THE IN VIVO REGENERATION OF GOLDFISH RHODOPSIN AND PORPHYRYPSON

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Fig. 1. The \textit{in vivo} regeneration of porphyropsin at 30°C (experiment 1). Twenty-seven goldfish were held at 30°C for 2 weeks before use. They were then exposed to a bright illumination for 1 h and transferred to the dark room. At regular time intervals, three animals were sampled for visual pigment in their retinas. The half-life of the regeneration was estimated to be 49 min. The line indicated in the semi-logarithmic plot was calculated by the least squares method. It has an intercept of 1.23 nmol kg$^{-1}$ body weight and a slope of 6.22×10$^{-3}$ nmol kg$^{-1}$ min$^{-1}$. The first-order rate constant was calculated from the slope of this line as described in Materials and Methods.
Fig. 2. The \textit{in vivo} regeneration of porphyropsin at 20°C (experiment 2). This experiment was carried out in the same way as experiment 1 (Fig. 1), except that 36 fish were used and from 3–6 fish were sampled at each time point of dark adaptation. The half-life of regeneration was estimated to be 83 min and the slope and the intercept of the line appearing in the semi-logarithmic plot were calculated by the method of least squares as $3.6 \times 10^{-3} \text{ nmol kg}^{-1} \text{ min}^{-1}$ and 1.37 nmol kg$^{-1}$, respectively.
Fig. 3. The in vivo regeneration of visual pigments at 30°C (experiment 3). Thirty-six goldfish were placed at 30°C in a photoperiod of 16 h light and 8 h dark (under dim light, see Materials and Methods) for 30 days to induce higher concentrations of rhodopsin in their retina. They were then subjected to bleaching and dark adaptation as in experiment 1 (Fig. 1). The half-life of this regeneration was estimated to be 106 min and the slope and the intercept of the line appearing in the semi-logarithmic plot were calculated by the method of least squares as $2.8 \times 10^{-3} \text{ nmol kg}^{-1} \text{ min}^{-1}$ and $1.55 \text{ nmol kg}^{-1}$, respectively.