COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY

VOLUME LXIX

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Symposium Participants

- AAPOLA, ULLA, Institute of Medical Technology, University of Tampere, Tampere, Finland
- ADAMS, CHRISTOPHER, Dept. of Genomics, Invitrogen Life Technologies, Carlsbad, California
- AIZAWA, YASUNORI, Johns Hopkins University, Baltimore, Maryland
- ALLIS, C. DAVID, Lab. of Chromatin Biology, Rockefeller University, New York, New York
- ALLISON, ANNE, Dept. of Microbiology, University of Virginia, Charlottesville
- ALLSHIRE, ROBIN, Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- ALMEIDA, RICARDO, Institute of Cellular and Molecular Biology, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- ALMOUZZI, GENEVIEVE, Institut Curie, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Paris, France
- ALTSCHULER, STEVEN, Center for Genomic Research, Harvard University, Cambridge, Massachusetts
- AMARIGLIO, NINETTE, Dept. of Pediatric Hematology and Oncology, Sheba Medical Center, Tel Hashomer, Israel
- AN, WENFENG, Dept. of Molecular Biology and Genetics, Johns Hopkins University, Baltimore, Maryland
- ANTAO, JOSE, Dept. of Molecular Biology, Harvard Medical School, Boston, Massachusetts
- ARAI, YOSHIO, Dept. of Radiation Oncology, Veteran's Administration of Pittsburgh, University of Pittsburgh, Pittsburgh, Pennsylvania
- ARROYAVE, RANDY, Dept. of Biological Sciences, City University of New York, Hunter College, New York, New York
- AUGER, ANDREANNE, Centre de recherche de l'Hôtel-Dieu de Québec, Laval University, Québec, Canada
- AVITAH-CURTIS, NICOLE, Models of Disease, Novartis Institutes for Biomedical Research, Cambridge, Massachusetts
- AVRAM, DORINA, Center for Cell Biology and Cancer Research, Albany Medical College, Albany, New York
- BALCIUNAITE, EGLE, Dept. of Pathology, School of Medicine, New York University, New York, New York
- BARLOW, DENISE, Center for Molecular Medicine, Institute of Microbiology and Genetics, University of Vienna, Vienna, Austria
- BARTEL, DAVID, Dept. of Biology, Whitehead Institute for Biomedical Research, Massachusetts Institute of Technology, Cambridge, Massachusetts
- BARTHOLOMEW, BLAINE, Dept. of Biochemistry, Southern Illinois University School of Medicine, Carbondale, Illinois
- BARTOLOMEI, MARISA, Dept. of Cell and Developmental Biology, School of Medicine, University of Pennsylvania, Philadelphia
- BATISTA, PEDRO J., Program in Molecular Medicine, Instituto Gulbenkian de Ciência-Portugal and School of Medicine, University of Massachusetts, Worcester
- BAUER, MATTHEW, Div. of Biological Sciences, University of Missouri, Columbia
- BAULCOMBE, DAVID, John Innes Centre, Norwich, United Kingdom
- BEAUDET, ARTHUR, Dept. of Molecular and Human Genetics, Baylor College of Medicine, Houston, Texas
- BECKER, PETER, Adolf Butenandt Institute, University of Munich, Munich, Germany
- BEIER, VERENA, Dept. of Functional Genome Analysis, German Cancer Research Center, Heidelberg, Germany
- BELOZEROV, VLADIMIR, Dept. of Biochemistry and Molecular Biology, University of Georgia, Athens
- BENDER, JUDITH, Dept. of Biochemistry and Molecular Biology, School of Public Health, Johns Hopkins University, Baltimore, Maryland
- BENDER, LAUREL, Dept. of Biology, Indiana University, Bloomington, Indiana
- BERGER, SHELLEY, Dept. of Molecular Genetics, Wistar Institute, Philadelphia, Pennsylvania
- BERNARDS, RENÉ, Div. of Molecular Carcinogenesis, The Netherlands Cancer Institute, Amsterdam, The Netherlands
- BESTOR, TIMOTHY, Dept. of Genetics and Development, Columbia University, New York, New York
- BIBIKOVA, MARINA, Dept. of Molecular Biology, Illumina, Inc., San Diego, California
- BICKMORE, WENDY, Dept. of Chromosome Biology, Human Genetics Unit, Medical Research Council, Edinburgh, Scotland, United Kingdom
- BIRCHLER, JAMES, Div. of Biological Sciences, University of Missouri, Columbia
- BIRD, ADRIAN, Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- BIRNBAUMER, LUTZ, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, North Carolina
- BOCCUNI, PIERNICOLA, Dept. of Molecular Pharmacology and Therapeutics, Memorial Sloan-Kettering Cancer Institute, New York, New York

