testis[13,14]. In considering their histochemical evidence, SEILER et al.[3] have suggested that the interrenal tissue of the lamprey may bear a closer resemblance to the Stannius corpuscles of the teleosts than to the interrenal cells of the higher vertebrates. However, in view of the ultrastructural evidence presented here and the well developed rough endoplasmic reticulum and Golgi of the corpuscles of Stannius[15,16] (features that are usually associated with protein secretion) this point of view must almost certainly be rejected[17].

Résumé. Après un exame au microscope électronique, le tissue interrénale de la lamproie, *Lampreta planeri*, montre tous les caractères essentiels d'un tissue stéroïdogénique, soit un reticulum lisse abondant, la présence de liposomes, de vésicules cytoplasmique très nombreuses et de mitochondries à crêtes tubulaires ou vésiculaires. Ces observations confirment l'idée que ces cellules correspondent au tissu interrénal ou adrénocortical des autres vertébrés.

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UV-induced Increase in Number of Periventricular 'Gomori-positive' Glial Cells in Brains of Mice

The brains of mammals, particularly rodents, contain a class of periventricularly localized glial cells with abundant cytoplasmic granulations showing strong affinity to Gomori's chrome haematoxylin and aldehyde fuchsin after permanganate oxidation[1-6]. The chrome haematoxylin-positive granules of the periventricular 'Gomori-positive' glia were shown to be large cytoplasmic organelles, unusually rich in thiol groups[7]. The number of the periventricular 'Gomori-positive' glial cells significantly increases in the brains of 800 R whole body X-ray irradiated animals[8]. A similar increase was observed after a local 3000 R and 4000 R irradiation of the head region[9].

In the present study, the periventricular 'Gomori-positive' glial cells were counted around the anterior part of the 3rd brain ventricle (Figure 1) in normal mice and those subjected to protracted UV-irradiation; 50 female white mice, 4 months old and weighing 25–30 g, were used. The animals were kept under standard laboratory conditions and fed a typical laboratory chow. The animals were divided into 4 experimental and 1 control group, each consisting of 10 individuals. The animals of the experimental groups were UV-irradiated at a spectral range of 254–405 nm, 68,000 erg/sec/cm^2. The irradiations were performed for 30 min on each consecutive day. Animals of the 1st experimental group were irradiated for 7 days, the 2nd group for 14 days, the 3rd for 21 days, and the 4th for 28 days. The irradiations were performed in a dark thermostat chamber at 10–12 °C.

The animals of the experimental and control groups were killed under ether anaesthesia, always at the same hour of the day. The brains were quickly dissected free, trimmed, fixed in Bouin's fluid, and stained with Gomori's chrome haematoxylin-phloxin in Bargmann's modification.

The 'Gomori-positive' periventricular glial cells were counted around the anterior part of the 3rd brain ventricle (Figure 1) under a 40× objective; 100 identical fields were scanned in each animal. The results were analysed statistically with Student's *t*-test.

The results are presented in the Table and in Figure 2. As can be seen, protracted UV-irradiation caused a

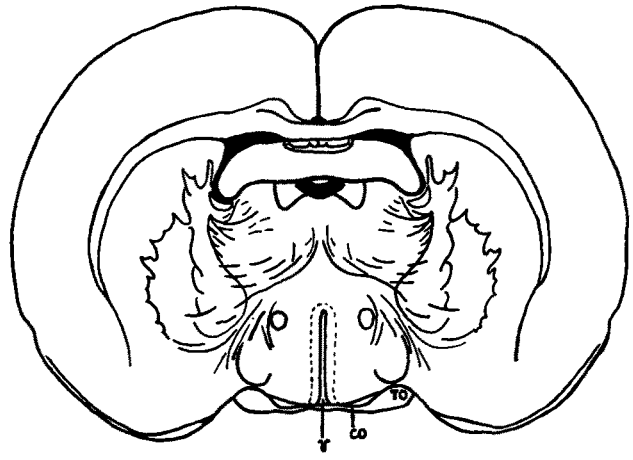

Fig. 1. Transverse section of mouse brain at the level of the optic chiasm. 'Gomori-positive' glial cells were counted in the area circumscribed by the broken line. V, third brain ventricle; CO, optic chiasm; TO, optic tract.

Group	No. of animals	Spectral range (nm)	Energy (erg/sec/cm^2)	Daily dose (min)	Total dose (min)	Mean number of cells	Standard deviation	Standard error	Student's *t*-test
Control	10	–	–	–	–	30.40	0.545	0.175	–
I. 7 days of UV	10	254–405	68,000	30	210	30.96	1.076	0.347	1.36
II. 14 days of UV	10	254–405	68,000	30	420	33.81	2.095	0.675	4.87
III. 21 days of UV	10	254–405	68,000	30	630	36.80	1.710	0.551	10.88
IV. 28 days of UV	10	254–405	68,000	30	840	43.53	6.456	2.082	6.40

marked increase in number of the 'Gomori-positive' periventricular glial cells in animals killed after 14, 21, and 28 days of irradiation. These results are statistically highly significant. Histological examination showed that not only the total number of the 'Gomori-positive' glial cells increased but also the amount of the 'Gomori-positive' granules in individual cells was much greater in the irradiated animals than in the controls (Figures 3 and 4).

