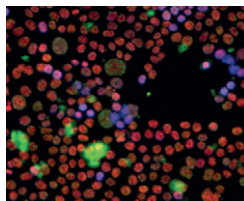


# Contents

Vol. 195 No. 3 November 2013



**Cover photo:** SOD1 inhibition induces DNA damage and synthetic lethal killing of *RAD54B*-deficient colon cancer cells. Image courtesy of Babu Sajesh. See Sajesh *et al.* Genetics 195:757–767.

- PERSPECTIVES**
- 625–634 **A Perspective on Micro-Evo-Devo: Progress and Potential**  
Nunes, Maria D. S., Saad Arif, Christian Schlötterer, and Alistair P. McGregor
- COMMENTARY**
- 635–642 **Exciting Prospects for Precise Engineering of *Caenorhabditis elegans* Genomes with CRISPR/Cas9**  
Frøkjær-Jensen, Christian
- YEASTBOOK**
- GENE EXPRESSION & METABOLISM
- 643–681 **Ribosome Biogenesis in the Yeast *Saccharomyces cerevisiae***  
Woolford, John L. Jr. and Susan J. Baserga
- INVESTIGATIONS**
- METHODS, TECHNOLOGY, AND RESOURCES
- 683–691 **Selecting Informative Traits for Multivariate Quantitative Trait Locus Mapping Helps to Gain Optimal Power**  
Cheng, Riyan, Justin Borevitz, and R. W. Doerge
- 693–702 **Estimating Individual Admixture Proportions from Next Generation Sequencing Data**  
Skotte, Line, Thorfinn Sand Korneliussen, and Anders Albrechtsen
- 703–713 **Highly Efficient Targeted Mutagenesis in Mice Using TALENs**  
Panda, Sudeepta Kumar, Benedikt Wefers, Oskar Ortiz, Thomas Floss, Bettina Schmid, Christian Haass, Wolfgang Wurst, and Ralf Kühn
- 715–721 **Highly Improved Gene Targeting by Germline-Specific Cas9 Expression in *Drosophila***  
Kondo, Shu and Ryu Ueda
- 723–737 **Genomic Resources for Gene Discovery, Functional Genome Annotation, and Evolutionary Studies of Maize and Its Close Relatives**  
Wang, Chao, Xue Shi, Lin Liu, Haiyan Li, Jetty S.S. Ammiraju, David A. Kudrna, Wentao Xiong, Hao Wang, Zhaozhao Dai, Yonglian Zheng, Jinsheng Lai, Weiwei Jin, Joachim Messing, Jeffrey L Bennetzen, Rod A. Wing, and Meizhong Luo
- GENOME INTEGRITY AND TRANSMISSION
- 739–755 **Coordination and Processing of DNA Ends During Double-Strand Break Repair: The Role of the Bacteriophage T4 Mre11/Rad50 (MR) Complex**  
Almond, Joshua R., Bradley A. Stohr, Anil K. Panigrahi, Dustin W. Albrecht, Scott W. Nelson, and Kenneth N. Kreuzer
- 757–767 **Synthetic Lethal Targeting of Superoxide Dismutase 1 Selectively Kills *RAD54B*-Deficient Colorectal Cancer Cells**  
Sajesh, Babu V., Melanie Bailey, Zeldá Lichtensztejn, Philip Hieter, and Kirk J. McManus

