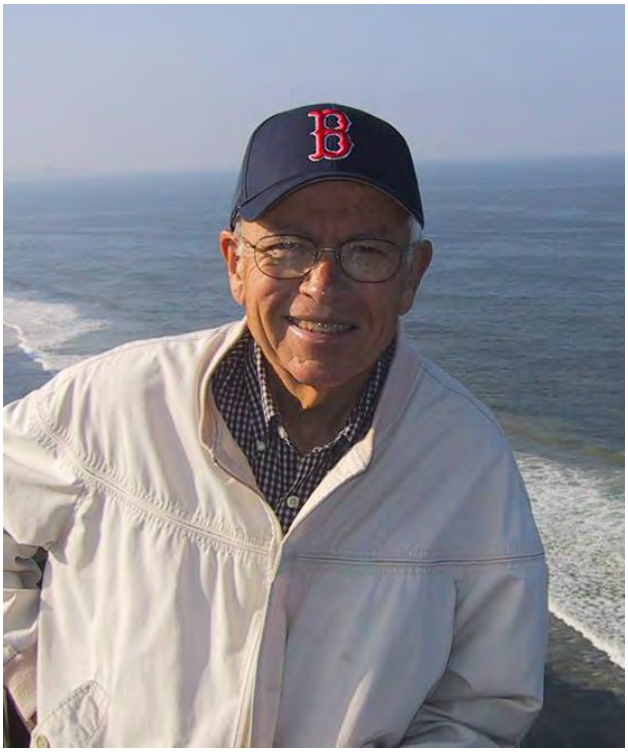
The Boynton Lecture

The Boynton Lecture is named in honor of Robert M. Boynton (1924-2006). Known to his friends as “Bob,” he began his career as an early student of Lorrin Riggs, took his first position at the University of Rochester (where he founded the Center for Visual Sciences), and in 1974 moved to the University of California at San Diego. Bob was a member of the OSA and the National Academy of Sciences, and was recognized by the OSA with the Tillyer medal, and the society's highest honor, the Ives medal. Bob's work was primarily in the field of color vision. The Boynton lecture was established in 2001.



This year the Boynton Lecture will be presented by Professor Donald I. A. MacLeod, of the University of California at San Diego. Don began his life in the outer Hebrides of Scotland, began his studies at the University of Glasgow, and completed his Ph.D. at Cambridge University under the tutelage of Paul Whittle. Following a post-doc with William Rushton, he joined the faculty at UCSD. Don has wide-ranging interests in vision, but is perhaps best known for his work on the early visual system, using nonlinearities to perform “psychophysical dissection.” His many honors include the OSA's Tillyer medal.

Color, Cones and Connectivity

Donald I.A. MacLeod, UC San Diego

Although we understand that a trichromatic color match is a match for the cones, we have no idea how the appearance of the matched colors relates to their neural representation. For instance, proposals about the colors seen by the red/green color blind require highly suspect assumptions about the relation between neural events and color experience. The limited evidence available does not support a simple view of that relation: in particular, color blindness cannot be explained by a cone pigment swap with normal postreceptoral organization.

In anomalous trichromats, the reduced separation between the long-wave and mid-spectral cone absorption spectra will lead to a commensurate reduction in red/green differentiation if the pigment swap is the only difference between anomalous and normal trichromatic systems. But here again the pigment swap model seems to be incomplete. Anomalous observers differentiate red from green more strongly than the pigment swap model predicts. And they display exaggerated orientation-contingent color aftereffects, that are explainable only if the cortical representation of color benefits from a compensatory post-receptoral gain enhancement that compensates for the effects of the pigment swap.

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