

**COLD SPRING HARBOR SYMPOSIA
ON QUANTITATIVE BIOLOGY
VOLUME LXXXIV**

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RNA Control and Regulation

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Director of the Biological Laboratory 1924 to 1936

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Front cover (paperback): Structure of a postcatalytic spliceosome immediately after exon ligation. RNA components are shown in gold. Image prepared by Max Wilkinson, MRC Laboratory of Molecular Biology, using data from Wilkinson et al. *Science* **358**: 1283–1288 [2017].

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In warm memory of Kiyoshi Nagai (1949–2019)

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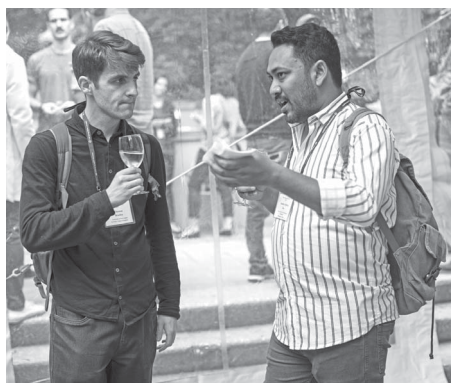
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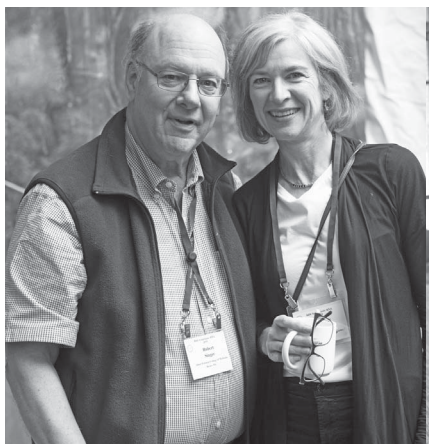
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Row 3: Beach Picnic

Row 4: S. McKnight, S. Gasser; B. Bass, E. Conti

Foreword

The Cold Spring Harbor Symposia on Quantitative Biology series is now in its 84th year, having been initiated by then-Director Reginald Harris back in 1933 when the Symposium lasted a full month! The Cold Spring Harbor Symposia bring together scientists to present and evaluate new data and ideas in rapidly moving areas of biological research. Each year, a topic is chosen at a stage at which general and intensive scrutiny and review are warranted. Many previous Cold Spring Harbor Symposia have addressed different aspects of RNA biology, including Nucleic Acids and Nucleoproteins in 1947, Transcription of Genetic Material in 1970, Mechanisms of Transcription in 1998, The Ribosome in 2001, and Regulatory RNAs in 2006. The enormous progress in the field in the past 15 years led us to conclude that the time was past due for another Symposium squarely focused on RNA. In fact, this is only the second Symposium in its entire history to include RNA in the title of the meeting, which we think conveys how central this molecule is in so many areas of the biology of the cell and increasingly to how we think about treating disease. Topics addressed at the 2019 Symposium included RNA-based structures; RNA modifications; nuclear localization of RNA; quality control and editing; RNA and gene regulation; cotranscriptional splicing; intron–exon boundaries; alternative polyadenylation; transposon control; small noncoding RNAs; long noncoding RNAs; RNA and development; membraneless organelles; phase separation; RNA-based diseases; and novel RNA functions.

The Symposium attracted more than 400 participants and provided an extraordinary five-day synthesis of current understanding in the field. Opening night talks setting the scene for later sessions included Roy Parker (HHMI/University of Colorado Boulder) on RNP granules in health and disease, Christine Mayr (Memorial Sloan Kettering Cancer Center) on the regulation of 3' UTR–mediated protein–protein interactions, Joshua Mendell (UT Southwestern Medical Center) on the regulation and function of noncoding RNAs in mammalian physiology and disease, and Adrian Krainer (Cold Spring Harbor Laboratory), who addressed targeted modulation of splicing or nonsense-mediated mRNA decay (NMD) for disease therapy. Jennifer Doudna (HHMI/University of California Berkeley) delivered a fascinating Dorcas Cummings lecture on “Editing the Code of Life” for the Laboratory’s friends and neighbors. Rising to the challenging task of condensing more than 50 talks over the prior five days, Gideon Dreyfuss (HHMI/University of Pennsylvania School of Medicine) provided a masterly summary of the state of the field at the conclusion of the Symposium. Interviews by participating editors, including Steve Mao, Richard Sever, Anke Sparmann, Lara Szewczak, Carika Weldon, and Jan Witkowski, were conducted throughout the Symposium to provide a snapshot of the state of current research and are available on the CSHL Leading Strand channel (<https://www.youtube.com/user/LeadingStrand>). Transcripts of these Symposium conversations are provided here.

We thank Val Pakaluk, Mary Smith, Ed Campodonico, and his staff in the Meetings & Courses Program for their assistance in organizing and running the Symposium and John Inglis and his staff at Cold Spring Harbor Laboratory Press, particularly Inez Sialiano, Maria Smit, Kathleen Bubbeo, and Denise Weiss, for publishing the printed and online versions of the Symposium proceedings. Photographer Connie Brukin captured candid snapshots throughout the meeting.

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Terri Grodzicker, David Stewart, and Bruce Stillman
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