

The American Journal of Pathology

Official Journal of the American Society for Investigative Pathology

August 2006 • Volume 169, Number 2

On the Cover: Matrilin-3 plays a role in modulating chondrocyte differentiation during embryonic development, in controlling bone mineral density in adulthood, and in preventing osteoarthritis during aging. Shown is the immunohistochemical staining pattern of the related proteins matrilin-1 (red) and matrilin-2 (green) in the tibial epiphyseal growth plate of a normal mouse at embryonic day E17.5. Nuclei were stained with Hoechst dye (blue). (See page 515)

Editorial

- 337 Introducing *Biological Perspectives*
Jay M. McDonald, Gene P. Siegal, and Peter A. Ward

Biological Perspectives

- 338 Hematopoietic Stem Cells: The Paradigmatic Tissue-Specific Stem Cell
David Bryder, Derrick J. Rossi, and Irving L. Weissman

Commentary

- 347 When It Comes to Blocking Lymphatics, It Is All a Question of Time
M. Luisa Iruela-Arispe
★ See Related article on page 708

Regular Articles

Cardiovascular, Pulmonary and Renal Pathology

- 351 Differential Effects of Continuous and Intermittent 17 β -Estradiol Replacement and Tamoxifen Therapy on the Prevention of Glomerulosclerosis: Modulation of the Mesangial Cell Phenotype *in Vivo*
Michael Karl, Mariana Berbo, Judith Pignac-Kobinger, Gary E. Striker, and Sharon J. Elliot
- 362 MDM2: A Novel *Mineralocorticoid-Responsive* Gene Involved in Aldosterone-Induced Human Vascular Structural Remodeling
Yasubiro Nakamura, Saya Suzuki, Takashi Suzuki, Katsubiko Ono, Ikumi Miura, Fumitoshi Satoh, Takuya Moriya, Haruo Saito, Shogo Yamada, Sadayoshi Ito, and Hironobu Sasano
- 372 Chemokine Receptor CX3CR1 Regulates Renal Interstitial Fibrosis after Ischemia-Reperfusion Injury
Kengo Furuichi, Ji-Liang Gao, and Philip M. Murphy

Cell Injury, Repair, Aging and Apoptosis

- 388 Nitric Oxide Is an Important Mediator of Renal Tubular Epithelial Cell Death *in Vitro* and in Murine Experimental Hydronephrosis
Tiina Kipari, Jean-Francois Caillier, David Ferenbach, Simon Watson, Kris Houlberg, David Walbaum, Spike Clay, John Savill, and Jeremy Hughes
- 400 Trophoblastic Oxidative Stress and the Release of Cell-Free Feto-Placental DNA
May Lee Tjoa, Tereza Cindrova-Davies, Olivera Spasic-Boskovic, Diana W. Bianchi, and Graham J. Burton

Epithelial and Mesenchymal Cell Biology

- 405 Integrin-Mediated Transforming Growth Factor- β Activation Regulates Homeostasis of the Pulmonary Epithelial-Mesenchymal Trophic Unit
Jun Araya, Stephanie Cambier, Alanna Morris, Walter Finkbeiner, and Stephen L. Nisbimura

Continued

- 416 A Novel N14Y Mutation in Connexin26 in Keratitis-Ichthyosis-Deafness Syndrome: Analyses of Altered Gap Junctional Communication and Molecular Structure of N Terminus of Mutated Connexin26
Ken Arita, Masashi Akiyama, Tomoyasu Aizawa, Yoshitaka Umetsu, Ikuo Segawa, Maki Goto, Daisuke Sawamura, Makoto Demura, Keiichi Kawano, and Hiroshi Shimizu

Immunopathology and Infectious Diseases

- 424 AMD3465, a Novel CXCR4 Receptor Antagonist, Abrogates Schistosomal Antigen-Elicited (Type-2) Pulmonary Granuloma Formation
Jerry S. Hu, Christine M. Freeman, Valerie R. Stolberg, Bo Chin Chiu, Gary J. Bridger, Simon P. Fricker, Nicholas W. Lukacs, and Stephen W. Chensue
- 433 Sepsis and Pathophysiology of Anthrax in a Nonhuman Primate Model
Deborah J. Stearns-Kurosawa, Florea Lupu, Fletcher B. Taylor, Jr., Gary Kinasewitz, and Shinichiro Kurosawa

