ROD AND CONE VISUAL PIGMENTS IN THE GOLDFISH

Andrew T. C. Tsin*, Paul A. Liebman†, David D. Beatty* and Robert Drzymala†
Fig. 1. Normalized absorbance spectra (solid lines) of cone and rod visual pigments from acclimated goldfish measured in the microspectrophotometer in comparison with the absorption spectra of the pure retinal based visual pigments (P579₁, P509₁, P441₁, P499₁; broken lines) and the corresponding pure 3-dehydroretinal based visual pigments (P625₂, P537₂, P452₂ and P522₂; dotted lines) using the nomograms of Ebrey and Honig (1977). The triangles are from averaged (or single) measurements made on cones and rods of Grassyfork goldfish that were acclimated to have rhodopsin-rich retinas. The ranges of estimated $\lambda_{\text{max}}$ were 575–580 nm for the red cones ($n = 4$), 525 nm for the green cones ($n = 1$), 445 nm for the blue cones ($n = 2$) and 508–510 nm for the rods ($n = 2$). The open circles are from averaged (or single) measurements made on cones and rods of a pet shop goldfish. The ranges of estimated $\lambda_{\text{max}}$ were 625 nm for the red cones ($n = 1$) 532–537 nm for the green cones ($n = 4$), 452 nm for the blue cones ($n = 1$) and 520 nm for the rods ($n = 1$). A smooth curve was drawn on the original MSP recording to obtain the data used for normalization.