- BOCKLANDT, SVEN, Dept. of Human Genetics, University of California, Los Angeles
- BOND, DIANE, Research and Development, Electrophoresis Platforms, Applied Biosystems, Foster City, California
- BONIFER, CONSTANZE, Dept. of Molecular Medicine, St. James University Hospital, University of Leeds, Leeds, United Kingdom
- BOURC'HIS, DEBORAH, Dept. of Genetics and Development, Columbia University, New York, New York
- BOYER, LAURIE, Dept. of Biology, Whitehead Institute for Biomedical Research, Massachusetts Institute of Technology, Cambridge, Massachusetts
- BRENNAN, JENNIFER, Dept. of Genetics, University of North Carolina, Chapel Hill
- BROMAN, KARL, Dept. of Biostatistics, Johns Hopkins University, Baltimore, Maryland
- BROWN, CAROLYN, Dept. of Medical Genetics, University of British Columbia, Vancouver, British Columbia, Canada
- BROWN, WILLIAM, Dept. of Genetics, Queens Medical Centre, University of Nottingham, Nottingham, United Kingdom
- BUCHBERGER, JOHANNES, Dept. of Cell Biology, Harvard Medical School, Boston, Massachusetts
- BUNGER, MAUREEN, Lab. of Molecular Carcinogenesis, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, North Carolina
- BUSSEMAKER, HARMEN, Dept. of Biological Sciences, Columbia University, New York, New York
- BYSTRICKY, KERSTIN, Dept. of Molecular Biology, University of Geneva, Geneva, Switzerland
- CABELLO, OLGA, Dept. of Molecular and Cellular Biology, Baylor College of Medicine, Houston, Texas
- CAI, HAINI, Dept. of Cellular Biology, University of Georgia, Athens
- CAO, RU, Dept. of Biochemistry and Biophysics, Lineberger Comprehensive Cancer Center, University of North Carolina, Chapel Hill
- CARBONE, ROBERTA, Dept. of Experimental Oncology, European Institute of Oncology, Milan, Italy
- CARTER, NIGEL, The Wellcome Trust Sanger Institute, Hinxton, Cambridge, United Kingdom
- CASLINI, CORRADO, Dept. of Medical Oncology, Fox Chase Cancer Center, Philadelphia, Pennsylvania
- CASSEL, SALLIE, Invitrogen Life Technologies, Carlsbad, California
- CEDAR, HOWARD, Dept. of Cellular Biochemistry, Hadasah Medical Center, Hebrew University, Jerusalem, Israel
- CHADWICK, LISA, Institute for Genome Sciences and Policy, Duke University, Durham, North Carolina
- CHAKRAVARTHY, SRINIVAS, Dept. of Biochemistry and Molecular Biology, Colorado State University, Fort Collins, Colorado
- CHALKER, DOUGLAS, Dept. of Biology, Washington University, St. Louis, Missouri
- CHAN, HUEI, Dept. of Pathology, University of Kentucky, Lexington
- CHAN, SHIRLEY, Dolan DNA Learning Center, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- CHANDLER, VICKI, Dept. of Plant Sciences, University of Arizona, Tucson
- CHEN, GENGXIN, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- CHEN, JACK, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- CHEN, XIN, Dept. of Developmental Biology, Stanford University School of Medicine, Stanford, California
- CHENG, XIAODONG, Dept. of Biochemistry, Emory University School of Medicine, Atlanta, Georgia
- CHERUKURI, SRUJANA, Dept. of Cell Biology, Cleveland Clinic Foundation, Cleveland, Ohio
- CHESS, ANDREW, Dept. of Biology, Whitehead Institute for Biomedical Research, Massachusetts Institute of Technology, Cambridge, Massachusetts
- CHONG, SUYINN, School of Molecular and Microbial Biosciences, University of Sydney, Sydney, New South Wales, Australia
- CHOO, JUNGHA, Dept. of Biological Sciences, Korea Advanced Institute of Science and Technology, Daejeon, South Korea
- CHUNG, JAE HOON, Dept. of Biological Sciences, Korea Advanced Institute of Science and Technology, Daejeon, South Korea
- CIRO, MARCO, Dept. of Experimental Oncology, European Institute of Oncology, Milan, Italy
- COCKERILL, PETER, Dept. of Molecular Medicine, St. James University Hospital, University of Leeds, Leeds, United Kingdom
- COENRAADS, MONICA, Rett Syndrome Research Foundation, Cincinnati, Ohio
- COHEN, AMIKAM, Dept. of Molecular Biology, Hebrew University Medical School, Jerusalem, Israel
- COLOT, VINCENT, Unité de Recherche en Génomique Végétale, Centre National de la Recherche Scientifique, Evry, France
- COMET, ITYS, Institut de Génétique Humaine, Centre National de la Recherche Scientifique, Montpellier, France
- COONROD, SCOTT, Dept. of Genetic Medicine, Weill Medical College, Cornell University, New York, New York
- COROMINAS, MONTSERRAT, Dept. of Genetics, Universitat de Barcelona, Barcelona, Spain
- CURRIE, RICHARD, Center for Scientific Review, National Institutes of Health, Bethesda, Maryland
- DAHARY, DVIR, Dept. of Cell Research and Immunology, Tel Aviv University, Tel Aviv, Israel
- DAI, JUNBIAO, Dept. of Genetics, Development, and Cell Biology, Iowa State University, Ames, Iowa
- DANNENBERG, JAN-HERMEN, Dept. of Medical Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts
- DAS, RAJDEEP, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- DAVID, GREGORY, Dept. of Medical Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts
- DAVIS, ERICA, Dept. of Genetics, Faculty of Veterinary Medicine, University of Liège, Liège, Belgium
- DEAN, CAROLINE, Dept. of Cell and Developmental Biol-

SYMPOSIUM PARTICIPANTS

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- ogy, John Innes Centre, Norwich, United Kingdom
- DEFOSSEZ, PIERRE, Institut Curie, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Paris, France
- DIAZ-PEREZ, SILVIA, Dept. of Human Genetics, University of California, Los Angeles
- DJUPEDAL, INGELA, Dept. of Natural Sciences, Karolinska Institutet, University College Södertörn, Huddinge, Sweden
- DORMAN, JANICE, Dept. of Epidemiology, University of Pittsburgh, Pittsburgh, Pennsylvania
- DORMANN, HOLGER, Lab. of Chromatin Biology, Rockefeller University, New York, New York
- DOSTATNI, NATHALIE, Institut Curie, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Paris, France
- DRGON, TOMAS, Molecular Neurobiology Branch, Charles River Laboratories, National Institute on Drug Abuse, Baltimore, Maryland
- DUAN, ZHIJUN, Dept. of Medical Genetics, University of Washington, Seattle
- DUBOWITZ, VICTOR, Neuromuscular Unit, Dept. of Pediatrics, Imperial College London, London, United Kingdom
- DUNCAN, ELIZABETH, Lab. of Chromatin Biology, Rockefeller University, New York, New York
- DUNN, REBECCA, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- EBERT, JOAN, Cold Spring Harbor Laboratory Press, Woodbury, New York
- ECCLESTON, ALEX, *Nature*, Nature Publishing, San Francisco, California
- ECKHARDT, FLORIAN, Dept. of Life Sciences, Epigenomics AG, Berlin, Germany
- EKWALL, KARL, Dept. of Natural Sciences, Karolinska Institutet, University College Södertörn, Huddinge, Sweden
- ELGIN, SARAH, Dept. of Biology, Washington University, St. Louis, Missouri
- EMMONS, SCOTT, Dept. of Molecular Genetics, Albert Einstein College of Medicine, Bronx, New York
- ESUMI, NORIKO, Dept. of Ophthalmology, School of Medicine, Johns Hopkins University, Baltimore, Maryland
- EVANS, JASON, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- EZHKOVA, ELENA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- FAN, YUHONG, Dept. of Cell Biology, Albert Einstein College of Medicine, Bronx, New York
- FARMER, DEBORAH, Gene Regulation and Chromatin Unit, Hammersmith Hospital, Clinical Sciences Centre, Medical Research Council, Imperial College London, London, United Kingdom
- FEIL, ROBERT, Institute of Molecular Genetics, Centre National de la Recherche Scientifique, Montpellier, France
- FEINBERG, ANDREW, Epigenetics Unit, School of Medicine, Johns Hopkins University, Baltimore, Maryland
- FELSENFIELD, GARY, Lab. of Molecular Biology, National Institute of Diabetes and Digestive Kidney Diseases, National Institutes of Health, Bethesda, Maryland
- FERRER, JORGE, Dept. of Endocrinology, IDIBAPS, Hospital Clinic de Barcelona, Barcelona, Spain
- FIELDS, SCOTT, Dept. of Immunology, National Jewish Medical and Research Center, Denver, Colorado
- FIRE, ANDREW, Dept. of Pathology and Genetics, Stanford University School of Medicine, Stanford, California
- FISCHER, SYLVIA, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- FISCHLE, WOLFGANG, Lab. of Chromatin Biology, Rockefeller University, New York, New York
- FOUREL, GENEVIEVE, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Ecole Normale Supérieure, Lyon, France
- FRAZER, KIMBLE, Div. of Pediatric Hematology and Oncology, Huntsman Cancer Institute, University of Utah, Salt Lake City
- FRY, CHRISTOPHER, Program in Molecular Medicine, School of Medicine, University of Massachusetts, Worcester
- GANN, ALEXANDER, Cold Spring Harbor Laboratory Press, Woodbury, New York
- GASSER, SUSAN, Dept. of Molecular Biology, University of Geneva, Geneva, Switzerland
- GASZNER, MIKLOS, Lab. of Molecular Biology, National Institute of Diabetes and Digestive Kidney Diseases, National Institutes of Health, Bethesda, Maryland
- GENDREL, ANNE-VALERIE, Unité de Recherche en Génomique Végétale, Centre National de la Recherche Scientifique, Evry, France
- GEORGES, MICHEL, Dept. of Genetics, Faculty of Veterinary Medicine, University of Liège, Liège, Belgium
- GILES, KEITH, Dept. of Biology, Johns Hopkins University, Baltimore, Maryland
- GOLDMAN, JOSEPH, Dept. of Molecular Biology, Harvard Medical School, Boston, Massachusetts
- GOMEZ, JORGE, Dept. of Microbiology and Immunology, Emory University, Atlanta, Georgia
- GOMOS-KLEIN, JANETTE, Dept. of Biological Sciences, City University of New York, Hunter College, New York, New York
- GONZALO, SUSANA, Molecular Oncology Program, Spanish National Cancer Centre, Madrid, Spain
- GOODMAN, LAURIE, *Journal of Clinical Investigation*, New York, New York
- GOPINATHRAO, GOPAL, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- GOTO, DEREK, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- GOTTSCHLING, DANIEL, Fred Hutchinson Cancer Research Center, Seattle, Washington
- GREWAL, SHIV, Lab. of Molecular Cell Biology, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
- GROSSNIKLAUS, UELI, Institute of Plant Biology, University of Zurich, Zurich, Switzerland
- GROTH, ANJA, Dept. of Cell Cycle and Cancer, Danish