- 769–779** **Hot Regions of Noninterfering Crossovers Coexist with a Nonuniformly Interfering Pathway in *Arabidopsis thaliana***  
Basu-Roy, Sayantani, Franck Gauthier, Laurène Giraut, Christine Mézard, Matthieu Falque, and Olivier C. Martin
- 781–793** **Phylogenies of Central Element Proteins Reveal the Dynamic Evolutionary History of the Mammalian Synaptonemal Complex: Ancient and Recent Components**  
Fraune, Johanna, Céline Brochier-Armanet, Manfred Alsheimer, and Ricardo Benavente
- 795–807** **Kinetochore Function and Chromosome Segregation Rely on Critical Residues in Histones H3 and H4 in Budding Yeast**  
Ng, Tessie M., Tineke L. Lenstra, Nicole Duggan, Shuangying Jiang, Steven Ceto, Frank C. P. Holstege, Junbiao Dai, Jef D. Boeke, and Sue Biggins
- GENE EXPRESSION
- 809–830** **New Levels of Transcriptome Complexity at Upper Thermal Limits in Wild *Drosophila* Revealed by Exon Expression Analysis**  
Telonis-Scott, Marina, Belinda van Heerwaarden, Travis K. Johnson, Ary. A. Hoffmann, and Carla. M. Sgrò
- CELLULAR GENETICS
- 831–844** **Nutritional Control of Epigenetic Processes in Yeast and Human Cells**  
Sadhu, Meru J., Qiaoning Guan, Fei Li, Jade Sales-Lee, Anthony T. Iavarone, Ming C. Hammond, W. Zacheus Cande, and Jasper Rine
- 845–855** **Is the Fungus *Magnaporthe* Losing DNA Methylation?**  
Ikeda, Ken-ichi, Ba Van Vu, Naoki Kadotani, Masaki Tanaka, Toshiki Murata, Kohta Shiina, Izumi Chuma, Yukio Tosa, and Hitoshi Nakayashiki
- 857–870** **Neurodegeneration Caused by Polyglutamine Expansion Is Regulated by P-Glycoprotein in *Drosophila melanogaster***  
Yadav, Suman and Madhu G. Tapadia
- 871–881** **Genetic Studies of Spectrin in the Larval Fat Body of *Drosophila melanogaster*: Evidence for a Novel Lipid Uptake Apparatus**  
Diaconeasa, Bianca, G. Harper Mazock, Anthony P. Mahowald, and Ronald R. Dubreuil
- 883–898** **Early Colony Establishment in *Neurospora crassa* Requires a MAP Kinase Regulatory Network**  
Leeder, Abigail C., Wilfried Jonkers, Jingyi Li, and N. Louise Glass
- DEVELOPMENTAL AND BEHAVIORAL GENETICS
- 899–913** **Mechanisms of Ephrin Receptor Protein Kinase-Independent Signaling in Amphid Axon Guidance in *Caenorhabditis elegans***  
Grossman, Emily N., Claudiu A. Giurumescu, and Andrew D. Chisholm
- 915–926** **Identification of Mob2, a Novel Regulator of Larval Neuromuscular Junction Morphology, in Natural Populations of *Drosophila melanogaster***  
Campbell, Megan and Barry Ganetzky
- 927–940** **The *Drosophila wings apart* Gene Anchors a Novel, Evolutionarily Conserved Pathway of Neuromuscular Development**  
Morriss, Ginny R., Carmelita T. Jaramillo, Crystal M. Mikolajczak, Sandy Duong, MaryAnn S. Jaramillo, and Richard M. Cripps
- POPULATION AND EVOLUTIONARY GENETICS
- 941–955** **Rate of Adaptation in Sexuals and Asexuals: A Solvable Model of the Fisher–Muller Effect**  
Park, Su-Chan and Joachim Krug

- 957–967** **Population Genetics and Molecular Evolution of DNA Sequences in Transposable Elements. I. A Simulation Framework**  
Kijima, T. E. and Hideki Innan
- 969–978** **Population Growth Inflates the Per-Individual Number of Deleterious Mutations and Reduces Their Mean Effect**  
Gazave, Elodie, Diana Chang, Andrew G. Clark, and Alon Keinan
- 979–992** **Quantifying Population Genetic Differentiation from Next-Generation Sequencing Data**  
Fumagalli, Matteo, Filipe G. Vieira, Thorfinn Sand Korneliussen, Tyler Linderoth, Emilia Huerta-Sánchez, Anders Albrechtsen, and Rasmus Nielsen
- 993–1006** **The Characteristic Trajectory of a Fixing Allele: A Consequence of Fictitious Selection That Arises from Conditioning**  
Zhao, Lei, Martin Lascoux, Andrew D. J. Overall, and David Waxman
- 1007–1025** **The Dynamics of Genetic Draft in Rapidly Adapting Populations**  
Kosheleva, Katya and Michael M. Desai
- 1027–1035** **Finding the Factors of Reduced Genetic Diversity on X Chromosomes of *Macaca fascicularis*: Male-Driven Evolution, Demography, and Natural Selection**  
Osada, Naoki, Shigeki Nakagome, Shuhei Mano, Yosuke Kameoka, Ichiro Takahashi, and Keiji Terao
- 1037–1053** **Statistical Properties of the Site-Frequency Spectrum Associated with  $\Lambda$ -Coalescents**  
Birkner, Matthias, Jochen Blath, and Bjarki Eldon
- 1055–1062** **Relating Phylogenetic Trees to Transmission Trees of Infectious Disease Outbreaks**  
Ypma, Rolf J. F., W. Marijn van Ballegooijen, and Jacco Wallinga
- GENETICS OF COMPLEX TRAITS**
- 1063–1075** **A Locus in *Drosophila sechellia* Affecting Tolerance of a Host Plant Toxin**  
Hungate, Eric A., Eric J. Earley, Ian A. Boussy, David A. Turissini, Chau-Ti Ting, Jennifer R. Moran, Mao-Lien Wu, Chung-I Wu, and Corbin D. Jones
- 1077–1086** **High-Throughput Computer Vision Introduces the Time Axis to a Quantitative Trait Map of a Plant Growth Response**  
Moore, Candace R., Logan S. Johnson, Il-Youp Kwak, Miron Livny, Karl W. Broman, and Edgar P. Spalding
- 1087–1102** **Complex Genetic Effects on Early Vegetative Development Shape Resource Allocation Differences Between *Arabidopsis lyrata* Populations**  
Remington, David L., Päivi H. Leinonen, Johanna Leppälä, and Outi Savolainen
- 1103–1115** **Genetic Mapping and Genomic Selection Using Recombination Breakpoint Data**  
Xu, Shizhong
- 1117–1128** **Genetic and Nongenetic Variation Revealed for the Principal Components of Human Gene Expression**  
Goldinger, Anita, Anjali K. Henders, Allan F. McRae, Nicholas G. Martin, Greg Gibson, Grant W. Montgomery, Peter M. Visscher, and Joseph E. Powell
- 1129–1139** **Pleiotropic Effects of a Mitochondrial–Nuclear Incompatibility Depend upon the Accelerating Effect of Temperature in *Drosophila***  
Hoekstra, Luke A., Mohammad A. Siddiq, and Kristi L. Montooth

