

Imaging in Neuroscience

A Laboratory Manual

Edited by Fritjof Helmchen, *Brain Research Institute, University of Zurich, Switzerland*, and Arthur Konnerth, *Institute for Neurosciences, Technical University Munich, Germany*; Series Editor, Rafael Yuste, *Howard Hughes Medical Institute, Columbia University*

As imaging technologies have revolutionized research in many areas of biology and medicine, neuroscientists have often pioneered the use of these new visualization techniques. *Imaging in Neuroscience: A Laboratory Manual*, part of Cold Spring Harbor Laboratory Press' *Imaging* series, provides the definitive collection of methods in use in this groundbreaking field. With over 90 chapters, the manual offers a depth of coverage unavailable from any other source. Sections focus on imaging at the molecular level, axons and nerve terminals, spines and dendrites, neurons and circuits in vitro, neurons and circuits in vivo, glia, brain dynamics, and behavior and brain pathology. Protocols range from basic techniques such as maintaining live cells and tissue slices during imaging to recent breakthroughs in optogenetics, uncaging, calcium imaging and imaging neuronal activity. *Imaging in Neuroscience: A Laboratory Manual* is an essential guide to discovering and implementing these techniques in the neuroscience laboratory.

2011, 1084 pp., illus., index

Hardcover \$280

Paperback \$195

ISBN 978-087969-937-6

ISBN 978-087969-938-3

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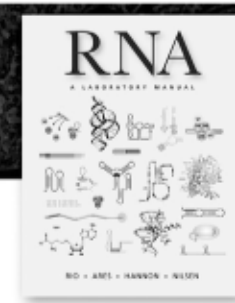
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RNA

A LABORATORY MANUAL

By Donald C. Rio, *University of California, Berkeley*; Manuel Ares, Jr., *University of California, Santa Cruz*; Gregory J. Hannon, *Cold Spring Harbor Laboratory*; and Timothy W. Nilsen, *Case Western Reserve University School of Medicine*

RNA molecules participate in and regulate a vast array of cellular processes, and the scientific community is now entering a new era in which some aspect of RNA biology—as a tool, a therapeutic, a diagnostic, or part of a fundamental process—is becoming increasingly important. But initiating RNA research can be intimidating, and without a thorough understanding of the challenges and complexities inherent in handling this fragile nucleic acid, forays into the RNA world can be quite frustrating. *RNA: A Laboratory Manual* provides a broad range of up-to-date techniques so that any investigator can confidently handle RNA and carry out meaningful experiments, from the most basic to the most sophisticated. Originating in four of the field's most prominent laboratories and written with novices as well as more advanced researchers in mind, this manual provides the necessary background and strategies for approaching any RNA investigation in addition to detailed step-by-step protocols and extensive tips and troubleshooting information. *RNA: A Laboratory Manual* will enable any researcher to approach a wide variety of RNA-related problems with confidence and a high expectation of success.

