CURRICULUM VITAE
PANAGIOTIS G. XENOULIS
DVM, Dr.med.vet., PhD

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CARRER – EDUCATION – TRAINING – HONORS

1996 – 2003	Veterinary Student, Aristoteles University of Thessaloniki, Greece
2003 - 2004	Private practitioner, Athens, Greece
10/2004	Visiting Veterinarian, College of Veterinary Medicine, Cornell University, Ithaca, New York, USA
11/2011	Visiting Veterinarian, College of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA
12/2004	Visiting Veterinarian, College of Veterinary Medicine, Virginia Tech, Blacksburg, Virginia, USA
2004 - 2008	Research Assistant, Gastrointestinal Laboratory, Department of Small Animal Clinical Sciences, Texas A&M University, College Station, TX
2008 – 2011	Graduate Research Assistant, Gastrointestinal Laboratory, Department of Small Animal Clinical Sciences, Texas A&M University, College Station, TX
2011 – 2016	Private practitioner, Animal Medical Center of Athens, Athens
2013 – 2016	University Scholar, Clinic of Medicine, Faculty of Veterinary Science, University of Thessaly, Karditsa, Greece
2016 – present	Consulting Veterinarian, Animal Medical Center of Athens, Athens, Greece
2016 – present	Assistant Professor, Clinic of Medicine, Faculty of Veterinary Science, University of Thessaly, Karditsa, Greece
2017 – present	Adjunct Assistant Professor of Internal Medicine, Department of Small Animal Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, Texas, USA
2019 – present	Tenured Assistant Professor, Clinic of Medicine, Faculty of Veterinary Science, University of Thessaly, Karditsa, Greece

DEGREES

- Graduate of the Faculty of Veterinary Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece (2003).
- Doctorate in Veterinary Medicine (Dr.med.vet.), Faculty of Veterinary Medicine, Ludwig-Maximilians University, Munich, Germany (2008).
- Doctor of Philosophy, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, Texas, USA (2011).

AWARDS AND HONORS

2003	I graduated 5th among the students of my class and 1st among the students of Small Animal arm of my School
2007	Competitive Travel Grant Award (Digestive Disease Week, May 2007, Washington, DC), Comparative Gastroenterology Society
2008	Marquis *Who's Who in America*
2008	Distinguished Greek Researcher living abroad (Government of Greece)
2009	Madison Who's Who for exemplary achievement and distinguished contributions
2009	College Level Outstanding Graduate (PhD) Student Award, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University
2010	The Veterinary Journal Review Prize for the best review article published in 2010 (Article: Lipid metabolism and hyperlipidemia in dogs)
2011	University Level Distinguished Graduate Student Award for Excellence in Doctoral Research, Texas A&M University
2012 – present	Member of the Advisory Board of The Veterinary Journal

TEACHING AND OTHER RESPONSIBILITIES AT THE UNIVERSITY OF THESSALY

Clinical responsibilities

- Clinical training of 3rd, 4th and 5th year students at the Clinic of Medicine (companion animals) on cases that visit the Teaching Hospital (15 hours/week – 8 months per year)
- Clinical training of interns and PhD students at the Clinic of Medicine (companion animals) on cases that visit the Teaching Hospital (15 hours/week – 11 months per year)
- Clinician in charge of Internal Medicine cases at the Clinic of Medicine (companion animals) on cases that visit the Teaching Hospital (15 hours/week – 11 months per year)

Teaching responsibilities (Courses)

- **Companion Animal Medicine II (6th Semester):** 2019-present – Companion Animal Cardiology (9 hours per Semester)
- **Companion Animal Medicine III (7th Semester):** 2019-present – Companion Animal Gastroenterology (16 hours per Semester)
- **Veterinary Ethics (3rd Semester):** 2018-present (4 hours per Semester)
- **Medicine III (8th Semester):** 2013-2019 – Small Animal Gastroenterology (24 hours per Semester)
- **Medicine IV (9th Semester):** 2016-2019 – Small Animal Cardiology (9 hours per Semester)

- **Animal Husbandry I (1st/3rd Semester):** 2016-2017 – Breeds of dogs and cats (4 hours per Semester)

RESEARCH MENTORSHIPS

PhD degree, Chair

2017 – present	Evangelia Stavroulaki, University of Thessaly, Greece
2019 – present	Dimitra Karra, University of Thessaly, Greece

PhD degree, Committee member

2016 – present	Punyamanee Yamkate, Texas A&M University, USA
2017 – present	Nicole Tate, University of Minnesota, USA
2019 – present	Evangelia Sofou, University of Thessaly, Greece

INTERN SUPERVISION

2016 – 2017	Evangelia Stavroulaki
2017 – 2017	Mikela Vlachou
2017 – 2018	Maria Cheliki
2018 – 2019	Dimitra Karra
2018 – 2019	Viktoria Spanou
2019 – present	Sofia Nanou

PUBLICATIONS

Theses

1) Investigations into idiopathic hypertriglyceridemia in Miniature Schnauzers in North America. Ludwig-Maximilians University, Munich, Germany. (Dr.med.vet.) (July 2008)

Idiopathic hypertriglyceridemia has been reported in Miniature Schnauzers. However, studies investigating the prevalence of this disorder in a large population of Miniature Schnauzers are lacking. 192 healthy Miniature Schnauzers and 38 healthy dogs of other breeds (control dogs) were enrolled in this study. Serum triglyceride and cholesterol concentrations were measured and statistically compared between the Miniature Schnauzers and the control group. Dogs were categorized based on their age, and median serum triglyceride concentrations were compared among different age groups. A total of 63 (32.8%) of the 192 Miniature Schnauzers had serum triglyceride concentrations above the upper limit of the reference range. In contrast, of the 38 control dogs, only 2 (5.3%) had serum triglyceride concentrations above the upper limit of the reference range. The median serum triglyceride concentration in Miniature Schnauzers was 73.5 mg/dL, which was significantly higher compared to that of the control group (median: 55 mg/dL; $p=0.0005$). Serum cholesterol concentration was above the upper limit of the reference range in 9 (9.0%) of 100 Miniature Schnauzers and in 2 (5.3%) of the control dogs. Mean serum cholesterol concentrations were not significantly different between the 2 groups ($p=0.1374$). Median serum triglyceride concentrations in Miniature Schnauzers increased significantly with age ($p<0.0001$), and there was a significant positive correlation

between serum triglyceride concentration and age (Spearman r=0.47; p<0.0001). There was no difference in serum triglyceride concentrations between male and female Miniature Schnauzers (p=0.48). Healthy Miniature Schnauzers had a high prevalence of hypertriglyceridemia compared to healthy dogs of other breeds. Both the prevalence and severity of hypertriglyceridemia increased with age. To determine whether hypertriglyceridemia in healthy Miniature Schnauzers was associated with increased serum liver enzyme activities, 65 Miniature Schnauzers with normal serum triglyceride concentrations (group 1), 20 Miniature Schnauzers with slightly increased serum triglyceride concentrations (group 2), and 20 Miniature Schnauzers with moderately to severely increased serum triglyceride concentrations (group 3) were evaluated. Questionnaires regarding each dog's medical history were collected, and serum alkaline phosphatase (ALP), alanine aminotransferase (ALT), aspartate aminotransferase (AST), and □-glutamyltransferase (GGT) activities were measured. Median serum ALP activity was significantly higher in group 3 than in 28 group 1 or 2, but was not significantly higher in group 2 than in group 1. Median serum ALT activity was significantly higher in group 3 than in group 1, but was not significantly different between any of the other groups. Compared with group 1, group 2 and 3 were significantly more likely to have an increased serum ALP activity (odds ratio, 26.2 and 192.6, respectively). Group 3 was also significantly more likely to have an increased serum ALT activity (odds ratio, 8.0), serum AST activity (odds ratio, 3.7), or serum GGT activity (odds ratio, 11.3), than group 1. Group 3 was significantly more likely (odds ratio, 31.0) to have > 2 high serum liver enzyme activities than was group 1. Results suggested that moderate to severe hypertriglyceridemia was associated with high serum liver enzyme activities in Miniature Schnauzers.

2) **Hypertriglyceridemia and its possible associations with pancreatitis in dogs.** Texas A&M University, Texas, USA. Doctor of Philosophy (PhD) (May 2011).
The hypotheses of the present study were that: 1) hypertriglyceridemia, especially when severe, is a risk factor for pancreatitis in Miniature Schnauzers, 2) primary hypertriglyceridemia and possibly subclinical pancreatic inflammation in Miniature Schnauzers will respond, at least partially, to feeding an ultra low-fat diet, and 3) dogs with pancreatitis will exhibit changes in their serum triglyceride and cholesterol concentrations, as well as in their lipoprotein profiles when compared to healthy dogs.
The objectives of the present study were: 1) to investigate a possible associations between serum triglyceride and canine pancreatic lipase immunoreactivity (cPLI) concentrations in Miniature Schnauzers, 2) to compare serum triglyceride concentrations in Miniature Schnauzers with a recent history of pancreatitis to those without a history of pancreatitis, 3) to evaluate the feasibility and assess the usefulness of a novel method for ultracentrifugal separation of lipoproteins as a means for lipoprotein fingerprinting in dogs, 4) to compare the lipoprotein profiles among dogs of various breeds, healthy Miniature Schnauzers, and Miniature Schnauzers with hyperlipidemia, 5) to evaluate the effect of a commercially available ultra-low-fat diet on serum triglyceride, cholesterol, and Spec cPL concentrations, as well as the lipoprotein profiles, in Miniature Schnauzers with suspected primary hypertriglyceridemia, and 6) to evaluate serum triglyceride and cholesterol concentrations and describe the lipoprotein profiles in dogs with and without pancreatitis.
In the first part of the study, the objective was to investigate a possible association between serum triglyceride and canine pancreatic lipase immunoreactivity (cPLI) concentrations in Miniature Schnauzers. One hundred and ninety-five Miniature Schnauzers were enrolled and divided into 2 groups based on whether they had normal

(Group 1) or increased (Group 2) serum triglyceride concentrations. Serum triglyceride and cPLI concentrations were measured and compared between groups. There was a significant but weak positive correlation between serum triglyceride and cPLI concentrations ($r=0.321$; $P<0.0001$). Miniature Schnauzers with hypertriglyceridemia had significantly higher serum cPLI concentrations (median: 99.5 μg/L) than Miniature Schnauzers with normal serum triglyceride concentrations (median: 39.3 μg/L; $P=0.0001$). A cut-off value of 862 mg/dL was selected for serum triglyceride concentration based on ROC analysis, and this concentration had an increased risk of 4.5 times ($P=0.0343$) for a serum cPLI concentration that is considered to be consistent with a diagnosis of pancreatitis with the assay used (>200 μg/L). Thus, this study supports an association between hypertriglyceridemia, especially when severe, and high cPLI concentrations in Miniature Schnauzers.

The objective of the second part of the study was to compare serum triglyceride concentrations between Miniature Schnauzers with and without a recent history of pancreatitis. To that end, 17 Miniature Schnauzers with a history of pancreatitis (Group 1) and 34 age-matched Miniature Schnauzers without a history of pancreatitis (Group 2) were prospectively enrolled. Two samples were collected from each of the 17 Miniature Schnauzers with pancreatitis: 1 during pancreatitis and 1 after clinical and biochemical resolution of pancreatitis. Serum triglyceride and cholesterol concentrations were compared between Group 1 (after resolution of pancreatitis) and Group 2. Miniature Schnauzers in Group 1 were significantly more likely to have hypertriglyceridemia (71%) after resolution of pancreatitis than Miniature Schnauzers in Group 2 (33%; odds ratio=5.02; 95% CI, 1.4 to 17.8; $P=0.0163$). Serum triglyceride concentrations were significantly higher in dogs of Group 1 (median: 605.0 mg/dL) after resolution of pancreatitis than in dogs of Group 2 (median: 73.5 mg/dL; $P=0.002$). Miniature Schnauzers with a history of pancreatitis were 5 times more likely to have hypertriglyceridemia than controls. Based on the results of this part of the study, hypertriglyceridemia appears to be associated with the development of pancreatitis in some dogs of this breed.

In the third part of the study, the goal was to assess the feasibility and usefulness of a novel, convenient, and economical density gradient ultracentrifugation method as a means for lipoprotein fingerprinting in dogs, and to characterize and compare the lipoprotein profiles of healthy dogs of various breeds, healthy Miniature Schnauzers, and Miniature Schnauzers with primary hypertriglyceridemia using the same method. Thirty-five healthy dogs of various breeds with serum triglyceride and cholesterol concentrations within their respective reference intervals (Group 1), 31 Miniature Schnauzers with serum triglyceride and cholesterol concentrations within their respective reference intervals (Group 2A), and 31 Miniature Schnauzers with hypertriglyceridemia (Group 2B) were included in the study. The most abundant lipoprotein fraction in dogs of Group 1 was HDL, mainly HDL2 and HDL3. LDL fractions were present in very small amounts, with the exception of LDL4 and LDL5. Triglyceride-rich lipoproteins were also found in very small amounts. The lipoprotein profiles of Miniature Schnauzers with serum triglyceride and cholesterol concentrations within the reference interval (Group 2A) were generally similar to the ones seen in dogs of Group 1 with regard to the abundance of major lipoprotein classes. However, most dogs in Group 2A showed some distinct differences in some lipoprotein fractions and subfractions. Using sliced inverse regression analysis, the group to which each dog belonged (i.e., Miniature Schnauzer versus other breeds) could be accurately predicted based on their lipoprotein profiles in 85% of the cases ($P=0.00017$). The most important lipoprotein fractions that served as predictors were the TRLs and the LDL fraction corresponding to LDL4 and LDL5. Miniature Schnauzers had

more prominent TRL peaks than dogs of other breeds, while dogs of other breeds had more prominent LDL4 and LDL5 peaks. Sliced inverse regression analysis in Groups 2A and 2B showed that the group to which each dog belonged (i.e., Miniature Schnauzers with normal serum triglyceride concentration versus Miniature Schnauzers with hypertriglyceridemia) could be accurately predicted based on their lipoprotein profiles in 95% of cases (P=0.000002). By far, the most important lipoprotein fraction that served as a predictor was the TRL fraction, which was more prominent in the dogs with hypertriglyceridemia. Fractions corresponding to LDL2, LDL3, LDL4, were more prominent in Miniature Schnauzers with serum triglyceride concentrations within the reference interval.

The aim of the fourth part of the study was to evaluate the effect of a commercially available low-fat diet on serum lipid and pancreas-specific lipase (Spec cPL) concentrations and lipoprotein profiles in Miniature Schnauzers with primary hypertriglyceridemia. Sixteen Miniature Schnauzers with hypertriglyceridemia of various degrees were included in the study (Group 1). A group of 28 healthy Miniature Schnauzers with serum triglyceride and cholesterol concentrations within the respective reference intervals (Group 2) was used as a control group for the lipoprotein profile analysis portion of the study. Dogs in Group 2 were used in order to obtain lipoprotein profiles from a group of healthy Miniature Schnauzers that could be used for illustration of whether lipoprotein profiles of hypertriglyceridemic Miniature Schnauzers tended to approach those of the healthy ones after the diet change. Each one of the dogs in Group 1 had a total of 4 blood samples collected. The first sample (sample 1) was used to diagnose primary hypertriglyceridemia. Then, in order to confirm the results of the initial sample and to investigate the variability of the findings, the owners were instructed to have a second sample (sample 2) collected 1 to 2 months after the collection of the initial sample, and without making any changes to the diet of their dogs. If hypertriglyceridemia was confirmed in the second sample, the dogs were put on the study diet. Approximately 7 to 9 weeks after the dogs had been exclusively on the study diet a third blood sample (sample 3) was collected. Finally, a fourth sample (sample 4) was collected approximately 2 to 4 weeks after the third sample. Serum triglyceride concentrations before the diet change (median of sample 1: 480 mg/dL; median of sample 2: 493 mg/dL) were significantly higher than after the diet change (median of sample 3: 177 mg/dL; median of sample 4: 168 mg/dL; P=0.0001). Serum cholesterol concentrations before the diet change (mean of sample 1: 381 mg/dL; mean of sample 2: 380 mg/dL) were significantly higher than after the diet change (mean of sample 3: 257 mg/dL; mean of sample 4: 178 mg/dL; P<0.0001). Serum Spec cPL concentrations before the diet change (mean of sample 1: 173 µg/L; mean of sample 2: 109 µg/L) were not significantly different than after the diet change (mean of sample 3: 144 µg/L; mean of sample 4: 137 µg/L; P=0.12). For analysis of the lipoprotein profiles in response to the diet change, the lipoprotein profiles after the diet change were compared with those of the same dogs before the diet change as well as those of the group of healthy dogs. Before the diet change, there was a 98% separation between Group 1 and Group 2 using SIR analysis (P=0.0003). Therefore, 15/16 (94%) of hyperlipidemic Miniature Schnauzers were classified as hyperlipidemic based on their lipoprotein profiles alone. After the diet change, significantly fewer Miniature Schnauzers (7/16; 44%; odds ratio: 19.3; 95% CI, 2.0-184.0; P=0.006) were still classified as hyperlipidemic by lipoprotein profile analysis, while the majority of the dogs of this group (56%) were classified as normal. Logistic regression analysis of the baseline lipoprotein profiles (before the diet change) of dogs that eventually responded and dogs that did not respond to the diet change showed that dogs that responded to the diet change could be separated with 88% accuracy from the

ones that did not respond, based on lipoprotein profile analysis even before the diet change. Dogs that did not respond to the diet change tended to have lower LDL fractions (mainly LDL1 and LDL2) and higher HDL fractions (mainly HDL2a, HDL3b, and HDL3c) than the ones that responded.

