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BOOK REVIEW

Retinal Development, edited by E. Sernagor, S. Eglen, W. Harris, and R. Wong. 2006. New York: Cambridge University Press

Reviewed by Peter Sterling, Department of Neuroscience, University of Pennsylvania, Philadelphia, Pennsylvania

Fairly regularly some member of my lab, finding a new feature of retinal circuitry, wonders aloud if it might "somehow relate to development." I always reply, "We don't study development." This partly reflects my curmudgeonly insistence that we stay focused on explaining function in the adult. But even if the discovery *did* relate to development, the connection would be too difficult to find—because the large territory has lacked any useful guide. Next time, however, I will hand over my copy of *Retinal Development* and reply more kindly, "Check it out."

The book's 16 chapters, following Rachel Wong's lucid introduction, are organized ontogenetically. Zuber and Harris begin by explaining how the "eye field" forms in the embryo. They include some of the classic embryology, citing experiments of Spemann and others from as early as 1901. Then quickly we are brought to date with cascades of eye-field transcription factors, known by horrible abbreviations such as, Lhx2 and Optx2(Six6). Thankfully, there are explanatory tables and convenient comparisons between the main experimental animals (frog, zebrafish, and mouse). The chapter is sufficiently brief to be readable by an outsider (like me), and it is generously referenced, mercifully, at the end of the chapter. So, one feels confident that with a morning to invest, one could get somewhere.

The same is true for subsequent chapters each by different authorities, which cover neuron genesis, migration, determination, and programmed death. You can also learn about neuronal mosaics, dendritic growth, synaptogenesis, emergence of function, regeneration, and (surprise!) stem cells. There are also special chapters on the human fovea, optic nerve, genomics, and zebrafish. The diverse authors have been brought well to heel by the editors so that each chapter has the same format that begins with some history and uses rather nice diagrams whose consistent style helps bind the diverse chapters into a real book.

Regarding history, I was particularly glad to find mention of Stone's amazing demonstrations from 1950 that, a piece of the pigment epithelium in salamander can regenerate a whole neural retina with a functional optic nerve that connects correctly to the brain. On the other hand, it was mildly disappointing not to find Roger Sperry, whose "chemoaffinity hypothesis," based on daring experiments, originated the idea that retinal maps are specified by chemical gradients. Now that the gradients of ligands and receptors have been identified, it seems slightly too early to have forgotten who proposed the idea. Yet, that is another lesson: Science offers not immortality but only a time constant—Sperry's was about 40 years.

My only complaint rests with the publisher—for muddying what must originally have been crisp micrographs and for collecting all the color figures into a few plates near the end of the book, rather than placing them in the individual chapters where they are needed. If book publishers further degrade their own products, before long all our reading will be on line.

Nevertheless, in providing the first systematic summary of what has been learned about retinal development, this volume fully justifies its title. It would make a great text for a graduate course.