positively stained tissue sections in which the amyloid fibrils must have been oriented in various directions, and in which there has been a lack of demonstration of the surface structure of the amyloid fibrils. Indeed, the various values of 50–300 Å which have been reported for the width of amyloid fibrils by several investigators correlate well with the widths of the most common types of lateral aggregates of filaments reported here.

In this work the application of negative staining has made it possible to visualize the ultrastructure of highly purified isolated amyloid fibrils. The fibril is made up of filaments of varying lengths but with reproducible diameter of 75 ± 9 Å. It occurs most commonly in lateral aggregates of 4, but may be found in side-to-side groups of 1–8 filaments. A 100 Å beading was observed on all filaments.

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Juxta Glomerular Apparatus staining with Thioflavine *T* Fluorochrome, and its Confusion with Amyloid

During an investigation of experimental amyloid in *BALB/c* mice with the thioflavine *T* fluorochrome method[1] applied to formol saline fixed sections, it became apparent that all 55 mice showed a bright green fluorescence in the juxta glomerular region. In the experimental group, which had a transplantable plasma cell tumour, *ADJ–PC5*, the fluorescent material was at first thought to indicate amyloid. However, it became obvious on examining the control group (20 mice) that one was dealing with a normal structure.

The fluorescent appearance varies with the plane of sectioning; under low power the fluorescence may show an irregular circular, oval or elongated structure (Fig. 1). With high magnification the cytoplasm but not the nuclei of these cells shows an intense granular fluorescence (Fig. 2). The morphology, site, granular appearance and presence of this fluorescent structure in all the normal mice studied suggest that it is the juxta glomerular apparatus.

While thioflavine *T* is a useful technique in studying amyloid it is, like congo red, and to a lesser extent methyl violet, not specific for amyloid. The pitfalls of the technique ought to be appreciated in order to avoid errors in recognizing amyloid. The following structures are stained by thioflavine *T*: (1) 'muciphages' of the rectal mucosa in man[2,3]; (2) myelin figures in neurones of amaurotic idiocy and granular cell myoblastoma[4]; (3) acidophil cells of the pituitary gland[5]; (4) zymogen granules in the pancreas of mice (personal observation); (5) mast cells in mice and man (personal observation); (6) juxta glomerular apparatus in mice.

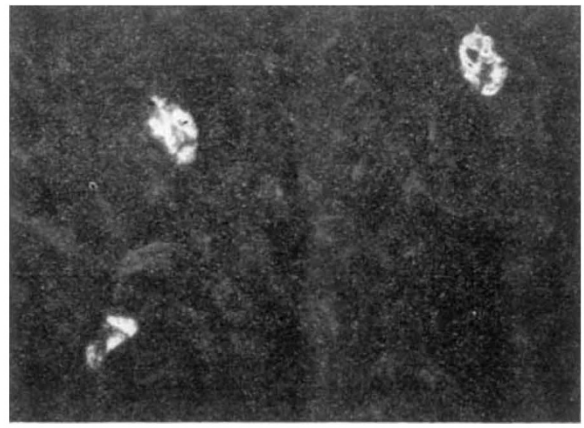

Fig. 1. Fluorescent microphotograph showing 3 juxta glomerular apparatus structures (thioflavine *T* × *c.* 395)

Fig. 2. Fluorescent microphotograph showing the juxta glomerular apparatus adjacent to the glomerulus (thioflavine *T* × *c.* 880)

Although the difficulties in interpreting rectal biopsies with regard to amyloid by the thioflavine *T* method are now appreciated, some of the other structures noted here have received little or no attention. This is particularly relevant in the experimental induction of amyloid in mice when the fluorescence in the juxta glomerular region can be easily confused with amyloid. Furthermore, it is suggested that this technique offers a simple and striking method for investigating the juxta glomerular apparatus.

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