- Cancer Society, Copenhagen, Denmark
- GRUNSTEIN, MICHAEL, Dept. of Biological Chemistry, University of California, Los Angeles
- GUEGLER, KARL, Applied Biosystems, Foster City, California
- GUENTHER, MATTHEW, Whitehead Institute for Biomedical Research, Massachusetts Institute of Technology, Cambridge, Massachusetts
- HAIG, DAVID, Dept. of Organismic and Evolutionary Biology, Botanical Museum, Harvard University, Cambridge, Massachusetts
- HAJKOVA, PETRA, Gurdon Institute, Wellcome Trust, Cancer Research U.K., University of Cambridge, Cambridge, United Kingdom
- HALL, IRA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- HAN, JEFFREY, Dept. of Molecular Biology and Genetics, School of Medicine, Johns Hopkins University, Baltimore, Maryland
- HANNON, GREGORY, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- HARRIS, ABIGAIL, Abcam, Ltd., Cambridge, United Kingdom
- HE, LIN, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- HE, YUEHUI, Dept. of Biochemistry, University of Wisconsin, Madison
- HEARD, EDITH, Mammalian Developmental Epigenetics Group, Institut Curie, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Paris, France
- HECHT, MERAV, Dept. of Cell Biochemistry and Human Genetics, Hebrew University, Jerusalem, Israel
- HELD, WILLIAM, Dept. of Molecular and Cellular Biology, Roswell Park Cancer Institute, Buffalo, New York
- HENIKOFF, STEVEN, Howard Hughes Medical Institute, Fred Hutchinson Cancer Research Center, Seattle, Washington
- HIRATANI, ICHIRO, Dept. of Biochemistry and Molecular Biology, Upstate Medical University, State University of New York, Syracuse
- HOEK, MAARTEN, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- HOHN, BARBARA, Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland
- HORIKOSHI, MASAMI, Lab. of Developmental Biology, Institute of Molecular and Cellular Biosciences, University of Tokyo, Tokyo, Japan
- HOULARD, MARTIN, Département de Biologie Joliot-Curie, Service de Biochimie et de Génétique Moléculaire, CEA de Saclay, Gif-sur-Yvette, France
- HSU, DUEN-WEI, Dept. of Biochemistry, Oxford University, Oxford, United Kingdom
- HSU, MEI, Dept. of Microbiology and Immunology, Dartmouth Medical School, Lebanon, New Hampshire
- HUA, SUJUN, Dept. of Genetics, Yale University School of Medicine, New Haven, Connecticut
- INAMOTO, SUSUMU, Dept. of Biotechnology, Institute of Research and Innovation, Chiba, Japan
- INGLIS, JOHN, Cold Spring Harbor Laboratory Press, Woodbury, New York
- IOSHIKHES, ILYA, Dept. of Biomedical Informatics, Ohio State University, Columbus, Ohio
- IRVINE, DANIELLE, Dept. of Chromosome Research, Murdoch Childrens Research Institute, Melbourne, Australia
- ISHINO, FUMITOSHI, Medical Research Center, Tokyo Medical and Dental University, Tokyo, Japan
- ISHOV, ALEXANDER, Dept. of Anatomy and Cell Biology, University of Florida, Gainesville
- IWAMOTO, KAZUYA, Lab. for Molecular Dynamics of Mental Disorders, Brain Science Institute, RIKEN, Wako, Japan
- JAENISCH, RUDOLF, Dept. of Biology, Whitehead Institute for Biomedical Research, Massachusetts Institute of Technology, Cambridge, Massachusetts
- JAYARAMAN, LATA, Dept. of Oncology, Bristol-Myers Squibb, Princeton, New Jersey
- JELINEK, TOM, Upstate Biotechnology, Inc., Lake Placid, New York
- JENUWEIN, THOMAS, Research Institute of Molecular Pathology, Vienna Biocenter, University of Vienna, Vienna, Austria
- JIA, SONGTAO, Lab. of Molecular Cell Biology, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
- JIMENEZ, JOSE, Dept. of Cellular and Molecular Physiology, Joslin Diabetes Center, Boston, Massachusetts
- JOHNSTONE, KAREN, Dept. of Molecular Genetics and Microbiology, University of Florida, Gainesville
- JORDAN, ALBERT, Dept. of Gene Regulation, Centre de Regulació Genòmica, Barcelona, Spain
- JOSHI-TOPE, GEETA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- KAJI, KEISUKE, Institute for Stem Cell Research, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- KAKKAD, REGHA, Center for Molecular Medicine, Institute of Microbiology and Genetics, Vienna Biocenter, University of Vienna, Vienna, Austria
- KAKUTANI, TETSUJI, Dept. of Integrated Genetics, National Institute of Genetics, Shizuoka, Japan
- KALANTRY, SUNDEEP, Dept. of Genetics, University of North Carolina, Chapel Hill
- KAMBERE, MARIJO, Dept. of Molecular Biology and Biochemistry, Wesleyan University, Middletown, Connecticut
- KAMPMANN, MARTIN, Lab. of Cell Biology, Rockefeller University, New York, New York
- KANNANGANATTU, PRASANTH, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- KANNO, MASAMOTO, Dept. of Immunology, Hiroshima University, Hiroshima, Japan
- KAPOOR, AVNISH, Dept. of Plant Sciences, University of Arizona, Tucson
- KARPF, ADAM, Dept. of Pharmacology and Therapeutics, Roswell Park Cancer Institute, Buffalo, New York
- KASSCHAU, KRISTIN, Center for Gene Research and Biotechnology, Oregon State University, Corvallis, Oregon
- KATO, MASAOMI, Dept. of Integrated Genetics, National