The aims of the last part of the study were: a) to measure serum triglyceride and cholesterol concentrations in dogs with naturally occurring pancreatitis and compare them with those of healthy dogs, and b) to determine the lipoprotein profiles of dogs with naturally occurring pancreatitis and compare them with those of healthy dogs. Seventeen dogs with pancreatitis and 53 healthy control dogs were enrolled. There was no statistically significant difference in the proportion of dogs that had hypertriglyceridemia between dogs with pancreatitis (18%) and healthy controls (7.5%; P=0.35). However, there was a statistically significant difference in serum triglyceride concentrations between dogs with pancreatitis (median: 67 mg/dL; range: 48 – 324 mg/dL) and dogs healthy control dogs (median: 54 mg/dL; range: 26 – 257 mg/dL; P=0.0026). There was a statistically significant difference in the proportion of dogs that had hypercholesterolemia between dogs with pancreatitis (Group 1) and healthy control dogs (P=0.011). However, there was no statistically significant difference in serum cholesterol concentrations between dogs with pancreatitis (median: 209 mg/dL; range: 142 – 849 mg/dL) and healthy control dogs (median: 227 mg/dL; range: 97 – 338 mg/dL; P=0.565). Sliced inverse regression analysis showed that lipoprotein profiles were distinctly different between dogs with pancreatitis and healthy control dogs (P=0.0012). Dogs could be classified in the correct group (healthy versus pancreatitis) with 89% accuracy based on their lipoprotein profiles alone. The most important differences in the lipoprotein profiles between dogs with pancreatitis and healthy dogs involved increases in LDL2, LDL3, and LDL4, and less prominent decreases in TRL, HDL2a, and HDL3c.

In summary, the main conclusions of the present study were:

1) Hypertriglyceridemia, especially when severe, is a risk factor for pancreatitis in Miniature Schnauzers. Therefore, it might be recommended that when hypertriglyceridemia is detected in dogs of this breed it should be treated and monitored.

2) Density gradient ultracentrifugation using NaBiEDTA as described in the present study is a useful screening method for the study of lipoprotein profiles in dogs. Important differences in lipoprotein profiles can be detected with this method even among dogs that have serum triglyceride and cholesterol concentrations within the reference interval.

3) Miniature Schnauzers with serum triglyceride and cholesterol concentrations within the reference interval appear to have significantly different lipoprotein profiles (mainly with regard to TRL and LDL4) than dogs of various other breeds.

4) Specific lipoprotein classes (TRL and specific LDL fractions, mainly LDL2) are associated with hypertriglyceridemia in Miniature Schnauzers. Changes in these lipoprotein classes are not always uniform among Miniature Schnauzers with hyperlipidemia.

5) The commercially available ultra-low-fat diet used in the present study was found to be effective in significantly reducing serum triglyceride and cholesterol concentrations within 2 months.

6) The commercially available ultra-low-fat diet used in the present study was found to be effective in shifting the lipoprotein profiles of most hyperlipidemic dogs towards those of non-hyperlipidemic dogs within 2 months.

7) A subgroup of Miniature Schnauzers appeared to not fully respond to the diet used in the present study as indicated mainly by their serum triglyceride concentrations and lipoprotein profiles. The reason for this finding is not known at this point, but differences in the pathogenetic basis of hyperlipidemia among dogs might have played a role.

8) The majority of dogs with naturally occurring pancreatitis appear to have serum triglyceride and cholesterol concentrations within their respective reference intervals. In the relatively small percentage of dogs that showed increases in serum triglyceride and/or cholesterol concentrations, those increases were generally mild. It might be recommended that profound increases in serum triglyceride and/or cholesterol concentrations in dogs with pancreatitis are unlikely to be the result of pancreatitis, and warrant further diagnostic investigation.
9) Important differences exist in lipoprotein profiles between dogs with pancreatitis and healthy control dogs. Dogs with pancreatitis have higher LDL fractions (mainly LDL2, LDL3, and LDL4) and lower TRL and HDL fractions (mainly HDL2a and HDL3c) than healthy control dogs. These changes in lipoprotein profiles are evident in the majority of dogs with pancreatitis, even in those dogs with serum concentrations of triglyceride and cholesterol within the reference interval.

Peer reviewed journal publications

1) **Current concepts in the diagnosis of pancreatitis in dogs and cats.** Xenoulis PG, Steiner JM. Journal of the Hellenic Veterinary Medical Society, 2006; 57(2):157-164.
Pancreatitis is the most common disorder of the exocrine pancreas in both dogs and cats. Ante-mortem diagnosis of pancreatitis can be challenging, and the majority of cases are believed to remain undiagnosed. Complete blood count, serum biochemistry profile, and urinalysis should always be performed in dogs and cats suspected of having pancreatitis, although findings are nonspecific for pancreatitis. Abdominal ultrasonography is very useful for the diagnosis of pancreatitis, although the diagnostic utility depends largely on the clinician's experience. Abdominal radiography is a useful diagnostic tool for the exclusion of other diseases that may cause similar clinical signs to those of pancreatitis. Computed tomography has not been shown to be useful for the diagnosis of canine or feline pancreatitis and can thus not be recommended. Histopathologic examination of the pancreas is the only method to definitively diagnose pancreatitis, but exclusion of the disease is difficult. Serum amylase and lipase activities are of no clinical value in cats, and should not be used for the diagnosis of pancreatitis in this species. In dogs, these tests may still have some clinical utility as an initial approach to animals with suspected pancreatitis. Due to its low sensitivity, serum TLI concentrations are considered of limited usefulness in diagnosing pancreatitis in dogs and cats. Finally, serum PLI concentrations are currently considered to be the most sensitive and specific test for the diagnosis of canine and feline pancreatitis.

2) Suspected isolated pancreatic lipase deficiency in a dog. Xenoulis PG, Fradkin JM, Rapp SW, Suchodolski JS, Steiner JM. Journal of Veterinary Internal Medicine, 2007; 21(5):1113-1116.
This paper describes for the first time a form of canine exocrine pancreatic insufficiency characterized by isolated pancreatic lipase deficiency, while the synthesis/secretion of trypsin was normal. A 4-month old dog presented with classic clinical signs of exocrine pancreatic insufficiency (chronic diarrhea, poor nutritional status, polyphagia) and the initial examination (which included TLI) was normal. After a series of diagnostic tests, which were performed without leading to a diagnosis, the concentration of serum pancreatic lipase immunoreactivity was measured and was found to be undetectable. The final diagnosis was isolated pancreatic lipase deficiency. The dog's clinical signs resolved with oral pancreatic enzymes supplementation and a low-fat diet.

3) Investigation of hypertriglyceridemia in healthy Miniature Schnauzers. Xenoulis PG, Suchodolski JS, Levinski MD, Steiner JM. Journal of Veterinary Internal Medicine, 2007; 21(6):1224-1230

Idiopathic hypertriglyceridemia has been reported in Miniature Schnauzers (MS). However, studies investigating the prevalence of this disorder in a large population of MS are lacking. Our hypothesis was that hypertriglyceridemia is prevalent in healthy MS. Animals: 192 healthy MS and 38 healthy dogs of other breeds (control dogs). Methods: Serum triglyceride and cholesterol concentrations were measured and statistically compared in both the MS and control group. Dogs were categorized based on their age and median serum triglyceride concentrations were compared between different age groups. A total of 63 (32.8%) of the 192 MS had serum triglyceride concentrations above the reference range. In contrast, of the 38 control dogs, only 2 (5.3%) had serum triglyceride concentrations above the reference range. The median serum triglyceride concentration in MS was 73.5 mg/dL, which was significantly higher compared to that of the control group (median=55 mg/dL; p=0.0005). Serum cholesterol concentration was above the reference range in 9 (9.0%) of 100 MS and in 2 (5.3%) of the control dogs. Mean serum cholesterol concentrations were not significantly different between the two groups (p=0.1374). Median serum triglyceride concentrations in MS increased significantly with age ($p<0.0001$), and there was a significant positive correlation between serum triglyceride concentrations and age (Spearman r=0.47; $p<0.0001$). There was no difference in serum triglyceride concentrations between male and female MS (p=0.48). Healthy Miniature Schnauzers have a high prevalence of hypertriglyceridemia compared to healthy dogs of other breeds. Both the prevalence and severity of hypertriglyceridemia increase with age.

4) **Serum liver enzyme activities in healthy Miniature Schnauzers with and without hypertriglyceridemia.** Xenoulis PG, Suchodolski JS, Levinski MD, Steiner JM. J Am Vet Med Assoc 2008; 232(1):63-6

The objective of this study was to evaluate whether hypertriglyceridemia in healthy Miniature Schnauzers is associated with elevated serum liver enzyme activities. 65 Miniature Schnauzers with normal serum triglyceride concentrations (group 1), 20 Miniature Schnauzers with mildly elevated serum triglyceride concentrations (group 2), and 20 Miniature Schnauzers with moderately to severely elevated serum triglyceride concentrations (group 3) were included in this study. Questionnaires regarding each dog's medical history were obtained and reviewed. Blood samples were collected from each dog and analyzed for serum ALP, ALT, AST, and GGT activities.

Median serum ALP activity was significantly higher in group 3 than in group 1 ($p<0.001$) or in group 2 ($p<0.05$), but was not significantly higher in group 2 than in group 1. Median serum ALT activity was significantly higher in group 3 than in group 1 ($p<0.01$), but was not significantly different between any of the other groups. Compared to the control group, both group 2 and group 3 had significant odds ratio (OR) for increased serum ALP activity (OR=26.2 and OR=192.6, respectively). Group 3 also had a significant OR for elevated serum ALT activity (OR=8.0), serum AST activity (OR=3.7), and serum GGT activity (OR=11.3) compared to group 1. The odds ratio for having two or more elevated serum liver enzyme activities compared to the control group was significant only for group 3 (OR=31.0). The results show that moderate to severe hypertriglyceridemia is associated with increased serum liver enzyme activities in Miniature Schnauzers.

5) **Chronic pancreatitis in dogs and cats.** Xenoulis PG, Suchodolski JS, Steiner JM: Compend Contin Educ Vet 2008; 30(3):166-181
Pancreatitis is the most common disorder of the exocrine pancreas in dogs and cats. Clinical diagnosis of chronic pancreatitis is challenging because the disease is usually mild or subclinical and because its clinical signs are often the same as those of complicating or concurrent diseases. Obtaining a detailed history, performing a thorough physical examination, and conducting tests that are sensitive and specific for pancreatitis are crucial in diagnosing chronic pancreatitis. Initial management of an acute episode of chronic pancreatitis largely involves supportive and dietary measures, while long-term management of chronic pancreatitis is based on dietary modification. Management of complications and concurrent diseases is crucial in animals with chronic pancreatitis.

6) **Serum pancreatic lipase immunoreactivity concentrations in dogs treated with potassium bromide and/or phenobarbital.** Steiner JM, Xenoulis PG, Anderson JA, Barr AC, Williams DA. Vet Ther 2008; 9(1): 37-44
This study compared serum canine pancreatic lipase immunoreactivity (cPLI) concentrations in dogs treated with KBr alone (group 1; n=98), phenobarbital alone (group 2; n=118), or a combination of KBr and phenobarbital (group 3; n=121), with those of healthy control dogs. Serum cPLI was above the reference range in 13.6% of all 337 dogs, 15.3% of group 1, 14.4% of group 2, and 11.6% of group 3. Serum cPLI was above 200 µg/L in 6.8% of all 337 dogs, 7.1% of group 1, 7.6% of group 2, and 5.8% of group 3. Median serum cPLI concentration was not significantly different between 74 healthy control dogs (16.3 µg/L), all 337 dogs evaluated (24.7 µg/L), and group 2 (17.7 µg/L), but was significantly higher in group 1 (31.6 µg/L) and group 3 (26.2 µg/L) than in healthy dogs. Odds ratios showed a significantly increased risk of all dogs evaluated and of groups 1 and 2 for a serum cPLI concentration above the upper limit of the reference range. This study suggests an increased risk for an increased serum cPLI concentration in dogs treated with KBr alone, phenobarbital alone, or a combination of phenobarbital and KBr.

7) **Molecular-phylogenetic characterization of microbial communities imbalances in the small intestine of dogs with inflammatory bowel disease.** Xenoulis PG, Palculict B, Allenspach K, Steiner JM, Van House AM, Suchodolski JS. FEMS Microbiol Ecol 2008; 66: 579-589
An association between luminal commensal bacteria and inflammatory bowel disease (IBD) has been suggested in humans, but studies investigating the intestinal microflora of dogs with IBD have not been published. The aim of this study was to characterize differences of the small intestinal microflora between dogs with IBD and healthy control dogs. Duodenal brush cytology samples were endoscopically collected from 10 dogs with IBD and 9 healthy control dogs. DNA was extracted and 16S rDNA was amplified using universal bacterial primers. Constructed 16S rDNA clone libraries were compared between groups. From a total of 1240 selected clones, 156 unique 16S rDNA sequences were identified, belonging to 6 phyla: Firmicutes (53.4%), Proteobacteria (28.4%), Bacteroidetes (7.0%), Spirochaetes (5.2%), Fusobacteria (3.4%), Actinobacteria (1.1%), and Incertae sedis (1.5%). Species richness was significantly lower in the IBD group (p=0.038). Principal component analysis indicated that the small intestinal microfloras of IBD and control dogs are composed of distinct microbial communities. The most profound difference involved enrichment of the IBD dogs with members of the Enterobacteriaceae family. However, differences involving members of other families,

such as Clostridiaceae, Bacteroidetes, Spirochaetes, were also identified. In conclusion, canine IBD is associated with altered duodenal microflora compared to healthy controls.

8) **Sensitivity of serum markers for pancreatitis in dogs with macroscopic evidence of pancreatitis.** Steiner JM, Newman SJ, Xenoulis PG, Woosley K, Suchodolski JS, Williams DA, Barton L. Vet Ther 2008; 9(4): 263-273
Pancreatitis occurs commonly in dogs, but its diagnosis remains challenging. The objective of this study was to compare the sensitivity of serum markers in a group of dogs with macroscopic evidence of pancreatitis. A total of 208 dogs presented for necropsy within 6 hours of death were evaluated, and dogs with macroscopic evidence of pancreatitis were included in this study. Serum samples from all dogs were analyzed for serum amylase and lipase activities and concentrations of canine trypsin-like immunoreactivity (cTLI), canine pancreatic lipase immunoreactivity (cPLI; measured by an in-house assay and by Spec cPL), and trypsin-α1-proteinase inhibitor complexes (T-α1PI). Of the 208 dogs evaluated 22 (10.6%) had macroscopic evidence of pancreatitis. All of the 22 dogs also had histologic evidence of pancreatic inflammation. Serum amylase and lipase activities were above the suggested cut-off value for pancreatitis in 4 (18.2%) and 3 (13.6%) dogs, respectively. Serum cTLI concentration was above the upper limit of the reference range (35.0 μg/L) in 8 (36.4%) dogs. Serum cPLI concentration as measured by in-house ELISA and by a commercial immunoassay was above the cut-off value for pancreatitis (200 μg/L and 400 μg/L, respectively) in 14 (63.6%) and 14 (63.6%) dogs, respectively. Serum T-α1PI concentration was above the upper limit of the reference range (32 μg/L) in 7 (31.8%) dogs. Serum cPLI concentration, as measured by an in-house ELISA or Spec cPL, had the highest sensitivity for macroscopic pancreatitis in this group of patients.

9) **Current concepts in feline pancreatitis.** Xenoulis PG, Steiner JM. Top Companion Anim Med 2008; 23(4):185-92 (Invited review)
Pancreatitis is the most common disorder of the exocrine pancreas in cats and is clinically important in this species. Despite that fact, the pathophysiology of feline pancreatitis is poorly understood and its etiology remains unknown in the majority of cases. Arriving at a clinical diagnosis of feline pancreatitis remains challenging because cats with pancreatitis exhibit mild and non-specific clinical signs, which accounts for the commonly low level of suspicion for this disease by the veterinary clinicians. In addition, sensitive and specific tests for the diagnosis of feline pancreatitis were, until recently, not available. Suspicion of pancreatitis should be based on a detailed history and physical examination, hematologic, clinicopathologic, and imaging findings. A diagnosis of feline pancreatitis should be confirmed by measurement of feline pancreatic lipase immunoreactivity (fPLI), abdominal ultrasound, pancreatic cytology, and/or pancreatic histopathology. Serum amylase and lipase concentrations are of no value, while feline trypsin-like immunoreactivity (fTLI) concentrations is of limited value for the diagnosis of feline pancreatitis. Abdominal ultrasound may be useful but requires experience and normal findings do not exclude pancreatitis. Management of pancreatitis is based on supportive therapy and dietary measures. Finally, management of complications and/or concurrent diseases is also crucial in cats with pancreatitis.

