In controlled experiments with sheep and cattle artificially infected with larvae of lung nematodes of the genus *Dictyocaulus*, a single oral dose of 5 mg/kg eliminated 84–100% of the worms. In sheep naturally infected with tapeworms of the genus *Moniezia*, a single oral dose at 10 mg/kg reduced the worm burden by 100%.

Albendazole was administered orally at 10 mg/kg to sheep artificially infected with metacercariae of *Fasciola hepatica* after the infection was determined to be patent. The activity was excellent, with 99% of the flukes being eliminated.

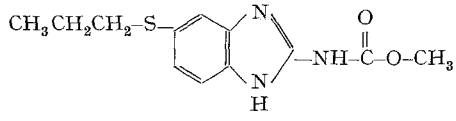
Preliminary experiments also indicate that comparable low doses are effective against *Ascaris*, *Oesophagostomum* and *Trichuris* in pigs; small and large strongylid worms, *Oxyuris*, *Parascaris* and *Probstmayria* in horses; *Ascaridia* and *Heterakis* in chickens.

Mice were infected orally with 50,000 embryonated ova of *Ascaris suum* per day for 2 days. Albendazole fed prophylatically for 11 days at 0.05% of the diet protected the mice against the lethal effects of the migrating larvae.

In a preliminary experiment in dogs, a single oral dose of 250 mg/kg was extremely active against *Toxocara canis* but was only slightly active against *Ancylostoma caninum*. However, administration at 50 mg/kg for 3 days was fully effective against these worms.

The oral LD_{50} in rats of albendazole was determined to be 2.40 g/kg with 95% confidence limits of 1.55 to 3.25 g/kg. No untoward effects were observed in sheep dosed orally with up to 100 mg/kg. However, a single dose of 500 mg/kg was not tolerated. Further studies, delineating the toxic and teratogenic potential of the compound are underway.

This is the first reported anthelmintic which promises to have useful activity against all the types of helminth parasites menacing our domestic animals. Extensive investigations are now under way around the world to fully evaluate its safety and field efficacy.



Methyl [5-(propylthio)-1H-benzimidazol-2-yl]carbamate.

Chromatin Subunits Visualized in Common Ultrathin Sections of *Helianthus* Nuclei

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Summary. Nuclei of etiolated hypocotyl cells of the sunflower (*Helianthus annuus* L.) display chromatin subunits of 110 Å diameter in untreated ultrathin sections, because of spontaneous and extensive chromatin decondensation.

Eukaryotic chromatin is organized in the form of a repeating subunit structure: Histone octamers[2–4] are associated with some 200 base pairs of DNA forming the socalled *ν*-bodies[5] or nucleosomes[6]; the single subunits are connected by DNA segments free of histones. Thus, the appearance of beads on a string arizes, when chromatin is prepared in appropriate manner[7–12]. Although nucleosomes have been demonstrated by various biophysical, biochemical and electron microscopic techniques to occur in all eukaryotic organisms, such as fungi, plants and animals[7–16], they were not yet shown in ultrathin sections prepared for common transmission electron microscopy.

Material and methods. Seeds of *Helianthus annuus* L. var. Russian Mammoth were germinated in the dark. Parenchyma cells of the hypocotyl cortex were fixed in glutaraldehyde (1%, pH 7.3) for 2 h, post-fixed with osmium tetroxide (1%) for 1 h, and block-stained with uranyl-acetate during dehydration[17]. Embedding was made according to SPURR[18]. Ultrathin sections were made with a Reichert OmU_3 ultramicrotome and micrographed with a Zeiss EM 10 electron microscope at 60 kV.

Results. The nuclei of etiolated hypocotyl cells of the sunflower are characterized by an extensive chromatin decondensation. This decondensation probably substitutes somewhat the pretreatment of chromating with 10% formalin, that was used to reveal nucleosomes, e.g. in whole mount metaphase chromosomes[12]. As a result, a clear subunit structure is visible in ultrathin section without any pretreatment (Figure). The unravelling of the chromatin fibres is, however, not sufficient to give rise to the appearance of beads on a string, i.e. to reveal the histone-free DNA segments between the nucleosomes. Some portions of the chromatin, probably chromomeres and heterochromatin, display a denser packaging of the subunits than does the gross of the nucleus. The diameter of the single particle is, on an average, 110 Å.

[1] Acknowledgment. I thank Mrs. S. KÜHNER for careful technical assistance.

