spaniels (CKCS) with CM and SM have smaller and more ventrally orientated OB with rostral forebrain flattening. We compared OB size, angulation between the OB and the hard palate and two measurements that represent flattening of the rostral forebrain from 5 phenotypic groups.

METHODS
Medical records from a 2 year period were searched for CKCS that had brain magnetic resonance imaging (MRI) and neurological assessment. The cohort was divided as follows: SM with phantom scratching (15 dogs); clinical SM (e.g. pain) but no phantom scratching (17 dogs); behavioural signs of pain with CM but no SM (25 dogs); CKCS with no SM and no behavioural signs of pain or scratching (13 dogs). In addition medical records were searched for dogs in the 5-15kg weight range with normal brain MRI (19 dogs including 5 brachycephalic). The MRI studies were anonymised, randomised and viewed in EFILM™. 5 measurements were taken from the T2W mid-sagittal brain MRI: the OB length and height (product represented OB size), angulation between the dorsal OB and the frontal lobe (bottom angle), angulation between the frontal and parietal lobes (top angle) and angulation between the OB and hard palate (OB angle).

RESULTS
There was a trend for decreasing mean OB size with increasing CMSM phenotype severity (SM-scratchers < SM non-scratchers < CM-pain < CKCS-control < other breed control). However post hoc analysis, Bonferroni, indicated that only “other-breed-control” was significantly different from the CMSM groups but was not significantly different from “CKCS control”. ANOVA analysis for OB, bottom and top angle did not reveal a statistically significant difference between the groups however for OB angle there was an apparent separation between the control and CMSM groups suggesting a trend towards more ventrally orientated OB with increasing CMSM phenotype severity.

CONCLUSION
This study suggests that CM should be considered a more global brain and skull conformational disorder with features of extreme brachycephaly including smaller more ventrally orientated OB however further work is required and the measurement technique has been refined for future studies. We recommend that future studies into MRI conformation of CM and SM uses rigorous phenotyping based on clinical signs and age.

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The impact of hypoxia on T regulatory cells in canine cancer and inflammation

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The presence of hypoxia and regulatory T cells (Tregs) in cancer has been associated with a poorer prognosis through treatment resistance and increased malignancy in some tumours. However, the precise relationship between Tregs and hypoxia in canine tumours has still to be explored. The aim of this study was use immunohistochemistry to detect expression of glucose transport-1 (GLUT1) and FoxP3 as respective markers for hypoxia and T regulatory cells, in benign and malignant tumours of different histotypes. Lymph node (LN) samples categorised as tumour-draining, metastatic or reactive due to inflammation were also examined. Both regulatory T cell and GLUT1 expression varied between tumour histotypes and LN types. There was an increased prevalence of FoxP3+ cells with increased GLUT1 labelling in all tumour and LN types, but metastatic LN results were confounded by strong GLUT1 labelling of some metastatic cells. This result suggests a possible link between hypoxia and Tregs in cancer and inflammation. Further research using additional markers for hypoxia and Tregs and a greater number of samples is warranted to explore potential novel therapeutic targets in the future.

Pilot study investigating the association between road traffic accidents and Toxoplasma gondii seroprevalence in cats

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STUDY AIM
It has been demonstrated that the parasite Toxoplasma gondii is able to alter the behaviour of rodents to show reduced...
Oral presentations

cat aversion and therefore increase the likelihood of transmission from intermediate to definitive host. Similar behaviour changes have also been demonstrated within the human population, with changes in personality profiles and reaction times in infected individuals. Latent toxoplasmosis in the domestic cat is, however, generally considered to be asymptomatic, with clinical signs, including neurological, only rarely reported.

With the most frequent cause of domestic feline mortality in the UK being attributed to trauma (12.2%) and with 60% of those involving road traffic accidents, this study aimed to investigate a possible link between *Toxoplasma gondii* infection in cats and an increased risk of involvement in traumatic accidents; specifically, road traffic accidents. The hypothesis being that cats that have been involved in a road traffic incident will be more likely to be seropositive for *T. gondii* antibodies, when compared to a control population of cats, which have not been associated with such trauma.

**METHODS**

Residual blood samples were collected into plain brown serum gel tubes from two groups of felines: one group of which had been involved in a road accident (N=13) and the other being geographically matched controls (N=10). *Toxoplasma gondii* IgM and IgG antibody titres were detected using indirect immunofluorescence (IIFT). These groups were compared using the non-parametric Fisher’s exact test.

A *T. gondii* UK seroprevalence in domestic cats ‘heat map’ was also generated from data (N=1344) obtained from UK commercial laboratories.

**RESULTS**

There were no significant differences observed between these two groups in relation to seropositivity status (**p**=1.0). The prevalence ‘heat map’ indicated that seroprevalence may vary within the UK, confirming the need for geographically matched controls.

**CONCLUSION**

The study did not find a significant association between *T. gondii* infection and road accidents in cats. This study’s major weakness to date was the low sample number, which made obtaining a significant, reliable answer to the stated hypothesis difficult. The study is ongoing and continues to collect samples in the hope that in the near future the study can be repeated with a larger cohort; therefore, this can be seen as an intermediate result.

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Urine as a potential source of biomarkers of canine spinal cord injury: challenges of biomarker discovery

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Urine is a source of potential biomarkers for various diseases but there is currently no consensus on how canine urine should be processed for proteomic analysis. This study investigated the effect of boric acid and centrifugation on urinary proteins. These steps are commonly recommended for urinary proteomic analysis, since boric acid inhibits bacterial growth in stored urine, while centrifugation helps to minimize cellular contamination of urine. The method employed to assay protein content is another consideration since agents present in urine may interfere with the reaction and generate erroneous values. This study therefore also compared the use of the bicinchoninic acid (BCA) assay and the Bradford assay to quantify urinary proteins. Random spot urine samples were collected from a control group (consisting of clinically healthy dogs and dogs with a variety of non-neurological conditions), and a group of dogs with spinal cord injury (SCI). On visual inspection, the intensities of protein bands visible on Coomassie blue- stained acrylamide gels were unaffected by centrifugation in the majority of samples analysed. However, samples positive for blood contamination (detected on dipstick) displayed a few unique bands and these bands were markedly reduced in intensity following centrifugation. Boric acid had no significant effect on the overall protein profile however in 8 out of 24 samples, a protein band visible between 50-75kDa decreased in intensity. The BCA and Bradford assays were used to calculate the volume required to give equal amounts of protein across all samples that were loaded onto the gel. Comparison of control and SCI samples showed that a number of SCI samples had a higher protein content compared to control samples on the gel based on the BCA assay values but displayed a comparable profile on the gel using the Bradford assay values. In conclusion, boric acid and centrifugation can influence the level of specific proteins. Centrifugation is recommended for blood-contaminated samples in order to obtain an accurate assessment of the urinary proteome. The BCA and Bradford protein assays provide largely comparable results, however the BCA assay might be more susceptible to interfering substances in urine. Optimising the protocols for sample preparation and protein measurements are essential for validation of potential urinary biomarkers of disease.