

# The American Journal of Pathology

*Official Journal of the American Society for Investigative Pathology*

January 2007 • Volume 170, Number 1

---

**On the Cover:** Image of extracellular matrix surrounding normal chondrocytes was captured and modeled as wire-frame renditions. Proteins shown include type II collagen (yellow), type IX collagen (red), cartilage oligomeric matrix protein (COMP; green) and matrilin 3 (blue). These interactions are altered by mutant COMP in pseudoachondroplasia and multiple epiphyseal dysplasia. (see page 293)

---

## Biological Perspectives

- 1 Alternative Vascularization Mechanisms in Cancer: Pathology and Therapeutic Implications  
*Balázs Döme, Mary J.C. Hendrix, Sándor Paku, József Tóvári, and József Tímár*

## Commentary

- 16 Linking Selective Vulnerability to Cell Death Mechanisms in Parkinson's Disease  
*Dennis W. Dickson*

## Regular Articles

### *Cardiovascular, Pulmonary and Renal Pathology*

- 20 Distinctive Epidermal Growth Factor Receptor/Extracellular Regulated Kinase-Independent and -Dependent Signaling Pathways in the Induction of Airway Mucin 5B and Mucin 5AC Expression by Phorbol 12-Myristate 13-Acetate  
*Daphne Yuan-chen Wu, Reen Wu, Sekbar P. Reddy, Yong Chan Lee, and Mary Mann-Jong Chang*
- 33 Persistent *Chlamydia pneumoniae* Infection of Cardiomyocytes Is Correlated with Fatal Myocardial Infarction  
*Luigi Giusto Spagnoli, Sabina Pucci, Elena Bonanno, Antonio Cassone, Fabiola Sesti, Alessandra Ciervo, and Alessandro Mauriello*
- 43 B-Cell Epitope Spreading Is a Critical Step for the Switch from C-Protein-Induced Myocarditis to Dilated Cardiomyopathy  
*Yob Matsumoto, Il-Kwon Park, and Kuniko Kohyama*
- 52 Alternative Complement Pathway in the Pathogenesis of Disease Mediated by Anti-Neutrophil Cytoplasmic Autoantibodies  
*Hong Xiao, Adrian Schreiber, Peter Heeringa, Ronald J. Falk, and J. Charles Jennette*
- 65 Mice Lacking Neutrophil Elastase Are Resistant to Bleomycin-Induced Pulmonary Fibrosis  
*Felix Chua, Sarah E. Dunsmore, Peter H. Clingen, Steven E. Mutsaers, Steven D. Shapiro, Anthony W. Segal, Jürgen Roes, and Geoffrey J. Laurent*
- Cell Injury, Repair, Aging and Apoptosis*
- 75 Regulation of Autophagy by Extracellular Signal-Regulated Protein Kinases During 1-Methyl-4-Phenylpyridinium-Induced Cell Death  
*Jian-hui Zhu, Craig Horbinski, Fengli Guo, Simon Watkins, Yasuo Uchiyama, and Charleen T. Chu*
- 87 Lack of Endothelial Nitric-Oxide Synthase Leads to Progressive Focal Renal Injury  
*Michael S. Forbes, Barbara A. Thornhill, Matthew H. Park, and Robert L. Chevalier*
- 100 Aggregated Myocilin Induces Russell Bodies and Causes Apoptosis: Implications for the Pathogenesis of Myocilin-Caused Primary Open-Angle Glaucoma  
*Gary Hin-Fai Yam, Katarina Gaplovska-Kysela, Christian Zuber, and Jürgen Roth*

