

A Golgi study of the telencephalon of the rainbow trout (*Oncorhynchus mykiss*).

II. Area ventralis

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SUMMARY

The present study describes the histological organization and morphological characteristics of neuronal types in the ventral telencephalic area of a teleost of the Salmonidae family, the rainbow trout (*Oncorhynchus mykiss*). We compared the histological and cytoarchitectural organization of this region with those of other teleostean species to investigate whether the variations in the organization of this region are related to phylogenetic distance or are a result of the different functional significance of sensory systems modulated by this region.

Using Golgi impregnation, the neuronal populations occupying this telencephalic area were grouped into ten different morphological types. The ventro-rostral area was identified as a proliferating region where neurogenesis continues during the adult life of the animal. In addition, this rostral region appears to be highly constant in its histological organization and neuron types among teleosts. The commissural and caudal levels of the ventral telencephalic area showed more pronounced interspecies differences, although with a basic common pattern of organization. Interestingly, in some aspects such as the presence of distinct neuronal types, close phylogenetically related species demonstrated more evident differences than those observed by comparison with advanced teleosts. Thus, the organization of this ventral telencephalic area proved to be relatively constant along the phylogenetic scale of teleosts, and the complexity of its organization could be influenced by different factors such as the physiological importance of the roles in which the region is involved.

Key words: Golgi impregnation - rainbow trout - telencephalon - teleostei.

INTRODUCTION

The telencephalic hemispheres of most vertebrates develop by a process of inversion and evagination, resulting in paired telencephalic vesicles, whereas the telencephalon of adult actinopterygians consists of two solid masses flanking a median ventricular space, as result of the development by the outward bending (eversion) of the dorsal portion of the medial telencephalic wall (Gage, 1893).

The eversion process affects in different degrees the families comprising the Actinopterygian group, and evident differences in the anatomical and histological organization are observed mainly in the dorsal telencephalic region among different groups (Nieuwenhuys, 1963; 1969; Northcutt and Braford, 1980; Northcutt and Davis, 1983; Nieuwenhuys and Meek, 1990). By contrast, as a result of the scarce incidence of the eversion process on the ventral telencephalic area, this region shows a much more constant histological organization among actinopterygians (Northcutt and Braford, 1980). Morphological characterization of neurons occupying this area has been carried out in closely related species belonging to the most everted groups (Bannister, 1973; Shiga et al., 1989; Antón, 1991), but there are no available data on the morphological characteristics of neuronal populations in the ventral telencephalic area in species of basal teleosts.

Therefore, the present study focused on the characterization of the different neuron types in

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