When Antony van Leeuwenhoek died in his home town of Delft, Holland in 1723, just two months short of his 91st birthday, his daughter Maria was left with several hundreds of his hand-made microscopes, many with specimens permanently mounted on them. He had instructed her to send a special set of 26 instruments to the Royal Society in London, of which he was a member. She did so within a few weeks and receipt of these microscopes was duly recorded in the Philosophical Transactions, the same journal in which most of Leeuwenhoek’s famous observations had been published during the preceding 50 years. The remaining microscopes, 247 complete instruments and 172 additional lenses mounted between metal plates, remained in Maria’s possession until her own death in 1745, at which time they were auctioned off. Of this prodigious number of instruments, only nine are known to be still in existence, all from the auctioned material, the 26 belonging to the Royal Society having been “borrowed” in the early 1800s and never heard from again. The cover this month shows a modern replica of a Leeuwenhoek-type microscope at more than twice natural size. Obviously, it is not a microscope at all in the modern sense of a compound microscope, but instead is a single small lens mounted between two brass plates (many of Leeuwenhoek’s microscopes were made of silver and several were of gold). The one horizontal and two vertical screws move the specimen, which is stuck on the point of a pin, so that it can be brought to focus near the center of the lens. The eye of the observer is, of course, placed very close to the lens on the side opposite the specimen. Henry Baker, who examined the Royal Society microscopes carefully in the mid-1700s had this to say about the lenses: “Several Writers represent the Glasses Mr. Leeuwenhoek made use of in his Microscopes to be little Globules or Spheres of Glass ... at the Time I am writing this, the Cabinet of Microscopes left . . . to the Royal Society . . . is standing upon my Table; and I can assure the World, that every one of the twenty-six Microscopes contained therein is a double convex Lens, and not a Sphere or Globule.” This is also true for all but one of the extant specimens, so it is very likely that the lenses in most of Leeuwenhoek’s microscopes were ground and polished, although he never explicitly said so himself. Indeed, despite his voluminous correspondence, Leeuwenhoek was silent about the construction and use of his microscopes, leaving many people to wonder how he could have described protozoa, sperm, and even bacteria so accurately with such simple instruments (see cover for April 1992). The answer probably has more to do with his ability as an observer than with the lenses themselves, the best of which have been shown, in any case, to resolve down to about 1 \( \mu m \). In 1981 Brian J. Ford discovered packets of Leeuwenhoek’s own specimens among his numerous letters at the Royal Society in London. Ford photographed some of them, including thin sections of cork and elder pith, with an authentic Leeuwenhoek microscope at Utrecht University, and he also took scanning E.M. images for comparison. Ford’s study dramatically confirmed Leeuwenhoek’s ability to see exactly what he described more than 300 years ago. A detailed discussion of these experiments and of Leeuwenhoek’s instruments can be found in Ford’s book, *Single Lens, the Story of the Simple Microscope.*
Instructions to Authors

*Molecular Biology of the Cell*, the journal owned and published by the American Society for Cell Biology, publishes papers that describe and interpret results of original research concerning the molecular aspects of cell structure and function. Studies whose scope bridges several areas of biology are particularly encouraged, for example cell biology and genetics. The aim of the Journal is to publish papers describing substantial research progress in full: papers should include all previously unpublished data and methods essential to support the conclusions drawn. The Journal will not, in general, publish papers that are merely confirmatory, preliminary reports of partially completed or incompletely documented research, findings of as yet uncertain significance, or reports simply documenting well known processes in organisms or cell types not previously studied. Methodological studies will be considered only when some new result of biological significance has been achieved with the method.

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DNA Enzymes and their Substrates: Motors, Mechanisms and More
  Steven Block, Princeton University
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  Studies of Protein Complexes by NMR: The Next Frontier
  Angela Gronenborn, NIH
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  Cathy Morris, Ottawa Civic Hospital
  (Sponsored by the Committee on Professional Opportunities for Women)
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  John Kuriyan, Rockefeller University
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  Eaton Lattman, Johns Hopkins University
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  Henry Lester, CalTech
Photosynthetic Light-harvesting Complexes and Energy Trapping
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  Steven Siegelbaum, Columbia University
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<tbody>
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<td>$95</td>
<td>$115</td>
<td>$135</td>
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<td>Student</td>
<td>$30</td>
<td>$40</td>
<td>$50</td>
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Identification of a Ligand-binding Site in an Immunoglobulin Fold Domain of the Saccharomyces cerevisiae Adhesion Protein α-Agglutinin
H. de Nobel, P.N. Lipke, and J. Kurjan ................................................................. 143–153

The Paramyxovirus Simian Virus 5 Hemagglutinin-Neuraminidase Glycoprotein, but not the Fusion Glycoprotein, Is Internalized Via Coated Pits and Enters the Endocytic Pathway
G.P. Leser, K.J. Ector, and R.A. Lamb ................................................................. 155–172

Errata .................................................................................................................. 173–192
Editorial

Articles

Mutational Analysis of Capping Protein Function in *Saccharomyces cerevisiae*  
G.I. Sizonenko, T.S. Karpova, D.J. Gattermeir, and J.A. Cooper ........................................ 1-15

Antagonistic Effects of Signal Transduction by Intracellular and Extracellular cAMP on Gene  
Regulation in *Dictyostelium*  
I. Endl, A. Konzok, and W. Nellen ................................................................. 17-24

TOR Controls Translation Initiation and Early G1 Progression in Yeast  

A Replication-Enhancing Element with Transcriptional Silencer Activity in Autonomously Replicating Human Chromosomal Fragments  
C. Obuse, Y. Okuno, T. Okazaki, and H. Masukata .................................................. 43-55

Identification of Seven Rat Axonemal Dynein Heavy Chain Genes: Expression during Ciliated  
Cell Differentiation  

Inositol Transport in *Saccharomyces cerevisiae* Is Regulated by Transcriptional and Degradative Endocytic  
Mechanisms during the Growth Cycle that Are Distinct from Inositol-induced Regulation  

The Ydj1 Molecular Chaperone Facilitates Formation of Active p60v-src in Yeast  
B. Dey, A.J. Caplan, and F. Boschelli ................................................................. 91-100

Cytoskeletal Integrity Is Required throughout the Mitogen Stimulation Phase of the Cell Cycle and Mediates  
the Anchorage-dependent Expression of Cyclin D1  
R.-M. Böhmier, E. Scharf, and R.K. Assolant ......................................................... 101-111

Modulation of Myosin Filament Organization by C-Protein Family Members  
S.H. Seiler, D.A. Fishman, and L.A. Leinwand ......................................................... 113-127

Resorption-Cycle-dependent Polarization of mRNAs for Different Subunits of V-ATPase in Bone-resorbing  
Osteoclasts  

(continued)