SYMPOSIUM PARTICIPANTS

ix

- Institute of Genetics, Mishima, Japan
- KATO, TADAFUMI, Lab. for Molecular Dynamics of Mental Disorders, Brain Science Institute, RIKEN, Wako, Japan
- KAUFMAN, PAUL, Dept. of Molecular and Cell Biology, Lawrence Berkeley National Laboratory, University of California, Berkeley
- KE, QINGDONG, Dept. of Environmental Medicine, New York University, Tuxedo, New York
- KELLY, WILLIAM, Dept. of Biology, Emory University, Atlanta, Georgia
- KELSEY, GAVIN, Developmental Genetics Programme, The Babraham Institute, Cambridge, United Kingdom
- KENNEDY, SCOTT, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- KIDNER, CATHERINE, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- KIKYO, NOBUAKI, Stem Cell Institute, University of Minnesota, Minneapolis
- KIM, JOHN, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- KIM, JOOMYEONG, Div. of Genome Biology, Lawrence Livermore National Laboratory, Livermore, California
- KIM, MI YOUNG, Dept. of Molecular Biology and Genetics, Cornell University, Ithaca, New York
- KINGSTON, ROBERT, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- KLAR, AMAR, Lab. of Gene Regulation and Chromosome Biology, National Cancer Institute, Frederick, Maryland
- KLAUTKY, TRUDEE, Field Application Specialist, Invitrogen, Shrewsbury, Massachusetts
- KLOSE, ROBERT, Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- KLYMENKO, TETYANA, Gene Expression Programme, European Molecular Biology Laboratory, Heidelberg, Germany
- KOH, MINGSHI, Dept. of Biological Sciences, National University of Singapore, Singapore, China
- KONFORTI, BOYANA, *Nature Structural & Molecular Biology*, New York, New York
- KOUSKOUTI, ANTIGONE, Dept. of Molecular Genetics, Institute of Molecular Biology and Biotechnology, Foundation for Research and Technology, Herakleion, Crete, Greece
- KOWENZ-LEUTZ, ELIZABETH, Dept. of Tumor Development and Differentiation, Max Delbrück Center for Molecular Medicine, Berlin, Germany
- KRAUS, W. LEE, Dept. of Molecular Biology and Genetics, Cornell University, Ithaca, New York
- KRIAUCIONIS, SKIRMANTAS, Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- KROGAN, NEVAN, Dept. of Medical Genetics, C.H. Best Institute, University of Toronto, Toronto, Ontario, Canada
- KSANDER, BRUCE, Dept. of Ophthalmology, Harvard Medical School, Boston, Massachusetts
- KUCEROVA, MARTINA, Dept. of Biological Sciences, Hunter College, City University of New York, New York, New York
- KURATOMI, GO, Lab. for Molecular Dynamics of Mental Disorders, Brain Science Institute, RIKEN, Wako, Japan
- KURODA, MITZI, Harvard-Partners Center for Genetics and Genomics, Harvard University, Boston, Massachusetts
- KWON, HYOCKMAN, Dept. of Bioscience and Biotechnology, Hankuk University of Foreign Studies, Yongin, Seoul, South Korea
- LABOURIER, EMMANUEL, Dept. of Research and Development, Ambion, Inc., Austin, Texas
- LAI, ANGELA, Johnson and Johnson Research, Strawberry Hills, Australia
- LAKEY, NATHAN, General and Administrative Offices, Orion Genomics, St. Louis, Missouri
- LAKOWSKI, BERNARD, Dept. of Neuroscience, Nematode Genetics Group, Institut Pasteur, Paris, France
- LANDE-DINER, LAURA, Dept. of Cellular Biochemistry, Hebrew University, Jerusalem, Israel
- LEE, JEANNIE, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- LI, MO, Dept. of Cellular Biology, University of Georgia, Athens
- LI, YING, Dept. of Cellular and Developmental Biology, Fox Chase Cancer Center, Philadelphia, Pennsylvania
- LIM, JAE-HWAN, Lab. of Metabolism, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
- LIPPMAN, ZACHARY, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- LIPSICK, JOSEPH, Dept. of Pathology, Stanford University, Stanford, California
- LIU, LIANG, Dept. of Biology, University of Alabama, Birmingham
- LOPES, ALEXANDRA, Dept. of Population Genetics, IPATIMUP, Instituto de Patologia e Immunologia Molecular da Universidade de Porto, Porto, Portugal
- LOUIS, EDWARD, Dept. of Genetics, University of Leicester, Leicester, United Kingdom
- LOWE, SCOTT, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- LU, XIANGDONG, Dept. of Biochemistry, University of North Carolina, Chapel Hill
- LUBITZ, SANDRA, Dept. of Biotechnology, Dresden University of Technology, Dresden, Germany
- LUSTIG, ARTHUR, Dept. of Biochemistry, Health Sciences Center, Tulane University, New Orleans, Louisiana
- LYLE, ROBERT, Dept. of Genetic Medicine and Development, School of Medicine, University of Geneva, Geneva, Switzerland
- MADHANI, HITEN, Dept. of Biochemistry and Biophysics, University of California, San Francisco
- MAGGERT, KEITH, Dept. of Biology, University of Utah, Salt Lake City
- MAJUMDER, SADHAN, Dept. of Molecular Genetics, M.D. Anderson Cancer Center, University of Texas, Houston