- 1141–1155 High-Resolution Mapping of Complex Traits with a Four-Parent Advanced Intercross Yeast Population**  
Cubillos, Francisco A., Leopold Parts, Francisco Salinas, Anders Bergström, Eugenio Scovacicchi, Amin Zia, Christopher J. R. Illingworth, Ville Mustonen, Sebastian Ibstedt, Jonas Warringer, Edward J. Louis, Richard Durbin, and Gianni Liti
- GENOME AND SYSTEMS BIOLOGY
- 1157–1166 Analysis of Allele-Specific Expression in Mouse Liver by RNA-Seq: A Comparison With *Cis*-eQTL Identified Using Genetic Linkage**  
Lagarrigue, Sandrine, Lisa Martin, Farhad Hormozdiari, Pierre-François Roux, Calvin Pan, Atila van Nas, Olivier Demeure, Rita Cantor, Anatole Ghazalpour, Eleazar Eskin, and Aldons J. Lusis
- NOTES**
- METHODS, TECHNOLOGY, AND RESOURCES
- 1167–1171 Transgene-Free Genome Editing in *Caenorhabditis elegans* Using CRISPR-Cas**  
Chiu, Hui, Hillel T. Schwartz, Igor Antoshechkin, and Paul W. Sternberg
- 1173–1176 Targeted Heritable Mutation and Gene Conversion by Cas9-CRISPR in *Caenorhabditis elegans***  
Katic, Iskra and Helge Großhans
- 1177–1180 Heritable Gene Knockout in *Caenorhabditis elegans* by Direct Injection of Cas9–sgRNA Ribonucleoproteins**  
Cho, Seung Woo, Jihyun Lee, Dana Carroll, Jin-Soo Kim, and Junho Lee
- 1181–1185 Heritable Custom Genomic Modifications in *Caenorhabditis elegans* via a CRISPR–Cas9 System**  
Tzur, Yonatan B., Ari E. Friedland, Saravanapriah Nadarajan, George M. Church, John A. Calarco, and Monica P. Colaiácovo
- 1187–1191 CRISPR/Cas9-Targeted Mutagenesis in *Caenorhabditis elegans***  
Waaajers, Selma, Vincent Portegijs, Jana Kerver, Bennie B. L. G. Lemmens, Marcel Tijsterman, Sander van den Heuvel, and Mike Boxem
- DEVELOPMENTAL AND BEHAVIORAL GENETICS
- 1193–1196 Evidence for a Tumor Suppressor Role for the *Large Tumor Suppressor* Genes *LATS1* and *LATS2* in Human Cancer**  
Yu, Tian, John Bachman, and Zhi-Chun Lai
- CORRIGENDUM**
- 1197 Local Ancestry Corrects for Population Structure in *Saccharomyces cerevisiae* Genome-Wide Association Studies**  
Diao, Liyang and Kevin C. Chen
- 1199 Complex Population Dynamics and the Coalescent Under Neutrality**  
Volz, Erik M.