*Continued*

Epithelial and Mesenchymal Cell Biology

- 110  $\alpha$ v $\beta$ 6 Integrin Regulates Renal Fibrosis and Inflammation in Alport Mouse  
*Kyungmin Habm, Matvey E. Lukashev, Yi Luo, William J. Yang, Brian M. Dolinski, Paul H. Weinreb, Kenneth J. Simon, Li Chun Wang, Diane R. Leone, Roy R. Lobb, Donald J. McCrann, Normand E. Allaire, Gerald S. Horan, Agnes Fogo, Raghu Kalluri, Charles F. Sfield III, Dean Sheppard, Humphrey A. Gardner, and Shelia M. Violette*
- 126 Expression of the Metastasis Suppressor KAI1 in Decidual Cells at the Human Maternal-Fetal Interface: Regulation and Functional Implications  
*Birgit Gellersen, Juliane Briese, Marine Oberndörfer, Katja Redlin, Annemarie Samalecos, Dagmar-Ulrike Richter, Thomas Löning, Heinrich-Maria Schulte, and Ana-Maria Bamberger*
- 140 Asbestos-Induced Peribronchiolar Cell Proliferation and Cytokine Production Are Attenuated in Lungs of Protein Kinase C- $\delta$  Knockout Mice  
*Arti Shukla, Karen M. Lounsbury, Trisha F. Barrett, Joanna Gell, Mercedes Rincon, Kelly J. Butnor, Douglas J. Taatjes, Gerald S. Davis, Pamela Vacek, Keiichi I. Nakayama, Keiko Nakayama, Chad Steele, and Brooke T. Mossman*
- 152 Pre-B-Cell Leukemia Transcription Factor 1 Regulates Expression of *Valosin-Containing Protein*, a Gene Involved in Cancer Growth  
*Ying Qiu, Yasubiko Tomita, Binglin Zhang, Itsuko Nakamichi, Eiichi Morii, and Katsuyuki Aozasa*

Growth Factors, Cytokines, Cell Cycle Molecules

- 160 Lack of Noggin Expression by Cancer Cells Is a Determinant of the Osteoblast Response in Bone Metastases  
*Ruth Schwaninger, Cyrill A. Rentsch, Antoinette Wetterwald, Geertje van der Horst, Rutger L. van Bezooijen, Gabri van der Pluijm, Clemens W.G.M. Löwik, Karin Ackermann, Walter Pyerin, Freddie C. Hamdy, George N. Thalman, and Marco G. Cecchini*
- 176 Identification and Functional Characterization of the Hepatic Stellate Cell CD38 Cell Surface Molecule  
*Sandra March, Mariona Graupera, María Rosa Sarrías, Francisco Lozano, Pilar Pizcueta, Jaume Bosch, and Pablo Engel*
- 188 Accelerated Wound Closure in Mice Deficient for Interleukin-10  
*Sabine A. Eming, Sabine Werner, Philippe Bugnon, Claudia Wickenhauser, Lisa Siewe, Olaf Utermöhlen, Jeffrey M. Davidson, Thomas Krieg, and Axel Roers*

Immunopathology and Infectious Disease

- 203 Th1 Immune Response Promotes Severe Bone Resorption Caused by *Porphyromonas gingivalis*  
*Philip Stasbenko, Reginaldo B. Gonçalves, Brad Lipkin, Alexander Ficarelli, Hajime Sasaki, and Antonio Campos-Neto*
- 214 Contrasting Roles for Axonal Degeneration in an Autoimmune versus Viral Model of Multiple Sclerosis: When Can Axonal Injury Be Beneficial?  
*Ikuo Tsunoda, Tomoko Tanaka, Emily Jane Terry, and Robert S. Fujinami*
- 227 FasL and TRAIL Induce Epidermal Apoptosis and Skin Ulceration Upon Exposure to *Leishmania major*  
*Liv Eidsmo, Caroline Fluur, Bence Rethi, Sofia Eriksson Ygberg, Nicolas Ruffin, Angelo De Milito, Hannab Akuffo, and Francesca Chiodi*
- 240 Islet  $\beta$ -Cell-Specific T Cells Can Use Different Homing Mechanisms to Infiltrate and Destroy Pancreatic Islets  
*Arno Hänninen, Rita Nurmela, Mikael Maksimow, Jarkko Heino, Sirpa Jalkanen, and Christian Kurts*
- 251 Role of Interleukin 10 during Persistent Infection with the Relapsing Fever Spirochete *Borrelia turicatae*  
*Harald Gelderblom, Jens Schmidt, Diana Londoño, Yunbong Bai, Jacqueline Quandt, Ron Hornung, Adriana Marques, Roland Martin, and Diego Cadavid*
- 263 Adrenomedullin Protects from Experimental Arthritis by Down-Regulating Inflammation and Th1 Response and Inducing Regulatory T Cells  
*Elena Gonzalez-Rey, Alejo Chorny, Francisco O'Valle, and Mario Delgado*
- 272 Soluble Mannosylated Myelin Peptide Inhibits the Encephalitogenicity of Autoreactive T Cells during Experimental Autoimmune Encephalomyelitis  
*Junda Kel, Judith Oldenampsen, Mariken Luca, Jan Wouter Drijfbout, Frits Koning, and Lex Nagelkerken*