- MAJUMDER, SARMILA, Dept. of Molecular and Cellular Biochemistry, Ohio State University, Columbus, Ohio
- MANDIYAN, VALSAN, Dept. of Pharmacology, Yale University, New Haven, Connecticut
- MANGONE, MARCO, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- MANIATAKI, ELISAVET, Dept. of Pathology, University of Pennsylvania, Philadelphia
- MANN, CARL, Service de Biochimie et de Génétique Moléculaire, CEA de Saclay, Gif-sur-Yvette, France
- MARIN BIVENS, CARRIE, Dept. of Research, Jackson Laboratory, Bar Harbor, Maine
- MARTIENSSSEN, ROBERT, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- MASUI, OSAMU, Dept. of Nuclear Dynamics and Genome Plasticity, Institut Curie, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Paris, France
- MATOUK, CHARLES, Institute of Medical Sciences, University of Toronto, Toronto, Ontario, Canada
- MCCANN, JENNIFER, Dept. of Molecular Medicine, Ottawa Health Research Institute, Ottawa, Ontario, Canada
- MELLO, CRAIG, Program in Molecular Medicine, Cancer Center, School of Medicine, University of Massachusetts, Worcester
- MELNICK, ARI, Albert Einstein College of Medicine, Bronx, New York
- MEYER, BARBARA, Dept. of Molecular and Cellular Biology, Howard Hughes Medical Institute, University of California, Berkeley
- MEYER, CLIFFORD, Dept. of Biostatistics, Dana-Farber Cancer Institute, Cambridge, Massachusetts
- MEYER, ERIC, Laboratoire de Génétique Moléculaire, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Ecole Normale Supérieure, Paris, France
- MIAO, FENG, Dept. of Diabetes, Beckman Research Institute, City of Hope, Duarte, California
- MIN, JINRONG, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- MISHRA, NILAMADHAB, Dept. of Internal Medicine, Wake Forest University School of Medicine, Winston-Salem, North Carolina
- MISHRA, RAKESH, Centre for Cellular and Molecular Biology, Hyderabad, India
- MITO, YOSHIKO, Dept. of Basic Science, Fred Hutchinson Cancer Research Center, Seattle, Washington
- MITTELSTEN SCHEID, ORTRUN, Gregor Mendel Institute of Molecular Plant Biology, Vienna, Austria
- MIZUNO, YOSUKE, Center for Genomics and Bioinformatics, Karolinska Institutet, Stockholm, Sweden
- MO, XIANMING, Dept. of Tumor Development and Differentiation, Max Delbrück Center for Molecular Medicine, Berlin, Germany
- MOHAN, KOMMU, Centre for Human Genetics, Bangalore, India
- MOHD-SARIP, ADONE, Dept. of Molecular and Cell Biology, Sylvius Laboratory, Centre for Biomedical Genetics, Leiden University Medical Centre, Leiden, The Netherlands
- MONTGOMERY, NATHAN, Dept. of Genetics, University of North Carolina, Chapel Hill
- MOONEY, MYESHA, Dept. of Microbiology, Emory University, Atlanta, Georgia
- MORRIS, KEVIN, Dept. of Medicine, University of California at San Diego, La Jolla
- MOTTAGUI-TABAR, SALIM, Center for Genomics and Bioinformatics, Karolinska Institutet, Stockholm, Sweden
- MUCHARDT, CHRISTIAN, Expression Génétique Moléculaire, Centre National de la Recherche Scientifique, Institut Pasteur, Paris, France
- MUNGALL, ANDREW, The Wellcome Trust Sanger Institute, Hinxton, Cambridge, United Kingdom
- MURCHISON, ELIZABETH, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- MUTSKOV, VESCO, Lab. of Molecular Biology, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland
- MYAKISHEV, MAX, Lab. of Metabolism, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
- NAGASE, HIROKI, Dept. of Cancer Genetics, Roswell Park Cancer Institute, Buffalo, New York
- NAKATANI, YOSHIHIRO, Dept. of Cancer Biology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, Massachusetts
- NARAYAN, SANTOSH, Dept. of Pharmacology and Neuroscience, University of North Texas Health Science Center, Fort Worth, Texas
- NISHIO, HITOMI, Dept. of Pediatrics, Mount Sinai School of Medicine, New York, New York
- NOLAN, CATHERINE, Dept. of Zoology, University College of Dublin, Dublin, Ireland
- NOWACKI, MARIUSZ, Laboratoire de Génétique Moléculaire, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Ecole Normale Supérieure, Paris, France
- NUNEZ, SABRINA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- OHTSUBO, HISAKO, Institute of Molecular and Cellular Biosciences, University of Tokyo, Tokyo, Japan
- OKADA, YUKI, Dept. of Biochemistry and Biophysics, University of North Carolina, Chapel Hill
- OMHOLT, STIG, Center for Integrative Genetics, Agricultural University of Norway, Aas, Norway
- ONISHI, MEGUMI, Dept. of Cell Biology, Harvard Medical School, Boston, Massachusetts
- OONO, KIYOHARU, Research Center for Environmental Genomics, Kobe University, Kobe, Japan
- ORDWAY, JARED, Dept. of Biomarkers, Orion Genomics, St. Louis, Missouri
- ORLANDO, VALERIO, Dept. of Epigenetics and Genome Reprogramming, Dulbecco Telethon Institute, Institute of Genetics and Biophysics, CNR, Naples, Italy
- ORTIZ, BENJAMIN, Dept. of Biological Sciences, Hunter College, City University of New York, New York, New York

SYMPOSIUM PARTICIPANTS

xi

- OZER, JOSEF, Dept. of Pharmacology, School of Medicine, Boston University, Boston, Massachusetts
- PADDISON, PATRICK, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- PAGAN, JULIA, Dept. of Cancer and Cell Biology, Queensland Institute of Medical Research, Brisbane, Australia
- PALLAORO, MICHELE, Dept. of Biochemistry, Institute for Research in Molecular Biology, Merck, Pomezia, Italy
- PAN, QI, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- PARO, RENATO, Zentrum für Molekulare Biologie, University of Heidelberg, Heidelberg, Germany
- PARRY, DEVIN, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- PARTHUN, MARK, Dept. of Molecular and Cellular Biochemistry, Ohio State University, Columbus, Ohio
- PARTRIDGE, JANET, Dept. of Biochemistry, St. Jude Children's Research Hospital, Memphis, Tennessee
- PASZKOWSKI, JERZY, Dept. of Plant Biology, University of Geneva, Geneva, Switzerland
- PELISSON, ALAIN, Institut de Génétique Humaine, Centre National de la Recherche Scientifique, Montpellier, France
- PENNELL, ROGER, Ceres, Inc., Malibu, California
- PETERSON, CRAIG, Program in Molecular Medicine, Medical Center, School of Medicine, University of Massachusetts, Worcester
- PETRIE, VICTORIA, Dept. of Biochemistry, St. Jude Children's Research Hospital, Memphis, Tennessee
- PFEFFER, PETER, Dept. of Reproduction, AgResearch Crown Research Institute, Hamilton, New Zealand
- PHAM, ANH-DUNG, Dept. of Biochemistry, Howard Hughes Medical Institute, UMDNJ-Robert Wood Johnson Medical School, Piscataway, New Jersey
- PIEDRAHITA, JORGE, Dept. of Molecular Biomedical Sciences, North Carolina State University, Raleigh, North Carolina
- PIEN, STEPHANE, Dept. of Plant Systems Biology, VIB, University of Gent, Gent, Belgium
- PILLUS, LORRAINE, Dept. of Biology, University of California at San Diego, La Jolla
- PIRROTTA, VINCENZO, Dept. of Zoology, University of Geneva, Geneva, Switzerland
- PLASTERK, RONALD, Hubrecht Laboratory, Netherlands Institute for Developmental Biology, Utrecht, The Netherlands
- POGACIĆ, VANDA, Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland
- POLLOCK, MILA, Cold Spring Harbor Laboratory Library, Cold Spring Harbor, New York
- POOT, RAYMOND, Marie Curie Research Institute, Oxford, United Kingdom
- POZZI, SILVIA, Dept. of Cancer Genetics, Roswell Park Cancer Institute, Buffalo, New York
- PRASANTH, SUPRIYA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- PRIOLEAU, MARIE-NOELLE, Laboratoire de Génétique Moléculaire, Unité Mixte de Recherche, Centre National de la Recherche Scientifique, Ecole Normale Supérieure, Paris, France
- PROBST, ALINE, Dept. of Plant Biology, University of Geneva, Geneva, Switzerland
- PRUITT, ROBERT, Dept. of Botany and Plant Pathology, Purdue University, West Lafayette, Indiana
- PTASHNE, MARK, Dept. of Molecular Biology, Memorial Sloan-Kettering Cancer Institute, New York, New York
- RAKYAN, VARDHMAN, Dept. of Epigenomics, The Wellcome Trust Sanger Institute, Hinxton, Cambridge, United Kingdom
- RAMACHANDRAN, ILENG, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- RAMASWAMY, AMUTHA, Dept. of Biomedical Informatics, Ohio State University, Columbus, Ohio
- RANDO, OLIVER, Bauer Center for Genomics Research, Harvard University, Cambridge, Massachusetts
- RAUSCHER, FRANK, Dept. of Molecular Genetics, Wistar Institute, Philadelphia, Pennsylvania
- RECHAVI, GIDEON, Sheba Cancer Research Center, Sheba Medical Center, Tel-Hashomer, Israel
- REDDI, PRABHAKARA, Dept. of Cell Biology, University of Virginia, Charlottesville
- REESE, KIMBERLY, Dept. of Cell and Developmental Biology, Howard Hughes Medical Institute, University of Pennsylvania, Philadelphia
- REIK, WOLF, Developmental Genetics Programme, The Babraham Institute, Cambridge, United Kingdom
- REINBERG, DANNY, Dept. of Biochemistry, Howard Hughes Medical Institute, UMDNJ-Robert Wood Johnson Medical School, Piscataway, New Jersey
- RICE, JUDD, Dept. of Biochemistry and Molecular Biology, University of Southern California, Los Angeles, California
- RICHARDS, ERIC, Dept. of Biology, Washington University, St. Louis, Missouri
- RIDDIHOUGH, GUY, *Science*, American Association for the Advancement of Science, Washington, D.C.
- RIDDLE, NICOLE, Div. of Biological Sciences, University of Missouri, Columbia
- RINE, JASPER, Dept. of Molecular and Cellular Biology, University of California, Berkeley
- RIVERA, ISABEL, Dept. of Biochemistry, Faculty of Pharmacy, University of Lisbon, Lisbon, Portugal
- ROBERTS, CHARLES, Dept. of Pediatric Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts
- ROLLINS, ROBERT, Dept. of Genetics and Development, Columbia University, New York, New York
- RONEMUS, MICHAEL, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- ROSEBROCK, ADAM, Dept. of Molecular Genetics and Microbiology, State University of New York, Stony Brook
- ROSSMANN, MARLIES, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- ROSSON, GARY, Lineberger Comprehensive Cancer Center, University of North Carolina, Chapel Hill
- ROZENBERG, JULIAN, Lab. of Metabolism, National Can-

