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different organs for the sexes. For the male hamsters the amyloidosis in all organs was related to social stress, whereas in the female hamsters this was only true for the spleen and kidneys. The analysis of variance for age dependency of these lesions showed no correlation between age and amyloidosis (data not shown).

Discussion

This study indicates an influence of social stress patterns on the development of amyloidosis in the SGH. Several authors have presented data with large differences in incidence and extent of amyloidosis (1, 5, 6, 7, 8). This can probably be explained in part by the number of animals housed per cage. Page and Glenner (2) discussed a predisposing influence of chronic inflammation on amyloidosis. This inflammation could result from wounding due to social fights. They excluded crowding of the animals as a directly influential factor. In contrast, our data which are in agreement with the data of Cowan and Johnson (3), suggest a more direct influence of crowding on amyloidosis. The authors did not recognize extensive wounding due to social fights. In our experiment such animals were excluded from statistical data evaluation. Furthermore, we could not establish a correlation between 'chronic inflammation' in various organs (whole organ spectrum examined) and amyloidosis. In contrast to other studies (1, 6) the results presented here also showed no clear age-dependence of amyloidosis, neither in the individually housed animals nor in the other groups.

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CONTRIBUTION TO THE HISTOGENESIS OF GRANULAR CELL TUMOURS

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Granular cell tumours (GCT) are rare tumours in humans and some domestic animal species. They are usually benign, rarely malignant. Most canine GCT occur within the tongue, whereas the equine cases have been described in the lung. They consist of round to spindle shaped cells, which contain diastase-resistant eosinophilic granules in their cytoplasm. The histogenesis is not established with certainty. In humans, current evidence suggests a neural source, which is assumed for animals as well. One author reported basal cell tumours in three dogs showing locally features of GCT. In this study we report four tumours classified as GCT because of their PAS-positive eosinophilic granules, which were demonstrated additionally by electronmicroscope. The tumours were investigated immunohistochemically with antibodies against keratin, desmin, vimentin, GFAP and S-100. The results are summarized in the following table:

	GCT 1	GCT 2	GCT 3	GCT 4
Species:	horse	dog	dog	dog
Localization	lung	tongue	tongue	lip
Antibodies:				
Keratin:	–	–	–	+
Vimentin:	–	+	+	–
Desmin:	+/–	–	–	–
S-100:	+	–	–	–
GFAP:	–	–	–	–

+: most of the tumour cells with positive reaction
–: no reaction of the tumour cells with the antibody
+/–: reaction of few tumour cells with the antibody

The GCT examined immunohistochemically reacted differently: GCT 1 showed positive reaction against S-100 only. In humans GCT are frequently stained by S-100. This, and the fact that human GCT contain most often neuron-specific enolase and myelin basic protein led to the conclusion, that GCT are of neural origin and probably derive from Schwann cells. This might be true for our GCT 1. Both canine tumours of the tongue (GCT 2, GCT 3) only contained vimentin. This supports a histogenesis of both tumours from a nonmuscular mesenchymal cell. GCT 4 only reacted with the keratin antibody. This fact, its histomorphologic appearance, and its localization in the lip favoured a histogenesis from epidermal basal cells, which has been discussed in humans and dogs by other authors.
As far as conclusions can be drawn from the small number of cases, the findings suggest that the histogenesis of GCT in domestic animals is not uniform. The hypothesis is supported that GCT show similar appearance despite different histogenesis, possibly because of an unknown metabolic defect of the tumour cells.