

## Special Issue: Proteomics in Infectious Disease

### Editorial

- S1 **The Host-pathogen Ecosystem Viewed through the Prism of Proteomics**  
*Ileana M. Cristea*

### Overview

### Minireview

- S5 **Proteomics Tracing the Footsteps of Infectious Disease**  
*Todd M. Greco and Ileana M. Cristea*

## Defining Pathogens Properties and Virulence

### Research

- S15 **Using Quantitative Spectrometry to Understand the Influence of Genetics and Nutritional Perturbations On the Virulence Potential of *Staphylococcus aureus***  
[S] *Jessica R. Chapman, Divya Balasubramanian, Kayan Tam, Manor Askenazi, Richard Copin, Bo Shopsis, Victor J. Torres, and Beatrix M. Ueberheide*
- S29 **Targeted Proteomics and Absolute Protein Quantification for the Construction of a Stoichiometric Host-Pathogen Surface Density Model**  
[S] *Kristoffer Sjöholm, Ola Kilsgård, Johan Teleman, Lotta Happonen, Lars Malmström, and Johan Malmström*
- S42 **Asparagine-Linked Glycans of *Cryptosporidium parvum* Contain a Single Long Arm, Are Barely Processed in the Endoplasmic Reticulum (ER) or Golgi, and Show a Strong Bias for Sites with Threonine**  
[S] *John R. Haserick, Deborah R. Leon, John Samuelson, and Catherine E. Costello*
- S54 **The Prenylated Proteome of *Plasmodium falciparum* Reveals Pathogen-specific Prenylation Activity and Drug Mechanism-of-action**  
[S] *Jolyn E. Gisselberg, Lichao Zhang, Joshua E. Elias, and Ellen Yeh*

## Alterations in Host Composition upon Pathogen Infection

### Minireviews

- S65 **The Promise of Proteomics in the Study of Oncogenic Viruses**  
*Alison A. McBride*
- S75 **Protein Interactions during the Flavivirus and Hepacivirus Life Cycle**  
*Gisa Gerold, Janina Bruening, Bettina Weigel, and Thomas Pietschmann*

On the cover: Oil on canvas art illustrating the process of viral infection triggering alterations in the infected cell. A viral particle (pink) infects the cell, depositing its genomic material and initiating a cascade of viral gene expression to promote viral replication. The arms emanating from the viral particle to “control” the host proteome are an abstract representation of the result of viral infection. Represented by the top right arm, viral proteins (pink) are produced to regulate the immune defense, host metabolism, and the assembly of viral particles. The arm at the bottom represents regulation of host proteins (red) through alteration in protein abundances, localization, or post-translational modifications. This artwork was executed by Carla Vendrell, graphic designer and illustrator, with input from Pierre M. Jean Beltran, graduate student from the Cristea laboratory at Princeton University.

## Research

- S92 **Time-resolved Global and Chromatin Proteomics during Herpes Simplex Virus Type 1 (HSV-1) Infection**  
 [S] *Katarzyna Kulej, Daphne C. Avgousti, Simone Sidoli, Christin Herrmann, Ashley N. Della Fera, Eui Tae Kim, Benjamin A. Garcia, and Matthew D. Weitzman*
- S108 **In Vivo and in Vitro Proteome Analysis of Human Immunodeficiency Virus (HIV)-1-infected, Human CD4<sup>+</sup> T Cells**  
 [S] *Johannes Nemeth, Valentina Vongrad, Karin J. Metzner, Victoria P. Strouvelle, Rainer Weber, Patrick Pedrioli, Ruedi Aebersold, Huldrych F. Günthard, and Ben C. Collins*
- S124 **Proteomic Screen for Cellular Targets of the Vaccinia Virus F10 Protein Kinase Reveals that Phosphorylation of mDia Regulates Stress Fiber Formation**  
 [S] *Matthew D. Greseth, Dominique C. Carter, Scott S. Terhune, and Paula Traktman*
- S144 **Label-free Proteomic Analysis of Exosomes Derived from Inducible Hepatitis B Virus-Replicating HepAD38 Cell Line**  
 [S] *Xiaofang Jia, Jieliang Chen, Dominik A. Megger, Xiaonan Zhang, Maya Kozlowski, Lijun Zhang, Zhong Fang, Jin Li, Qiaofang Chu, Min Wu, Yaming Li, Barbara Sitek, and Zhenghong Yuan*