10) **Feline pancreatitis.** Xenoulis PG, Steiner JM. Veterinary Focus 2009;19(2):11-19 (Invited review)
Pancreatitis is a common and clinically important disease in cats. The most common clinical signs in cats with pancreatitis are anorexia and lethargy. Gastrointestinal signs,

such as vomiting and diarrhea, occur less frequently. Cats with severe pancreatitis can be critically ill. Feline pancreatic lipase immunoreactivity (fPLI; now measured as Spec fPL) appears to be currently the most useful test for antemortem diagnosis of feline pancreatitis. A definitive diagnosis of pancreatitis, as well as differentiation of acute and chronic pancreatitis, can only be made by histopathologic examination of the pancreas. Ideally, the diagnosis of feline pancreatitis should be based on a combination multiple methods such as fPLI, abdominal ultrasound, cytology, and/or histopathology. Management of feline pancreatitis is based on identification of risk factors and complicating diseases and symptomatic and supportive care, which mainly consists of fluid therapy, nutritional management, and analgesic and antiemetic medications.

11) **Lipid metabolism and hyperlipidemia in dogs.** Xenoulis PG, Steiner JM. Vet J 2010; 183 (1): 12–21
Lipid metabolism in dogs can be divided into exogenous and endogenous pathways and exhibits some unique characteristics compared to other species. Hyperlipidemia is common in dogs, and can be either primary or secondary to other diseases. Secondary hyperlipidemia is the most common form in dogs, and it can be a result of endocrine disorders, pancreatitis, cholestasis, protein-losing nephropathy, obesity, and high fat diets. Primary hyperlipidemia is less common and usually associated with certain breeds. Hypertriglyceridemia of Miniature Schnauzers is the most common form of primary hyperlipidemia in dogs in the United States, and appears to have a genetic basis although its etiology remains unknown. Possible complications of hyperlipidemia in dogs include pancreatitis, liver disease, atherosclerosis, ocular disease, and seizures. Management of hyperlipidemia in dogs is achieved by administration of low fat diets with or without the administration of lipid lowering agents such as omega-3 fatty acids, gemfibrozil, and niacin.

12) **Molecular analysis of the bacterial microbiota in duodenal biopsies from dogs with idiopathic inflammatory bowel disease.** Suchodolski JS, Xenoulis PG, Paddock CG, Steiner JM, Jergens AE. Vet Microbiol 2010; 142(3-4): 394-400
An association between mucosa-adherent commensal bacteria and inflammatory bowel disease (IBD) has been proposed for humans. There are no reports characterizing the mucosa-adherent duodenal microbiota in dogs with idiopathic IBD using molecular methods. The aim of this study was to investigate differences in the mucosa-adherent duodenal microbiota between dogs with idiopathic IBD and healthy dogs. Duodenal biopsy samples were collected from 7 dogs with IBD and 7 healthy control dogs. DNA was extracted, 16S ribosomal RNA genes were amplified and 16S rRNA gene clone libraries were constructed and compared between groups. A total of 1,035 clones were selected, and based on a 98% similarity criterion, 133 unique phylotypes were identified across all dogs. These phylotypes belonged to 6 bacterial phyla: Proteobacteria (52.9%), Firmicutes (26.1%), Bacteroidetes (7.7%), Actinobacteria (8.6%), Fusobacteria (4.4%), Tenericutes (0.2%) and Verrucomicrobia (0.1%). Significant differences were identified in the relative abundance of several bacterial groups between dogs with IBD and healthy dogs ($p<0.001$). Healthy dogs and dogs with IBD clustered according to their disease status. Dogs with IBD had a significantly higher abundance of clones belonging to Alpha-, Beta-, and Gammaproteobacteria ($p<0.0001$ for all classes), and a significantly lower abundance of Clostridia ($p<0.0001$). Bacteria of the genera Pseudomonas, Acinetobacter, Conchiformibious, Achromobacter, Brucella, and Brevundimonas, were significantly more abundant in dogs with IBD. In conclusion, significant differences of the mucosa-adherent duodenal microbiota were observed between dogs with idiopathic IBD and

healthy dogs in this study. These results warrant further investigations into the role of the intestinal microbiota in the pathophysiology of canine IBD.

13) **Identification of variants of the SPINK1 gene and their association with pancreatitis in Miniature Schnauzers.** Bishop MA, Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. Am J Vet Res 2010; 71(5):527-33
The objective of this study was to evaluate the serine protease inhibitor, Kazal type 1 (SPINK1) gene for variants and determine their possible association with pancreatitis in Miniature Schnauzers. For this purpose, 39 Miniature Schnauzers with pancreatitis, 25 healthy Miniature Schnauzers, and 23 healthy dogs of other breeds were used. The entire canine SPINK1 gene with its intron/exon boundaries was initially sequenced in 22 Miniature Schnauzers. This was followed by sequencing of two regions of the gene in 65 additional canine DNA samples at the locations of the variants found in the initial part of the study. Analysis of the SPINK1 gene in Miniature Schnauzers revealed 3 closely associated variants in both healthy Miniature Schnauzers and Miniature Schnauzers with pancreatitis. These variants consisted of two missense mutations in the second exon (N20K and N25T) and a poly T insertion in the third intron, near the boundary of exon 3 (IVS3+26-27ins(T)33-39,15_61dup11). Pancreatitis was significantly associated with being homozygous for these 3 variants in Miniature Schnauzers. In healthy dogs of other breeds, only the 2 exonic variants were identified. In conclusion, our results suggest that mutations of the SPINK1 gene may be associated with pancreatitis in the Miniature Schnauzer.

14) **Association between serum triglyceride and canine pancreatic lipase immunoreactivity concentrations in Miniature Schnauzers.** Xenoulis PG, Suchodolski JS, Ruaux CG, Steiner JM. J Am Anim Hosp Assoc 2010; 46(3):229-234
The objective of this study was to investigate an association between serum triglyceride and canine pancreatic lipase immunoreactivity (cPLI) concentrations in Miniature Schnauzers. One hundred and ninety-five Miniature Schnauzers were enrolled and divided into 2 groups based on whether they had normal (group 1) or increased (group 2) serum triglyceride concentrations. Serum triglyceride and cPLI concentrations were measured and compared between groups. There was a significant positive correlation between serum triglyceride and cPLI concentrations ($r=0.321$; $p<0.0001$). Miniature Schnauzers with hypertriglyceridemia had significantly higher median serum cPLI concentration (99.5 μg/L) than Miniature Schnauzers with normal serum triglyceride concentrations (39.3 μg/L; $p=0.0001$). A cut-off value of 862 mg/dL was selected for serum triglyceride concentration based on ROC analysis, and this concentration had an increased risk of 4.5 times ($p=0.0343$) for a serum cPLI concentration that is considered consistent for pancreatitis (>200 μg/L). The present study supports an association between hypertriglyceridemia, especially when severe (≥862 mg/dL), and high cPLI concentrations in Miniature Schnauzers.

15) **Molecular characterization of the cloacal microbiota of healthy wild and captive parrots.** Xenoulis PG, Gray PL, Brightsmith D, Palculict B, Hoppes S, Steiner JM, Tizard I, Suchodolski JS. Vet Microbiol 2010; 146(3-4):320-325
The gastrointestinal microbiota plays a fundamental role in health and disease. Only limited data are available about the composition of the intestinal microbiota of captive animals compared to those of wild animals. The aim of the present study was to characterize the cloacal microbiota of apparently healthy wild and captive parrots. A total of 16 parrots, 8 wild and 8 captive, belonging to 3 different species, were used in this

study. Fecal material was collected via cloacal swabbing. DNA was extracted and 16S rRNA genes were amplified using universal bacterial primers. Constructed 16S rRNA gene clone libraries were compared between groups. A total of 518 clones were analyzed, and 49 operational taxonomic units (OTU) were identified. The OTUs were classified in 4 bacterial phyla: Firmicutes (72.9%), Proteobacteria (14.9%), Actinobateria (12%), and Bacteroidetes (0.2%). Bacterial diversity was significantly lower in wild birds than in captive birds. Principal component analysis based on the Unifrac distance metric indicated that the cloacal microbiota differed between wild and captive parrots. Staphylococcus saprophyticus was significantly more abundant in wild birds, while Escherichia coli was significantly more abundant in captive birds. In conclusion, wild and captive parrots appear to have differences in the composition of their cloacal bacterial microbiota. The clinical significance of these differences remains to be determined.

16) **Detection of *Tritrichomonas foetus* in cats in Greece.** Xenoulis PG, Saridomichelakis MN, Read SA, Suchodolski JS, Steiner JM. J Feline Med Surg 2010; 12(10):831-833

Intestinal infection of cats with T. foetus has been reported in the USA, Canada, several European countries, and Australia. However, T. foetus has not been previously reported in cats in Greece. The aim of this study was to test fecal samples from cats living in Greece for the presence of T. foetus DNA. Feces were collected from 31 cats living in Greece. DNA was extracted from the fecal samples and the presence of T. foetus DNA was detected by a single-tube nested PCR. T. foetus specific DNA was detected in the feces of 6/31 (19.4%) cats. All 6 cats were reported to have normal fecal quality at the time of sample collection. The present study confirms for the first time the presence of T. foetus in cats in Greece and suggests that T. foetus infection is often asymptomatic in older cats.

17) **Serum triglyceride concentrations in Miniature Schnauzers with and without a history of probable pancreatitis.** Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. J Vet Intern Med 2011; 25(1):20-25

The association between hypertriglyceridemia and pancreatitis remains obscure in dogs. A possible role of hypertriglyceridemia as a cause of pancreatitis in Miniature Schnauzers has been suspected. The objective of the present study was to compare serum triglyceride concentrations between Miniature Schnauzers with and without a recent history of pancreatitis. A total of 17 Miniature Schnauzers with a history of pancreatitis (group 1) and 34 age-matched Miniature Schnauzers without a history of pancreatitis (group 2) were prospectively enrolled in the study. Two samples were collected from each of the 17 Miniature Schnauzers with pancreatitis: one during pancreatitis and one after clinical and biochemical resolution of pancreatitis. Serum triglyceride and cholesterol concentrations were compared between group 1 (after resolution of pancreatitis) and group 2. Miniature Schnauzers in group 1 were significantly more likely to have hypertriglyceridemia (70.6%) after resolution of pancreatitis than Miniature Schnauzers in group 2 (35.3%; odds ratio=4.4; 95% confidence interval=1.3-15.5; p=0.0357). Serum triglyceride concentrations were significantly higher in dogs of group 1 (median: 605.0 mg/dL) after resolution of pancreatitis than in dogs of group 2 (median: 73.5 mg/dL; p=0.0108). In conclusion, Miniature Schnauzers with a history of pancreatitis were 4.4 times more likely to have hypertriglyceridemia than controls. Hypertriglyceridemia might be associated with the development of pancreatitis in some dogs of this breed. Additional studies are needed to further clarify the role of hypertriglyceridemia in the development of pancreatitis in Miniature Schnauzers as well as other dog breeds.

18) **Association of hypertriglyceridemia with insulin resistance in healthy Miniature Schnauzers.** Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. J Am Vet Med Assoc 2011; 238(8):1011-6

The objective of the present study was to determine whether hypertriglyceridemia in Miniature Schnauzers is associated with insulin resistance. A total of 28 healthy Miniature Schnauzers with hypertriglyceridemia and 31 healthy Miniature Schnauzers with normal serum triglyceride concentrations were enrolled in the study. All dogs were free of clinical signs for at least 3 months prior to blood collection, had no history of a chronic disease, and were not receiving any medications that are known to affect lipid metabolism or serum insulin concentrations. Serum insulin and glucose concentrations were measured, and the HOMA index (HOMA index = fasting insulin (mU/L) X fasting glucose (mmol/L)/22.5) was calculated. Median serum insulin concentration was significantly higher in hypertriglyceridemic Miniature Schnauzers (21.3 mU/L) than in controls (12.5 mU/L; p=0.0004). Also, the proportion of dogs with serum insulin concentrations above the reference range was significantly higher in hypertriglyceridemic Miniature Schnauzers (28.6%) than in controls (6.5%; p=0.0363; OR=5.8; 95% CI=1.1-30.2). The median HOMA index score was significantly higher in hypertriglyceridemic Miniature Schnauzers (4.9) than in controls (2.8; p=0.0015). The results of the present study suggest that hypertriglyceridemia in Miniature Schnauzers is often associated with insulin resistance. Further studies are needed and are in progress to determine the prevalence and clinical significance of insulin resistance in hypertriglyceridemic Miniature Schnauzers.

19) ***Tritrichomonas foetus*: a new cause of diarrhea in cats in Greece.** Xenoulis PG. Journal of the Hellenic Veterinary Medical Society 2011; 62(2):132-140

Over the past few years, the protozoan parasite Tritrichomonas foetus (T. foetus) has emerged as a new and important cause of feline diarrhea in the international veterinary community. In a recent study, the presence of T. foetus was confirmed for the first time in cats in Greece. The protozoan parasite T. foetus has been primarily known as a cause of trichomoniasis in cattle. In this animal species, the parasite affects the reproductive system of both males and females, and is associated with infertility and other reproductive problems. It was first described as a cause of feline diarrhea in 2003 in the United States. Since then, feline T. foetus-associated diarrhea has been reported in many countries around the world, and recently it was also described in cats in Greece. The trophozoites of the parasite are excreted in the feces and healthy cats are infected with the ingestion of T. foetus trophozoites. T. foetus affects mainly the colon and the distalsmall intestine. T. foetus-associated diarrhea occurs mainly in young cats, but cats of any age can be infected and develop clinical signs. The main clinical sign is diarrhea, which may contain mucus or blood, and often has spontaneous remissions and exacerbations. General clinical signs such as anorexia, weight loss and fever occur less frequently. If left untreated, the diarrhea often persists for months or years. In some cats the clinical signs eventually resolve without treatment, but this can take up to 2 years. Moreover, these animals usually remain infected and are a source of infection for other cats (or humans) and often the clinical signs relapse in situations of stress. Feline T. foetus infection can be diagnosed mainly by: a) microscopic examination of fecal samples, b) fecal culture specific for T. foetus and c) fecal PCR. None of the above methods is diagnostic in 100% of cases and therefore these methods should be used in combination, and bearing in mind the disadvantages of each method. Most antiparasitic and antibiotic drugs are not effective in treating diarrhea caused by T. foetus. Transient improvement can be seen

with the use of common antibiotics or antiparasitic drugs, but the clinical signs typically recur with discontinuation of treatment. The only drug with proven efficacy against T. foetus in cats is ronidazol, which is usually used at a dose of 30 mg/kg, orally every 24 hours for 14 days. In some cases, the clinical sings recur with discontinuation of treatment but they usually resolve after one additional treatment cycle. The most serious side effect of ronidazole in cats is the development of neurological signs, but those usually resolve with discontinuation of treatment. Finally, T. foetus may be transmitted to humans, although this has not been proven.

20) **Partial characterization of cobalamin deficiency in Chinese Shar Peis.** Bishop MA, Xenoulis PG, Berghoff N, Grutzner N, Suchodolski JS, Steiner JM. Vet J 2012; 191(1):41-45

A total of 22,462 serum sample results from dogs being evaluated for gastrointestinal disease at the Gastrointestinal Laboratory, College of Veterinary Medicine, Texas A&M University were evaluated retrospectively. The proportion of dogs with serum cobalamin concentrations below the reference interval and median serum concentrations were compared between Shar Peis and other dog breeds. Serum samples were also obtained prospectively from 22 healthy and 32 Shar Peis with chronic gastrointestinal disease and 59 healthy dogs of other breeds, and serum concentrations of cobalamin, folate, and methylmalonic acid were determined and compared. Overall, 64.0% (89/139) of serum samples from Shar Peis showed serum cobalamin concentrations below the limit of the reference interval and 38.1% (53/139) of these were below the detectable limit for the assay. The median serum cobalamin concentration in Shar Peis was significantly lower than in other breeds. Shar Peis with gastrointestinal disease had significantly lower serum cobalamin and higher serum methylmalonic acid concentrations compared to healthy Shar Peis. Healthy Shar Peis had significantly increased serum methylmalonic acid concentrations compared to healthy dogs of other breeds. There were no meaningful differences in folate concentrations between groups. In conclusion, Shar Peis have a high prevalence of cobalamin deficiency compared to other breeds and healthy Shar Peis may have subclinical cobalamin deficiency.

21) **Canine and feline pancreatic lipase immunoreactivity.** Xenoulis PG, Steiner JM. Vet Clin Pathol 2012; 41(3):312-324 (Invited review)

A clinical diagnosis of pancreatitis in dogs and cats can be challenging. Several diagnostic modalities have been evaluated over the years for the diagnosis of canine and feline pancreatitis, but the majority of these modalities have been shown to be of limited clinical usefulness because of poor performance, limited availability, and/or because they are invasive. Assays for the measurement of pancreatic lipase immunoreactivity (cPLI/Spec cPL and SNAP cPL in dogs and fPLI/Spec fPL and SNAP fPL in cats) were first developed about 10 years ago, and studies have shown that they are currently the serum tests of choice for the evaluation of canine and feline patients, respectively, suspected of having pancreatitis. This is a direct consequence of their high sensitivity and specificity for pancreatitis compared to other serum tests. As with any other test, false positive and false negative results do occur with pancreatic lipase immunoreactivity assays and it is important to know the limitations of these assays. As there is currently no gold standard for ante-mortem diagnosis of pancreatitis in dogs and cats, a combination of a careful history and physical evaluation with the use of pancreatic lipase immunoreactivity assays and abdominal ultrasound is typically what will lead to the most accurate clinical diagnosis of pancreatitis.