- cer Institute, National Institutes of Health, Bethesda, Maryland
- RUGG-GUNN, PETER, Dept. of Surgery, University of Cambridge, Cambridge, United Kingdom
- RUSCHE, LAURA, Dept. of Biochemistry, Duke University, Durham, North Carolina
- RUSK, NICOLE, *Nature Methods*, New York, New York
- RUSSANOVA, VALYA, National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, Maryland
- RUVKUN, GARY, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- SAAVEDRA, RAUL, Scientific Review Branch, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland
- SACCHI, NICOLETTA, Dept. of Cancer Genetics, Roswell Park Cancer Institute, Buffalo, New York
- SANDERS, STEVEN, Gurdon Institute, Wellcome Trust, Cancer Research U.K., University of Cambridge, Cambridge, United Kingdom
- SASAKI, HIROYUKI, Div. of Human Genetics, National Institute of Genetics, Mishima, Japan
- SASSONE-CORSI, PAOLO, Institut de Génétique et de Biologie Moléculaire et Cellulaire, Illkirch, France
- SATO, NORIKO, Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan
- SCHILDKRAUT, CARL, Dept. of Cell Biology, Albert Einstein College of Medicine, Bronx, New York
- SCHLEGEL, ROBERT, Dept. of Oncology, Novartis Institutes for BioMedical Research, Cambridge, Massachusetts
- SCHOENHERR, CHRISTOPHER, Dept. of Cell and Structural Biology, University of Illinois, Urbana
- SCHOLZ, CHRISTIAN, Dept. of Hematology and Oncology, Charité Campus Virchow-Klinikum, Berlin, Germany
- SCHONES, DUSTIN, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- SEISER, CHRISTIAN, Dept. of Medical Biochemistry, Vienna Biocenter, University of Vienna, Vienna, Austria
- SELKER, ERIC, Institute of Molecular Biology, University of Oregon, Eugene
- SHARP, JUDITH, Dept. of Biochemistry and Biophysics, University of California, San Francisco
- SHARP, PHILLIP, Center for Cancer Research, Massachusetts Institute of Technology, Cambridge, Massachusetts
- SHEN, CHANG-HUI, Dept. of Biology, College of Staten Island, City University of New York, Staten Island, New York
- SHIBAHARA, KEI-ICHI, Dept. of Integrated Genetics, National Institute of Genetics, Mishima, Japan
- SHINKAI, YOICHI, Dept. of Cell Biology, Institute for Virus Research, Kyoto University, Kyoto, Japan
- SHOVLIN, TANYA, Dept. of Biomedical Sciences, University of Ulster, Coleraine, Londonderry, Northern Ireland, United Kingdom
- SHUREIQI, IMAD, Dept. of Clinical Cancer Prevention, M.D. Anderson Cancer Center, University of Texas, Houston
- SI, KAUSIK, Dept. of Neurobiology and Behavior, Columbia University, New York, New York
- SIDDIQUI, KHALID, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- SIDHU, RAVINDER, Bone and Joint Research Unit, St. Bartholomew's Hospital, London, United Kingdom
- SIGOVA, ALLA, Dept. of Biochemistry and Molecular Pharmacology, School of Medicine, University of Massachusetts, Worcester
- SKIPPER, MAGDALENA, *Nature Reviews Genetics*, London, United Kingdom
- SKOULTCHI, ARTHUR, Dept. of Cell Biology, Albert Einstein College of Medicine, Bronx, New York
- SLAWSON, ELIZABETH, Dept. of Biology, Washington University, St. Louis, Missouri
- SMITH, ANDREW, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- SMITS, GUILLAUME, IRIBHM, Université Libre de Bruxelles, Brussels, Belgium
- SOLTER, DAVOR, Dept. of Developmental Biology, Max Planck Institute for Immunobiology, Freiburg, Germany
- SOUTOGLLOU, EVANTHIA, National Cancer Institute, National Institutes of Health, Bethesda, Maryland
- SPADA, FABIO, Sars International Centre for Marine Molecular Biology, University of Bergen, Bergen, Norway
- SPARMANN, ANKE, Dept. of Microbiology, State University of New York, Stony Brook
- SPECTOR, DAVID, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- SPECTOR, MONA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- SRIDHARAN, RUPA, Howard Hughes Medical Institute, University of California, Los Angeles
- SRINIVASAN, LAKSHMI, Dept. of Animal Biology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia
- STANCHEVA, IRINA, Dept. of Biochemistry, University of Edinburgh, Edinburgh, Scotland, United Kingdom
- STEBBINS, MICHAEL, *Nature Genetics*, New York, New York
- STEWART, DAVID, Meetings and Courses Programs, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- STILLMAN, BRUCE, President and CEO, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- STRAHL, BRIAN, Dept. of Biochemistry and Biophysics, University of North Carolina, Chapel Hill
- STRUNNIKOV, ALEXANDER, Lab. of Gene Regulation and Development, National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, Maryland
- SU, RUEY-CHYI, Dept. of Microbiology, Immunology, and Molecular Genetics, Howard Hughes Medical Institute, University of California, Los Angeles
- SURANI, AZIM, Gurdon Institute, Wellcome Trust, Cancer Research U.K., University of Cambridge, Cambridge, United Kingdom
- SUSSMAN, HILLARY, *Genome Research*, Cold Spring Har-

