraham L. Sonenshein

A *fadD* mutant of *Vibrio cholerae* Is Impaired in the Production of Virulence Factors and Membrane Localization of the Virulence Regulatory Protein TcpP 258–266
Sreejana Ray, Eshita Chatterjee, Arpita Chatterjee, Kalidas Paul, and Rukhsana Chowdhury

The *fbpABC* Operon Is Required for Ton-Independent Utilization of Xenosiderophores by *Neisseria gonorrhoeae* Strain FA19 267–278
Heather R. Strange, Tracey A. Zola, and Cynthia Nau Cornelissen

A Kunitz Protease Inhibitor from *Dermacentor variabilis*, a Vector for Spotted Fever Group Rickettsiae, Limits *Rickettsia montanensis* Invasion 321–329
Shane M. Ceraul, Ashley Chung, Khandra T. Sears, Vsevolod L. Popov, Magda Beier-Sexton, M. Sayeedur Rahman, and Abdu F. Azad

Salmonella enterica Serovar Typhimurium Binds to HeLa Cells via Fim-Mediated Reversible Adhesion and Irreversible Type Three Secretion System 1-Mediated Docking 330–341
Benjamin Misselwitz, Saskia K. Kreibich, Samuel Rout, Bärbel Stecher, Balamurugan Periaswamy, and Wolf-Dietrich Hardt

Characterization of a *Staphylococcus aureus* Surface Virulence Factor That Promotes Resistance to Oxidative Killing and Infectious Endocarditis 342–352
Natalia Malachowa, Petra L. Kohler, Patrick M. Schlievert, Olivia N. Chuang, Gary M. Dunny, Scott D. Kobayashi, Jacek Miedzobrodzki, Gregory A. Bohach, and Keun Seok Seo

Continued on following page

Effect of Factor H-Binding Protein Sequence Variation on Factor H Binding and Survival of <i>Neisseria meningitidis</i> in Human Blood	Kathleen Y. Dunphy, Peter T. Beernink, Barbara Brogioni, and Dan M. Granoff	353–359
Quantitative PCR-Based Competitive Index for High-Throughput Screening of <i>Salmonella</i> Virulence Factors	Hyunjin Yoon, Phillippe Gros, and Fred Heffron	360–368
CELLULAR MICROBIOLOGY: PATHOGEN-HOST CELL MOLECULAR INTERACTIONS		
Discovery of Novel Secreted Virulence Factors from <i>Salmonella enterica</i> Serovar Typhimurium by Proteomic Analysis of Culture Supernatants	George S. Niemann, Roslyn N. Brown, Jean K. Gustin, Afke Stufkens, Afshan S. Shaikh-Kidwai, Jie Li, Jason E. McDermott, Heather M. Brewer, Athena Schepmoes, Richard D. Smith, Joshua N. Adkins, and Fred Heffron	33–43
Investigation of the Mechanisms by Which <i>Listeria monocytogenes</i> Grows in Porcine Gallbladder Bile	Georgina C. Dowd, Susan A. Joyce, Colin Hill, and Cormac G. M. Gahan	369–379
Meningococcal Internalization into Human Endothelial and Epithelial Cells Is Triggered by the Influx of Extracellular L-Glutamate via GltT L-Glutamate ABC Transporter in <i>Neisseria meningitidis</i>	Hideyuki Takahashi, Kwang Sik Kim, and Haruo Watanabe	380–392
Role of <i>Tannerella forsythia</i> NanH Sialidase in Epithelial Cell Attachment	Kiyonobu Honma, Elina Mishima, and Ashu Sharma	393–401
The Early Secretory Pathway Contributes to the Growth of the <i>Coxiella</i>-Replicative Niche	Emanuel Martín Campoy, Felipe Carlos Martín Zoppino, and María Isabel Colombo	402–413
<i>Coxiella burnetii</i> Acid Phosphatase Inhibits the Release of Reactive Oxygen Intermediates in Polymorphonuclear Leukocytes	J. Hill and J. E. Samuel	414–420
BACTERIAL INFECTIONS		
Structural Dissection and <i>In Vivo</i> Effectiveness of a Peptide Inhibitor of <i>Porphyromonas gingivalis</i> Adherence to <i>Streptococcus gordonii</i>	Carlo Amorin Daep, Elizabeth A. Novak, Richard J. Lamont, and Donald R. Demuth	67–74
Host DNA Repair Proteins in Response to <i>Pseudomonas aeruginosa</i> in Lung Epithelial Cells and in Mice	Min Wu, Huang Huang, Weidong Zhang, Shibichakravarthy Kannan, Andrew Weaver, Molynda Mckibben, Danielle Herington, Huawei Zeng, and Hongwei Gao	75–87
Role of the HefC Efflux Pump in <i>Helicobacter pylori</i> Cholesterol-Dependent Resistance to Ceragenins and Bile Salts	Elizabeth A. Trainor, Katherine E. Horton, Paul B. Savage, Traci L. Testerman, and David J. McGee	88–97
Infectivity Acts as <i>In Vivo</i> Selection for Maintenance of the Chlamydial Cryptic Plasmid	Marsha Russell, Toni Darville, Kumar Chandra-Kuntal, Bennett Smith, Charles W. Andrews, Jr., and Catherine M. O'Connell	98–107
Heat Shock Factor 1 Protects Mice from Rapid Death during <i>Listeria monocytogenes</i> Infection by Regulating Expression of Tumor Necrosis Factor Alpha during Fever	Patience Murapa, Martin R. Ward, Siva K. Gandhapudi, Jerold G. Woodward, and Sarah E. F. D'Orazio	177–184
Probiotic <i>Lactobacillus reuteri</i> Ameliorates Disease Due to Enterohemorrhagic <i>Escherichia coli</i> in Germfree Mice	Kathryn A. Eaton, Alexander Honkala, Thomas A. Auchtung, and Robert A. Britton	185–191