22) **Chronic pancreatitis in dogs: a retrospective study of clinical, clinicopathological, and histopathological findings in 61 cases.** Bostrom BM, Xenoulis PG, Newman SJ, Pool RR, Fosgate GT, Steiner JM. Vet J 2013, 195(1):73-9
The objective of the present study was to characterize the clinical, clinicopathologic, and histopathologic findings of dogs with chronic pancreatitis. The necropsy database at Texas A&M University was searched for reports of dogs with histologic evidence of chronic pancreatitis defined as irreversible histologic changes of the pancreas, i.e. fibrosis and atrophy. Medical records and necropsy reports were retrieved and reviewed. A reference necropsy population of 100 randomly selected dogs was used for signalment and concurrent disease comparisons. Cases were categorized as clinical or incidental chronic pancreatitis based on the presence of vomiting, decreased appetite, or both versus neither of these signs. All archived pancreata samples were evaluated histologically and scored using a published pancreatic scoring system.

23) **Novel lipoprotein density profiling in healthy dogs and dogs with hyperlipidemia.** Xenoulis PG, Cammarata P, Walzem RL, Wooten K, Curtone W, Lopinski D, Macfarlane R, Suchodolski JS, Steiner JM. BMC Vet Res 2013, 9:47. doi: 10.1186/1746-6148-9-47
Despite the importance of abnormalities in lipoprotein metabolism in clinical canine medicine, the fact that most previously used methods for lipoprotein profiling are rather laborious and time-consuming has been a major obstacle to the wide clinical application and use of lipoprotein profiling in this species. The aim of the present study was to assess the feasibility of a continuous lipoprotein density profile (CLPDP) generated within a bismuth sodium ethylenediaminetetraacetic acid (NaBiEDTA) density gradient to characterize and compare the lipoprotein profiles of healthy dogs of various breeds, healthy Miniature Schnauzers, and Miniature Schnauzers with primary hypertriacylglycerolemia. A total of 35 healthy dogs of various breeds with serum triacylglycerol (TAG) and cholesterol concentrations within their respective reference intervals were selected for use as a reference population. Thirty-one Miniature Schnauzers with serum TAG and cholesterol concentrations within their respective reference intervals and 31 Miniature Schnauzers with hypertriacylglyceridemia were also included in the study. The results suggest that CLPDP using NaBiEDTA provides unique diagnostic information in addition to measurements of serum TAG and cholesterol concentrations and that it is a useful screening method for dogs with suspected lipoprotein metabolism disorders. Using the detailed and continuous density distribution information provided by the CLPDP, important differences in lipoprotein profiles can be detected even among dogs that have serum TAG and cholesterol concentrations within the reference interval. Miniature Schnauzers with serum TAG and cholesterol concentrations within the reference interval had significantly different lipoprotein profiles than dogs of various other breeds. In addition, it was further established that specific lipoprotein fractions are associated with hypertriacylglyceridemia in Miniature Schnauzers. The results of the present study suggest that density gradient ultracentrifugation using NaBiEDTA is a useful screening method for the study of lipoprotein profiles in dogs. Therefore, this method could potentially be used for diagnostic purposes for the separation of dogs suspected of having lipoprotein abnormalities from healthy dogs.

24) **Thyroid function in 36 dogs with leishmaniosis due to *Leishmania infantum* before and during treatment with allopurinol with or without meglumine antimonate.** Saridomichelakis MN, Xenoulis PG, Chatzis MK, Kasabalis D, Steiner JM, Suchodolski JS, Petanides T. Vet Parasitol 2013, 197(1-2):22-8

Hypothyroidism may predispose to the development of canine leishmaniosis or it may appear during the course of the latter due to infiltration and destruction of the thyroid gland by infected macrophages. The main purpose of this study was to evaluate thyroid function through measurement of serum total thyroxin (tT_4), free thyroxin (fT_4), and canine thyroid stimulating hormone (cTSH) concentrations in 36 dogs with leishmaniosis, before and after 2 and 4 weeks of treatment with allopurinol with or without meglumine antimonate. Before treatment 27/36 (75%) dogs had serum tT_4 concentrations below the lower limit of the reference interval but only 2 of them had concurrently serum fT_4 concentrations below the lower limit of the reference interval and none had increased serum cTSH concentrations. During treatment there were no significant changes in serum tT_4 or fT_4 concentrations, whereas a significant increase in serum cTSH was observed. Two dogs had decreased serum tT_4 and fT_4 but normal cTSH concentrations before treatment and two other dogs had decreased serum tT_4 and increased cTSH, but normal fT_4 concentrations during the treatment period. Although hypothyroidism could not be definitively excluded in these dogs it is considered unlikely based on their overall hormonal profile, clinical presentation, and response to treatment. Therefore, hypothyroidism does not appear to be an important predisposing disease or a frequent complication of canine leishmaniosis.

25) **Intestinal *Tritrichomonas foetus* infection in cats: a retrospective study of 104 cases.** Xenoulis PG, Lopinski DJ, Read SA, Suchodolski JS, Steiner JM. J Feline Med Surg 2013, 15(12):1098-103.
The clinical presentation and response to treatment of cats infected with Tritrichomonas foetus have not been sufficiently described in a large number of pet cats. The aim of this study was to collect and analyze clinical data from pet cats diagnosed with intestinal T foetus infection. Clinical information was collected for 104 cats that tested polymerase chain reaction-positive for T foetus. The most common clinical sign was diarrhea (98%) with a median duration of 135 days (range 1-2880 days). Forty-nine of 83 (59%) cats had diarrhea since adoption. Other clinical signs included anorexia (22%), depression (24%), weight loss or failure to gain weight (20%), vomiting (19%), abdominal pain (9%) and increased appetite (3%). A total of 45 cats had completed treatment with ronidazole, 29 of which (64%) showed a good clinical response to treatment. Sixteen (36%) cats had either partial or no improvement, or a relapse shortly after discontinuation of treatment.

26) **Comparison of PCR and conventional blood culture to evaluate blood from dogs with suspected sepsis.** Heilmann RM, Xenoulis PG, Barr JW, Dowd SE, Suchodolski JS, Lawhon SD, Steiner JM. Vet J 2013, 198(3):714-716
Sepsis carries a poor prognosis in critically ill dogs. PCR-based diagnostics could be more sensitive for detecting bacteremia than conventional blood culture, allowing earlier initiation of appropriate therapy. Molecular techniques have been considered as ancillary tools for detecting bacteremia and identifying pathogens in humans and in dogs with bacterial endocarditis. This study compared PCR analysis and blood culture for detecting bacteremia in six dogs with suspected sepsis and six healthy control dogs. One blood culture from a dog with suspected sepsis was positive but none from the healthy controls. PCR was negative for extracts from all dogs. This pilot study does not support the hypothesis that culture-independent PCR-based techniques used directly on small samples of blood are useful for diagnosing bacteremia in dogs with suspected sepsis.

27) **Serum canine pancreatic lipase immunoreactivity concentrations in experimentally-induced and naturally-occurring canine monocytic ehrlichiosis**

(*Ehrlichia canis*). Mylonakis ME, Xenoulis PG, Theodorou K, Siarkou VI, Steiner JM, Harrus S, Leontides L, Rallis T, Suchodolski JS, Koutinas AF. Vet Microbiol 2014, 169(3-4):198-202
Ehrlichia canis infection causes multisystemic disease in dogs (canine monocytic ehrlichiosis, CME) which is associated with variable morbidity and mortality. Atypical clinical manifestations, including gastrointestinal signs, may occasionally occur in CME and approximately 10-15% of dogs are presented with historical or clinical evidence of vomiting, diarrhea, and/or abdominal discomfort. The objective of this study was to investigate if there are any alterations in serum canine pancreatic lipase immunoreactivity (cPLI) in dogs with experimentally induced or naturally occurring monocytic ehrlichiosis. Serum samples from 10 Beagle dogs experimentally infected with E. canis and two healthy uninfected Beagles were serially examined; samples from 20 naturally infected dogs (10 with non-myelosuppressive [NME] and 10 with myelosuppressive [ME] ehrlichiosis) were also examined at a given point in time (cross-sectional sampling). None of the experimentally infected Beagles showed gastrointestinal signs or increased cPLI concentrations prior to or following the artificial infection. Three naturally infected dogs with NME and one with ME demonstrated serum cPLI concentrations in the diagnostic range for pancreatitis (>400 μg/L) without showing gastrointestinal signs. The results of the present study indicated that 4/20 (20%) of dogs naturally infected with E. canis demonstrated increased serum cPLI concentrations consistent with mild and clinically inapparent pancreatitis.

28) **Prospective evaluation of serum pancreatic lipase immunoreactivity and troponin I concentrations in *Leishmania infantum*-infected dogs treated with meglumine antimonate.** Xenoulis PG, Saridomichelakis MN, Chatzis MK, Kasabalis D, Petanides T, Suchodolski JS, Steiner JM. Vet Parasitol 2014, 203; 326-330
Canine leishmaniosis (CanL) caused by Leishmania infantum is an important zoonotic disease. One of the most commonly used drugs for the treatment of CanL is meglumine antimonate. Drugs of this class have been associated with pancreatitis and cardiotoxicity in humans infected with Leishmania spp. The aim of this study was to measure serum canine pancreatic lipase immunoreactivity (Spec cPL) and cardiac troponin I (cTnI) concentrations in dogs with leishmaniosis during treatment with meglumine antimonate, and to compare them with those of dogs with leishmaniosis not treated with this drug. A total of 30 non-uremic dogs with leishmaniosis, living in Greece, were prospectively enrolled into the study. Of the 30 dogs, 20 (Group A) were treated with a combination of meglumine antimonate (100mg/kg, SC, q24h) and allopurinol (10mg/kg, PO, q12h) for 28 days, while 10 dogs (Group B) were treated with allopurinol alone (10mg/kg, PO, q12h) for 28 days. Blood samples were collected at timepoint 0 (before treatment) and at 14 and 28 days after the initiation of treatment. None of the dogs treated with meglumine antiomonate had a Spec cPL concentration suggestive of pancreatitis (≥400μg/L) or clinical signs suggestive of pancreatitis at any of the timepoints. Similarly, none of the dogs treated with meglumine antiomonate had a serum cTnI concentration above the upper limit of the reference range (>0.5ng/mL) or clinical evidence of cardiotoxicity at any of the 3 timepoints. In the present study, meglumine antimonate treatment in dogs with leishmaniosis did not result in clinical or laboratory evidence of either pancreatitis or cardiotoxicity.

29) **Development and analytical validation of an enzyme-linked immunosorbent assay for the measurement of feline tumor necrosis factor alpha in serum.** Steiner JM, Xenoulis PG, Schwierk V, Suchodolski JS. Vet Clin Pathol 2014, 43(3):397-404

The role of tumor necrosis factor alpha (TNF-α), a cytokine shown to play a crucial role in human Crohn's disease patients, in cats with chronic enteropathies is yet unknown. Also, a validated assay for measurement of TNF-α in cats is currently not available. Objectives: The objective of this study was to develop and analytically validate an enzyme-linked immunosorbent assay (ELISA) for the quantification of TNF-α in serum samples from cats. A sandwich ELISA was developed and analytically validated by assessment of detection limit, linearity, accuracy, precision, and reproducibility. A control range for serum fTNF-α concentration was established. Serum concentrations of fTNF-α were compared between 20 healthy cats and 39 cats with chronic enteropathies. The detection limit of the assay was 38.4 ng/L. Observed-to-expected ratios for serial dilutions of 4 serum samples ranged from 75.1 to 111.9%. Observed-to-expected ratios for spiking recovery for 4 serum samples ranged from 91.3 to 129.7%. Coefficients of variation for intra- and inter-assay variability ranged from 3.9 to 7.6 % and from 7.8 to 12.5 % for 4 serum samples, respectively. The control range was <223.5 ng/L. Serum concentrations of feline TNF-α were significantly higher in cats with chronic enteropathies and diarrhea than in cats with chronic enteropathies but without diarrhea or in healthy control cats. The ELISA described here was suitable for the quantification of fTNF-α in feline serum and should facilitate research into the importance of TNF-α in cats with chronic enteropathies.

30) **Diagnosis of pancreatitis in dogs and cats.** Xenoulis PG**.** J Small Anim Pract 2015, 56(1):13-26 (Invited review)
Pancreatitis is the most common disorder of the exocrine pancreas in both dogs and cats. Ante-mortem diagnosis of canine and feline pancreatitis can be challenging. The clinical picture of dogs and cats with pancreatitis varies greatly (from very mild to severe or even fatal) and is characterized by nonspecific findings. Complete blood count, serum biochemistry profile, and urinalysis should always be performed in dogs and cats suspected of having pancreatitis, although findings are nonspecific for pancreatitis. Serum amylase and lipase activities and TLI concentrations have no or only limited clinical value for the diagnosis of pancreatitis in either dogs or cats. Conversely, serum PLI concentration is currently considered to be the serum test of choice for the diagnosis of canine and feline pancreatitis. Abdominal radiography is a useful diagnostic tool for the exclusion of other diseases that may cause similar clinical signs to those of pancreatitis. Abdominal ultrasonography can very useful for the diagnosis of pancreatitis, but the diagnostic utility depends largely on the clinician’s experience. Abdominal radiography is a useful diagnostic tool for the exclusion of other diseases that may cause similar clinical signs to those of pancreatitis. Histopathologic examination of the pancreas is considered the gold standard for the diagnosis and classification of pancreatitis, but it is not free of limitations. In clinical practice, a combination of careful evaluation of the animal’s history, serum PLI concentration and abdominal ultrasonography, completed with pancreatic cytology or histopathology when indicated or possible, is considered to be the most practical and reliable means for an accurate diagnosis or exclusion of pancreatitis compared to other diagnostic modalities.

31) **Canine hyperlipidemia.** Xenoulis PG, Steiner JM. J Small Anim Pract 2015, 56(10):595-605 (Invited review)
Hyperlipidaemia refers to an increased concentration of lipids in the blood. Hyperlipidaemia is common in dogs and has recently emerged as an important clinical condition that requires a systematic diagnostic approach and appropriate treatment. Hyperlipidaemia can be either primary or secondary to other diseases. Secondary hyperlipidaemia is the most common form in dogs, and it can be a result of endocrine

disorders, pancreatitis, cholestasis, protein-losing nephropathy, obesity, as well as other conditions and the use of certain drugs. Primary hyperlipidaemia is less common in the general canine population but it can be very common within certain breeds. Hypertriglyceridaemia of Miniature Schnauzers is the most common form of primary hyperlipidaemia in dogs but other breeds are also affected. Possible complications of hyperlipidaemia in dogs include pancreatitis, liver disease, atherosclerosis, ocular disease and seizures. Management of primary hyperlipidaemia in dogs is achieved by administration of ultra low-fat diets with or without the administration of lipid lowering drugs such as omega-3 fatty acids, fibrates, niacin and statins.

32) **Prevalence and clinicopathological features of triaditis in a prospective case series of symptomatic and asymptomatic cats.** Fragkou FC, Adamama-Moraitou KK, Poutahidis T, Prassinos NN, Kritsepi-Konstantinou M, Xenoulis PG, Steiner JM, Lidbury JA, Suchodolski JS, Rallis TS. J Vet Intern Med 2016 30(4):1031-104

The term triaditis designates the concurrent presence of idiopathic inflammatory bowel disease (IBD), cholangitis, and pancreatitis in cats. The histopathology of concurrent, but often subclinical, inflammatory processes in the small intestine, liver, and pancreas of cats is poorly described. We aimed to investigate the frequency of enteritis, cholangitis, pancreatitis, or some combination of these in symptomatic and asymptomatic cats, compare clinicopathological features, and correlate histopathological with laboratory findings. Domestic cats (27 symptomatic, 20 asymptomatic, and 8 normal). Prospective study. Physical examination, laboratory variables (CBC, serum biochemistry profile, serum thyroxine concentration, serum feline trypsin-like immunoreactivity [fTLI], feline lipase immunoreactivity [fPLI, as measured by Spec fPL(®)], urinalysis, and fecal analysis), imaging, and histopathological examinations were conducted. Feline liver, pancreas, and small intestine were biopsied during laparotomy.Inflammatory lesions were detected in 47 cats (27 symptomatic, 20 asymptomatic). In total, 20 cats had histopathologic lesions of IBD (13/47, 27.7%), cholangitis (6/47, 12.8%), or pancreatitis (1/47, 2.1%) alone, or inflammation involving >1 organ (27/47, 57.4%). More specifically, 16/47 cats (34.0%) had concurrent lesions of IBD and cholangitis, 3/47 (6.4%) of IBD and pancreatitis, and 8/47 cats (17%) of triaditis. Triaditis was identified only in symptomatic cats (8/27, 29.6%). A mild, positive correlation was detected between the severity (score) of IBD lesions and the number of comorbidities (rho = +0.367, P = .022). Histopathological evidence of IBD or IBD with comorbidities was detected in both symptomatic and asymptomatic cats. The possibility of triaditis should be considered in symptomatic cats with severe IBD.

