



Eye, Retina, and Visual System of the Mouse (MIT Press)

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Recent years have seen a burst of studies on the mouse eye and visual system, fueled in large part by the relatively recent ability to produce mice with precisely defined changes in gene sequence. Mouse models have contributed to a wide range of scientific breakthroughs for a number of ocular and neurological diseases and have allowed researchers to address fundamental issues that were difficult to approach with other experimental models. This comprehensive guide to current research captures the first wave of studies in the field, with fifty-nine chapters by leading scholars that demonstrate the usefulness of mouse models as a bridge between experimental and clinical research. The opening chapters introduce the mouse as a species and research model, discussing such topics as the mouse's evolutionary history and the mammalian visual system. Subsequent sections explore more specialized subjects, considering optics, psychophysics, and the visual behaviors of mice; the organization of the adult mouse eye and central visual system; the development of the mouse eye (including comparisons to human development); the development and plasticity of retinal projections and visuotopic maps; mouse models for human eye disease (including glaucoma and cataracts); and the application of advanced genomic technologies (including gene therapy and genetic knockouts) to the mouse visual system. Readers of this unique reference will see that the study of mouse models has already demonstrated real translational prowess in vision research.

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- Sales Rank: #1777003 in Books
- Published on: 2008-07-03
- Original language: English
- Number of items: 1
- Dimensions: 11.00" h x 1.02" w x 8.50" l, 4.43 pounds
- Binding: Hardcover
- 768 pages



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Editorial Review

Review

The book, *Eye, Retina, and Visual System of the Mouse* examines the extensive ophthalmic research currently being done, including: optics, psychophysics, and visual behavior; the relationship of the eye to the central nervous system; ocular development; development of retinal projections to the brain; some examples of mouse models of human eye disease; and a summary of some advanced gene technologies. The many well-known contributors to this book have provided good summaries of a wide range of topics that will be useful to all who study visual neuroscience.

(Richard S. Smith, Research Scientist, The Jackson Laboratory)

Twenty years ago, most visual neuroscientists studied cats or monkeys, and the idea of using the mouse for vision research was preposterous -- everyone 'knew' that mice could hardly see at all, so why would one bother? Now, the genetic revolution has utterly changed the landscape, and the growth of mouse vision research has been explosive. This comprehensive and well-produced volume collects our essential knowledge of mouse vision into a single extraordinarily useful volume. It will be the standard reference for years to come.

(J. Anthony Movshon, New York University)

This timely book provides an outstanding resource for both beginners and experts.... Of particular note is the book's final section on advanced techniques, which is filled with practical 'how-to' advice. Be warned: your colleagues down the hall will borrow this book shamelessly. My copy went missing more than once.

(Markus Meister *The Quarterly Review of Biology*)

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