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XXV (1960) Biological Clocks	LIX (1994) The Molecular Genetics of Cancer
XXVI (1961) Cellular Regulatory Mechanisms	LX (1995) Protein Kinesis: The Dynamics of Protein Trafficking and Stability
XXVII (1962) Basic Mechanisms in Animal Virus Biology	LXI (1996) Function & Dysfunction in the Nervous System
XXVIII (1963) Synthesis and Structure of Macromolecules	LXII (1997) Pattern Formation during Development
XXIX (1964) Human Genetics	LXIII (1998) Mechanisms of Transcription
XXX (1965) Sensory Receptors	LXIV (1999) Signaling and Gene Expression in the Immune System
XXXI (1966) The Genetic Code	LXV (2000) Biological Responses to DNA Damage
XXXII (1967) Antibodies	LXVI (2001) The Ribosome
XXXIII (1968) Replication of DNA in Microorganisms	LXVII (2002) The Cardiovascular System
XXXIV (1969) The Mechanism of Protein Synthesis	LXVIII (2003) The Genome of <i>Homo sapiens</i>
	LXIX (2004) Epigenetics
	LXX (2005) Molecular Approaches to Controlling Cancer

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vii

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Second row: K. Beemon presenting her poster; G. Carmichael, A. Krainer
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Third row: Dining on the terrace overlooking Cold Spring Harbor*

First row: N. Sacchi, J. Watson; J. Mattick, E. Blackburn; S. Gilbert
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Fourth row: J. Hicks, N. Wade, H. Sussman; G. Hannon; S. Gundersen, N. Proudfoot
Fifth row: K. Moelling, B. Stillman; V. Narry Kim; Lunch al fresco

First row: M. Timmermans, L. Zhang, M. Guo; J. Salotti
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 Third row: I. Bozzoni, W. Filipowicz; G. Zieve, G. Dreyfuss; R. Shields, M. Pollock
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 Fifth row: Picnic at Blackford

Foreword

The role of DNA as the primary information carrier and RNA as the interpretative system for that information has been the key tenet of modern biology—the central dogma of molecular biology. This was modified by the discovery of reverse transcription and presented at this Symposium in 1970. The large majority of enzymatic reactions are carried out by proteins, although the discovery of catalytic RNA and its emerging centrality in certain highly conserved cellular processes such as protein synthesis and eukaryotic mRNA splicing have increasingly suggested that RNA plays a more diverse and complex role in the cell than initially proposed. The discovery of RNA interference and the ubiquity of microRNAs in diverse systems have clearly established that this polymer regulates gene transcription and translation in hitherto unexpected ways, as well as providing cellular defense mechanisms against viruses. How many of these regulatory processes are relics of an ancient RNA-based world, as has been suggested for the riboswitches, remains unclear, but their growing importance in both prokaryotic and eukaryotic biology is fuelling research and new ideas in laboratories around the world. Transcriptional and translational control by RNA, epigenetic phenomena such as RNA-directed DNA methylation and RNAi-directed heterochromatin formation, meiotic silencing, and cellular defense mechanisms against viruses are just some of the current areas under intense investigation through a variety of genetic, genomic, biochemical, cell biological, and structural approaches.

It was therefore deemed timely to focus the annual Symposium broadly on the theme of regulation of cellular processes by RNA-based mechanisms. It is increasingly clear that many of these processes may be harnessed to perturb biological function in a variety of biological systems, work that has reached its most widespread application with the use of large-scale RNAi screens. The Symposium therefore explored how the application of these technologies, combined with a growing understanding of the molecular basis of many of these processes, is yielding new insights into the treatment of many human diseases.

In organizing this Symposium with considerable help from Terri Grodzicker, we relied on the assistance of our colleagues Greg Hannon and Adrian Krainer for suggestions for speakers, while Susan Gottesman provided useful guidance in the prokaryotic field. We also thank the first evening speakers, Susan Gottesman, David Baulcombe, Gary Ruvkun, and Greg Hannon for providing an overview of the areas to be covered. This year's Reginald Harris Lecture was delivered by Elizabeth Blackburn on telomere ribonucleoprotein biology. We particularly thank Joan Steitz, with help from Greg Hannon, for delivering a thoughtful and realistic summary of the current state of the field, and Ronald Plasterk, who ably managed to convey the excitement and surprises of the emerging world of small RNAs in his Dorcas Cummings Lecture to the local community and the attending scientists.

This Symposium was attended by 469 scientists from over 25 countries, and the program included 70 oral presentations and 209 poster presentations. 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.