Granulocyte-Macrophage Colony-Stimulating Factor- and Tumor Necrosis Factor Alpha-Mediated Matrix Metalloproteinase Production by Human Osteoblasts and Monocytes after Infection with <i>Brucella abortus</i>	Romina Scian, Paula Barrionuevo, Guillermo H. Giambartolomei, Carlos A. Fossati, Pablo C. Baldi, and M. Victoria Delpino	192–202
The Lipid A Phosphate Position Determines Differential Host Toll-Like Receptor 4 Responses to Phylogenetically Related Symbiotic and Pathogenic Bacteria	Stephen R. Coats, Alex B. Berezow, Thao T. To, Sumita Jain, Brian W. Bainbridge, Karim P. Banani, and Richard P. Darveau	203–210
Cooperation between LepA and PlcH Contributes to the <i>In Vivo</i> Virulence and Growth of <i>Pseudomonas aeruginosa</i> in Mice	Yutaka Kida, Takashi Shimizu, and Koichi Kuwano	211–219
Effects of <i>ibeA</i> Deletion on Virulence and Biofilm Formation of Avian Pathogenic <i>Escherichia coli</i>	Shaohui Wang, Chunling Niu, Zhenyu Shi, Yongjie Xia, Muhammad Yaqoob, Jianjun Dai, and Chengping Lu	279–287
Genome-Wide Identification of <i>Streptococcus pneumoniae</i> Genes Essential for Bacterial Replication during Experimental Meningitis	T. E. Molzen, P. Burghout, H. J. Bootsma, C. T. Brandt, Christa E. van der Gaast-de Jongh, M. J. Eleveld, M. M. Verbeek, N. Frimodt-Møller, C. Østergaard, and P. W. M. Hermans	288–297
<i>Mycobacterium ulcerans</i> Triggers T-Cell Immunity followed by Local and Regional but Not Systemic Immunosuppression	Alexandra G. Fraga, Andrea Cruz, Teresa G. Martins, Egidio Torrado, Margarida Saraiva, Daniela R. Pereira, Wayne M. Meyers, Françoise Portaels, Manuel T. Silva, António G. Castro, and Jorge Pedrosa	421–430
HOST RESPONSE AND INFLAMMATION		
Leukocytes Infiltrate the Skin and Draining Lymph Nodes in Response to the Protozoan <i>Leishmania infantum chagasi</i>	Colin J. Thalhofer, Yani Chen, Bayan Sudan, Laurie Love-Homan, and Mary E. Wilson	108–117
MyD88-Dependent Signaling Protects against Anthrax Lethal Toxin-Induced Impairment of Intestinal Barrier Function	Shu Okugawa, Mahtab Moayeri, Michael A. Eckhaus, Deborah Crown, Sharmina Miller-Randolph, Shihui Liu, Shizuo Akira, and Stephen H. Leppla	118–124
<i>Pasteurella multocida</i> Toxin-Stimulated Osteoclast Differentiation Is B Cell Dependent	Dagmar Hildebrand, Klaus Heeg, and Katharina F. Kubatzky	220–228
Exposure to Cigarette Smoke Inhibits the Pulmonary T-Cell Response to Influenza Virus and <i>Mycobacterium tuberculosis</i>	Yan Feng, Ying Kong, Peter F. Barnes, Fang-Fang Huang, Peter Klucar, Xisheng Wang, Buka Samten, Mayami Sengupta, Bruce Machona, Ruben Donis, Amy R. Tvinnereim, and Homayoun Shams	229–237
Nontypeable <i>Haemophilus influenzae</i> Initiates Formation of Neutrophil Extracellular Traps	Richard A. Juneau, Bing Pang, Kristin E. D. Weimer, Chelsie E. Armbruster, and W. Edward Swords	431–438
<i>Porphyromonas gingivalis</i> Virulence in a <i>Drosophila melanogaster</i> Model	Christina O. Igboin, Melvin L. Moeschberger, Ann L. Griffen, and Eugene J. Leys	439–448
<i>Porphyromonas gingivalis</i>-Host Interactions in a <i>Drosophila melanogaster</i> Model	Christina O. Igboin, Kevin P. Tordoff, Melvin L. Moeschberger, Ann L. Griffen, and Eugene J. Leys	449–458
Strain-Specific Polymorphisms in Paneth Cell α-Defensins in C57BL/6 Mice and Evidence of Vestigial Myeloid α-Defensin Pseudogenes	Michael T. Shanahan, Hiroki Tanabe, and André J. Ouellette	459–473