The results of this study show that not only ionizing radiation, such as X-rays, causes the appearance of new 'Gomori-positive' granules in the periventricular glia, but a similar phenomenon is also observed after UV-irradiation. This effect of the UV-radiation on the brain is certainly indirect. Most probably diffusible radiotoxins are produced as the result of the irradiation. After entering the blood stream, they reach the central nervous system.

It has recently been suggested that the role of the periventricular 'Gomori-positive' glia is the protection

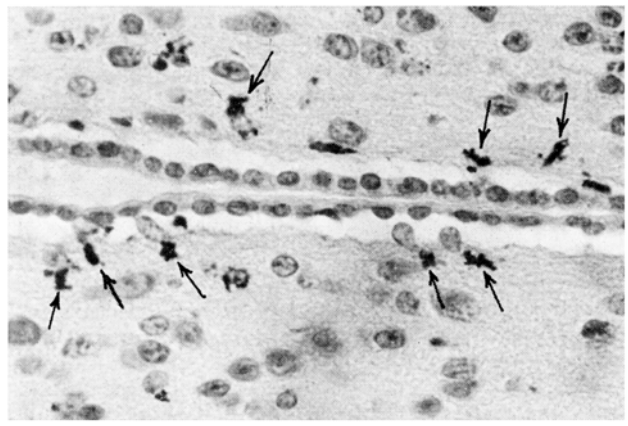

Fig. 4. Same area as in Figure 3. Animal exposed to daily UV-irradiations for 28 days. Note the very numerous periventricular 'Gomori-positive' glial cells (arrows). Chrome haematoxylin-phloxin. ×600.

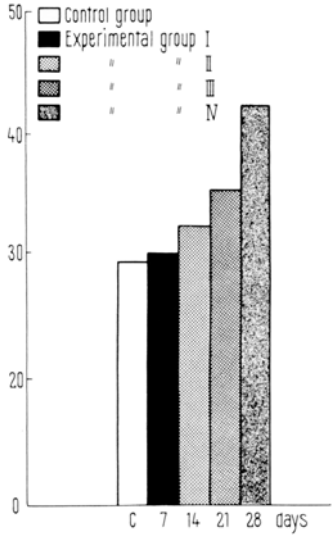

Fig. 2. Mean numbers of 'Gomori-positive' periventricular glial cells in the area indicated in Figure 1 in control and UV-irradiated animals.

of the brain tissue from noxious blood-borne agents, such as stable organic free radicals and organic peroxides[7,8]. According to this hypothesis, the peroxidase of the 'Gomori-positive' granules of the periventricular glia decomposes lipoperoxides and other organic peroxides which arise during normal oxidative metabolism, and as a result of irradiation. A thiol peroxidase decomposing organic peroxide has been found by LITTLE and O'BRIEN[10] in the liver. However, the peroxide character of the 'radiotoxins' which arise as a result of UV-irradiation still remains to be determined.

Zusammenfassung. Im vorderen Teil des 3. Ventrikels wurden periventrikuläre «Gomori-positive» Gliazellen bei normalen und UV-bestrahlten weissen Mäusen gezählt und eine statistisch signifikante Erhöhung der Zellen nach 14, 21 und 28 Tagen täglicher UV-Bestrahlung festgestellt.

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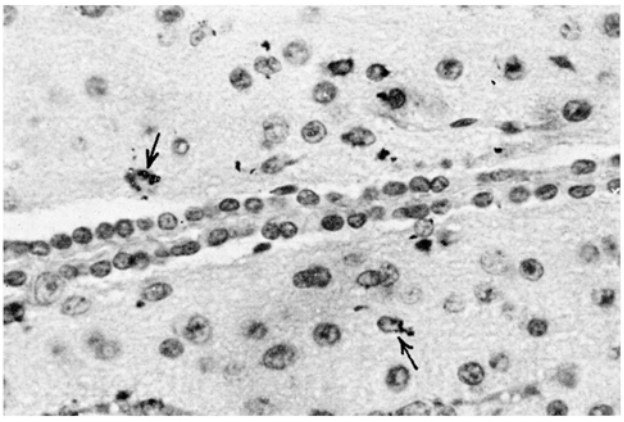

Fig. 3. Periventricular brain tissue in the area as indicated in Figure 1. Occasional 'Gomori-positive' glial cells are observed (arrows). Control animal. Chrome haematoxylin phloxin. ×600.

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