We thank Val Pakaluk and Mary Smith in the Meetings and Courses Program office for their efficient help in organizing the Symposium. Joan Ebert and Patricia Barker in the Cold Spring Harbor Laboratory Press, headed by John Inglis, ensured that this volume would be produced. We thank them for their dedication to producing high-quality publications.

Bruce Stillman
David Stewart
January 2007

Sponsors

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Contents

Symposium Participants	v
Foreword	xxi

Introduction

Small RNA Regulators and the Bacterial Response to Stress <i>S. Gottesman, C.A. McCullen, M. Guillier, C.K. Vanderpool, N. Majdalani, J. Benhammou, K.M. Thompson, P.C. FitzGerald, N.A. Sowa, and D.J. FitzGerald</i>	1
Short Silencing RNA: The Dark Matter of Genetics? <i>D.C. Baulcombe</i>	13
Misexpression of the <i>Caenorhabditis elegans</i> miRNA <i>let-7</i> Is Sufficient to Drive Developmental Programs <i>G.D. Hayes and G. Ruvkun</i>	21
Function and Localization of MicroRNAs in Mammalian Cells <i>A.K.L. Leung and P.A. Sharp</i>	29

Mechanism and Biology of RNAi

The RNAi Pathway Initiated by Dicer-2 in <i>Drosophila</i> <i>K. Kim, Y.S. Lee, D. Harris, K. Nakahara, and R.W. Carthew</i>	39
Molecular Mechanism of Target RNA Transcript Recognition by Argonaute-Guide Complexes <i>J.S. Parker, S.M. Roe, and D. Barford</i>	45
Drosha in Primary MicroRNA Processing <i>Y. Lee, J. Han, K.-H. Yeom, H. Jin, and V.N. Kim</i>	51
Substrate Selectivity of Exportin 5 and Dicer in the Biogenesis of MicroRNAs <i>E. Lund and J.E. Dahlberg</i>	59
The Argonautes <i>L. Joshua-Tor</i>	67
Structure of Dicer and Mechanistic Implications for RNAi <i>I.J. MacRae, F. Li, K. Zhou, W.Z. Cande, and J.A. Doudna</i>	73
Structural Biology of RNA Silencing and Its Functional Implications <i>D.J. Patel, J.-B. Ma, Y.-R. Yuan, K. Ye, Y. Pei, V. Kuryavyi, L. Malinina, G. Meister, and T. Tuschl</i>	81
Systemic RNAi in <i>Caenorhabditis elegans</i> <i>C.P. Hunter, W.M. Winston, C. Molodowitch, E.H. Feinberg, J. Shih, M. Sutherlin, A.J. Wright, and M.C. Fitzgerald</i>	95

Genome-wide Approaches

Transcriptional Landscape of the Human and Fly Genomes: Nonlinear and Multifunctional Modular Model of Transcriptomes <i>A.T. Willingham, S. Dike, J. Cheng, J.R. Manak, I. Bell, E. Cheung, J. Drenkow, E. Dumais, R. Duttagupta, M. Ganesh, S. Ghosh, G. Helt, D. Nix, A. Piccolboni, V. Sementchenko, H. Tammana, P. Kapranov, the ENCODE Genes and Transcripts Group, and T.R. Gingeras</i>	101
Novel Transcribed Regions in the Human Genome <i>J. Rozowsky, J. Wu, Z. Lian, U. Nagalakshmi, J.O. Korbel, P. Kapranov, D. Zheng, S. Dyke, P. Newburger, P. Miller, T.R. Gingeras, S. Weissman, M. Gerstein, and M. Snyder</i>	111
Computational Analysis of RNAs <i>S.R. Eddy</i>	117
MicroRNAs in Search of a Target <i>G. Stefani and F. Slack</i>	129
RNomics: Identification and Function of Small Non-Protein-coding RNAs in Model Organisms <i>A. Hüttenhofer</i>	135
<i>Drosophila</i> Genome-wide RNAi Screens: Are They Delivering the Promise? <i>B. Mathey-Prevot and N. Perrimon</i>	141
Deep Conservation of MicroRNA-target Relationships and 3'UTR Motifs in Vertebrates, Flies, and Nematodes <i>K. Chen and N. Rajewsky</i>	149

