Somatic chromosome number in the mitotic plates of *Rana tigrina*

Chromosome number	23	24	25	26	26 + s	27	28	29	Total number of cells
Number of cells	5	6	5	35	10	7	1	1	70

While a large number of aneuploid configurations were observed, regular polyploids e.g. triploids, tetraploids etc., have not been encountered so far. The falacy of earlier speculations that the sub-diploid number at mitotic level may be attributed to faulty techniques of squashing[2,5] etc. has been borne out by the present application of the most advanced technique. As such in all probability, the variation is real and might have originated owing to repeated non-disjunction involving varying numbers of chromosomes at the mitotic level resulting in aneuploidy. The variability, however, can be expressed as $2n - 3$, $2n - 2$, $2n - 1$, $2n$, $2n$ + s, $2n + 1$, $2n + 2$ and $2n + 3$.

To sum sup, there does not seem to be an absolute constancy of karyotype for the species under present investigation, in as much as occasional deviations from the standard diploid chromosome complement are not very uncommon. Such variation seemingly provides raw material for the evolution of karyotype, and the repeated non-disjunction followed by random anaphase movement of the chromosomes may lead to the formation of different cell lineages, which may ultimately lead to the establishment of different karyotypes within a family.

The investigations are still in progress and analysis of complete data from somatic and germ cells of male and female frogs will be published elsewhere.

Zusammenfassung. Es wurde Aneuploidie bis zu drei Chromosomen in den männlichen Körperzellen von *Rana tigrina* (Ranidae: Anura: Amphibia) beobachtet. Die Variationen betreffen: $2n - 3$, $2n - 2$, $2n - 1$, $2n$, $2n + 1$, $2n + 2$ und $2n + 3$.

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Nuclear Bodies in Endothelial Cells of Human Glomeruli

Nuclear bodies have been observed in cells from a variety of normal and abnormal tissues and species[1-3], and classifications into different morphological types have been proposed[3,4]. Their significance is still obscure, although some factors affecting their incidence have been detected[4]. In the course of an ultrastructural study of the renal tissue from a patient suffering from Alport's syndrome, nuclear bodies were frequently observed in the endothelial cells of glomerular capillaries.

Material and methods. Renal tissue was obtained by transcutaneous needle biopsy from a patient in which Alport's syndrome had been diagnosed. Small fragments of the bioptic material were immediately fixed in 1% buffered osmium tetroxide, dehydrated in alcohol and embedded in Epon. Thin sections were cut on a LKB Ultrotome, stained with lead hydroxide and observed in a Philips EM 300 electron microscope.

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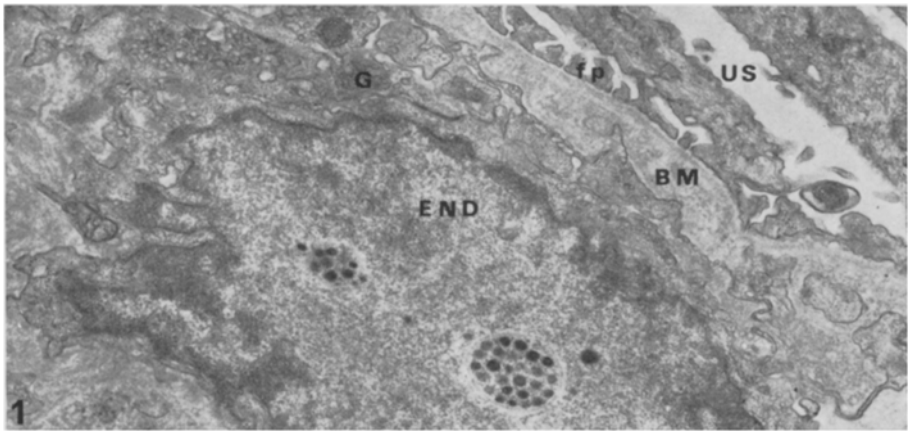


Fig. 1. The nucleus of an endothelial cell (END) contains 2 nuclear bodies. BM, glomerular basement membrane; fp, foot processes; US, urinary space; G, Golgi apparatus. ×16,000.