33) **Feline exocrine pancreatic insufficiency: a retrospective study of 150 cases.** Xenoulis PG, Zoran DL, Fosgate GT, Suchodolski JS, Steiner JM. J Vet Intern Med 2016, 30(6):1790-1797

Little information is available about the clinical presentation and response to treatment of cats with exocrine pancreatic insufficiency (EPI). Objectives: To describe the signalment, clinical signs, concurrent diseases, and response to treatment of cats with EPI. Animals: One hundred and fifty cats with EPI. Methods: Retrospective case series. Results: Questionnaires were sent to 261 veterinarians, and 150 (57%) were returned with data suitable for statistical analysis. The median age of the cats with EPI was 7.7 years. The median body condition score was 3 of 9. Ninety-two of 119 cats (77%) had hypocobalaminemia, and 56 of 119 cats (47%) had increased and 6 of 119 cats (5%) had decreased serum folate concentrations. Clinical signs included weight loss (91%),

unformed feces (62%), poor hair coat (50%), anorexia (45%), increased appetite (42%), lethargy (40%), watery diarrhea (28%), and vomiting (19%). Eighty-seven cats (58%) had concurrent diseases. Treatment response was reported to be good in 60%, partial in 27%, and poor in 13% of 121 cats. Trypsin-like immunoreactivity <4 μg/L was associated with a positive response to treatment (OR, 3.2; 95% CI, 1.5-7.0; P = .004). Also, cobalamin supplementation improved the response to treatment (OR, 3.0; 95% CI, 1.4-6.6; P = .006). Conclusions and clinical importance: Exocrine pancreatic insufficiency in cats often has a different clinical presentation than in dogs. The age range for EPI in cats is wide, and many cats can be ≤5 years of age. Most cats respond well to appropriate treatment for EPI, and cobalamin supplementation appears to be necessary for a good response.

34) **Cardiac Troponin I concentration in dogs with experimental monocytic ehrlichiosis (*Ehrlichia canis*).** Kalogianni L, Koutinas CK, Theodorou K, Xenoulis PG, Steiner JM, Suchodolski JS, Harrus S, Siarkou VI, Mylonakis ME. Vet J 2016, 217(11):109-111
Canine monocytic ehrlichiosis (CME, Ehrlichia canis) has occasionally been associated with myocardial injury. The aim of the present study was to serially measure and evaluate cardiac troponin I (cTnI) concentrations in dogs with experimentally induced acute and subclinical CME and to evaluate potential associations between cTnI concentration and an array of echocardiographic and electrocardiographic parameters. Serum cTnI concentration and simultaneous echocardiographic and electrocardiographic recordings were evaluated in 12 healthy Beagle dogs prior to experimental infection and on days 20 and 90 post-inoculation with E. canis. Almost all serum cTnI concentrations were below the limit of detection and selected electrocardiographic and echocardiographic parameters remained unchanged throughout the study.

35) **SNAP tests for pancreatitis in dogs and cats: SNAP cPL and SNAP fPL.** Xenoulis PG, Steiner JM. Top Comp Animal Med 2016, 31(4):134-139 (Invited review)
A clinical diagnosis of pancreatitis in dogs and cats can be challenging. Several diagnostic modalities have been evaluated over the years for the diagnosis of canine and feline pancreatitis, but most of these modalities have been shown to be of limited clinical use because of poor performance, limited availability, or because they are invasive, or all of these. Assays for the measurement of pancreatic lipase (PL) immunoreactivity [Specific canine PL (Spec cPL) in dogs and Specific feline PL (Spec fPL) in cats] were first developed approximately 15 years ago, and studies have shown that they are currently the serum tests of choice for the evaluation of canine and feline patients, respectively, suspected of having pancreatitis. This is a direct consequence of their high specificity of detecting only PL and their sensitivity for pancreatitis when compared with other serum tests. SNAP cPL and SNAP fPL are in-clinic tests that have been developed based on the Spec cPL and Spec fPL assays. As with any other test, false-positive and false-negative results do occur with PL immunoreactivity assays, and it is important to know the limitations of these assays.

36) **Serum alpha1-proteinase inhibitor concentrations in dogs with exocrine pancreatic disease, chronic hepatitis, or proteinuric chronic kidney disease.** Heilmann RM, Grützner N, Hokamp JA, Lidbury JA, Xenoulis PG, Suchodolski JS, Nabity MB, Cianciolo R, Steiner JM. Vet J. 2018, 236:68-71
Serum canine α1-proteinase inhibitor (cα1-PI) concentrations were evaluated in dogs with pancreatitis (n=24), exocrine pancreatic insufficiency (EPI; n=29), chronic hepatitis (CH;

n=11) or proteinuric chronic kidney disease (CKD-P; n=61) to determine whether systemic proteinase/proteinase-inhibitor balance is altered in these conditions. Dogs with CKD-P had significantly lower cα1-PI concentrations than dogs with pancreatitis, EPI or CH; 16% of dogs with CKD-P had serum cα1-PI concentrations below the reference interval. Serum and urine cα1-PI concentrations were inversely correlated in dogs with CKD-P, but not in dogs with CH. This suggests that renal loss of cα1-PI contributes to decreased serum concentrations in dogs with CKD-P, while hepatic cα1-PI synthesis with CH either is not compromised or is counterbalanced by extrahepatic production.

37) **Association of serum calprotectin (S100A8/A9) concentrations and idiopathic hyperlipidemia in Miniature Schnauzers.** Heilmann RM, Xenoulis PG, Müller K, Stavroulaki E, Suchodolski JS, Steiner JM. J Vet Intern Med 2019, 33(2):578-587
Background: Idiopathic hyperlipidemia (IH) is a common condition in Miniature Schnauzers (MS). Studies in people have linked IH to low-grade inflammation, which plays an important role in the pathogenesis of IH complications. The role of inflammation in MS with IH is unknown. Objective: Evaluation of the inflammatory markers serum calprotectin and S100A12 in MS with IH and in response to dietary intervention for IH management. Animals: One-hundred fifty clinically healthy MS. Methods: Serum triglyceride, cholesterol, calprotectin, and S100A12 concentrations were measured before and after placing the dogs on an ultra-low fat diet. Results: Hypertriglyceridemia (HTGL, $P < .001$) and hypercholesterolemia (HCHOL, $P = .01$) were independently associated with increased serum calprotectin but not S100A12 concentrations. Compared to normolipidemic MS, serum calprotectin concentrations were significantly higher in MS with HTGL ($P < .001$) or combined hyperlipidemia ($P = .02$), but not those with isolated HCHOL ($P = 1.0000$). Presence ($P = .005$) and severity ($P = .003$) of HTGL and serum cholesterol concentrations ($P = .04$) decreased in MS with IH within 14-26 weeks after being placed on the ultra-low fat diet, but neither serum calprotectin nor S100A12 concentrations changed significantly with this dietary intervention. Conclusions and clinical importance: Subclinical (low-grade) inflammation appears to be present in some MS with IH, and an ultra-low fat diet does not decrease serum concentrations of inflammatory proteins in those dogs. Whether this presumed inflammatory phenotype in MS with IH is associated with the development of IH complications (eg, insulin resistance) requires further research.

38) **Evaluation of nephrotoxicity and ototoxicity of aminosidine (paromomycin) in dogs with leishmaniosis due to *Leishmania infantum*: a randomized, blinded, controlled study.** Kasabalis D, Chatzis M, Apostolidis K, Xenoulis PG, Buono A, Petanides T, Leontides L, Polizopoulou Z, Steiner JM, Suchodolski JS, Saridomichelakis MN. Exp Parasitol 2019, 206: doi.org/10.1016/j.exppara.2019.107768
Canine leishmaniosis due to Leishmania infantum is a widespread zoonotic disease. Although aminosidine can be an effective treatment, current therapeutic recommendations do not advocate its use, mainly due to concerns regarding the potential nephrotoxicity and ototoxicity of this drug. The aim of this randomized, blinded, controlled study was to evaluate the nephrotoxicity and ototoxicity of aminosidine-allopurinol combination and compare it with that of meglumine antimonate-allopurinol combination in non-azotemic dogs with leishmaniosis. Forty dogs with leishmaniosis were randomly assigned to be treated with either aminosidine at 15 mg/kg, subcutaneously, once daily for 28 days (group A) or with meglumine antimonate at 100 mg/kg, subcutaneously, once daily for 28 days (group B). In addition to either drug, dogs in both groups were administered allopurinol at 10 mg/kg per os twice daily for 2 months. Kidney function was evaluated

through measurement of serum creatinine, urea nitrogen, inorganic phosphorus, and cystatin-c concentrations and complete urinalysis, including protein-to-creatinine ratio, at baseline and after 14, 28, and 60 days from the beginning of the treatment. At the same time points, vestibular and auditory functions were evaluated through neurological examination and brainstem auditory evoked response (BAER) recordings of wave I, wave V, inter-wave I-V latencies, and minimum hearing thresholds. None of the dogs developed clinicopathological evidence of kidney disease during the study. Serum creatinine concentration increased >0.3 mg/dl over baseline in 2 dogs in group A and in 5 dogs in group B. Parameters of kidney function were not significantly different or were improved compared to baseline and the only difference between the two groups was the lower concentration of serum creatinine in group A. None of the dogs developed peripheral vestibular syndrome or hearing impairment. At the end of the study, parameters of auditory function were not significantly different or were improved compared to baseline and there were no differences between the two groups. The results of this study show that the nephrotoxicity and ototoxicity of aminosidine, when administered to non-azotemic dogs with leishmaniosis at 15 mg/kg subcutaneously once daily for 28 days along with allopurinol, is minimal and does not differ from that of meglumine antimonate.

39) **Serum triglyceride and cholesterol concentrations and lipoprotein profiles in dogs with naturally occurring pancreatitis and healthy control dogs.** Xenoulis PG, Cammarata PJ, Walzem RL, Suchodolski JS, Steiner JM. Submitted for publication, J Vet Intern Med, 2019 (Accepted for publication)

Previous studies have reported an association between hyperlipidemia and pancreatitis in dogs, but details of this association remain obscure. The aims of the present study were to compare serum triglyceride and cholesterol concentrations and lipoprotein profiles between dogs with naturally occurring pancreatitis and healthy dogs. 17 dogs with a clinical diagnosis of pancreatitis (Group 1) and 53 healthy control dogs (Group 2). Prospective case-control study. In Group 13/ 17 dogs (18%) had hypertriglyceridemia while in Group 2, 4/53 dogs (7.5%) had hypertriglyceridemia (Odds ratio=2.63; 95% CI=0.52-13.14; p=0.35). There was a statistically significant difference in serum triglyceride concentrations between Group 1 (median: 67 mg/dL) and Group 2 (median: 54 mg/dL; p=0.0026). In Group 1, 4/17 dogs (24%) had hypercholesterolemia, while 1/53 (1.9%) dogs in Group 2 had hypercholesterolemia (Odds ratio=16; 95% CI=1.64-155.5; p=0.011). There was no statistically significant difference in serum cholesterol concentrations between Group 1 (median: 209 mg/dL) and Group 2 (median: 227 mg/dL; p=0.565). Lipoprotein profiles were distinctly different between Group 1 and Group 2 dogs (Eigenvalues = 0.6719; R2=1.0; p=0.0012). Most dogs with pancreatitis in the present study (>70%) had serum triglyceride and cholesterol concentrations within their reference intervals. In the small percentage of dogs that showed hypertriglyceridemia and/or hypercholesterolemia, increases were mild. Important differences were identified in lipoprotein profiles between dogs with pancreatitis and healthy control dogs. Dogs with pancreatitis had higher LDL fractions and lower TRL and HDL fractions than healthy dogs.

Book chapters

1) Pancreatic lipase immunoreactivity. Xenoulis PG, Steiner JM. In: Blackwell's Five-Minute Veterinary Consult: Laboratory Tests and Diagnostic Procedures. Vaden SL, Knoll JS, Smith F, Tilley LP (eds.), Wiley-Blackwell, Ames, Iowa, pp 462-463, 2009
This chapter is a detailed description of the usefulness of methods for detection of specific pancreatic lipase in the dog (Spec cPL) and cat (Spec fPL) in clinical practice. The biochemistry of pancreatic lipase and the specificity and sensitivity of the tests Spec cPL and Spec fPL are discussed, as are the problems and limitations of these tests, which should be known by the veterinarian for proper use and evaluation of test results.

2) **Diagnostic evaluation of the pancreas.** Xenoulis PG, Steiner JM. In: Canine and Feline Gastroenterology. Washabau RJ, Day MJ (eds.), Elsevier, St. Louis, Missouri, pp 803-812, 2013
In this chapter, which is part of the most detailed and comprehensive small animal gastroenterology reference book, is a detailed description of the methods currently used to diagnose diseases of the pancreas in the dog and cat. Discussed are serum amylase and lipase activities, serum TLI and PLI (Spec cPL) concentrations, abdominal radiography, ultrasound, and cytology and histopathology of the pancreas.

3) **Necrosis and inflammation: canine.** Xenoulis PG, Steiner JM. In: Canine and Feline Gastroenterology. Washabau RJ, Day MJ (eds.), Elsevier, St. Louis, Missouri, pp 812-821, 2013
This chapter is an extensive literature review of canine pancreatitis. Definitions and pathophysiology are discussed, as is the clinical presentation of dogs with pancreatitis. The recommended diagnostic approach to the diagnosis of pancreatitis and a detailed description of diagnostic methods are covered. An extensive description of the latest views on the treatment of pancreatitis in dogs is included.

4) **Pancreatitis.** Xenoulis PG, Steiner JM, Eric Monnet. In: Small Animal Soft Tissue Surgery. Monnet E (ed.), Wiley-Blackwell, Ames, Iowa, pp 488-505, 2013
This chapter contains a detailed description of the etiology, pathogenesis, diagnosis and treatment of pancreatitis in dogs and cats. Special emphasis is given to the pathogenesis, clinical presentation, diagnosis and surgical treatment of rare but serious complications of pancreatitis such as pancreatic abscess, pancreatic pseudocyst, necrotic pancreatic masses, etc.

5) **Approach to canine hyperlipidemia.** Xenoulis PG. In: Kirk's Current Veterinary Therapy XV. Bonagura JD, Twedt DC (eds.), Elsevier, St. Louis, Missouri, pp 261-266, 2014
Hyperlipidemia refers to an increased concentration of lipids in the blood (serum or plasma). Specifically, an increased blood concentration of triglycerides is referred to as hypertriglyceridemia, while an increased blood concentration of cholesterol is referred to as hypercholesterolemia. Hyperlipidemia is a common clinicopathologic finding in dogs. In contrast to human beings, hyperlipidemia has been traditionally considered a relatively benign condition in dogs and, therefore, clinical experience with and research regarding canine hyperlipidemia have been at their infancy. In the last decade, several studies in both humans and dogs have associated specific forms of hyperlipidemia with a much wider range of diseases than previously thought. Therefore, canine hyperlipidemia has emerged as an important clinical condition that requires detailed diagnostic approach and appropriate treatment. A detailed review of canine lipoprotein structure and metabolism, as well as in depth discussion on the causes and consequences of hyperlipidemia is

beyond the scope of this chapter. This chapter will focus on the diagnostic and therapeutic approach of dogs with hyperlipidemia.

6) **Tritrichomonas infection.** Xenoulis PG. In: Clinical Veterinary Advisor: Dogs and Cats, 3rd ed. Cote E (ed.), Elsevier, St. Louis, Missouri, pp 1021-1022, 2015

Over the past few years, the protozoan parasite Tritrichomonas foetus (T. foetus) has emerged as a new and important cause of feline diarrhea in the international veterinary community. The protozoan parasite T. foetus has been primarily known as a cause of trichomoniasis in cattle. In this animal species, the parasite affects the reproductive system of both males and females, and is associated with infertility and other reproductive problems. It was first described as a cause of feline diarrhea in 2003 in the United States. Since then, feline T. foetus-associated diarrhea has been reported in many countries around the world, and recently it was also described in cats in Greece. The trophozoites of the parasite are excreted in the feces and healthy cats are infected with the ingestion of T. foetus trophozoites. T. foetus affects mainly the colon and the distalsmall intestine. T. foetus-associated diarrhea occurs mainly in young cats, but cats of any age can be infected and develop clinical signs. The main clinical sign is diarrhea, which may contain mucus or blood, and often has spontaneous remissions and exacerbations. General clinical signs such as anorexia, weight loss and fever occur less frequently. If left untreated, the diarrhea often persists for months or years. In some cats the clinical signs eventually resolve without treatment, but this can take up to 2 years. Moreover, these animals usually remain infected and are a source of infection for other cats (or humans) and often the clinical signs relapse in situations of stress. Feline T. foetus infection can be diagnosed mainly by: a) microscopic examination of fecal samples, b) fecal culture specific for T. foetus and c) fecal PCR. None of the above methods is diagnostic in 100% of cases and therefore these methods should be used in combination, and bearing in mind the disadvantages of each method. Most antiparasitic and antibiotic drugs are not effective in treating diarrhea caused by T. foetus. Transient improvement can be seen with the use of common antibiotics or antiparasitic drugs, but the clinical signs typically recur with discontinuation of treatment. The only drug with proven efficacy against T. foetus in cats is ronidazol, which is usually used at a dose of 30 mg/kg, orally every 24 hours for 14 days. In some cases, the clinical sings recur with discontinuation of treatment but they usually resolve after one additional treatment cycle. The most serious side effect of ronidazole in cats is the development of neurological signs, but those usually resolve with discontinuation of treatment. Finally, T. foetus may be transmitted to humans, although this has not been proven.