Myeloperoxidase Selectively Binds and Selectively Kills Microbes	Robert C. Allen and Jackson T. Stephens, Jr.	474–485
MyD88 Deficiency Leads to Decreased NK Cell Gamma Interferon Production and T Cell Recruitment during <i>Chlamydia muridarum</i> Genital Tract Infection, but a Predominant Th1 Response and Enhanced Monocytic Inflammation Are Associated with Infection Resolution	Uma M. Nagarajan, James Sikes, Daniel Prantner, Charles W. Andrews, Jr., Lauren Frazer, Anna Goodwin, Jessica N. Snowden, and Toni Darville	486–498
FUNGAL AND PARASITIC INFECTIONS		
Coevolution of T_H1, T_H2, and T_H17 Responses during Repeated Pulmonary Exposure to <i>Aspergillus fumigatus</i> Conidia	Benjamin J. Murdock, Andrew B. Shreiner, Roderick A. McDonald, John J. Osterholzer, Eric S. White, Galen B. Toews, and Gary B. Huffnagle	125–135
The Stearoyl-Coenzyme A Desaturase 1 Is Essential for Virulence and Membrane Stress in <i>Candida parapsilosis</i> through Unsaturated Fatty Acid Production	Long Nam Nguyen, Attila Gacser, and Joshua D. Nosanchuk	136–145
Differential Regulation of Kidney and Spleen Cytokine Responses in Mice Challenged with Pathology-Standardized Doses of <i>Candida albicans</i> Mannosylation Mutants	Luis Castillo, Donna M. MacCallum, Alistair J. P. Brown, Neil A. R. Gow, and Frank C. Odds	146–152
Persistence of <i>Plasmodium falciparum</i> Parasites in Infected Pregnant Mozambican Women after Delivery	Elisa Serra-Casas, Clara Menéndez, Carlota Dobaño, Azucena Bardají, Llorenç Quintó, Jaume Ordi, Betuel Sigauque, Pau Cisteró, Inacio Mandomando, Pedro L. Alonso, and Alfredo Mayor	298–304
MICROBIAL IMMUNITY AND VACCINES		
Preclinical Evaluation of the Pht Proteins as Potential Cross-Protective Pneumococcal Vaccine Antigens	Fabrice Godfroid, Philippe Hermand, Vincent Verlant, Philippe Denoël, and Jan T. Poolman	238–245
Identification of Immunodominant Antigens by Probing a Whole <i>Chlamydia trachomatis</i> Open Reading Frame Proteome Microarray Using Sera from Immunized Mice	Maria I. Cruz-Fisher, Chunmei Cheng, Guifeng Sun, Sukumar Pal, Andy Teng, Douglas M. Molina, Matthew A. Kayala, Adam Vigil, Pierre Baldi, Philip L. Felgner, Xiaowu Liang, and Luis M. de la Maza	246–257
<i>Burkholderia pseudomallei</i> Proteins Presented by Monocyte-Derived Dendritic Cells Stimulate Human Memory T Cells <i>In Vitro</i>	Patcharaporn Tippayawat, Maneerat Pinsiri, Darawan Rinchai, Donporn Riyapa, Amornrat Romphruk, Yunn-Hwen Gan, Raymond L. Houghton, Philip L. Felgner, Richard W. Titball, Mark P. Stevens, Edouard E. Galyov, Gregory J. Bancroft, and Ganjana Lertmongkolchai	305–313
Older Adults Have a Low Capacity To Opsonize Pneumococci Due to Low IgM Antibody Response to Pneumococcal Vaccinations	Saeyoung Park and Moon H. Nahm	314–320
Generation of a Neutralizing Human Monoclonal Antibody Fab Fragment to Surface Antigen 1 of <i>Toxoplasma gondii</i> Tachyzoites	Yong-Feng Fu, Meng Feng, Kenji Ohnishi, Tamon Kimura, Johbu Itoh, Xun-Jia Cheng, and Hiroshi Tachibana	512–517

