

Stem Cell Special Issue

Introduction to Stem Cell Special Section

Heide Schatten

Pluripotent Stem Cells and Reprogrammed Cells in Farm Animals

Monika Nowak-Imialek, Wilfried Kues, Joseph W. Carnwath, and Heiner Niemann

How Can Female Germline Stem Cells Contribute to the Physiological Neo-Oogenesis in Mammals and Why Menopause Occurs?

Antonin Bukovsky

The Significant Role of Centrosomes in Stem Cell Division and Differentiation

Heide Schatten and Qing-Yuan Sun

The Hair Follicle Bulge: A Niche for Adult Stem Cells

Hilda Amalia Pasolli

Neural Stem Cells in Neurospheres, Embryoid Bodies, and Central Nervous System of Human Embryos

*A. Henry Sathanathan*Hematopoietic Derived Cell Infiltration of the Intestinal Tumor Microenvironment in *Apc^{Min/+}* Mice*Celestia Davis, Robert Price, Grishma Acharya, Troy Baudino, Thomas Borg, Franklin G. Berger, and Maria Marjorette O. Peña*

Multiphoton Flow Cytometry to Assess Intrinsic and Extrinsic Fluorescence in Cellular Aggregates: Applications to Stem Cells

David G. Buschke, Jayne M. Squirrell, Hidayath Ansari, Michael A. Smith, Curtis T. Rueden, Justin C. Williams, Gary E. Lyons, Timothy J. Kamp, Kevin W. Eliceiri, and Brenda M. Ogle

Biological Applications

Age-Dependent Expression of Collagen Receptors and Deformation of Type I Collagen Substrates by Rat Cardiac Fibroblasts

*Christopher G. Wilson, John W. Stone, Vennece Fowlkes, Mary O. Morales, Catherine J. Murphy, Sarah C. Baxter, and Edie C. Goldsmith*Quantitative Electron Microscopy of Cellulose Nanofibril Structures from *Eucalyptus* and *Pinus radiata* Kraft Pulp Fibers*Gary Chinga-Carrasco, Yingda Yu, and Ola Diserud*

Karyotype Analysis of Buckwheat Using Atomic Force Microscopy

Suresh Neethirajan, Tamaki Hirose, Junichi Wakayama, Kazumi Tsukamoto, Hiroko Kanahara, and Shigeru Sugiyama

Materials Applications

Compositional Analysis with Atomic Column Spatial Resolution by 5th-Order Aberration-Corrected Scanning Transmission Electron Microscopy

David Hernández-Maldonado, Miriam Herrera, Pablo Alonso-González, Yolanda González, Luisa González, Jaume Gazquez, María Varela, Stephen J. Pennycook, María de la Paz Guerrero-Lebrero, Joaquín Pizarro, Pedro L. Galindo, and Sergio I. Molina

Carbon Diffusion from Methane into Walls of Carbon Nanotube through Structurally and Compositionally Modified Iron Catalyst

Michael J. Behr, K. Andre Mkhoyan, and Eray S. Aydil

Multifrequency Atomic Force Microscopy: Compositional Imaging with Electrostatic Force Measurements

Sergei Magonov and John Alexander

Technology and Software Development Light and Confocal Microscopy

Quality Assurance Testing for Modern Optical Imaging Systems

Robert F. Stack, Carol J. Bayles, Anne-Marie Girard, Karen Martin, Cynthia Opansky, Katherine Schulz, and Richard W. Cole

Restoration of Uneven Illumination in Light Sheet Microscopy Images

Mohammad Shorif Uddin, Hwee Kuan Lee, Stephan Preibisch, and Pavel Tomancak

Deep Tissue Fluorescent Imaging in Scattering Specimens Using Confocal Microscopy

Sherry G. Clendenon, Pamela A. Young, Michael Ferkowicz, Carrie Phillips, and Kenneth W. Dunn

Measurements Validating the Confocal Scanning Laser Holography Microscope

Peter B. Jacquemin and Rodney A. Herring

Helium Ion Microscopy

Angular Dependence of the Ion-Induced Secondary Electron Emission for He⁺ and Ga⁺ Beams*Vincenzo Castaldo, Josephus Withagen, Cornelius Hagen, Pieter Kruit, and Emile van Veldhoven*

Resolution Limits of Secondary Electron Dopant Contrast in Helium Ion and Scanning Electron Microscopy

Mark Jepson, Xiong Liu, David Bell, David Ferranti, Beverley Inkson, and Cornelia Rodenburg

Is Microanalysis Possible in the Helium Ion Microscope?

David C. Joy and Brendan J. Griffin

BOOK REVIEW

*Unseen Companions: Big Views of Tiny Creatures**Elaine C. Humphrey*

Dear Abbe

Dear Abbe,

I have a user who insists on growing cells in plastic well plates, and I am trying to come up with a good way to punch or cut out individual wells without disturbing the cells too much. The idea is to put them on a glass slide for the microscope. Is there a tool that works well on 96- and 384-well plates? I tried to get them to use glass so imaging on our microscope would be easier, but they are stubborn about using plastic.

Earl from Corning, NY

Dear Earl-enmyer,

I'm afraid I have no tool that works well on 96 or any other number of wells for cutting out the wells. Maybe using a precise painting of acetone along the edges would work? My forte is more along the lines of punching them out. It is a little known fact that I became interested in the pugilistic arts and sparred with Max Schmeling. Max and I became good friends at a Bierschenke after a row with some unruly patrons. After sparring mentally with my colleagues, a physical outlet was welcomed. Of course, everyone knows the long-standing relationship of microscopists and boxing, and this has been the basis of many sample techniques. For example, the "Gentleman Jim" of cryo-EM fame is named in honor of American boxer James Corbett. Just take out your fingerling boxing gloves and punch those little devils right out. A few cells might be offended by your violent method, but they're going to be unhappy under the scope anyway.

Dear Abbe,

Would you like to become a millionaire? If so, you should invest the massive royalties from your syndicated column in my new venture: the Laboratory Shopping Network! As an investor, you could ensure your own wealth by promoting our products in your column. This month, we will have a special on zircon knives for microscopists who cannot afford diamonds.

Grayson in Hoosier Land

Dearest Grayson!

Is this a trick question? I am already a millionaire! As for my extensive royalties, they are tied up in nanotech personal hygiene products. As for promotion, I already have several products that we developed and I am spokesperson for: a device to convert old glass plate lantern slides into JPEGs, 24K tennis bracelets made from spent sputter coater targets, a combination microtome/back massager, and my personal favorite, the snuggie lab coat! I would have more creations for product development, but I invested early on with Sir Tommy Sopwith and his "Bat Boat" and lost quite the bundle. My assistant assures me that you are an excellent risk, but I've learned to consult my financial advisor, Herr Bankrotteur, in all investment decisions. I'll have my people contact your people.

If you have a bundle to invest, send your cash in unmarked bills to Herr Abbe in care of his assistant, Herr Shields at jpsshield@uga.edu.