7) **Cholesterol and Triglycerides.** Xenoulis PG. In: Textbook of Veterinary Internal Medicine, 8th ed. Ettinger S, Feldman E, Cote E (eds), Elsevier, St. Louis, Missouri, pp 252-256, 2017

Hyperlipidaemia refers to an increased concentration of lipids in the blood. Hyperlipidaemia is common in dogs and has recently emerged as an important clinical condition that requires a systematic diagnostic approach and appropriate treatment. Hyperlipidaemia can be either primary or secondary to other diseases. Secondary hyperlipidaemia is the most common form in dogs, and it can be a result of endocrine disorders, pancreatitis, cholestasis, protein-losing nephropathy, obesity, as well as other conditions and the use of certain drugs. Primary hyperlipidaemia is less common in the general canine population but it can be very common within certain breeds. Hypertriglyceridaemia of Miniature Schnauzers is the most common form of primary hyperlipidaemia in dogs but other breeds are also affected. Possible complications of

hyperlipidaemia in dogs include pancreatitis, liver disease, atherosclerosis, ocular disease and seizures. Management of primary hyperlipidaemia in dogs is achieved by administration of ultra low-fat diets with or without the administration of lipid lowering drugs such as omega-3 fatty acids, fibrates, niacin and statins.

8) **Pancreatic Abscess.** Xenoulis PG. In: Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Gastrointestinal Diseases, 1st ed. Mott J, Morrison A (eds), Wiley & Sons, pp 628-631, 2019
Pancreatic abscesses are uncommon but usually severe complications of pancreatitis in dogs. This is one of the very few chapters in the English literature that describes the diagnosis and treatment of pancreatic abscesses in dogs and cats.

9) **Pancreatic Pseudocyst.** Xenoulis PG. In: Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Gastrointestinal Diseases, 1st ed. Mott J, Morrison A (eds), Wiley & Sons, pp 645-648, 2019
Pancreatic pseudocysts are rare complications of pancreatitis in dogs. This is one of the very few chapters in the English literature that describes the diagnosis and treatment of pancreatic pseudocysts in dogs and cats.

10) **Hepatic Lipidosis.** Xenoulis PG. In: Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Gastrointestinal Diseases, 1st ed. Mott J, Morrison A (eds), Wiley & Sons, pp 763-770, 2019
Feline hepatic lipidosis is a common and potentially fatal liver disorder. Although the pathophysiologic mechanisms of FHL remain elusive, there is an imbalance between the influx of fatty acids from peripheral fat stores into the liver, de novo liposynthesis, and the rate of hepatic oxidation and dispersal of hepatic TAG via excretion of very-low density lipoproteins. The diagnosis of FHL is based on anamnestic, clinical, and clinicopathologic findings, associated with diagnostic imaging of the liver, and cytology, or histological examination of liver biopsies. Fluid therapy, electrolyte correction and adequate early nutrition are essential components of the therapy for FHL. This chapter describes the recent advances in feline hepatic lipidosis.

11) **Hepatic Encephalopathy.** Chatzis MK, Xenoulis PG. In: Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Gastrointestinal Diseases, 1st ed. Mott J, Morisson A (eds), Wiley & Sons, pp 748-754, 2019
This chapter reviews hepatic encephalopathy in companion animals. Clinical signs and categories of hepatic disease likely to cause HE are discussed. Ammonia has a key role in pathogenesis and current concepts in body ammonia metabolism are reviewed. Inflammation and manganese accumulation are also thought to be important in pathogenesis. Treatment of HE in acute and chronic cases is discussed along with the rationale for current treatment recommendations. Potential avenues for new treatments and human treatments, which may be transferable to companion animals, are reviewed.

12) **Disorders of lipid metabolism.** Xenoulis PG. In: Handbook of Feline Endocrinology. 1st ed. Feldman E, Peterson M, Fracassi F (eds), Edra, Milan, Italy, pp 609-626, 2019
Hyperlipidaemia refers to an increased concentration of lipids in the blood. Hyperlipidaemia is common in dogs and has recently emerged as an important clinical condition that requires a systematic diagnostic approach and appropriate treatment. Hyperlipidaemia can be either primary or secondary to other diseases. Secondary

hyperlipidaemia is the most common form in cats, and it can be a result of endocrine disorders, pancreatitis, cholestasis, protein-losing nephropathy, obesity, as well as other conditions and the use of certain drugs. Primary hyperlipidaemia is less common in the general feline population but it can be very common within certain breeds. Possible complications of hyperlipidaemia in dogs include pancreatitis, liver disease, atherosclerosis, ocular disease and seizures. Management of primary hyperlipidaemia in dogs is achieved by administration of ultra low-fat diets with or without the administration of lipid lowering drugs such as omega-3 fatty acids, fibrates, niacin and statins.

13) **Tritrichomonas infection.** Xenoulis PG. In: Cote's Clinical Veterinary Advisor: Dogs and Cats, 4th ed. Cohn L, Cote E (eds), Elsevier, St. Louis, Missouri, pp 997-998, 2019

Over the past few years, the protozoan parasite Tritrichomonas foetus (T. foetus) has emerged as a new and important cause of feline diarrhea in the international veterinary community. The protozoan parasite T. foetus has been primarily known as a cause of trichomoniasis in cattle. In this animal species, the parasite affects the reproductive system of both males and females, and is associated with infertility and other reproductive problems. It was first described as a cause of feline diarrhea in 2003 in the United States. Since then, feline T. foetus-associated diarrhea has been reported in many countries around the world, and recently it was also described in cats in Greece. The trophozoites of the parasite are excreted in the feces and healthy cats are infected with the ingestion of T. foetus trophozoites. T. foetus affects mainly the colon and the distalsmall intestine. T. foetus-associated diarrhea occurs mainly in young cats, but cats of any age can be infected and develop clinical signs. The main clinical sign is diarrhea, which may contain mucus or blood, and often has spontaneous remissions and exacerbations. General clinical signs such as anorexia, weight loss and fever occur less frequently. If left untreated, the diarrhea often persists for months or years. In some cats the clinical signs eventually resolve without treatment, but this can take up to 2 years. Moreover, these animals usually remain infected and are a source of infection for other cats (or humans) and often the clinical signs relapse in situations of stress. Feline T. foetus infection can be diagnosed mainly by: a) microscopic examination of fecal samples, b) fecal culture specific for T. foetus and c) fecal PCR. None of the above methods is diagnostic in 100% of cases and therefore these methods should be used in combination, and bearing in mind the disadvantages of each method. Most antiparasitic and antibiotic drugs are not effective in treating diarrhea caused by T. foetus. Transient improvement can be seen with the use of common antibiotics or antiparasitic drugs, but the clinical signs typically recur with discontinuation of treatment. The only drug with proven efficacy against T. foetus in cats is ronidazol, which is usually used at a dose of 30 mg/kg, orally every 24 hours for 14 days. In some cases, the clinical sings recur with discontinuation of treatment but they usually resolve after one additional treatment cycle. The most serious side effect of ronidazole in cats is the development of neurological signs, but those usually resolve with discontinuation of treatment. Finally, T. foetus may be transmitted to humans, although this has not been proven.

14) **Exocrine Pancreatic Insufficiency in Dogs and Cats**. Xenoulis PG. In: Clinical Small Animal Internal Medicine. 1st ed. Bruyette D (ed), Wiley-Blackwell, pp 581-587, 2020

This chapter summarizes research performed during the last decades that has had an impact on the diagnosis and management of exocrine pancreatic insufficiency (EPI) in

dogs. Pancreatic acinar atrophy is by far the most common cause for the maldigestion signs of canine EPI. The ability to diagnose pancreatic acinar atrophy in the subclinical phase before the development of total acinar atrophy and manifestation of clinical signs has offered new possibilities to study the pathogenesis of the disease. Diagnosis of exocrine pancreatic dysfunction is based on typical findings in clinical histories and clinical signs and is confirmed with pancreatic function tests. In recent years, the measurement of serum canine trypsin-like immunoreactivity has become the most commonly used pancreatic function test to diagnose canine EPI. Serum trypsin-like immunoreactivity measurement is species- and pancreas-specific. When clinical maldigestion signs of EPI appear, enzyme replacement therapy is indicated. Despite accurate enzyme supplementation, only a small portion of orally administered enzymes are delivered functionally intact into the small intestine. In dogs, the highest enzyme activity in the duodenum has been obtained with nonenteric-coated supplements: raw chopped pancreas or powdered enzymes. Aside from dietary enzyme supplements, dietary changes are often made to improve clinical response, but sometimes weight gain and stool quality remain suboptimal. Other medications for treatment of gastrointestinal tract signs are often used in such dogs with EPI. Antibiotics are the most common adjunctive medication. Of the antibiotics administered, tylosin is used in Finland almost exclusively.

Proceedings

1) Antiemetic treatment in dogs and cats. Xenoulis PG. Proceedings of the 9th Panhellenic Veterinary Conference for Small Animals, Athens, Greece, 2010, p. 281-285.
This paper provides a detailed description of the mechanisms of induction of vomiting as well as the basic diagnostic approach that the clinician should follow in animals presenting with vomiting. A description of the mechanism of action, side effects, and clinical usefulness of drugs currently used for the symptomatic treatment of vomiting in dogs and cats (phenothiazines, metoclopramide, serotonin receptor antagonists, angiotensin receptor NK-1) follows.

2) **Treatment of chronic hepatitis in dogs.** Xenoulis PG. Proceedings of the 9th Panhellenic Veterinary Conference for Small Animals, Athens, Greece, 2010, p. 264-268.
This paper discusses the etiology, pathophysiology and diagnostic approach to dogs with chronic hepatitis. There is also a detailed description of current treatment of chronic hepatitis in the dog, which includes the following: 1) removal of the causative factor (whenever possible), 2) nutritional support, 3) reduction of the inflammation of the liver (with the administration of glucocorticoids, azathioprine or cyclosporine), 4) reduction or prevention of fibrosis (with the administration of colchicine) and 5) general liver support (with the administration of ursodeoxycholic acid, S-adenosyl-methionine, vitamin E and/or silymarin). Furthermore, when complications due to liver disease are identified (e.g., ascites, hepatic encephalopathy) they should be treated appropriately.

3) **Current concepts on the diagnosis of pancreatitis in dogs.** Xenoulis PG. Proceedings of the 9th Panhellenic Veterinary Conference for Small Animals, Athens, Greece, 2010, p. 272-276.
This paper, provides a detailed description of the clinical findings, the results of hematological and biochemical testing, and the specialized diagnostic tests currently used for the diagnosis of pancreatitis in dogs. The measurement of serum activities of lipase and amylase, the concentration of the specific pancreatic lipase, ultrasonography,

computed tomography and histology of the pancreas are discussed. For each diagnostic test, there is a detailed discussion on the disadvantages and advantages, as well as its usefulness in daily clinical practice.

4) **Diagnostic testing for gastrointestinal disease.** Xenoulis PG. 14th Annual Feline Medicine Symposium, Office of Continuing Education, College of Veterinary Medicine andBiomedical Sciences, Texas A&M University, 2010.
This paper describes the most important diagnostic tests and methods used for the diagnosis of gastrointestinal diseases of cats. Different methods of fecal examination, diagnostic tests used for the diagnosis of pancreatitis and pancreatic exocrine insufficiency, diagnostic tests for the diagnosis of chronic enteropathies (e.g., serum concentrations of vitamin B12 and folic acid, ultrasonography, histopathological examination of intestinal biopsies) and therapeutic trials (using specific diets or antibiotics) used for clinical differentiation of chronic enteropathies in the cat are discussed.

5) **Pancreatitis in cats: more common than you think.** Xenoulis PG. Proceedings of the 12th Panhellenic Veterinary Conference, Athens, Greece, 2012.
Once believed to be rare in cats, pancreatitis has recently emerged as a common and important disease in this species. It is the most common disease of the exocrine pancreas in the cat and mortality can be quite high if not treated properly. Clinical diagnosis of pancreatitis in cats remains difficult and treatment is mainly based on supportive measures. This paper discusses the incidence of pancreatitis in cats, the importance of the clinical picture and the clinical examination for the diagnosis of pancreatitis, and the use of sensitive and specific diagnostic tests (measurement of specific pancreatic lipase, ultrasonography, histopathology and cytology) for the diagnosis of pancreatitis in cats.

6) **Chronic enteropathies in dogs and cats: what you need to know.** Xenoulis PG. Proceedings of the 12th Panhellenic Veterinary Conference, Athens, Greece, 2012.
This paper discusses the most important diagnostic and therapeutic points of chronic enteropathies in dogs and cats. Chronic enteropathies include, among other conditions, food-responsive enteropathy, antibiotic-responsive enteropathy, idiopathic inflammatory bowel disease, and tumors of the gastrointestinal tract. The clinical differentiation of individual diseases causing clinical signs of a chronic enteropathy is often difficult and sometimes only achieved after appropriate therapeutic trials. A correct diagnosis is essential for providing appropriate and effective treatment.

7) **Laboratory diagnosis of pancreatitis in dogs and cats.** Xenoulis PG. 30th ACVIM Forum, Seattle, Washington, USA, 2013
Pancreatitis is the most common disorder of the exocrine pancreas in dogs and cats. The term pancreatitis refers to inflammation (i.e., infiltration with inflammatory cells) of the exocrine pancreas, although it is often used to describe diseases of the exocrine pancreas characterized by necrosis, with or without an inflammatory component. Pancreatitis is generally divided into acute and chronic forms based on the absence or presence of permanent histopathologic lesions, respectively, such as pancreatic fibrosis and/or atrophy. The categorization of pancreatitis into acute and chronic has potential diagnostic, therapeutic, and prognostic implications. Despite recent advances in diagnostics, it is increasingly recognized that accurate clinical diagnosis of pancreatitis can be challenging. Several serum tests have been developed and evaluated over the past decades, but most have shown no or only limited usefulness for the diagnosis of pancreatitis in dogs and

cats. Although there has been substantial progress in the development of laboratory testing for pancreatitis, a definitive diagnosis cannot always be reached using laboratory testing alone. Proper use and correct interpretation of results of multiple diagnostic modalities is crucial for a correct diagnosis.

8) **Pancreatitis: when is surgery needed?** Xenoulis PG. Proceedings of the 5th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2014.
Pancreatitis is commonly seen in clinical practice and is associated with significant morbidity and mortality in both dogs and cats. Treatment of pancreatitis remains almost exclusively supportive and symptomatic. Surgical intervention is rarely required and it is used most frequently to treat pancreatic complications of pancreatitis (e.g., local fluid collections) or persistent biliary obstruction.

9) **Chronic diarrhea in dogs and cats.** Xenoulis PG. Proceedings of the 6th Forum of the Hellenic Small Animal Veterinary Society, Athens, Greece, 2015.
There is a paucity of research-based knowledge about chronic diarrhoea in dogs and cats. In the literature no studies can be found that confirms that round worm, whip worm, hook worm or giardia cause chronic diarrhoea in dogs and cats. For this reason, it is questionable to study endoparasites when clarifying the reason for chronic diarrhoea in dogs and cats. No study confirms that clostridium-, campylobacter- or salmonella species cause chronic diarrhoea signs in dogs. There is no research-based information to-date that endoscopy would be helpful in the diagnosis of dogs and cats with chronic diarrhoea or to monitor how the disease progresses. Neither no reliable laboratory test can be recommended to be used in evaluating the seriousness of the disease or to monitor the progress of the disease. There is no evidence based information on what food should be recommended for dogs suffering from diarrhoea. Only a few studies have been published that show how effective antibiotics are in the treatment of diarrhoeal dogs and cats. Many more studies are needed before it is possible to determine how effective corticosteroids are in the treatment of diarrhoea in dogs and cats.

10) **Feline friendly practices**. Xenoulis PG. Proceedings of the 7th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2016.
Feline friendly practices are becoming more and more popular. This article describes the important components of cat friendly practices and elaborates on the usefulness of cat friendly handling.
11) **Feline liver diseases.** Xenoulis PG. Proceedings of the 7th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2016.
Diseases of the biliary tree and gallbladder are more common in cats than diseases of the liver parenchyma. The parenchyma is usually affected secondarily to systemic illnesses, while the biliary system is the prime target for infectious agents (eg, bacteria and flukes) and non-infectious conditions (eg, neoplasia and cysts). Cats with biliary disease are evaluated because of common feline clinical signs such as anorexia, nausea, vomiting and lethargy. Icterus may or may not be obvious. Biopsies for histological evaluation, and bile aspirates for culture and cytological evaluation are helpful diagnostically. Antibiotics and immunosuppressive drugs have been used successfully. Hepatosupportive drugs may help in liquefying thick bile and protecting hepatic tissue from damage. Ultrasound is a noninvasive diagnostic tool that may help in identifying dilated bile ducts, liver cysts and choleliths. It is also used to guide percutaneous bile aspiration. This review, written for all veterinarians who treat cats, describes the various conditions that can affect the feline biliary tree and gallbladder. Treatment options are discussed, and brief summaries

provided of surgical techniques and diagnostic approaches. Evidence base The veterinary literature pertaining to feline biliary disease is comprehensively reviewed. When appropriate, data on dogs and humans has been included to provide background information. Based on the available literature, more research into feline biliary diseases is needed.