Small RNAs in Development

Organ Polarity in Plants Is Specified through the Opposing Activity of Two Distinct Small Regulatory RNAs <i>F.T.S. Nogueira, A.K. Sarkar, D.H. Chitwood, and M.C.P. Timmermans</i>	157
The Function of RNAi in Plant Development <i>R.S. Poethig, A. Peragine, M. Yoshikawa, C. Hunter, M. Willmann, and G. Wu</i>	165
rasiRNAs, DNA Damage, and Embryonic Axis Specification <i>W.E. Theurkauf, C. Klattenhoff, D.P. Bratu, N. McGinnis-Schultz, B.S. Koppetsch, and H.A. Cook</i>	171
Architecture of a MicroRNA-controlled Gene Regulatory Network That Diversifies Neuronal Cell Fates <i>O. Hobert</i>	181
The <i>Caenorhabditis elegans</i> Argonautes ALG-1 and ALG-2: Almost Identical yet Different <i>B.B.J. Tops, R.H.A. Plasterk, and R.F. Ketting</i>	189
MicroRNA Function and Mechanism: Insights from Zebra Fish <i>A.F. Schier and A.J. Giraldez</i>	195
MicroRNAs and Hematopoietic Differentiation <i>A. Fatica, A. Rosa, F. Fazi, M. Ballarino, M. Morlando, F.G. De Angelis, E. Caffarelli, C. Nervi, and I. Bozzoni</i>	205

Telomeres and Cancer

Expression and Suppression of Human Telomerase RNA <i>S. Li and E.H. Blackburn</i>	211
RNA as a Flexible Scaffold for Proteins: Yeast Telomerase and Beyond <i>D.C. Zappulla and T.R. Cech</i>	217
Telomerase RNA Levels Limit the Telomere Length Equilibrium <i>C.W. Greider</i>	225

End Regulation of Transcripts

Sensing Metabolic Signals with Nascent RNA Transcripts: The T Box and S Box Riboswitches as Paradigms <i>T.M. Henkin and F.J. Grundy</i>	231
Genetic Control by <i>cis</i> -Acting Regulatory RNAs in <i>Bacillus subtilis</i> : General Principles and Prospects for Discovery <i>Irnov, A. Kertsburg, and W.C. Winkler</i>	239
A Mg ²⁺ -responding RNA That Controls the Expression of a Mg ²⁺ Transporter <i>E.A. Groisman, M.J. Cromie, Y. Shi, and T. Latifi</i>	251
Structural Studies of the Purine and SAM Binding Riboswitches <i>S.D. Gilbert, R.K. Montange, C.D. Stoddard, and R.T. Batey</i>	259
Regulating Bacterial Transcription with Small RNAs <i>G. Storz, J.A. Opdyke, and K.M. Wassarman</i>	269
Turnover and Function of Noncoding RNA Polymerase II Transcripts <i>M.J. Dye, N. Gromak, D. Haussecker, S. West, and N.J. Proudfoot</i>	275

RNPs and RNA Editing

How Does RNA Editing Affect dsRNA-mediated Gene Silencing? <i>B.L. Bass</i>	285
How a Small DNA Virus Uses dsRNA but Not RNAi to Regulate Its Life Cycle <i>R. Gu, Z. Zhang, and G.G. Carmichael</i>	293
Regulation of Two Key Nuclear Enzymatic Activities by the 7SK Small Nuclear RNA <i>W.-J. He, R. Chen, Z. Yang, and Q. Zhou</i>	301
The SMN Complex: An Assembly Machine for RNPs <i>D.J. Battle, M. Kasim, J. Yong, F. Lotti, C.-K. Lau, J. Mouaikel, Z. Zhang, K. Han, L. Wan, and G. Dreyfuss</i>	313
Developing Global Insight into RNA Regulation <i>R.B. Darnell</i>	321
Regulation of Alternative Splicing by snoRNAs <i>S. Kishore and S. Stamm</i>	329

Biology of Short RNAs

Measuring the Rates of Transcriptional Elongation in the Female <i>Drosophila melanogaster</i> Germ Line by Nuclear Run-on <i>A. Sigova, V. Vagin, and P.D. Zamore</i>	335
Polymorphic MicroRNA–Target Interactions: A Novel Source of Phenotypic Variation <i>M. Georges, A. Clop, F. Marcq, H. Takeda, D. Pirottin, S. Hiard, X. Tordoir, F. Caiment, F. Meish, B. Bibé, J. Bouix, J.M. Elsen, F. Eychenne, E. Laville, C. Larzul, D. Milenkovic, J. Tobin, and C. Charlier</i>	343
Expression and Function of MicroRNAs in Viruses Great and Small <i>C.S. Sullivan, A. Grundhoff, S. Tevethia, R. Treisman, J.M. Pipas, and D. Ganem</i>	351