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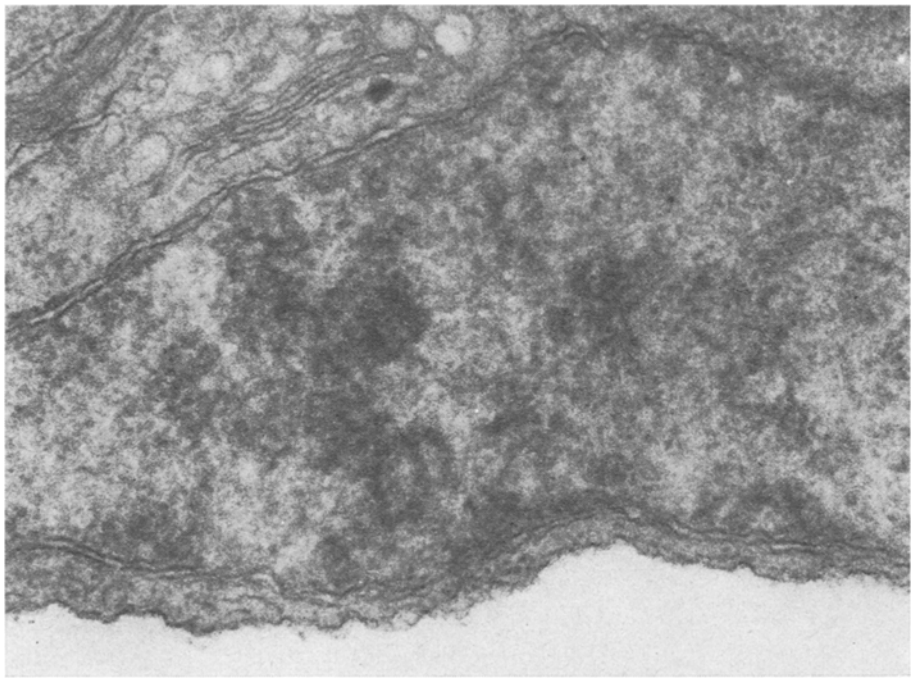

Ultrathin section of a hypocotyl cell nucleus of *Helianthus annuus*. Note the subunit structure throughout the chromatin. Glutaraldehyde, OsO_4, uranylacetate, Epon. × 60,000.

Discussion. The demonstration of chromatin particles in untreated nuclei of the sunflower gives direct evidence for the subunit organization of chromatin, which was so far postulated from results obtained by indirect methods and shown in electron micrographs of specifically pretreated cells. The diameter of the subunit was found to be about 110 Å in *Helianthus*. The statements on the size of nucleosomes given in the literature are variable, such as 69 Å[10], 70–90 Å[12], 125 Å[6], and 135 × 50 Å[11]. Since it is well established that the single subunit is composed of each 2 molecules of the histones of type f2a1, f2a2, f2b, and f3[2–4], the different diameters reported may be rather the consequence of different techniques employed for their demonstration than the expression of species-specific variation.

Hybridization in the Mexican and 13-Lined Ground Squirrels, *Spermophilus mexicanus* and *Spermophilus tridecemlineatus*

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Summary. Evidence of hybridization between the ground squirrels, *Spermophilus tridecemlineatus* and *S. mexicanus* is presented on the basis of chromosomal and protein data. The hybrids produced appear to be completely interfertile. Based on the evidence of hybridization and the recent reestablishment of contact between these two species, they are considered to be semispecies.

The nearctic ground squirrels of the genus *Spermophilus* are comprised of 6 subgenera or groups of species of close taxonomic affinity[2]. The subgenus *Ictidomys* includes 4 species of striped or spotted ground squirrels, and 2 species *S. mexicanus* and *S. tridecemlineatus* are widespread, occurring in grassy habitats from central Canada and the United States to the eastern Rocky Mountains (*S. tridecemlineatus*) and southwestern United States and northern Mexico (*S. mexicanus*)[3,4]. Recently, NADLER and HUGHES[5] correlated chromosomal characters of the two species, and determined that karyotypic evidence substantiates the close phylogenetic relationship between the two species.

This report provides evidence of natural hybridization between *S. mexicanus* and *S. tridecemlineatus* based on karyological and allozymic variation. Additionally interpretation of the available data provides a basis for determining the level of speciation attained by these two taxa.

Materials and methods. Ground squirrels ($N = 160$) were examined from 18 natural populations as follows: *Spermophilus tridecemlineatus*. Indiana: Terre Haute, Vigo Co., 12; Texas: Denton, Denton Co., 18; Lewisville, Denton Co., 7; Wichita Falls, Wichita Co., 17; Paris,

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