12) **Hyperlipidemia and gastroenterology.** Xenoulis PG. Proceedings of the 11th Congress of the Hellenic Veterinary Medical Society, Athens, 2016.
Hyperlipidemia is an important emergent condition in dogs. However, in contrast to humans, hyperlipidemia has been traditionally considered a relatively benign condition in dogs and, therefore, clinical experience with, and research regarding, canine hyperlipidemia have been limited. In the last decade, several studies in both humans and dogs have associated specific forms of hyperlipidemia with a much wider range of diseases than previously thought. Therefore, canine hyperlipidemia is emerging as an important clinical condition that requires a systematic diagnostic approach and appropriate treatment. The aim of this review is to provide the small animal clinician with the most up-to-date information on lipoprotein metabolism, the clinical consequences of hyperlipidemia, as well as the diagnostic and therapeutic approach of hyperlipidemic dogs.

13) **Feline infectious peritonitis.** Xenoulis PG. Proceedings of the 8th Forum of the Hellenic Small Animal Veterinary Society, Athens, Greece, 2017.
Feline infectious peritonitis (FIP) is one of the most important fatal infectious diseases of cats, the pathogenesis of which has not yet been fully revealed. The present review focuses on the biology of feline coronavirus (FCoV) infection and the pathogenesis and pathological features of FIP. Recent studies have revealed functions of many viral proteins, differing receptor specificity for type I and type II FCoV, and genomic differences between feline enteric coronaviruses (FECVs) and FIP viruses (FIPVs). FECV and FIP also exhibit functional differences, since FECVs replicate mainly in intestinal epithelium and are shed in feces, and FIPVs replicate efficiently in monocytes and induce systemic disease. Thus, key events in the pathogenesis of FIP are systemic infection with FIPV, effective and sustainable viral replication in monocytes, and activation of infected monocytes. The host's genetics and immune system also play important roles. It is the activation of monocytes and macrophages that directly leads to the pathologic features of FIP, including vasculitis, body cavity effusions, and fibrinous and granulomatous inflammatory lesions. Advances have been made in the clinical diagnosis of FIP, based on the clinical pathologic findings, serologic testing, and detection of virus using molecular (polymerase chain reaction) or antibody-based methods. Nevertheless, the clinical diagnosis remains challenging in particular in the dry form of FIP, which is partly due to the incomplete understanding of infection biology and pathogenesis in FIP. So, while much progress has been made, many aspects of FIP pathogenesis still remain an enigma.

14) **Antibiotics, probiotics, and prebiotics in dogs with chronic diarrhea.** Xenoulis PG. Proceedings of the 9th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2018.
Antibiotic-responsive diarrhea (ARD) is an idiopathic syndrome causing chronic diarrhea in young, large-breed dogs. Why antibiotics are effective in controlling diarrhea is not understood, and whether small intestinal bacterial numbers are truly increased is now doubted, but previous focus on the condition being small intestinal bacterial overgrowth

has hampered the understanding of this condition. The name ARD simply defines the condition, and studies are now looking at the interaction of small intestinal bacteria and the mucosa to try to understand why it occurs. Probiotics and prebiotics might have a role in the management of this disease.

15) **Diagnosis of pancreatitis in dogs and cats.** Xenoulis PG. Proceedings of the 9th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2018.
Pancreatitis is the most common disorder of the exocrine pancreas in both dogs and cats. Ante-mortem diagnosis of canine and feline pancreatitis can be challenging. The clinical picture of dogs and cats with pancreatitis varies greatly (from very mild to severe or even fatal) and is characterized by nonspecific findings. Complete blood count, serum biochemistry profile, and urinalysis should always be performed in dogs and cats suspected of having pancreatitis, although findings are nonspecific for pancreatitis. Serum amylase and lipase activities and TLI concentrations have no or only limited clinical value for the diagnosis of pancreatitis in either dogs or cats. Conversely, serum PLI concentration is currently considered to be the serum test of choice for the diagnosis of canine and feline pancreatitis. Abdominal radiography is a useful diagnostic tool for the exclusion of other diseases that may cause similar clinical signs to those of pancreatitis. Abdominal ultrasonography can very useful for the diagnosis of pancreatitis, but the diagnostic utility depends largely on the clinician's experience. Abdominal radiography is a useful diagnostic tool for the exclusion of other diseases that may cause similar clinical signs to those of pancreatitis. Histopathologic examination of the pancreas is considered the gold standard for the diagnosis and classification of pancreatitis, but it is not free of limitations. In clinical practice, a combination of careful evaluation of the animal's history, serum PLI concentration and abdominal ultrasonography, completed with pancreatic cytology or histopathology when indicated or possible, is considered to be the most practical and reliable means for an accurate diagnosis or exclusion of pancreatitis compared to other diagnostic modalities.

16) **Gastrointestinal histopathology in dogs and cats.** Xenoulis PG. Proceedings of the 9th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2018.
Flexible endoscopy has become a valuable tool for the diagnosis of many small animal gastrointestinal (GI) diseases, but the techniques must be performed carefully so that the results are meaningful. This article reviews the current diagnostic utility of flexible endoscopy, including practical/technical considerations for endoscopic biopsy, optimal instrumentation for mucosal specimen collection, the correlation of endoscopic indices to clinical activity and to histopathologic findings, and new developments in the endoscopic diagnosis of GI disease. Recent studies have defined endoscopic biopsy guidelines for the optimal number and quality of diagnostic specimens from different regions of the gut. They also have shown the value of ileal biopsy in the diagnosis of canine and feline chronic enteropathies, and have demonstrated the utility of endoscopic biopsy specimens beyond routine hematoxylin and eosin histopathological analysis, including their use in immunohistochemical, microbiological, and molecular studies.

17) **Portosystemic shunts in dogs.** Xenoulis PG. Proceedings of the 9th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2018.
Traditionally, portosystemic shunts (PSSs) are best managed with surgical intervention. However, recent evidence suggests that several cases could potentially be managed medically. To accomplish this task, veterinarians must be able to identify dogs in which a PSS is a strong possibility. Dogs exhibit clinical signs that are both similar to and

different from the signs of PSSs in cats. Options for imaging canine PSSs include ultrasound, scintigraphy, and contrast radiography. Medical management stabilizes the critical patients in anticipation of surgery and is used for those patients in which surgical correction is not possible. Surgical options for PSS occlusion include techniques for acute vessel ligation or attenuation and for slow vessel occlusion. The prognosis is based on the degree of shunt occlusion and the ability of the liver to adapt to increased hepatic blood flow.

18) **Intestinal microbiota in dogs and cats in health and disease.** Proceedings of the 11th Forum of the Hellenic Small Animal Veterinary Society, Thessaloniki, Greece, 2020. There is a large and emerging interest in the role of the gastrointestinal microbiota in health and disease. This review serves to review the current knowledge and recommendations of the gastrointestinal microbiota in health and gastrointestinal disease. Further, this review evaluates the current literature and suggests guidelines for faecal microbial transplantation, a novel therapy for dysbiosis in veterinary medicine.

SCIENTIFIC ABSTRACTS

1) **Combined test for gastric emptying and oro-cecal transit time in healthy dogs before and after tylosin administration.** Steiner JM, Suchodolski JS, Ruaux CG, Berghoff N, Fetz K, Tress U, Stoll A, Rodrigues FH, Xenoulis P, Williams DA. 23rd Annual ACVIM Forum, J Vet Intern Med 2005; 19(3):475-476

2) **Serum pancreatic lipase immunoreactivity concentrations (cPLI) in dogs treated with potassium bromide and/or phenobarbital.** Steiner JM, Xenoulis P, Anderson JA, Barr AC, Williams DA. 23rd Annual ACVIM Forum, J Vet Intern Med 2005(3); 19:441

*3) **Detection of the gene encoding *Clostridium perfringens* enterotoxin in the small intestine of healthy dogs and dogs with diarrhea.** Xenoulis PG, Steiner JM, Granly L, Egelund T, Suchodolski JS. 24th Annual ACVIM Forum, J Vet Intern Med 2006; 20(3):751

*4) **Association between serum triglyceride and canine pancreatic lipase immunoreactivity (cPLI) concentrations in Miniature Schnauzers.** Xenoulis PG, Suchodolski JS, Ruaux CG, Swim ES, Steiner JM: 24th Annual ACVIM Forum, J Vet Intern Med 2006; 20(3):750

5) **Prevalence of *Clostridium hiranonis* in the intestinal tract of healthy dogs and dogs with gastrointestinal disease.** Suchodolski JS, Xenoulis PG, Steiner JM. 16th ECVIM-CA Congress, J Vet Intern Med 2006, 20(6): 1520-1521

6) **Histologic findings and minimally-invasive serum markers in dogs with neoplasia involving the pancreas.** Steiner JM, Newman SJ, Xenoulis PG, Woosley K, Suchodolski JS, Williams DA, Barton L. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21(3):650

7) **Comparison of sensitivity of minimally-invasive serum markers in dogs with macroscopic evidence of pancreatitis.** Steiner JM, Newman SJ, Xenoulis PG, Woosley

K, Suchodolski JS, Williams DA, BartonL. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21(3):614

8) **Identification of *Tritrichomonas foetus* DNA in feces from cats with diarrhea from Germany and Austria.** Steiner JM, Xenoulis PG, Read SA, Suchodolski JS, Globokar M, Huisinga, Thuere S. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21(3):649

9) **Prevalence of cobalamin deficiency in Chinese Shar Peis.** Bishop MA, Xenoulis PG, Suchodolski JS, Steiner JM. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21(3):613-614

10) **Identification of three mutations in the pancreatic secretory trypsin inhibitor gene of Miniature Schnauzers.** Bishop MA, Xenoulis PG, Suchodolski JS, Steiner JM. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21(3):614

*11) **Serum liver enzyme activities in healthy Miniature Schnauzers with and without hypertriglyceridemia.** Xenoulis PG, Suchodolski JS, Steiner JM. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21(3):651-652

*12) **Prevalence of hypertriglyceridemia in healthy Miniature Schnauzers.** Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. 25th Annual ACVIM Forum, J Vet Intern Med 2007; 21:614-615

13) **Molecular characterization of the fecal bacterial flora of healthy wild and captive parrots.** Gray PL, Xenoulis PG, Brightsmith D, Tizard I, Steiner JM, Suchodolski JS. Proceedings of the 28th Annual AAV Conference, Providence, RI, 2007; 271-273

14) **Evaluation of serum markers for exocrine pancreatic function and pathology in dogs presented for necropsy.** Steiner JM, Newman SJ, Xenoulis PG, Woosley K, Suchodolski JS, Williams DA, Barton L. Proceedings of the 32nd WSAVA Congress, Sydney, Australia, 2007

15) **Relationship between serum fPLI and triglyceride concentrations in cats.** Steiner JM, Aicher KM, Suchodolski JS, Xenoulis PG. 26th Annual ACVIM Forum, J Vet Intern Med 2008; 22(3):746-747

16) **Molecular analysis of the bacterial microflora in duodenal biopsies from dogs with inflammatory bowel disease.** Suchodolski JS, Jergens AE, Paddock CG, Xenoulis PG, Steiner JM. 26th Annual ACVIM Forum, J Vet Intern Med 2008; 22(3):803

17) **Characterization of the bacterial microflora and innate immunity response in German Shepherd dogs with antibiotic-responsive diarrhea.** Allenspach K, Suchodolski JS, McNeill FM, House A, Hendricks A, Xenoulis PG, Steiner JM, Werling D. 26th Annual ACVIM Forum, J Vet Intern Med 2008; 22(3):748

*18) **Relationship between mutations of the pancreatic secretory trypsin inhibitor gene and pancreatitis in Miniature Schnauzers and dogs of other breeds.** Bishop MA, Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. 26th Annual ACVIM Forum, J Vet Intern Med 2008; 22(3):745-746

*19) **Evaluation of the apolipoprotein C-II gene in Miniature Schauzers with idiopathic hypertriglyceridemia.** Xenoulis PG, Bishop MA, Suchodolski JS, and Steiner JM. 26th Annual ACVIM Forum, J Vet Intern Med 2008; 22(3):805

*20) **Evidence of insulin resistance in healthy Miniature Schnauzers with idiopathic hypertriglyceridemia.** Xenoulis PG, Mitsuhashi Y, Bauer JE, Levinski MD, Suchodolski JS, Steiner JM. 26th Annual ACVIM Forum, J Vet Intern Med 2008; 22(3):751-752

21) **Serum cobalamin, folate, and methylmalonic acid concentrations in healthy ferrets and ferrets with chronic diarrhea**. Hoppes S, Xenoulis PG, Berghoff N, Gray PL, Suchodolski JS, Steiner JM. Proceedings of the Annual AEMV Conference, Savannah, Georgia, 2008; 61-63

22) **Response of the avian fecal microflora to dietary change.** Gray PL, Xenoulis PG, Brightsmith D, Hoppes S, Tizard I, Steiner JM, Suchodolski JS. Proceedings of the 29th Annual AAV Conference, Savannah, Georgia, 2008; 311

*23) **Serum triglyceride concentrations in Miniature Schnauzers with and without a history of pancreatitis.** Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. 27th Annual ACVIM Forum, J Vet Intern Med 2009(3); 23:733

*24) **Serum fPLI and Spec fPL concentrations in cats with experimentally induced chronic renal failure.** Xenoulis PG, Finco DR, Suchodolski JS, Steiner JM. 27th Annual ACVIM Forum, J Vet Intern Med 2009; 23(3):758

*25) **Detection of *Tritrichomonas foetus* in cats from Greece.** Xenoulis PG, Saridomichelakis MN, Read SA, Suchodolski JS, Steiner JM. Proceedings of the 19th ECVIM-CA Congress, Porto, Portugal, 2009; 251

26) **Molecular assay for the detection of *Campylobacter* spp. in canine and feline fecal samples.** Suchodolski JS, Gossett N, Aicher KM, Heilmann RM, Xenoulis PG, Steiner JM. 28th Annual ACVIM Forum, J Vet Intern Med 2010; 24(3):748-749

27) **Association between breed and increased serum Spec cPL concentrations in dogs.** Bishop MA, Xenoulis PG, Suchodolski JS, Steiner JM. 28th Annual ACVIM Forum, J Vet Intern Med 2010; 24(3):752-753

*28) **Serum Spec cPL® concentrations in *Leishmania infantum*-infected dogs treated with meglumine antimonate.** Xenoulis PG, Saridomichelakis MN, Chatzis MK, Suchodolski JS, Steiner JM. 28th Annual ACVIM Forum, J Vet Intern Med 2010; 24(3):752

*29) **Intestinal *Tritrichomonas foetus* infection in cats: a retrospective study of 104 cases.** Xenoulis PG, Lopinski DJ, Doyal LC, Read SA, Suchodolski JS, Steiner JM. 28th Annual ACVIM Forum, J Vet Intern Med 2010; 24(3):750

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hypertriglyceridemia. Xenoulis PG, Levinski MD, Suchodolski JS, Steiner JM. 29th Annual ACVIM Forum, J Vet Intern Med 2011; 25:687

*31) **Serum triglyceride and cholesterol concentrations and lipoprotein profiles in dogs with naturally occurring pancreatitis and healthy control dogs.** Xenoulis PG, Cammarata PJ, Wooten K, Heilmann RM, Weber K, Walzem R, Macfarlane RD, Suchodolski JS, Steiner JM. 21st Annual ECVIM Congress, J Vet Intern Med 2011; 25(6):1488

32) **Comparison of blood PCR with blood culture in dogs with suspected sepsis.** Heilmann RM, Xenoulis PG, Barr J, Dowd SE, Suchodolski JS, Steiner JM. 30th Annual ACVIM Forum, J Vet Intern Med 2012; 26(3):818

*33) **Feline exocrine pancreatic insufficiency: 150 cases.** Xenoulis PG, Wooff P, Zoran DL, Doyal LC, Wooten K, Cutrone WN, Suchodolski JS, Steiner JM. 30th Annual ACVIM Forum, J Vet Intern Med 2012; 26(3):765

34) **Feline triaditis: a prospective study of 47 cases.** Fragkou F, Adamama-Moraitou KK, Poutahidis T, Prassinos N, Xenoulis PG, Steiner JM, Rallis T. 22nd Annual ECVIM Congress, J Vet Intern Med 2012; 26(6):1525

*35) **Effect of a low-fat diet on serum lipoprotein profiles in Miniature Schnauzers with primary hyperlipidemia.** Xenoulis PG, Cammarata PJ, Curtone W, Lopinski D, Wooten K, Walzem RW, Macfarlane RD, Suchodolski JS, Steiner JM. 31st Annual ACVIM Forum, J Vet Intern Med 2013; 27(3):742-743