CONTENTS

xxv

Expression and Function of MicroRNAs Encoded by Kaposi's Sarcoma-associated Herpesvirus <i>E. Gottwein, X. Cai, and B.R. Cullen</i>	357
Relationship between Retroviral Replication and RNA Interference Machineries <i>K. Moelling, A. Matskevich, and J.-S. Jung</i>	365
Positive and Negative Modulation of Viral and Cellular mRNAs by Liver-specific MicroRNA miR-122 <i>C.L. Jopling, K.L. Norman, and P. Sarnow</i>	369
Control of Gene Expression by Noncoding RNAs	
The Challenge of Viral snRNPs <i>N.K. Conrad, V. Fok, D. Cazalla, S. Borah, and J.A. Steitz</i>	377
MSL Complex Associates with Clusters of Actively Transcribed Genes along the <i>Drosophila</i> Male X Chromosome <i>E. Larschan, A.A. Alekseyenko, W.R. Lai, P.J. Park, and M.I. Kuroda</i>	385
Noncoding RNAs of the H/ACA Family <i>M. Terns and R. Terns</i>	395
Biogenesis and Intranuclear Trafficking of Human Box C/D and H/ACA RNPs <i>T. Kiss, E. Fayet, B.E. Jádý, P. Richard, and M. Weber</i>	407
RNA and Protein Actors in X-Chromosome Inactivation <i>O. Masui and E. Heard</i>	419
X-Chromosome Kiss and Tell: How the Xs Go Their Separate Ways <i>M.C. Anguera, B.K. Sun, N. Xu, and J.T. Lee</i>	429
Heterochromatin	
Genetic Analyses of DNA Methyltransferases in <i>Arabidopsis thaliana</i> <i>X. Zhang and S.E. Jacobsen</i>	439
RNA-directed DNA Methylation and Pol IVb in <i>Arabidopsis</i> <i>M. Matzke, T. Kanno, B. Huettel, L. Daxinger, and A.J.M. Matzke</i>	449
Studies on the Mechanism of RNAi-dependent Heterochromatin Assembly <i>D. Moazed, M. Bühler, S.M. Buker, S.U. Colmenares, E.L. Gerace, S.A. Gerber, E.-J.E. Hong, M.R. Motamed, A. Verdel, J. Villén, and S.P. Gygi</i>	461
Cell Biology of the <i>Arabidopsis</i> Nuclear siRNA Pathway for RNA-directed Chromatin Modification <i>C.S. Pikaard</i>	473
A Paragenetic Perspective on Integration of RNA Silencing into the Epigenome and Its Role in the Biology of Higher Plants <i>R.A. Jorgensen, N. Doetsch, A. Müller, Q. Que, K. Gendler, and C.A. Napoli</i>	481
RNAi-mediated Heterochromatin Assembly in Fission Yeast <i>M. Zofall and S.I.S. Grewal</i>	487
Slicing and Spreading of Heterochromatic Silencing by RNA Interference <i>S.M. Locke and R.A. Martienssen</i>	497
Quality Control, Messenger RNA Turnover, and Translational Control	
Molecular Chaperones and Quality Control in Noncoding RNA Biogenesis <i>S.L. Wolin and E.J. Wurtmann</i>	505
Stress-induced Reversal of MicroRNA Repression and mRNA P-body Localization in Human Cells <i>S.N. Bhattacharyya, R. Habermacher, U. Martine, E.I. Closs, and W. Filipowicz</i>	513
MicroRNAs Silence Gene Expression by Repressing Protein Expression and/or by Promoting mRNA Decay <i>I. Behm-Ansmant, J. Rehwinkel, and E. Izaurralde</i>	523
MicroRNAs, mRNAs, and Translation <i>P.A. Maroney, Y. Yu, and T.W. Nilsen</i>	531
Regulation of Poly(A)-binding Protein through PABP-interacting Proteins <i>M.C. Derry, A. Yanagiya, Y. Martineau, and N. Sonenberg</i>	537
Two Distinct Conformations of the Conserved RNA-rich Decoding Center of the Small Ribosomal Subunit Are Recognized by tRNAs and Release Factors <i>E.M. Youngman, L. Cochella, J.L. Brunelle, S. He, and R. Green</i>	545
Summary: The Expanding Universe of Noncoding RNAs <i>G.J. Hannon, F.V. Rivas, E.P. Murchison, and J.A. Steitz</i>	551
Author Index	565
Subject Index	567

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