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Nota di contenuto	1. Introduction: G-protein Signaling in the Retina -- Part One- Phototransduction in Rods and Cones -- 2. G-protein Deactivation Mechanisms in Vertebrate Phototransduction -- 3. Signaling by Rod and Cone Photoreceptors: Opsin Properties, G-protein Assembly and Mechanisms of Activation -- 4. G-protein–effector Coupling in the Vertebrate Phototransduction Cascade -- Part II- Inner Retinal GPCR Signaling Pathways -- 5. Interdependence among Members of the mGluR6 G-protein Mediated Signalplex of Retinal Depolarizing Bipolar Cells -- 6. Mechanistic Basis for G-protein Function in ON Bipolar Cells -- 7. Modulation of Trpm1 and the mGluR6 cascade in ON Bipolar Cells -- 8. The Role of Dopamine in Fine-tuning Cone- and Rod-driven Vision -- 9. Regulation of Electrical Synaptic Plasticity in the Retina by G-protein Coupled Receptors -- Part III- Signaling by Photosensitive Ganglion Cells -- 10. The Functional Properties of the G-protein-coupled Receptor melanopsin in Intrinsically Photosensitive Retinal Ganglion Cells.

Sommario/riassunto

We have learned a great deal about the organization and function of GPCR pathways, and the role that they play in vision. The information gained from these studies has provided, and will continue to provide, critical insights to further our understanding of complex GPCR pathways in the central nervous and endocrine systems. In essence, the retina is the first ‘optogenetically’-driven circuit with clearly understood physiology. Thus, studying GPCR-driven pathways in the retina will likely guide the interpretation of optogenetic experiments, which are increasingly utilized to study central circuits. Collectively, these signaling pathways allow the retina to represent visual space over a wide range of light intensities and to synchronize its function to the day/night cycle. G protein Signaling Mechanisms in the Retina summarizes our current understanding of the organizational principles of GPCR pathways, using insights derived from the study of the retina. The book highlights several G protein signaling cascades, including phototransduction, ON bipolar cell signaling, dopaminergic pathways, and ipRGC signaling.