

agglutination, that is, inhibitor, and we are at present of the opinion that a strongly positive TE-agglutination test, as was observed on the tuberculous guinea pigs in this investigation, may be an indication of a disturbed state of serum in its 'agglutinator-inhibitor' relation.

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<sup>1</sup> Ito, R., Matsuda, M., and Aoki, K., *Jap. J. Pharmacol.*, **9**, 169 (1960).

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## HISTOLOGY

### A Unique Pattern of Localization within the Cerebellum

It has been generally accepted that the microscopic structures of the individual layers of the cerebellum are invariant in all animals. For example, Kappers *et al.*<sup>1</sup> state that "different cytoarchitectonic regions, such as are demonstrable in the various areas of the cerebral cortex, are not present in the cortical portion of the cerebellum". This absence of localization of histological structure has been a hindrance to research in view of the known localization of function in different regions of the cerebellum.

During the course of certain experiments in this laboratory it was noted that there was a microscopically observable difference in the 'staining' intensity in the histochemical test for the enzyme 5'-nucleotidase between the anterior and posterior portions of the cerebellum in mice. This difference was found in the molecular layer (Fig. 1). Microdensitometry indicated a 2-fold difference in activity between the two portions. The enzyme was demonstrated by a modification of Naidoo's<sup>2</sup> method, using 10 $\mu$  thick cold-microtome sections. In coronal section, on the other hand, the enzyme was seen to be distributed in a series of bands which ran in an antero-posterior direction (Fig. 2). These bands were wider posteriorly than anteriorly, thus accounting for the antero-posterior differences originally noted (Fig. 1).

This unique pattern was observed in mice of all ages from 11 days to 13 weeks but not of 4 or 7 days of age.

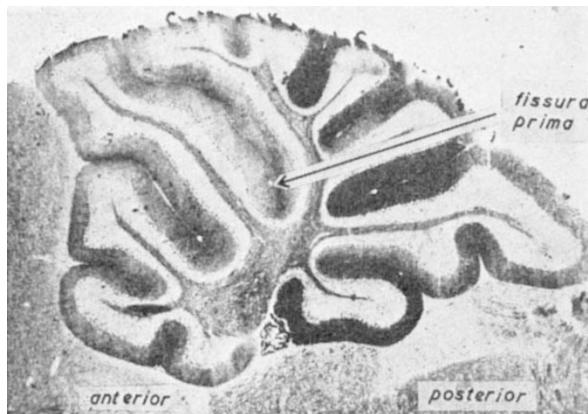


Fig. 1. Paramedian section of cerebellum of 8-week-old mouse showing 5-nucleotidase activity (no counter stain). ( $\times$  c. 15)

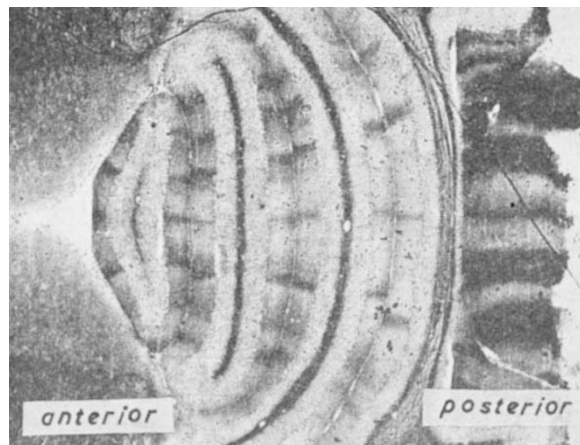


Fig. 2. Coronal section (slightly oblique) of cerebellum of 10-week-old mouse showing the banded distribution of the enzyme. ( $\times$  c. 19)

There were no sex differences and no such distributional pattern was seen with any of 16 other enzymes examined.

The significance of this discovery is not immediately apparent. The transition between the two zones occurred at the apex of the folium immediately posterior to the fissura prima in all the mice examined. The increased enzyme activity of the zone is present right up to the posterior margin of this layer in the roof of the 4th ventricle. It therefore does not differentiate paleocortex from neocortex, and in consequence it must be supposed that it has little or no phylogenetic significance.

Ontogenetically it would suggest that the posterior wall of the fissura prima is to be included in the anatomically anterior portion of the cerebellum, and that any functional differences between anterior and posterior terminate not at the base of the fissura prima, as might be supposed, but caudal to it.

The significance of the antero-posterior banding is not known.

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<sup>1</sup> Kappers, C. V. A., Huber, G. C., and Crosby, E. C., *The Comparative Anatomy of the Nervous System of Vertebrates including Man*, **1**, 696 (New York, The Macmillan Co., 1936).

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### Histochemical Reaction for Steroid-3 $\beta$ -ol-dehydrogenase in the Interrenal and the Corpuscles of Stannius of *Anguilla anguilla* and *Conger conger*

SINCE Giacomini's<sup>1</sup> demonstration that the interrenal tissue of the 'head-kidney' in teleosts is embryologically and anatomically independent of the corpuscles of Stannius, doubt has remained as to the participation of these corpuscles in the production of corticosteroids.

Phillips and Mulrow<sup>2</sup> and Nandi and Bern<sup>3</sup> have given direct evidence for the secretion of these hormones by the interrenal tissue. Ford<sup>4</sup> did not manage to identify corticosteroids in extracts of corpuscles of Stannius in the pacific salmon, *Oncorhynchus nerka*, just as Phillips and Mulrow<sup>2</sup> had shown that *in vitro* cultures of the corpuscles of Stannius from *Pseudopleuronectes americanus*, incubated in the presence of tritiated progesterone, lack the capacity to synthesize adrenocorticosteroids. The latter results show indirectly that the enzymes responsible for steroidogenesis are absent from the corpuscles of Stannius.

In order to obtain direct proof of the absence of steroidogenesis in this gland, we have carried out a histo-