## Mechanisms of Host Defense against Pathogen

### Minireview

- S161 **Sharpening Host Defenses during Infection: Proteases Cut to the Chase**  
 \* *Natalie C. Marshall, B. Brett Finlay, and Christopher M. Overall*

### Research

- S172 **Proteome and Secretome Analysis Reveals Differential Post-transcriptional Regulation of Toll-like Receptor Responses**  
 [S] \* *Marijke Koppenol-Raab, Virginie Sjoelund, Nathan P. Manes, Rachel A. Gottschalk, Bhaskar Dutta, Zachary L. Benet, Iain D. C. Fraser, and Aleksandra Nita-Lazar*
- S187 **Global Characterization of Protein Secretion from Human Macrophages Following Non-canonical Caspase-4/5 Inflammasome Activation**  
 [S] *Martina B. Lorey, Katriina Rossi, Kari K. Eklund, Tuula A. Nyman, and Sampsa Matikainen*
- S200 **Human Antiviral Protein IFIX Suppresses Viral Gene Expression during Herpes Simplex Virus 1 (HSV-1) Infection and Is Counteracted by Virus-induced Proteasomal Degradation**  
 [S] *Marni S. Crow and Ileana M. Cristea*
- S215 **Norovirus-Mediated Modification of the Translational Landscape via Virus and Host-Induced Cleavage of Translation Initiation Factors**  
 [S] \* *Edward Emmott, Frederic Sorgeloos, Sarah L. Caddy, Surender Vashist, Stanislav Sosnovtsev, Richard Lloyd, Kate Heesom, Nicolas Locker, and Ian Goodfellow*
- S230 **Host Plants Indirectly Influence Plant Virus Transmission by Altering Gut Cysteine Protease Activity of Aphid Vectors**  
 [S] *Patricia V. Pinheiro, Murad Ghanim, Mariko Alexander, Ana Rita Rebelo, Rogerio S. Santos, Benjamin C. Orsburn, Stewart Gray, and Michelle Cilia*

## Technological Innovation and Resources

- S244 **Profiling Subcellular Protein Phosphatase Responses to Coxsackievirus B3 Infection of Cardiomyocytes**  
 [S] *Millie Shah, Christian M. Smolko, Sarah Kinicki, Zachary D. Chapman, David L. Brautigam, and Kevin A. Janes*

# Biomarkers and Therapeutic Promise

## Research

S263

### **Kinome Profiling Identifies Druggable Targets for Novel Human Cytomegalovirus (HCMV) Antivirals**

*Kyle C. Arend, Erik M. Lenarcic, Heather A. Vincent, Naim Rashid, Eric Lazear, Ian M. McDonald, Thomas S. K. Gilbert, Michael P. East, Laura E. Herring, Gary L. Johnson, Lee M. Graves, and Nathaniel J. Moorman*

S277

### **Identification of Antibody Targets for Tuberculosis Serology using High-Density Nucleic Acid Programmable Protein Arrays**

*Lusheng Song, Garrick Wallstrom, Xiaobo Yu, Marika Hopper, Jennifer Van Duine, Jason Steel, Jin Park, Peter Wiktor, Peter Kahn, Al Brunner, Douglas Wilson, Elizabeth R. Jenny-Avital, Ji Qiu, Joshua Labaer, D. Mitchell Magee, and Jacqueline M. Achkar*

