



**Fig. S5** Light-induced translocation of transducin and return to the outer segment. **(B)** Kinetic analysis of return to the OS. In the absence of a GEF (rhodopsin), solubilization of  $T\alpha$  governed by GDP/GTP exchange is slow ( $k=10^{-4}/\text{sec}$ )<sup>38</sup>, and is most likely the rate limiting step for the return of transducin. Likewise, the hydrolysis of  $T\alpha^{GTP}$  is slow ( $k=0.025 \text{ sec}^{-1}$ ) in the absence of GAP, but not rate-limiting. GDP/GTP exchange maintains a rate constant of  $0.0001/\text{sec}$ , resulting in only 0.01% of  $T\alpha$  solubilized per second<sup>38</sup>, or one-third of  $T\alpha/\text{hour}$ , which explains the slow return to the outer segment.