Matrix Pathobiology

- 445 Matrix Metalloproteinase-1 Produced by Human CXCL12-Stimulated Natural Killer Cells
Seiji Goda, Hiroshi Inoue, Hisanori Umebara, Michibiko Miyaji, Yutaka Nagano, Nari Harakawa, Hisao Imai, Peter Lee, James B. McCarthy, Takashi Ikey, Naobika Domae, Yoji Shimizu, and Joji Iida
- 459 Mechanotransduction of Extracellular Signal-Regulated Kinases 1 and 2 Mitogen-Activated Protein Kinase Activity in Smooth Muscle Is Dependent on the Extracellular Matrix and Regulated by Matrix Metalloproteinases
Karen J. Aitken, Gregory Block, Armando Lorenzo, Daniel Herz, Nesrin Sabba, Omar Dessouki, France Fung, Marta Szybouska, Laura Craig, and Darius J. Bägli
- 471 Aberrant Collagenase Expression in Chronic Idiopathic Myelofibrosis Is Related to the Stage of Disease but Not to the JAK2 Mutation Status
Oliver Bock, Johanne Neuse, Kais Hussein, Kai Brakensiek, Guntram Buesche, Thomas Bubr, Birgitt Wiese, and Hans Kreipe

- 482 Elevated Cysteine-Rich 61 Mediates Aberrant Collagen Homeostasis in Chronologically Aged and Photoaged Human Skin
TaiHao Quan, TianYuan He, Yuan Shao, Lin Lin, Sewon Kang, John J. Voorbees, and Gary J. Fisher

Musculoskeletal Pathology

- 491 Regulation of Type II Collagen Synthesis during Osteoarthritis by Prolyl-4-Hydroxylases: Possible Influence of Low Oxygen Levels
Claudia Grimmer, Nadine Balbus, Ute Lang, Thomas Aigner, Thorsten Cramer, Lutz Müller, Bernd Swoboda, and David Pfander
- 503 p62 Ubiquitin Binding-Associated Domain Mediated the Receptor Activator of Nuclear Factor- κ B Ligand-Induced Osteoclast Formation: A New Insight into the Pathogenesis of Paget's Disease of Bone
Kirk H.M. Yip, Haotian Feng, Nathan J. Pavlos, Ming H. Zheng, and Jiake Xu
- 515 Functional Knockout of the Matrilin-3 Gene Causes Premature Chondrocyte Maturation to Hypertrophy and Increases Bone Mineral Density and Osteoarthritis
Louise van der Weyden, Lei Wei, Junming Luo, Xu Yang, David E. Birk, David J. Adams, Allan Bradley, and Qian Chen

Neurobiology

- 528 Aminoglycoside-Induced Degeneration of Adult Spiral Ganglion Neurons Involves Differential Modulation of Tyrosine Kinase B and p75 Neurotrophin Receptor Signaling
Justin Tan and Robert K. Shepherd
- 544 Reduction of Amyloid Angiopathy and A β Plaque Burden after Enriched Housing in TgCRND8 Mice: Involvement of Multiple Pathways
Oliver Ambrée, Uwe Leimer, Arne Herring, Nicole Görtz, Norbert Sachser, Michael T. Heneka, Werner Paulus, and Kathy Keyvani
- 553 NUB1 Suppresses the Formation of Lewy Body-Like Inclusions by Proteasomal Degradation of Synphilin-1
Kunikazu Tanji, Tomoaki Tanaka, Fumiaki Mori, Katsumi Kito, Hitoshi Takahashi, Koichi Wakabayashi, and Tetsu Kamitani