## AUTHOR INDEX

- Achkar, Jacqueline M., S277  
Aebersold, Ruedi, S108  
Alexander, Mariko, S230  
Arend, Kyle C., S263  
Askenazi, Manor, S15  
Avgousti, Daphne C., S92
- Balasubramanian, Divya, S15  
Benet, Zachary L., S172  
Brautigan, David L., S244  
Bruening, Janina, S75  
Brunner, Al, S277
- Caddy, Sarah L., S215  
Carter, Dominique C., S124  
Chapman, Jessica R., S15  
Chapman, Zachary D., S244  
Chen, Jieliang, S144  
Chu, Qiaofang, S14  
Cilia, Michelle, S230 4  
Collins, Ben C., S108  
Copin, Richard, S15  
Costello, Catherine E., S42  
Cristea, Ileana M., S1, S5, S200  
Crow, Marni S., S200
- Della Fera, Ashley N., S92  
Dutta, Bhaskar, S172
- East, Michael P., S263  
Eklund, Kari K., S187  
Elias, Joshua E., S54  
Emmott, Edward, S215
- Fang, Zhong, S144  
Finlay, B. Brett, S161  
Fraser, Iain D. C., S172
- Garcia, Benjamin A., S92  
Gerold, Gisa, S75  
Ghanim, Murad, S230  
Gilbert, Thomas S. K., S263  
Gisselberg, Jolyn E., S54  
Goodfellow, Ian, S215  
Gottschalk, Rachel A., S172  
Graves, Lee M., S263  
Gray, Stewart, S230  
Greco, Todd M., S5  
Greseth, Matthew D., S124  
Günthard, Huldrych F., S108
- Happonen, Lotta, S29  
Haserick, John R., S42  
Heesom, Kate, S215  
Herring, Laura E., S263
- Herrmann, Christin, S92  
Hopper, Marika, S277
- Janes, Kevin A., S244  
Jenny-Avital, Elizabeth R., S277  
Jia, Xiaofang, S144  
Johnson, Gary L., S263
- Kahn, Peter, S277  
Kilsgård, Ola, S29  
Kim, Eui Tae, S92  
Kinicki, Sarah, S244  
Koppenol-Raab, Marijke, S172  
Kozlowski, Maya, S144  
Kulej, Katarzyna, S92
- Labaer, Joshua, S277  
Lazear, Eric, S263  
Lenarcic, Erik M., S263  
Leon, Deborah R., S42  
Li, Jin, S144  
Li, Yaming, S144  
Lloyd, Richard, S215  
Locker, Nicolas, S215  
Lorey, Martina B., S187
- Magee, D. Mitchell, S277  
Malmström, Johan, S29  
Malmström, Lars, S29  
Manes, Nathan P., S172  
Marshall, Natalie C., S161  
Matikainen, Sampsa, S187  
McBride, Alison A., S65  
McDonald, Ian M., S263  
Megger, Dominik A., S144  
Metzner, Karin J., S108  
Moorman, Nathaniel J., S263  
M. Ueberheide, Beatrix, S15
- Nemeth, Johannes, S108  
Nita-Lazar, Aleksandra, S172  
Nyman, Tuula A., S187
- Orsburn, Benjamin C., S230  
Overall, Christopher M., S161
- Park, Jin, S277  
Pedrioli, Patrick, S108  
Pietschmann, Thomas, S75  
Pineiro, Patricia V., S230
- Qiu, Ji, S277
- Rashid, Naim, S263  
Rebelo, Ana Rita, S230  
Rossi, Katriina, S187

Samuelson, John, S42  
Santos, Rogerio S., S230  
Shah, Millie, S244  
Shopsin, Bo, S15  
Sidoli, Simone, S92  
Sitek, Barbara, S144  
Sjoelund, Virginie, S172  
Sjöholm, Kristoffer, S29  
Smolko, Christian M., S244  
Song, Lusheng, S277  
Sorgeloos, Frederic, S215  
Sosnovtsev, Stanislav, S215  
Steel, Jason, S277  
Strouvelle, Victoria P., S108  
  
Tam, Kayan, S15  
Teleman, Johan, S29  
Terhune, Scott S., S124  
Torres, Victor J., S15  
Traktman, Paula, S124

Van Duine, Jennifer, S277  
Vashist, Surender, S215  
Vincent, Heather A., S263  
Vongrad, Valentina, S108  
  
Wallstrom, Garrick, S277  
Weber, Rainer, S108  
Weigel, Bettina, S75  
Weitzman, Matthew D., S92  
Wiktor, Peter, S277  
Wilson, Douglas, S277  
Wu, Min, S144  
  
Yeh, Ellen, S54  
Yu, Xiaobo, S277  
Yuan, Zhenghong, S144  
  
Zhang, Lichao, S54  
Zhang, Lijun, S144  
Zhang, Xiaonan, S144