Continued

Matrix Pathobiology

- 281 Immunomodulator FTY720 Induces Myofibroblast Differentiation via the Lysophospholipid Receptor S1P<sub>3</sub> and Smad3 Signaling  
*Christina D. Keller, Pilar Rivera Gil, Markus Tölle, Markus van der Giet, Jerold Chun, Heinfried H. Radeke, Monika Schäfer-Korting, and Burkhard Kleuser*
- 293 Unique Matrix Structure in the rER Cisternae of Pseudoachondroplasia Chondrocytes  
*Thomas M. Merritt, Roger Bick, Brian J. Poindexter, Joseph L. Alcorn, and Jacqueline T. Hecht*
- 301 Decorin-Mediated Regulation of Fibrillin-1 in the Kidney Involves the Insulin-Like Growth Factor-I Receptor and Mammalian Target of Rapamycin  
*Liliana Schaefer, Wasiliki Tsalastra, Andrea Babelova, Martina Baliova, Jens Minnerup, Lydia Sorokin, Hermann-Josef Gröne, Dieter P. Reinhardt, Josef Pfeilschifter, Renato V. Iozzo, and Roland M. Schaefer*

Musculoskeletal Pathology

- 316 Caveolin-1<sup>(-/-)</sup>- and Caveolin-2<sup>(-/-)</sup>-Deficient Mice Both Display Numerous Skeletal Muscle Abnormalities, with Tubular Aggregate Formation  
*William Schubert, Federica Sotgia, Alex W. Cohen, Franco Capozza, Gloria Bonuccelli, Claudio Bruno, Carlo Minetti, Eduardo Bonilla, Salvatore DiMauro, and Michael P. Lisanti*

Tumorigenesis and Neoplastic Progression

- 334 Tumor Cell Transendothelial Passage in the Absorbing Lymphatic Vessel of Transgenic Adenocarcinoma Mouse Prostate  
*Giacomo Azzali*
- 347 Hedgehog Signaling Promotes Medulloblastoma Survival via BclII  
*Eli E. Bar, Aneeka Chaudhry, Mohamed H. Farab, and Charles G. Eberhart*
- 356 Matrix Metalloproteinase-9 Is Differentially Expressed in Nonfunctioning Invasive and Noninvasive Pituitary Adenomas and Increases Invasion in Human Pituitary Adenoma Cell Line  
*Isa M. Hussaini, Christy Trotter, Yunge Zhao, Rana Abdel-Fattah, Samson Amos, Aizhen Xiao, Crystal U. Agi, Gerard T. Redpath, Zixing Fang, Gilberto K.K. Leung, Maria Beatriz S. Lopes, and Edward R. Laws, Jr.*
- 366 Src-Family Kinases Are Activated in Non-Small Cell Lung Cancer and Promote the Survival of Epidermal Growth Factor Receptor-Dependent Cell Lines  
*Jie Zhang, Shailaja Kalyankrishna, Marie Wislez, Nishan Thilaganathan, Babita Saigal, Wei Wei, Long Ma, Ignacio I. Wistuba, Faye M. Johnson, and Jonathan M. Kurie*
- 377 Aneuploidy Arises at Early Stages of Apc-Driven Intestinal Tumorigenesis and Pinpoints Conserved Chromosomal Loci of Allelic Imbalance between Mouse and Human  
*Paola Alberici, Emma de Pater, Joana Cardoso, Mieke Bevelander, Lia Molenaar, Jos Jonkers, and Riccardo Fodde*

Vascular Biology, Atherosclerosis and Endothelium Biology

- 388 Vasculoprotective Effects of Anti-Tumor Necrosis Factor- $\alpha$  Treatment in Aging  
*Anna Csiszar, Nazar Labinskyy, Kira Smith, Aracelia Rivera, Zsuzsanna Orosz, and Zoltan Ungvari*
- 399 Overexpression of Notch1 Ectodomain in Myeloid Cells Induces Vascular Malformations through a Paracrine Pathway  
*Xiujie Li, Ezequiel Calvo, Marc Cool, Pavel Chrobak, Denis G. Kay, and Paul Jolicœur*
- 416 Complement C1q Reduces Early Atherosclerosis in Low-Density Lipoprotein Receptor-Deficient Mice  
*Vinay K. Bhatia, Sheng Yun, Viola Leung, David C. Grimsditch, G. Martin Benson, Marina B. Botto, Joseph J. Boyle, and Dorian O. Haskard*

427 **ASIP Journal CME Program in Pathogenesis**

▀ denotes participating articles in this issue