SYMPOSIUM PARTICIPANTS

xiii

- bor Laboratory Press, Woodbury, New York
- SWIGUT, TOMASZ, Lab. of Molecular Vertebrate Embryology, Rockefeller University, New York, New York
- SYMER, DAVID, Lab. of Immunobiology, National Cancer Institute, Frederick, Maryland
- TACHIBANA, MAKOTO, Lab. of Mouse Models, Institute for Virus Research, Kyoto University, Kyoto, Japan
- TAHLILIANI, MAMTA, Dept. of Pathology, Center for Blood Research, Harvard Medical School, Boston, Massachusetts
- TAIPALE, MIKKO, Gene Expression Programme, European Molecular Biology Laboratory, Heidelberg, Germany
- TAKEDA, SHIN, Dept. of Plant Biology, University of Geneva, Geneva, Switzerland
- TAM, PATRICK, Embryology Unit, Children's Medical Research Institute, Westmead, Sydney, Australia
- TAMADA, HIROSHI, Stem Cell Institute, University of Minnesota, Minneapolis
- THOMPSON, JEFFREY, Dept. of Biology, Denison University, Granville, Ohio
- TIAN, YANAN, Dept. of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, Texas
- TIMMERMANS, MARJA, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- TOMPA, RACHEL, Dept. of Biochemistry and Biophysics, University of California, San Francisco
- TORRES, HECTOR, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, North Carolina
- TSIKITIS, MARY, Dept. of Pathology, School of Medicine, New York University, New York, New York
- TSUCHIMOTO, SUGURU, Institute for Molecular and Cellular Biosciences, University of Tokyo, Tokyo, Japan
- TUTEJA, JIGYASA, Dept. of Physiological and Molecular Plant Biology, University of Illinois, Urbana
- TUZON, CREIGHTON, Dept. of Biochemistry and Molecular Genetics, Health Sciences Center, University of Colorado, Denver
- URA, KIYOE, Div. of Gene Therapy Science, Graduate School of Medicine, Osaka University, Osaka, Japan
- VALER, MARC, Dept. of Research and Development and Marketing, Agilent Technologies, Waldbronn, Germany
- VAN HOUDT, HELENA, Dept. of Plant Systems Biology, VIB, University of Gent, Gent, Belgium
- VAN LOHUIZEN, MAARTEN, Div. of Molecular Genetics, The Netherlands Cancer Institute, Amsterdam, The Netherlands
- VAN LOO, KAREN, Dept. of Molecular Animal Physiology, University of Nijmegen, Nijmegen, The Netherlands
- VAN RIETSCHOTEN, JOHANNA, Dept. Molecular Cell Biology and Immunology, VU Medical Center, Amsterdam, The Netherlands
- VAUGHN, MATTHEW, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- VAURY, CHANTAL, Université D'Auvergne, Clermont-Ferrand, France
- VERDEL, ANDRE, Dept. of Cell Biology, Harvard Medical School, Boston, Massachusetts
- VINCENZ, CLAUDIUS, Dept. of Biological Chemistry, Howard Hughes Medical Institute, School of Medicine, University of Michigan, Ann Arbor
- VINSON, CHARLES, Lab. of Metabolism, National Institutes of Health, Bethesda, Maryland
- WAGLE, MAHENDRA, Lab. of Developmental Neurobiology, Temasek Life Sciences Laboratory, Singapore, China
- WALSH, MARTIN, Dept. of Pediatrics and Human Genetics, Mount Sinai School of Medicine, New York, New York
- WANG, DUO, Dept. of Molecular Biology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts
- WANG, SONG, Dept. of Biological Sciences, Stanford University, Stanford, California
- WANG, YANMING, Lab. of Chromatin Biology, Rockefeller University, New York, New York
- WARBURTON, PETER, Dept. of Human Genetics, Mount Sinai School of Medicine, New York, New York
- WEBSTER, KYLIE, Dept. of Genetics and Bioinformatics, Walter and Eliza Hall Institute of Medical Research, Parkville, Victoria, Australia
- WEST, ADAM, Div. of Cancer Sciences and Molecular Pathology, Western Infirmary, University of Glasgow, Glasgow, Scotland, United Kingdom
- WEST, KATHERINE, Div. of Cancer Sciences and Molecular Pathology, Western Infirmary, University of Glasgow, Glasgow, Scotland, United Kingdom
- WHITEHEAD, NEDRA, Applied Sciences Branch, Centers for Disease Control, Atlanta, Georgia
- WICKNER, REED, Lab. of Biochemistry and Genetics, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda, Maryland
- WILHELM, BRIAN, The Wellcome Trust Sanger Institute, Hinxton, Cambridge, United Kingdom
- WILLIAMSON, CHRIS, Mammalian Genetics Unit, Medical Research Council, Harwell, Oxfordshire, United Kingdom
- WILSON, JON, Dept. of Protein Structure, National Institute for Medical Research, London, United Kingdom
- WITKOWSKI, JAN, Banbury Center, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York
- WONG, LEE, Dept. of Chromosome Research, Murdoch Children's Research Institute, Royal Children's Hospital, Parkville, Victoria, Australia
- WU, HAO, Dept. of Molecular and Medical Pharmacology, University of California, Los Angeles
- WU, JIANG, Dept. of Pathology and Developmental Biology, Howard Hughes Medical Institute, Stanford University, Stanford, California
- WYSOCKA, JOANNA, Lab. of Chromatin Biology, Rockefeller University, New York, New York
- XIANG, TIANHAO (TIM), Dept. of Reproductive Technology, ViaGen, Inc., Austin, Texas
- XU, GUOLIANG, Shanghai Institute for Biological Sciences, Chinese Academy of Sciences, Shanghai, China

XUAN, ZHENYU, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York

YANG, SEUNG KYOUNG, Dept. of Biological Sciences, Korea Advanced Institute of Science and Technology, Daejeon, South Korea

YANG, XIANG-JIAO, Dept. of Medicine, McGill University, Montréal, Québec, Canada

YE, XIAOFEN, Dept. of Molecular Oncology, Fox Chase Cancer Center, Philadelphia, Pennsylvania

YILDIRIM, EDA, Lab. of Signal Transduction, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, North Carolina

