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MBC: What We’re About

Modern biological research presents unprecedented opportunities to gather data, to understand complex cellular processes and mechanisms, and to eliminate boundaries between traditional disciplines. In turn, these opportunities add to the challenges inherent in the publication of scientific results. At Molecular Biology of the Cell, we consider the reporting of science to be an integral part of research itself—a critical tool that properly belongs in the hands of scientists.

MBC operates on the principle that the sole purpose of a scientific journal should be to serve as a vehicle for effective communication among scientists. We believe that journals should be otherwise transparent—imposing no requirements for “level of excitement,” setting no trends, enforcing no arbitrary length restrictions. Rather, MBC seeks to facilitate communication among scientists by expecting full documentation of Methods and Results, by encouraging Introductions and Discussions that frame questions and interpret findings clearly (even for those outside an immediate circle of experts), and by advocating the interests of both contributors and readers through fair, prompt, and thorough review, coupled with responsible editorial adjudication and thoughtful suggestions for revision and clarification.

The criteria by which manuscripts are evaluated for Molecular Biology of the Cell are straightforward: rigor in experimental design and execution, significance in the results and interpretation, and clarity and scholarship in presentation.
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**Cover**

A problem that continued to plague microscopists until well into the 19th century was adequate illumination of their specimens. The solar microscope solved this problem by using sunlight, by far the brightest light available, to project an image of the specimen onto a sheet of paper inside a darkened box, commonly known by its Latin name *camera obscura*. The cover illustration shows the camera obscura (A) without optics, and in a separate figure, the optics mounted on top of the camera. The optical train began with a large plane mirror (H) arranged so that it could be rotated and tilted to catch the light of the sun, regardless of its position in the sky. The light was focused by a condensing lens (F) onto the specimen, in this case a needle, which was placed just outside the focal point of the single objective lens (K). The image was then projected onto a sheet of paper inside the box, where it could be viewed by opening a small door (c, d) in the side and looking down. The instrument shown here was designed by Wilhelm Friedrich von Gleichen (also called Russworm) and described in 1777 in a book entitled *Auserlesene mikroskopische Entdeckungen bey den Pflanzen, Blumen und Blüthen, Insekten und andern Merkwürdigkeiten* (Exquisite microscopical discoveries in plants, flowers, blossoms, insects, and other curiosities). Gleichen used the solar microscope to produce the many outstandingly beautiful and accurate illustrations in his book. The solar microscope permitted several observers to view a specimen simultaneously, without danger of blinding from looking directly at the sun, and it could even be modified to project an image onto the wall of a darkened room. By using a larger camera obscura with an opening in the base for inserting one's hand, an investigator could trace the image of the specimen with a pen or pencil. The solar microscope had several obvious disadvantages. Its intense illumination tended to burn up delicate specimens. Furthermore, its uncorrected lens gave unsharp images if too great a magnification was attempted. Henry Baker, in his popular treatise *The Microscope Made Easy*, published in 1743, suggested that a louse should not be enlarged beyond three feet in length for maximal clarity! Finally, of course, the solar microscope was not useful in cloudy weather. In many respects the solar microscope anticipated major features of both the modern camera and the modern slide projector.