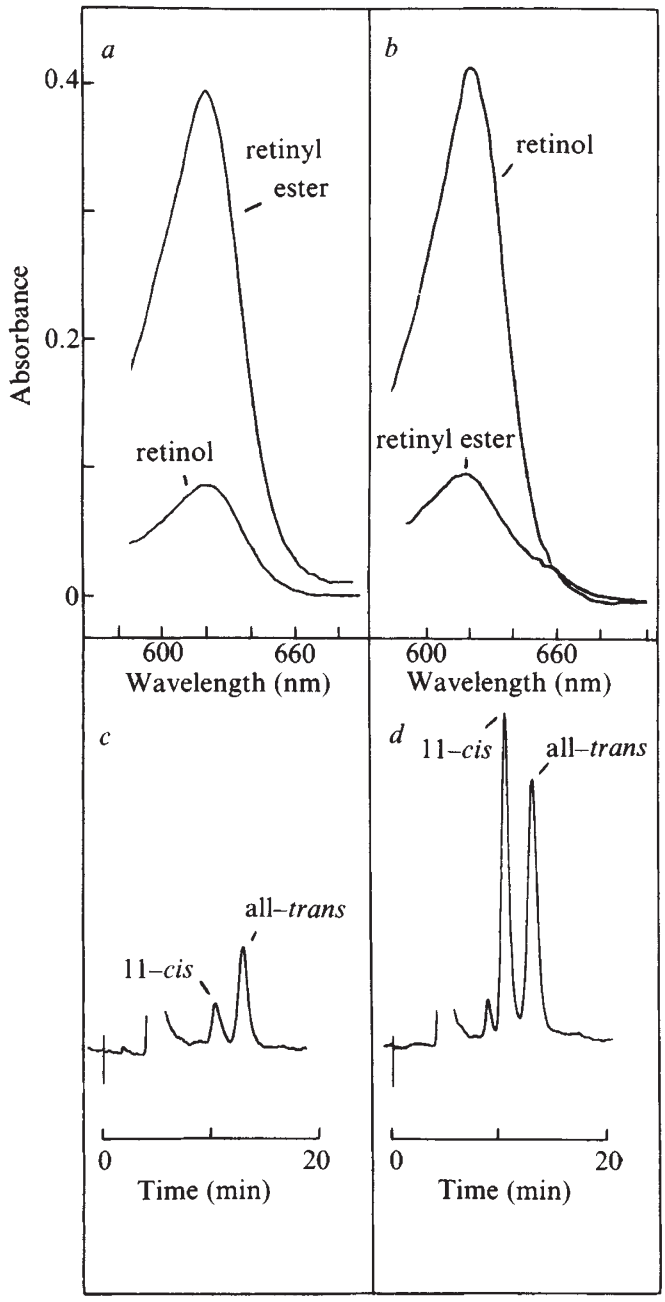

Fig. 1 Vitamin A content of ROS compared with the rest of the retina. *a* and *b* show the spectra of the Carr–Price "blues" (Cary 14 spectrophotometer) from the retinyl ester and retinol fractions separated by HPLC as summarised below. Both colour intensity and λ_{max} are independent of isomer configuration and whether alcohol or ester forms are involved[11]. The ROS contained 3.69 nmol vitamin A of which only 0.69 nmol was ester. From the rest of the retina the yield was 3.48 nmol, of which 2.86 was ester. *c* and *d* show the HPLC records obtained. Retinyl esters eluted between 3.5 and 7.0 min. Other absorbing substances, including small amounts of carotenoid esters, appeared during this time but did not interfere with the Carr–Price reaction. For clarity, the initial peak of the HPLC record has been blocked out. The 11-*cis* and all-*trans* retinols eluted between 9.5 and 16.0 min. The minor peak preceding 11-*cis* in the ROS extract was not identified; its size varied between different experiments. The experimental conditions were: Columns, 2 m × 2 mm stainless steel packed with Corasil II (Waters Associates); eluant, 1% isopropanol in hexane (Fisher H-291); flow rate, 0.9 ml min^{-1} from a Waters model 6000 pump; detection, 310 nm at absorbance 0.05 setting on an Instrument Specialties model UA-5 monitor; injection, 24 μl, Chromatronix fixed-loop valve. Recovery of retinol from the column averaged 95%, retinyl ester 100%. *a*, *c*, Retina without ROS; *b*, *d*, ROS.

As Fig. 1*b* and *c* shows, the alcohol fractions eluted in two bands maximal at 10.6 and 13.0 min identified respectively as 11-*cis* and all-*trans* retinol[10]. The 11-*cis* isomer accounted for as much as 60% of the ROS retinol, but the all-*trans* isomer preponderated in the small quantity of retinol present in the remainder of the retina.

The vitamin A content of the ROS amounts to 4.2 mol % of the rhodopsin, determined by digitonin extraction of the light petroleum-extracted residues. This corresponds to about a 2-d supply of prosthetic groups if ROS growth proceeds at the rate of ~ 2% d^{-1} (ref. 1). The amount of 11-*cis* retinol alone is thus sufficient to sustain rhodopsin renewal for about 1 d. Normally, the pool of ROS retinol would be continually replenished, probably from supplies in the pigment epithelium which are known to amount to about 2 mol of retinyl ester per mol of retinal rhodopsin[10]. The ester could be converted to alcohol before transfer to the retina, but it is more likely that it is transported unchanged and hydrolysed in the ROS. The latter cannot synthesise ester, although other parts of the retina can[14–16]. The derivative of vitamin A that is converted to 11-*cis*, and where this isomerisation takes place in the eye, is being investigated and will be discussed elsewhere.

I thank F. Farag for technical assistance. This work was supported by grants from the US Public Health Service and Fight for Sight, New York City.

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Received October 6; accepted October 22, 1975.

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Corrigendum

In the article "Mutation rate, genome size and their relation to the rec concept" by J. A. Heddle and K. Athanasiou (*Nature*, **258**, 359; 1975) the following corrections should be made. Page 360, line 5: the value of m should be 1.68×10^{-19}; line 6: the b and r values should be 0.91 and 0.98, respectively. In Table 2 the genome size of φX174 and S13 should be 1.7×10^{6}.