Published in November 2010, 586 pp., illus., appendices, index

Hardcover \$240

Paperback \$165

ISBN 978-0-879698-90-4

ISBN 978-0-879698-91-1

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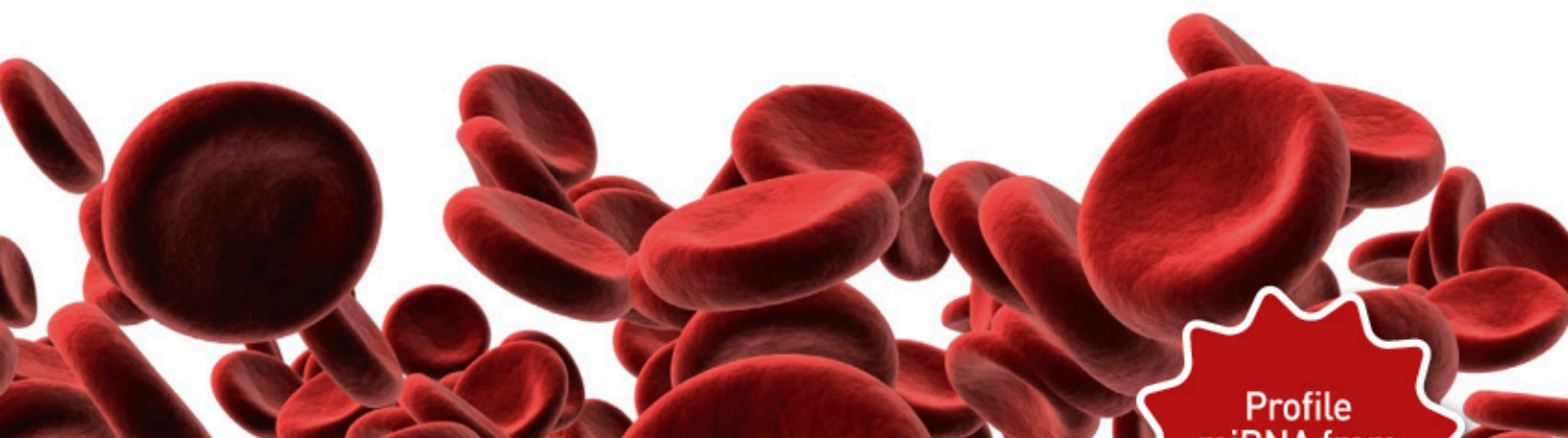
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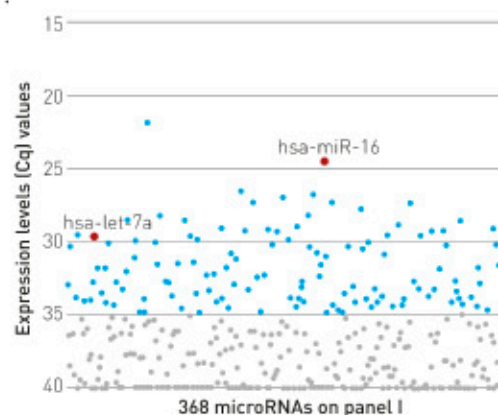
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Postdoctoral Position – MicroRNAs in the Nucleolus

An entry-level (recently conferred or imminent doctorate degree) postdoctoral position is available in the laboratory of Thoru Pederson, University of Massachusetts Medical School, to participate in a project probing new dimensions of the nucleolus in mammalian cells, including the presence therein of certain microRNAs (see Politz, Hogan and Pederson, *RNA* 15: 1705-1715, 2009).

The project seeks to identify the molecular interaction of these microRNAs with other elements of the nucleolar machinery and its functional significance. Some of this work will involve live cell tracking of introduced microRNAs, including pri- and pre-miRNAs, in the nucleus and applicants with such experience would be especially welcomed.

This position will also afford the successful applicant an opportunity to obtain postdoctoral training in the context of a leading community of RNA scientists at UMass Medical School.

Submit a CV and the names of at least two references to:
thoru.pederson@umassmed.edu

Positions for Faculties, postdocs, and graduate students in RNA Nanotechnology

Positions for two Research Assistant Professors, five postdoctoral fellows and several graduate students in RNA Nanotechnology are available to study the mechanism of RNA nanoparticle assembly and their medical applications (Guo P. The Emerging Field of RNA Nanotechnology, *Nature Nanotechnology*, 2010, 5:833).

Experiences in nucleic acid chemistry, RNA Biochemistry, RNA Structure and Function, RNA computation, or siRNA delivery are preferred.

Send CV to Peixuan Guo at
guop@purdue.edu



POSTDOCTORAL FELLOW AT IRB BARCELONA POSTDOCTORAL POSITION IN CANCER RESEARCH

Applications are invited for a postdoctoral position in the Structural Bioinformatics & Network Biology Group of the Institute for Research in Biomedicine (IRB-Barcelona). Our laboratory builds and analyzes the information contained in cell networks to study the molecular mechanisms underlying complex diseases (<http://www.irbbarcelona.org/paloy>).

We are now looking for a highly motivated and interactive scientist to investigate molecular mechanisms underlying breast and colorectal cancer, using a battery of molecular and cell biology techniques. These studies will involve extensive collaborations with other research groups.

Requirements:

- PhD degree in Biomedical Sciences with a good publications record.
- Strong background in molecular and cell biology, with experience in cancer research. Familiarity with RNAi assays and confocal microscopy will be highly valued.
- Enthusiasm for science and capacity to work independently and to drive a scientific project to conclusion.
- Good knowledge of English.