YOKOYAMA, KAZUNARI, Gene Engineering Division, RIKEN, Tsukuba Science City, Ibaraki, Japan

YOUNG, DALLAN, Dept. of Biochemistry and Molecular Biology, University of Calgary, Calgary, Alberta, Canada

YUSA, KOSUKE, Dept. of Social and Environmental Medicine, Osaka University, Osaka, Japan

ZAMORE, PHILLIP, Dept. of Biochemistry and Molecular Biology, School of Medicine, University of Massachusetts, Worcester

ZHANG, FENG, Dept. of Genetics, Development, and Cell Biology, Iowa State University, Ames, Iowa

ZHANG, YI, Dept. of Biochemistry and Biophysics, Lineberger Comprehensive Cancer Center, University of North Carolina, Chapel Hill

ZHANG, ZHIGUO, Dept. of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, Minnesota

ZHAO, KEJI, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, Maryland

ZHONG, GAN-YUAN, Dept. of Agriculture & Nutrition, Pioneer Hi-Bred International, Johnston, Iowa

First row: R. Plasterk; A. Auger, D. Young, H. Van Houdt; D. Allis, E. Bernstein
Second row: E. Selker; P. Sharp, H. Cedar; E. Louis, D. Gottschling, S. Henikoff; E. Heard
Third row: Y. Fan, G. Fourel; P. Sassone-Corsi, B. Stillman; B. Ortiz, G. Felsenfeld
Fourth row: A. Surani, P. Hajkova; V. Pirrotta, J. Paszkowski, M. Timmermans

*First row: L. Goodman; S. Emmons, G. Ruvkun, B. Meyer; E. Richards, D. Baulcombe, I. Stancheva
 Second row: M. Macari demonstrating the online Oral History Project; S. Gasser, C. Schildkraut
 Third row: E. Yildirim, S. Cherukuri, B. Meyer; H. Sussman, M. Bartolomei, J. Lee
 Fourth row: G. Kelsey, E. Davis; P. Overbeek, O. Cabello; I. Hall, J. Birchler*

First row: S. Kennedy, E. Meyer; D. Haig; R. Pruitt; H. Sasaki; C. Peterson, S. Berger

Second row: C. Mann, P. Kaufman; G. Rechavi, A. Cohen; M. Grunstein, A. Bird

Third row: D. Spector, D. Stewart, P. Sassone-Corsi; P. Cockerill, C. Williamson; U. Grossniklaus, Y. Lazebnik

Fourth row: Airlsee Wine and Cheese; O. Rando, S. Altschuler

*First row: C. Tuzon, K. Ekwall; A. Pelisson, Z. Lippman
Second row: B. Hohn, G.-Y. Zhong; W. Bickmore; J. Partridge, L. Gann
Third row: Symposium Cocktails on Blackford Lawn*

*First row: Lunchtime on Blackford Lawn
Second row: M. Gaszner; G. Almouzni, Y. Nakatani; S. Lubitz, K. Webster
Third row: J. Watson, R. Wickner; K. Giles*

*First row: Brunch chez Blackford; K. West, M.-N. Prioleau
Second row: P. Sherwood, A. Klar, J. Hicks; V. Pogačić, V. Beier
Third row: J. Birchler, R. Martienssen; Grace closed circuit TV*

First row: P. Kannanganattu, V. Ellison; D. Barlow, R. Lyle; V. Chandler, J. Bender
Second row: A. Chess, Y. He, C. Dean; W. Kelly, V. Colot; S. Elgin
Third row: D. Gottschling, R. Jaenisch; P. Zamore, D. Bartel; A. Skoultschi, A. Harris
Fourth row: Summary (D. Gottschling)

First row: Y. Okada, H. Chan; T. Bestor, X. Cheng; B. Strahl
 Second row: Y. Arai; A. Eccleston, R. Kingston, M. van Lohuizen; W. Reik; N. Sato
 Third row: J. Brennan; M. Hoek, D. Goto; R. Rollins, N. Rusk, W. Held, G. Smits
 Fourth row: A. Feinberg, M. Stebbins; D. Solter, J. Witkowski, A. Surani; G. Rosson

Foreword

Until recently, the general view of heredity has been seen through the lens of DNA. Indeed, the 2003 Symposium on “The Genome of *Homo sapiens*” contributed to that view by emphasizing the importance of DNA sequence and its origins. But increasingly, investigators are exploring a set of secondary phenomena that give rise to heritable changes in gene function that occur without a change in the underlying DNA sequence—epigenetic mechanisms such as DNA methylation, histone acetylation, imprinting, RNA interference, gene silencing, and paramutation. A growing body of evidence indicates that epigenetic changes are important contributors to the pathogenesis of disease in humans, animals, and plants and may lie at the heart of many important gene–environment interactions. And so it seemed timely to hold a Symposium explicitly devoted to “Epigenetics.”

Previous Symposia that have in part examined the role of the macromolecular context in which the primary genetic information is found include the 1941 Symposium on “Genes and Chromosomes: Structure and Organization,” which emphasized a biophysical approach to these structures; the two closely separated Symposia that examined “Chromosome Structure and Function” (1973) and “Chromatin” (1977), at which latter meeting the nature of the nucleosome was unveiled; and the 1993 Symposium on “DNA and Chromosomes,” by which time the human genome project with its focus on the primary sequence was well underway. The 69th Symposium, however, was the first to fully explore the heritable aspects to these and related biochemical phenomena.

The field of epigenetics as we know it today was prominently introduced at the 1951 Symposium on “Genes and Mutations.” There, Ed Lewis presented data on position effect variegation in *Drosophila*, a phenomenon that has played an important role in the history of the field. Equally importantly, Barbara McClintock presented her ideas about heterochromatin and movable genetic elements, the so-called Ac-Ds system in maize that opened up understanding of transposition and its links to gene silencing and formation of heterochromatin. Some 53 years later, the 69th Symposium witnessed a rather complete molecular description of her ideas, including links to RNAi.

The 69th Symposium ran for 5 days and included 460 participants with 68 oral presentations and 210 poster presentations. We wish to thank Dr. David Haig for his superb Dorcas Cummings Memorial public lecture presenting a theoretical approach to epigenetics, on the subject of The Divided Self—Brains, Brawn and the Superego. We also wish to thank the first night speakers, Drs. Davor Solter, Barbara Meyer, David Allis, and Andrew Fire for their superb overview presentations, and we particularly thank Dr. Daniel Gottschling for agreeing to summarize the Meeting.

We thank Jenna Williams and Mary Smith in the Meetings and Courses office for efficiently running the meeting and John Inglis and his staff at the Cold Spring Harbor Laboratory Press, particularly Joan Ebert, Kathleen Bubbeo, and Danny deBruin, for publishing both the on-line and printed versions of the meeting manuscripts. Essential funds to run this meeting were obtained from the National Cancer Institute, a branch of the National Institutes of Health. In addition, financial help from the corporate benefactors, sponsors, affiliates, and contributors of our meetings program is essential for these Symposia to remain a success and we are most grateful for their continued support.

Bruce Stillman
David Stewart
March 2005

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