eine achtfach symmetrische Strukturierung des Kernporenannulus beschrieben.

Ein Substanzaustausch zwischen Kern und Cytoplasma durch die Kernporen hindurch konnte in Porenquerschnitten beobachtet werden. Man gewinnt dabei den Eindruck, dass von intranukleären Substanzanhäufungen an der Kernperipherie (Nucleoprotein, Ribosomen, Ribosomenvorstufen, *m*-RNS?) einzelne Stränge von granulär-fibrillärem Material durch die Kernporen ins Cytoplasma übertreten.

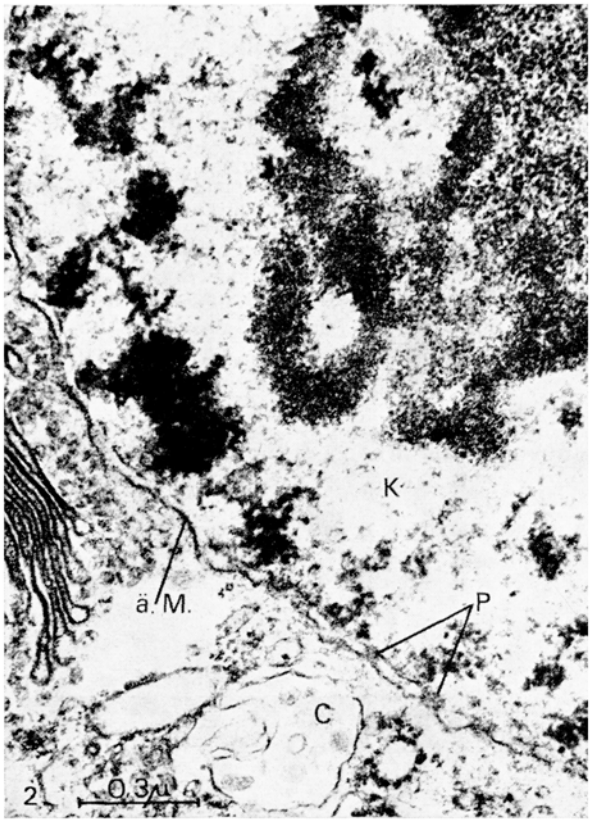

Fig. 2. Zerstörte Kernmembran nach DNAse Behandlung (× 50000). ä.M., äussere Lamelle der Kernmembran, i.M., innere Lamelle der Kernmembran, C, Cytoplasma, K, Kern, P, Kernporen.

Präinkubation ganzer Diatomeenzellen mit DNAse, RNAse oder Pepsin unter geeingeten Bedingungen führt zu den folgenden Strukturveränderungen an der Kernhülle. DNAse vermag die innere Kernmembranlamelle weitgehend abzubauen, während die äussere Lamelle nicht angegriffen wird (Figur 2). Pepsinbehandlung zerstört – je nach Art der Vorfixierung – entweder die gesamte Kernhülle inklusive Poren oder nur die beiden Kernmembranlamellen, während die Porenstrukturen weitgehend erhalten bleiben. RNAse führte zu keiner Veränderung der Kernhülle, in Übereinstimmung[5] und im Gegensatz[7] zu anderen Befunden. Entsprechende Vergleiche und Kontrollen lassen es als sicher erscheinen, dass die beschriebenen Enzymwirkungen spezifisch sind.

Eine ausführlichere Darstellung und Diskussion ist in grösserem Zusammenhang vorgesehen[8].

Summary. The nuclear envelope and nuclear pores of the diatom *Streptotheca thamesis* are described, concerning some ultrastructural and functional features. Treatment with DNAse or pepsine results in a partial breakdown of these organelles.

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Electron Microscopic Observations on the Parathyroid Gland in Experimental Hypoparathyroidism

Ultrastructure of the parathyroid gland has been studied in rats[1,2], toads and frogs[3], deer and men (normal and parathyroid adenoma[4,5]) but we found no similar studies concerning the parathyroids of dogs.

The present paper deals with the fine structural changes of parathyroid glands in control dogs and in dogs with hypoparathyroidism. Iso-immune hypoparathyroidism in dogs was induced in a similar way as used by us for induction of hypoparathyroidism in rats[6]. Thus, following 4 months of repeated inoculations of dogs' parathyroid tissue, emulsified in Freund adjuvant, into the foot pad (intraplantary) and then i.m., we obtained a hypoparathyroid state characterized by a decrease in uptake of ^{45}Ca, increase of ^{32}P; and also biochemical findings showing hypocalcemia, hyperphosphoremia and intense increase of alkalineserum phosphatase.

For light and electron microscopy, the small specimens of parathyroid tissue were prelevated from the control dogs and dogs with induced immunological hypopara-

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thyroidism, fixed in cold Bouin for light microscopy and in Palade's fixative buffered with sucrose at pH 7.4, embedding in Vestopal-W; the ultra-thin sections were cut by LKB-ultrotome, mounted on grids and stained by lead citrate before examination[7], under JEM-5Y.