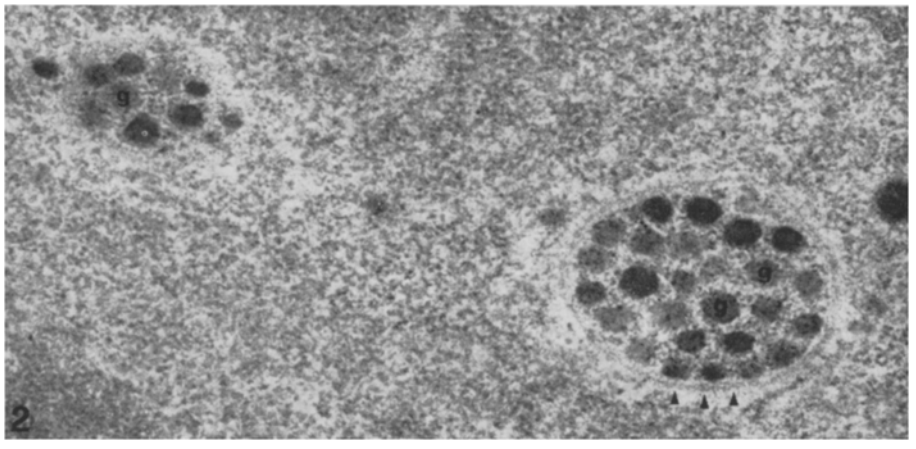
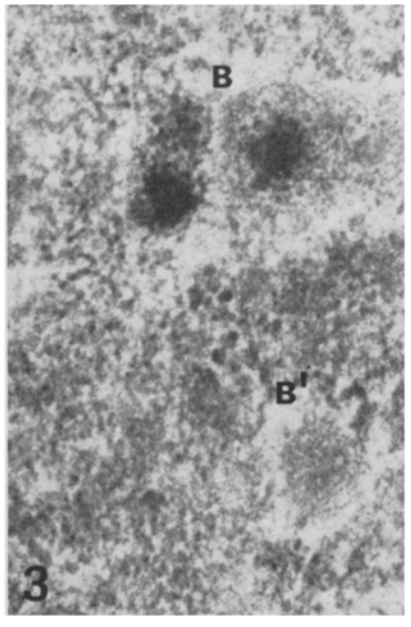
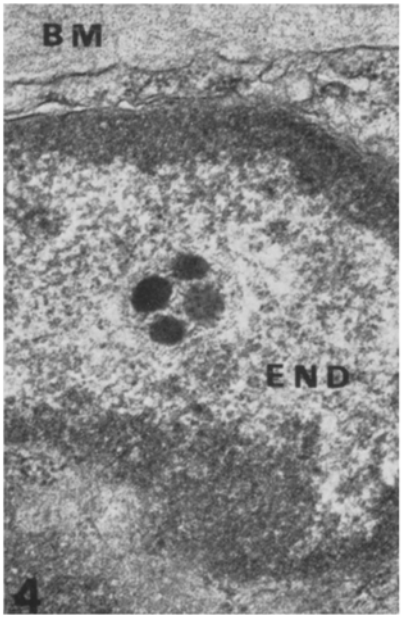


Fig. 2. At higher magnification, the nuclear body visible on the right appears composed of a cluster of granules (g) of different electron density immersed in a finely granular matrix, similar to the surrounding nuclear matter. The nuclear body is surrounded by a halo of low electron density containing a filamentous annular structure (arrows). The nuclear body visible in the upper left of the photograph contains fewer granules and no annular structure is visible around. ×45,000.





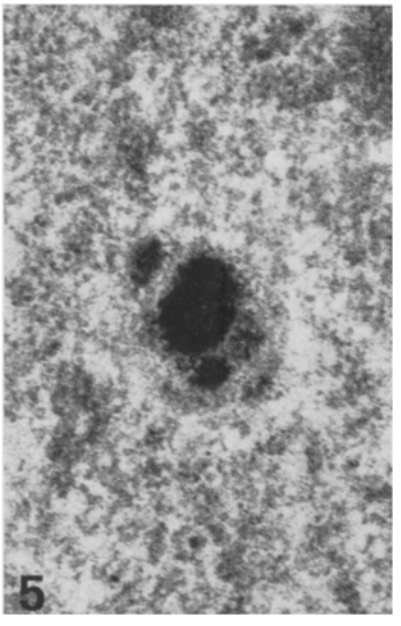


Fig. 3. Two bodies are present in the nucleus of an endothelial cell. The upper one (B) is composed of an electron-dense irregularly round core surrounded by a zone of fluffy material. The structure visible in the lower part of the picture (B′) seems to consist of fluffy material only, the electron-dense core being perhaps outside the plane of section. ×54,000.

Fig. 4. An endothelial cell nucleus (END) contains a large body composed of 4 electron-dense granules enclosed by an ill-defined annular structure. BM, glomerular basement membrane. ×22,500.

Fig. 5. The nucleus of an endothelial cell contains a body composed of electron-dense granules of different size surrounded by a less electron-dense area which in some parts appears finely granular. ×54,000.

Results. Nuclear bodies of different morphology were present in about 10% of endothelial cells of glomerular capillaries. The most numerous ones appeared as grossly oval clusters of granules of different electron density, largely varying in number, from 85 to 120 nm in diameter, immersed in a finely granular matter similar to the surrounding nuclear material (Figures 1 and 2). In many instances, the clusters were surrounded by a halo of low electrondensity in which a filamentous annular structure was visible. The two diameters of the larger nuclear bodies averaged 1 μm and 8 μm respectively. Other nuclear bodies (Figures 3 and 5) resembled type I bodies of the classification of BOUTEILLE et al.[4].