- 566 Cerebral Ischemia-Hypoxia Induces Intravascular Coagulation and Autophagy
Faisal Adhami, Guangbong Liao, Yury M. Morozov, Aryn Schloemer, Vincent J. Schmitzborst, John N. Lorenz, R. Scott Dunn, Charles V. Vorbees, Marsha Wills-Karp, Jay L. Degen, Roger J. Davis, Noboru Mizushima, Pasko Rakic, Bernard J. Dardzinski, Scott K. Holland, Frank R. Sharp, and Chia-Yi Kuan
- 584 Continued Administration of Ciliary Neurotrophic Factor Protects Mice from Inflammatory Pathology in Experimental Autoimmune Encephalomyelitis
Tanja Kuhlmann, Leah Remington, Isabelle Cognet, Lyne Bourbonniere, Simone Zebntner, Florence Guilbot, Alexandra Herman, Angélique Guay-Giroux, Jack P. Antel, Trevor Owens, and Jean-François Gauchat
- 599 Alzheimer's Disease-Like Tau Neuropathology Leads to Memory Deficits and Loss of Functional Synapses in a Novel Mutated Tau Transgenic Mouse without Any Motor Deficits
Katharina Schindowski, Alexis Bretteville, Karelle Leroy, Séverine Bégard, Jean-Pierre Brion, Malika Hamdane, and Luc Buée
- Tumorigenesis and Neoplastic Progression
- 617 Relaxin Enhances the Oncogenic Potential of Human Thyroid Carcinoma Cells
Sabine Hombach-Klonisch, Joanna Bialek, Bogusz Trojanowicz, Ekkehard Weber, Hans-Jürgen Holzhausen, Josh D. Silvertown, Alastair J. Summerlee, Henning Dralle, Cuong Hoang-Vu, and Thomas Klonisch
- 633 Signal Transducers and Activators of Transcription-3 Up-Regulates Tissue Inhibitor of Metalloproteinase-1 Expression and Decreases Invasiveness of Breast Cancer
Jennifer Dien, Hesbam M. Amin, Neil Chiu, Winson Wong, Christine Frantz, Brian Chiu, John R. Mackey, and Raymond Lai
- 643 Increased Melanoma Growth and Metastasis Spreading in Mice Overexpressing Placenta Growth Factor
Marcella Marcellini, Naomi De Luca, Teresa Riccioni, Alessandro Ciucci, Angela Orecchia, Pedro Miguel Lacal, Federica Ruffini, Maurizio Pesce, Francesca Cianfarani, Giovanna Zambruno, Augusto Orlandi, and Cristina Maria Failla
- 655 Aberrant Expression of ID2, a Suppressor of B-Cell-Specific Gene Expression, in Hodgkin's Lymphoma
Christoph Renné, Jose Ignacio Martin-Subero, Maren Eickernjäger, Martin-Leo Hansmann, Ralf Küppers, Reiner Siebert, and Andreas Bräuninger
- 665 Rapid Growth of Invasive Metastatic Melanoma in Carcinogen-Treated Hepatocyte Growth Factor/Scatter Factor-Transgenic Mice Carrying an Oncogenic CDK4 Mutation
Damia Tormo, Aleix Ferrer, Evelyn Gaffal, Jörg Wenzel, Etiena Basner-Tschakarjan, Julia Steitz, Lukas C. Heukamp, Ines Gütgemann, Reinhard Bueltner, Marcos Malumbres, Mariano Barbacid, Glenn Merlino, and Thomas Tüting
- 673 Dormant Cancer Cells Retrieved from Metastasis-Free Organs Regain Tumorigenic and Metastatic Potency
 *Mika Suzuki, Evangeline Sari Mose, Valerie Montel, and David Tarin*
- 682 Androgen Receptor Remains Critical for Cell-Cycle Progression in Androgen-Independent CWR22 Prostate Cancer Cells
Xin Yuan, Tong Li, Hongyun Wang, Tao Zhang, Moumita Barua, Robert A. Borgesi, Glenn J. Buble, Michael L. Lu, and Steven P. Balk
- Vascular Biology, Atherosclerosis and Endothelium Biology
- 697 STAT-6-Mediated Control of P-Selectin by Substance P and Interleukin-4 in Human Dermal Endothelial Cells
Yasubiro Miyazaki, Takabiro Satoh, Kiyoshi Nishioka, and Hiroo Yokozeki
- 708 Lymphangiogenic Growth Factor Responsiveness Is Modulated by Postnatal Lymphatic Vessel Maturation
 *Terbi Karpanen, Maria Wirzenius, Taija Mäkinen, Tanja Veikkola, Hidde J. Haisma, Marc G. Achen, Steven A. Stacker, Bronislaw Pytowski, Seppo Ylä-Herttuala, and Kari Alitalo*
- ★ See Related Commentary on page 347
- 719 NADPH Oxidase-Derived Overproduction of Reactive Oxygen Species Impairs Postischemic Neovascularization in Mice with Type 1 Diabetes
Téni G. Ebrahimian, Christophe Heymes, Dong You, Olivier Blanc-Brude, Barend Mees, Ludovic Waeckel, Micheline Duriez, José Vilar, Ralph P. Brandes, Bernard I. Levy, Ajay M. Shah, and Jean-Sébastien Silvestre

729 **ASIP Journal CME Program in Pathogenesis**

 denotes participating articles in this issue