Examination by light microscope points to a compact, cordonal structure in control dogs, separated by connective tissue and blood capillaries. In hypoparathyroid dogs, we observed an intense atrophy, disorganization of cellular pattern with degenerative cell lesions, fibro-lympho-plasmocytic infiltrations and advanced sclerosis.

Electron microscopy showed in parathyroid of control dogs many oval cells separated by fine intercellular spaces, oval or elongated nuclei, enveloped by a double nuclear membrane; unexpended endoplasmic reticulum as small empty vesicles and 2 kinds of opaque secretory granules – first kind of large, medium dense electron granules, oval and bounded by a single membrane ranging in size from 0.5–0.8 μ; the second is smaller, measuring 100–200 nm, oval and contains a very dense electron substance; mitochondria are elongated with cristae; many free-ribosomes in matrix of cytoplasm. At the basal zone, there are some parathyroid cells and endothelial cells, with evident basement membrane separating them from a capillary lumen and red blood cells.

In the parathyroid gland of dogs with hypoparathyroidism, we noted severe ultrastructural changes, which consist of atrophy of endoplasmic reticulum, reduction of number and size of secretory granules. Nuclei are elongated enveloped by a very irregular outline of nuclear membrane, giving a cog-like pattern. Mitochondria are swollen and vacuolated with disrupted cristae and irregular outline. Rarely, we saw at the basal zone some electron medium dense granules, their lumen being half empty and moving towards the periendothelial space. Frequently, we noted large zones of sclerosis formed by many fibrocytes and connective fibres with typical periodicity and encircling the dislocated epithelial cells.

From this study it appears that, in experimental hypoparathyroidism in dogs, the ultrastructural and structural pattern is very damaged. Thus, in most specimens the atrophy of endoplasmic reticulum, tumefaction and vacuolation of mitochondria, reduction of number and size of secretory granules, are the prominent ultrastructural and structural features. All these fine structural changes may explain the decrease in the parathormone (PTH) secretion rate, and consecutively the upset in phosphocalcium metabolism.

However, it is difficult at present to conclude about the mode of secretion and release of PTH, and thus whether PTH can be identified by electron microscopy; it is possible, as in other endocrine glands (thyroid, adrenalcortex), that these granules represent the first step of synthesis of PTH, or represent some form of stored intracellular product; the increase of these granules in the vicinity of Golgi zone in hyperactive parathyroids suggest this. Some authors suggest that first type of granules with medium electron density represent the first step in synthesis of PTH[8], so-called prosecretory granules and the dense granules, the final stage, of storage of PTH, being secretory granules[2]. Both kinds of granules are very much decreased in hypoparathyroid dogs.

These findings may represent a new contribution to the experimental cytophysiology of the parathyroid gland.

Résumé. Les modifications ultrastructurales de la glande parathyroïde sont étudiées ici chez les chiens témoins et les chiens avec hypoparathyroïdisme produit par isoimmunisation. On observe une réduction du reticulum endoplasmique des granules sécrétoires ainsi qu'une tuméfaction et vacuolisation des mitochondries; les noyaux ont un aspect dentelé chez les chiens hypoparathyroïdiens. Ces données peuvent apporter une contribution à l'étude de la cytophysiologie de la glande parathyroïde.

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Interaction of Graft-versus-Host Reaction and Lymphocytic Choriomeningitis Infection in Mice

Characteristic features of graft-versus-host (GVH) disease are lymphoid hypoplasia and impaired immunological reactivity with a low level of circulating antibodies and immunoglobulins[1–7]. In such animals, susceptibility to infections and toxic substances seems to be increased. Even the 'runting' or 'wasting', developing in the course of GVH reaction, is supposed to be the result of toxic influences and/or infection[6–8]. It is also known that some viruses, especially in immunologically incompetent animals, can lead to a state of runting[9,10]. On the other hand, it was shown that occurrence of fatal meningitis in mice infected intracerebrally with an appropriate dose of the virus of lymphocytic choriomeningitis (LCM) can be greatly reduced by thymectomy or by other treatment resulting in lymphoid depletion and immunosuppression[11–16]. Further, there exists some parallelism between thymectomy and the GVH reaction[17–19]. On the basis of the above data, a study of the interaction of GVH reaction and LCM infection seemed to be of interest.

GVH reaction was produced in 6- to 8-week-old ($C_{57}Bl \times CBA$) F_1 hybrid mice of both sexes. The animals were injected i.v. with 50×10^6 spleen cells from adult $C_{57}Bl$ donors, matched according to sex. Controls received ($C_{57}Bl \times CBA$) F_1 hybrid cells, using the same technical procedure. The pre-titrated 300 LD_{50} dose of LCM virus was inoculated intracerebrally on the 7th day following spleen cell transfer. The weight, mortality rate, signs of runting, and neurological symptoms respectively were regularly recorded. In mice not infected with LCM virus, absolute lymphocyte counts were done at intervals.