Discussion. The significance of nuclear bodies remains obscure. It has been stated that they are observed mainly in pathological conditions[3], but other authors suggest that they may be observed principally in growing and rapidly multiplying cells[4]. The nuclear bodies most frequently observed by us do not seem to correspond exactly to any of those previously described. Others, seldom encountered, have some resemblance with type I bodies of previous classifications[4]. The lack of previous reports of the presence of nuclear bodies in normal and pathological human renal cells seems to suggest that they are rare in this tissue and might induce one to speculate that their frequent observation in a case of Alport's syndrome is somehow correlated to the peculiar metabolic and genetic alterations present in this disease[5,6]. Further

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observations of other cases of this disease will probably provide a better understanding of the significance of nucelar bodies in this pathological condition.

Riassunto. Nel corso dello studio ultrastrutturale di una biopsia renale di un paziente con sindrome di Alport sono stati frequentemente osservati corpi nucleolari nelle cellule endoteliali glomerulari. Gli autori descrivono tale reperto e ne discutono il possibile significato.

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Electron Microscopy of the Pulmonary Alveolar Cells (Granular Pneumocytes) of Normal and Vagotomized Amphibian (*Bufo icterus icterus*)

The relationship between mammalian foetal lung surfactant production and the lamellar osmiophilic inclusions in granular pneumocytes (pneumocytes, epycites, niche cells, wall cells, septal cells, type II alveolar cells) has been extensively studied[1-4].

MILLER and BONDURANT[5] have compared the surface-active properties of lung extracts prepared from amphibians, reptiles, birds and mammals, and conclude that a distinctive surface-active material is limited only to mammalian lungs. Similar conclusions were made by CLEMENTS[6], who found no surface-active agents in the lung of the frog. Although non-mammalian lung extracts do not have surface tension-lowering activity, significant amounts of palmitoyl and lecithin can be found in these preparations[7]. The so-called osmiophilic inclusions, related to surfactant production in mammals, are present

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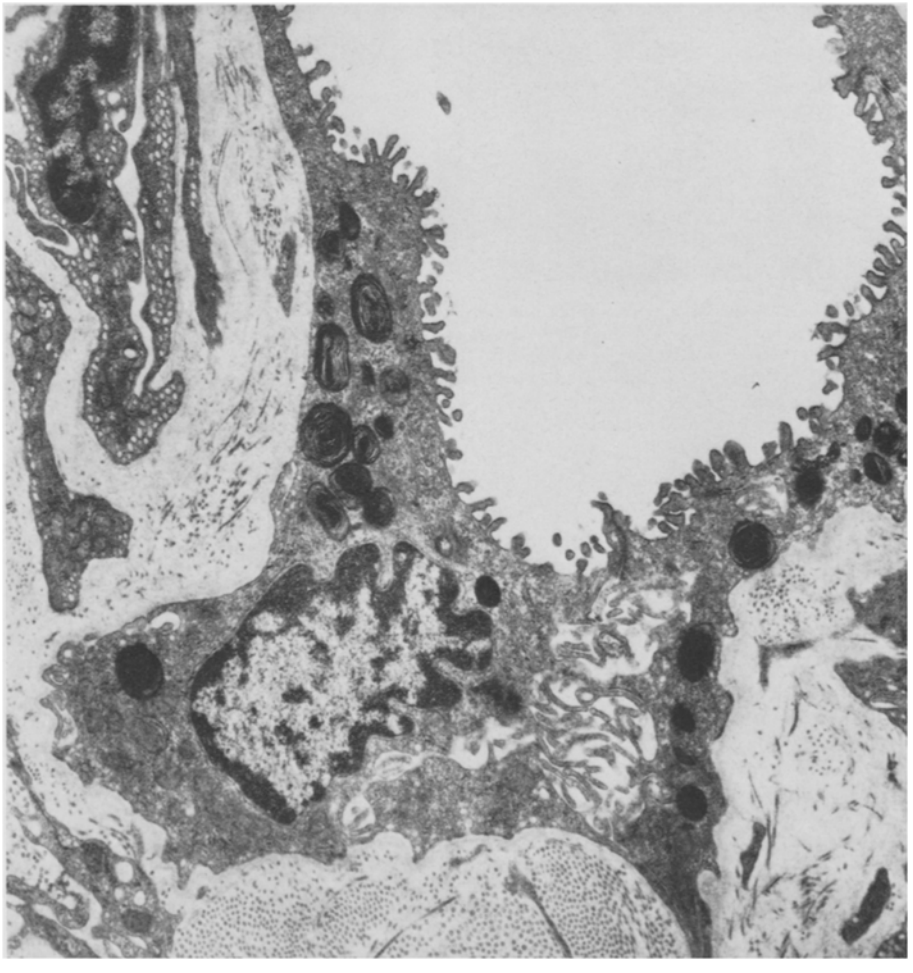

Fig. 1. Electron micrograph of the toad lung showing one type of alveolar cell (granular pneumocyte) with large and clear nucleus, abundant lamellar osmiophilic inclusions and microvilli protruding into the alveolar air space ×10,300.