

Electrophysiological and anatomical evidence for a direct projection from the nucleus of the basal optic root to the nucleus rotundus in pigeons.

B. Diekamp, B. Hellmann, N.F. Troje, S.R. Wang and O. Gunturkun

A direct projection of the nucleus of the basal optic root (nBOR) onto the nucleus rotundus (Rt) in the pigeon would link the accessory optic system to the ascending tectofugal pathway and could thus combine self- and object-motion processes. In this study, injections of retrograde tracers into the Rt revealed some cells in central nBOR to project onto the ipsilateral Rt. Contrary, injections into the diencephalic component of the ascending thalamofugal pathway resulted in massive labeling of neurons in dorsal nBOR. Single unit recordings showed that visual nBOR units could be activated by antidromic stimulation through the Rt. Successful collision tests applied to nBOR cells revealed that the connection between nBOR and Rt is direct. These data provide strong evidence for a direct and differential projection of nBOR subcomponents onto the thalamic relays of the two ascending visual pathways. © 2001 Elsevier Science Ireland Ltd. All rights reserved.