Vaccination with Outer Membrane Complexes Elicits Rapid Protective Immunity to Multidrug-Resistant <i>Acinetobacter baumannii</i>	Michael J. McConnell, Juan Domínguez-Herrera, Younes Smani, Rafael López-Rojas, Fernando Docobo-Pérez, and Jerónimo Pachón	518–526
Interleukin-1 Receptor Signaling Is Required To Overcome the Effects of Pertussis Toxin and for Efficient Infection- or Vaccination-Induced Immunity against <i>Bordetella pertussis</i>	Xuqing Zhang, Sara E. Hester, Mary J. Kennett, Alexia T. Karanikas, Liron Bendor, David E. Place, and Eric T. Harvill	527–541
MOLECULAR GENOMICS		
Conjunctival Transcriptome in Scarring Trachoma	Matthew J. Burton, Saul N. Rajak, Julien Bauer, Helen A. Weiss, Sonda B. Tolbert, Alice Shoo, Esmail Habtamu, Alphaxard Manjurano, Paul M. Emerson, David C. W. Mabey, Martin J. Holland, and Robin L. Bailey	499–511
RETRACTIONS		
Activation of Intercellular Adhesion Molecule 1 Expression by <i>Helicobacter pylori</i> Is Regulated by NF-κB in Gastric Epithelial Cancer Cells	Naoki Mori, Akihiro Wada, Toshiya Hirayama, Thomas P. Parks, Christian Stratowa, and Naoki Yamamoto	542
Induction of Monocyte Chemoattractant Protein 1 by <i>Helicobacter pylori</i> Involves NF-κB	Naoki Mori, Atsuhisa Ueda, Romas Gelezianas, Akihiro Wada, Toshiya Hirayama, Teizo Yoshimura, and Naoki Yamamoto	543
<i>Helicobacter pylori</i> Induces RANTES through Activation of NF-κB	Naoki Mori, Alan M. Krensky, Romas Gelezianas, Akihiro Wada, Toshiya Hirayama, Chihiro Sasakawa, and Naoki Yamamoto	544
<i>Helicobacter pylori</i> Induces CCL20 Expression	Koh Tomimori, Eriko Uema, Hiromitsu Teruya, Chie Ishikawa, Taeko Okudaira, Masachika Senba, Kazuo Yamamoto, Toshifumi Matsuyama, Fukunori Kinjo, Jiro Fujita, and Naoki Mori	545
<i>Helicobacter pylori</i>-Induced Interleukin-12 p40 Expression	Eriko Takeshima, Koh Tomimori, Hiromitsu Teruya, Chie Ishikawa, Masachika Senba, Daniele D'Ambrosio, Fukunori Kinjo, Hitomi Mimuro, Chihiro Sasakawa, Toshiya Hirayama, Jiro Fujita, and Naoki Mori	546

Cover photograph (Copyright © 2011, American Society for Microbiology. All Rights Reserved.): *Listeria monocytogenes* is capable of efficient growth within the porcine gallbladder. Shown is a false-colored scanning electron micrograph of *L. monocytogenes* in the lumen of the porcine gallbladder. (See related article on p. 369.)