Applicants should send by e-mail a brief cover letter summarizing research interests and goals, full curriculum vitae and the names and addresses of two references to Dr. Patrick Aloy: patrick.aloy@irbbarcelona.org



**University of Massachusetts Medical School
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The newly established Program in Bioinformatics and Integrative Biology continues to invite applications for **tenure-track or senior tenured professor positions**. We are seeking innovative, energetic and collaborative individuals who plan to develop strong computational research programs to tackle problems in one of the following areas: regulatory genomics, comparative genomics, systems biology, RNA biology, evolutionary biology, statistical genetics, or proteomics. Exceptionally strong candidates in other computational biology areas will also be considered. Wet bench research space can be arranged for individuals who are interested in performing experiments to augment their computational efforts.

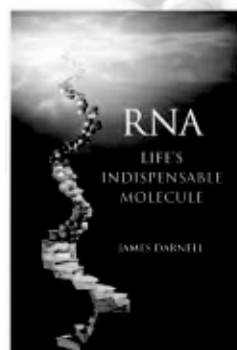
The Program in Bioinformatics and Integrative Biology is housed in a state-of-the-art research building with the neighboring Departments of Biochemistry and Molecular Pharmacology, Neurobiology, Cancer Biology, Medicine, and the Program in Gene Function and Expression. The Program has high-performance computing facilities and a full-time Bioinformatician to support the research activities of its faculty. Salary and start-up package will be competitive and commensurate with the high level of accomplishment expected for successful applicants.

Applicants should submit a cover letter explaining their interest in the Program, a curriculum vitae that includes honors, publications, and a succinct research plan to <http://www.academicjobsonline.org>. To expedite the review process, applicants should invite three individuals who are familiar with your work and potential for success to upload their recommendation letters at the same web address. Inquiries, but not application materials, may be directed to Professor Zhiping Weng at zhiping.weng@umassmed.edu.

As an equal opportunity and affirmative action employer, UMMS recognizes the power of a diverse community and encourages applications from individuals with varied experiences, perspectives and backgrounds.

RNA

LIFE'S INDISPENSABLE MOLECULE



By James Darnell, *The Rockefeller University*

In *RNA: Life's Indispensable Molecule*, Jim Darnell provides a comprehensive and captivating account of RNA research, illuminated by his own life-long and celebrated engagement in the field. Darnell describes how scientists unraveled fundamental questions about the biochemical and genetic importance of RNA—how mRNAs are generated and used to produce proteins, how noncoding and catalytic RNAs mediate key cellular processes, and how RNA molecules likely initiated life on Earth. With a scope extending from the early 20th century to the present day, and with the clarity expected from an accomplished textbook author, he conveys the intellectual context in which these questions first arose and explains how the key experiments were structured and answers obtained. The book is geared towards scientists from the graduate level on up, and will particularly appeal to active investigators in RNA biology, educators of molecular biology and biochemistry, and science historians.

Due July 2011, 416 pp., illus., sources, index
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GUIDE TO THE HUMAN GENOME

By Stewart Scherer

Easy access to information about human genes

Presenting the genes of the human genome in their biological context, *Guide to the Human Genome* is an extensive online resource that provides easy access to information about human genes and their roles in specific processes. The text of the website is also available in a print version. With numerous illustrations and tables, each of the nearly 300 sections of the *Guide* describes genes involved in a specific pathway, process, or structure—from the molecular and cellular levels to developmental and physiological processes. In the online version, these sections contain links to more information about proteins encoded by over 17,000 known or predicted human genes. For each protein, basic characteristics about its composition and length, its human relatives and relatedness to proteins in other species, and direct links to resources at NCBI are included. Additional links to NCBI resources are provided for human noncoding RNAs and repeated DNA elements and for proteins of interest from other species. The entire text of the *Guide* is searchable, and tools are available for identifying human protein sequences using those from other species. The *Guide* will be useful to researchers looking to connect sequence data with functional information, and can be used in parallel with traditional texts in undergraduate and graduate courses to provide a genomics dimension and experience of identifying genes underpinning processes of interest.

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"The *Guide* is not a textbook, a database, a review article, or a reference book. By combining aspects of all of them, I hope it is useful to students, faculty, and researchers."

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