36) **Thyroid function in dogs with leishmaniosis due to *Leishmania infantum* before and during treatment.** Saridomichelakis MN, Xenoulis PG, Chatzis MK, Kasabalis D, Steiner JM, Suchodolski JS, Petanides T. 26th Congress of the European College of Veterinary Dermatology, Vet Dermatology 2013; 24:393

37) **Serial serum concentrations of canine pancreatic lipase immunoreactivity, troponin I, total T4, free T4, and TSH in hospitalized dogs with parvoviral enteritis treated with oseltamivir (Tamiflu®) or placebo and associations with clinical outcome.** Soubasis N, Koutinas CK, Theodorou K, Papaioannou E, Xenoulis PG, Adamama-Moraitou K, Pardali D, Steiner JM, Kritsepi M, Suchodolski JS, Rallis T. 15th ESVCP Annual Congress, Vet Clin Pathol 2014, 42(4):E21

38) **"Feline triaditis: a prospective study of 47 cases.** Fragkou F, Adamama-Moraitou KK, Poutahidis T, Prasinos NN, Kritsepi M, Xenoulis P, Steiner JM, Rallis T. 6th Forum of the HCAVS, Athens, 2015 (proceedings in electronic form)

39) **Serum cardiac troponin I concentration and assessment of cardiac function in dogs with experimentally induced *Ehrlichia canis* infection.** Kalogianni L, Koutinas CK, Theodorou K, Xenoulis PG, Steiner JM, Suchodolski JS, Harrus S, Siarkou VI, Mylonakis ME. 16th ESVCP Annual Congress, Vet Clin Pathol 2015, 44(1): E7

40) **Investigation of the role of small intestinal bacterial overgrowth and the presence of bacteria in bile in the pathogenesis of triaditis in the cat.** Fragkou F, Adamama-Moraitou KK, Poutahidis T, Prasinos NN, Dimitrakopoulou F, Kritsepi-

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*42) **Specificity of SNAP fPL for the diagnosis of pancreatitis in healthy cats and sick cats without clinical suspicion of pancreatitis.** Xenoulis PG, Chatzis MK, Kokkinaki K, Stavroulaki EM, Saridomichelakis MN. 27th ECVIM-CA Congress, J Vet Intern Med 2018; 32(1):578

43) **Serum S100/calgranulin concentrations in Miniature Schnauzers with idiopathic hyperlipidemia.** Heilmann RM, Xenoulis PG, Müller K, Stavroulaki E, Suchodolski JS, Steiner JM. 27th ECVIM-CA Congress, J Vet Intern Med 2018; 32(1):535

44) **Immune-mediated neutropenia in a cat.** Stavroulaki E, Papanikolaou E, Hatzis A, Xenoulis PG. 9ο Forum, ΕΛΕΚΖΣ, Θεσσαλονίκη, 2018 (πρακτικά σε ηλεκτρονική μορφή)

45) **A retrospective study of pemphigus foliaceus in four cats (2010- 2017).** Tseliki M, Saridomichelakis MN, Papanikolaou E, Xenoulis PG. 14ο Panhellenic Veterinary Congress, HVMS, Thessaloniki, 2018, pp. 109-110

46) **Association between serum calprotectin concentrations and insulin resistance in Miniature Schnauzers with idiopathic hyperlipidemia.** Heilmann RM, Xenoulis PG, Gneipel J, Riggers D, Stavroulaki E, Suchodolski JS, Steiner JM. 2018 ACVIM Forum, J Vet Intern Med, 2018; 32(3):2235

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48) **Identification of genetic risk factors of hypertriglyceridemia in Miniature Schnauzers.** Tate NM, Lohman M, Minor KM, Xenoulis P, Steiner JM, Mickelson JR, McCue ME1, Furrow E. 10th International Conference on Canine and Feline Genetics and Genomics, 2019, Bern, Switzerland, Proceedings p. 86

49) **Impact of antibiotic administration on fecal bacterial groups potentially associated with dysbiosis in kittens.** Stavroulaki EM, Suchodolski JS, Lidbury JA, Steiner JM, Xenoulis PG. 29th ECVIM-CA Congress, Milan Italy

50) **Evaluation of post-heparin lipase activity using 1,2-O-dilauryl-rac-glycero-3-glutaric acid-(6'-methylresorufin) ester (DGGR) lipase assay in cats and dogs.** Lim SY, Xenoulis PG, Stavroulaki EM, Lidbury J, Suchodolski JS, Carrière F, Steiner JM. Proceedings of the 6th Asian Meeting of Animal Medicine Specialties 2019, Shanghai, China, p 194

51) **Congenital hypothyroidism in the cat: a report of two cases.** Karra DA, Xenoulis PG. 11th Forum of the HCAVS, Thessaloniki, 2020 (Proceedings in electronic form)

52) **Specificity of Spec fPL and SNAP fPL in healthy cats and diseased cats without a clinical suspicion of pancreatitis.** Spanou VM, Chatzis MK, Saridomichelakis MN, Steiner JM, Xenoulis PG. 11th Forum of the HCAVS, Thessaloniki, 2020 (Proceedings in electronic form)

PRESENTATIONS

Invited Lectures

02-2009 to 11-2009	Feline Internal Medicine – Monthly Grand Rounds (webconference) College of Veterinary Medicine and Biomedical Sciences, Texas A&M University (Participation as an online guest presenter)
03-2010	**Antiemetic treatment in the dog and cat.** 9th Panhellenic Small Animal Veterinary Conference, HVMS, Athens
03-2010	**Treatment of canine chronic hepatitis.** 9th Panhellenic Small Animal Veterinary Conference, EKE, Athens
03-2010	**Current concepts on the diagnosis of canine pancreatitis.** 9th Panhellenic Small Animal Veterinary Conference, HVMS, Athens
04-2010	**Diagnostic testing for gastrointestinal disease.** 14th Annual Feline Medicine Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, Texas, USA
04-2012	**Feline pancreatitis: more common than you think.** 12th Panhellenic Small Animal Veterinary Conference, HVMS, Athens
04-2012	**Chronic intestinal disease in the dog: what you need to know.** 12th Panhellenic Small Animal Veterinary Conference, HVMS, Athens
06-2013	**Laboratory diagnosis of pancreatitis in dogs and cats.** 31st ACVIM Forum, Seattle, Washington, June 2013
10-2013	**Lipoprotein metabolism in dogs I.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Lipoprotein metabolism in dogs II.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Genetics of canine hyperlipidemia.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Management of canine hyperlipidemia.**

	Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Pancreatitis and hyperlipidemia in dogs.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Hyperlipidemia, hepatic disease, and insulin resistance in dogs.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Diagnostic approach to canine hyperlipidemia.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Primary hyperlipidemia in dogs.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Secondary hyperlipidemia in dogs.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Feline acromegaly.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Feline hyperthyroidism I**. Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
10-2013	**Feline hyperthyroidism II.** Intensive course on Endocrinology and metabolism in companion animals, ANCLIVEPA, Sao Paulo, Brazil
03-2014	**Pancreatitis: when is surgery required?** 5th HCAVS Forum, Thessaloniki
03-2015	**Canine chronic enteropathies.** 6th HCAVS Forum, Athens
03-2016	**The cat friendly practice.** 7th HCAVS Forum, Thessaloniki
03-2016	**Hepatic lipidosis, cholangitis, and hepatic cysts in the cat.** 7th HCAVS Forum, Thessaloniki
11-2016	**Hyperlipidemia and gastroenterology.** 11th Panhellenic Small Animal Veterinary Conference, HVMS, Athens
02-2017	**Chronic diarrhea in the cat: a diagnostic challenge.** Gerolymatos International, Aegli, Zappeio, Athens
03-2017	**The diagnostic and therapeutic challenge of feline infectious peritonitis.** 8th HCAVS Forum, Athens
03-2018	**Antibiotics, probiotics and prebiotics in canine chronic diarrhea.** 9th HCAVS Forum, Thessaloniki
03-2018	**Pancreatitis in the dog and cat: a diagnostic challenge.** 9th HCAVS Forum, Thessaloniki
03-2018	**Portosystemic shunts in the dog.** 9th HCAVS Forum, Thessaloniki

03-2018	**Interpretation of histopathologic findings from a clinical standpoint.** 9th HCAVS Forum, Thessaloniki
09-2018	**Chronic kidney disease in the cat: early diagnosis, treatment and prognosis.** Astron Chemicals AE (Hill's), Aegli, Zappio, Athens
03-2019	**Understanding the cat and its needs.** Meeting on quality of life for animals, IVSA Thessaly, Karditsa
04-2019	**Post-graduate veterinary programs.** Youth Business Lab for Vets, IVSA Thessaly, Karditsa
09-2019	**Intestinal microbiome and intestinal dysbiosis in the dog and cat.** Astron Chemicals AE (Hill's), Plaza Resort Hotel, Anavissos, Athens
10-2019	**Raw diets: the risk of transmission of infectious agents to animals.** HVMS, Meeting entitled "Raw diets: safe or not?". School of Public Health, Athens
10-2019	**Raw diets: are they nutritionally balanced?** HVMS, Meeting entitled "Raw diets: safe or not?". School of Public Health, Athens
12-2019	**Intestinal microbioma and intestinal dysbiosis in the dog and cat.** Astron Chemicals AE (Hill's), Webinar

Abstract presentations

02-26-2006	"Association between serum triglyceride and canine pancreatic lipase immunoreactivity (cPLI) concentrations in Miniature Schnauzers"; GUTSKI 2006; 5th Annual Meeting of the Comparative Gastroenterology Society (CGS); Winter Park, CO
06-02-2006	"Detection of the gene encoding *Clostridium perfringens* enterotoxin in the small intestine of healthy dogs and dogs with diarrhea"; 24th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM); Louisville, KY
06-02-2006	"Association between serum triglyceride and canine pancreatic lipase immunoreactivity (cPLI) concentrations in Miniature Schnauzers"; 24th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM); Louisville, KY
04-03-2007	"Hypertriglyceridemia and gastrointestinal disease in Miniature Schnauzers"; GUTSEA 2007; 6th Annual Meeting of the Comparative Gastroenterology Society (CGS); San Pedro, Belize
06-08-2007	"Prevalence of hypertriglyceridemia in healthy Miniature Schnauzers"; 25th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM); Seattle, WA
02-27-2008	"Molecular analysis of the small intestinal microflora in dogs with IBD"; GUTSKI 2008; 7th Annual Meeting of the

	Comparative Gastroenterology Society (CGS); Winter Park, CO
06-07-2008	"Evidence of insulin resistance in healthy Miniature Schnauzers with idiopathic hypertriglyceridemia"; 26th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM); San Antonio, TX
03-01-2009	"Is hyperlipidemia clinically significant in dogs?" GUTSEA 2009; 8th Annual Meeting of the Comparative Gastroenterology Society (CGS); Playa del Carmen, Mexico
03-02-2010	"Gastrointestinal diseases associated with canine leishmaniosis and its treatment" GUTSKI 2010; 9th Annual Meeting of the Comparative Gastroenterology Society (CGS); Winter Park, CO
09-09-2011	"Serum triglyceride and cholesterol concentrations and lipoprotein profiles in dogs with naturally occurring pancreatitis and healthy control dogs" 21st Congress of the European College of Veterinary Internal Medicine (ECVIM); Seville, Spain
05-31-2012	"Feline exocrine pancreatic insufficiency: 150 cases" 30th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM); New Orleans, LA
06-14-2013	"Effect of a low-fat diet on serum lipoprotein profiles in Miniature Schnauzers with primary hypertrilipidemia" 31st Annual Forum of the American College of Veterinary Internal Medicine (ACVIM); Seattle, WA

Poster presentations

06-07-2007	"Serum liver enzyme activities in healthy Miniature Schnauzers with and without hypertriglyceridemia" 25th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM), Seattle, WA
06-06-2008	"Evaluation of the apolipoprotein C-II gene in Miniature Schauzers with idiopathic hypertriglyceridemia." 26th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM), San Antonio, TX
06-11-2010	Serum Spec cPL® concentrations in *Leishmania infantum*-infected dogs treated with meglumine antimonate. 28th Annual Forum of the America College of Veterinary Internal Medicine (ACVIM), Anaheim, CA
06-11-2010	*Tritrichomonas foetus* infection in cats: a retrospective study of 104 cases. 28th Annual Forum of the American College of Veterinary Internal Medicine (ACVIM), Anaheim, CA
14-09-2017	Specificity of SNAP fPL for the diagnosis of pancreatitis in healthy cats and sick cats without clinical suspicion of pancreatitis. 27th ECVIM-CA Congress, St. Julian's, Malta

SCIENTIFIC MEETINGS ATTENDED

10-2019	Hellenic Veterinary Society Conference on Raw Diets in dogs and cats, Athens, Greece
10-2019	Eastern European Regional Veterinary Conference, Thessaloniki, Greece
09-2019	29th Congress of the European College of Veterinary Internal Medicine, Milan, Italy
05-2019	1st Eurogutsea Meeting of the Comparative Gastroenterology Society and the European Society of Comparative Gastroenterology, Barcelona, Spain
03-2019	10th Forum of the Hellenic Companion Animal Veterinary Society, Athens, Greece
11-2018	12th Dermatology Conference of the Hellenic Society of Veterinary Dermatology, Thessaloniki, Greece
09-2018	28th Congress of the European College of Veterinary Internal Medicine, Rotterdam, Netherlands
03-2018	9th Forum of the Hellenic Companion Animal Veterinary Society, Thessaloniki, Greece
03-2018	The Vet Symposium, Royal Canin, Montpellier, France
11-2017	11th Dermatology Conference of the Hellenic Society of Veterinary Dermatology, Athens, Greece
09-2017	27th Congress of the European College of Veterinary Internal Medicine, St. Julian's, Malta
03-2017	8th Forum of the Hellenic Companion Animal Veterinary Society, Athens, Greece
11-2016	11th Small Animal Panhellenic Veterinary Conference, Athens, Greece
10-2016	2-Day Hematology Course, Hellenic Companion Animal Veterinary Society, Athens, Greece
06-2016	22nd FECAVA Eurocongress, Hofburg, Vienna
03-2016	7th Forum of the Hellenic Companion Animal Veterinary Society, Thessaloniki, Greece
11-2015	10th Dermatology Conference of the Hellenic Society of Veterinary Dermatology, Athens, Greece
03-2015	6th Forum of the Hellenic Companion Animal Veterinary Society, Athens, Greece
03-2014	5th Forum of the Hellenic Companion Animal Veterinary Society, Thessaloniki, Greece
12-2013	9th Dermatology Conference of the Hellenic Society of Veterinary Dermatology, Athens, Greece
06-2013	31st Annual Forum of the American College of Veterinary Internal Medicine, Seattle, WA
05-2012	30th Annual Forum of the American College of Veterinary Internal Medicine, New Orleans, LA
04-2012	12th Panhellenic Veterinary Conference, Athens, Greece
09-2011	21st Congress of the European College of Veterinary Internal Medicine, Seville, Spain
10-2010	Canine Leptospirosis 2010: Update on Diagnosis, Management, and Prevention, College of Veterinary Medicine and

	Biomedical Sciences, Texas A&M University, College Station, TX
06-2010	28th Annual Forum of the American College of Veterinary Internal Medicine, Anaheim, CA
04-2010	14th Annual Feline Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
03-2010	9th Panhellenic Conference on Companion Animal Medicine, Athens, Greece
03-2010	GUTSKI 2010, 9th Annual Meeting of the Comparative Gastroenterology Society, Winter Park, CO
01-2010	27th North American Veterinary Conference, Orlando, FL
09-2009	Workshop on Research Communication, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
09-2009	Canine Medicine Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
08-2009	Oncology/Cytology Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
04-2009	13th Annual Feline Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
03-2009	GUTSEA 2009, 8th Annual Meeting of the Comparative Gastroenterology Society, Playa del Carmen, Mexico
02-2009 to 11-2009	Feline Internal Medicine - Monthly Grand Rounds, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
11-2008	Small Animal Emergency Medicine and Critical Care Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
06-2008	26th Annual Forum of the American College of Veterinary Internal Medicine, San Antonio, TX
05-2008	Digestive Disease Week, San Diego, CA
04-2008	12th Annual Feline Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
02-2008	GUTSKI 2008, 7th Annual Meeting of the Comparative Gastroenterology Society, Winter Park, CO
01-2008	25th North American Veterinary Conference, Orlando, FL
10-2007	Veterinary Anesthesia and Analgesia Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
08-2007	Small Animal Dermatology Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
06-2007	25th Annual Forum of the American College of Veterinary Internal Medicine, Seattle, WA
05-2007	Digestive Disease Week, Washington, DC

04-2007	11th Annual Feline Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
03-2007	GUTSEA 2007, 6th Annual Meeting of the Comparative Gastroenterology Society, San Pedro, Belize
12-2006	Annual Exotic Pets Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
12-2006	Clinical Neurology Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
06-2006	24th Annual Forum of the American College of Veterinary Internal Medicine, Louisville, KY
05-2006	Digestive Disease Week, Los Angeles, CA
03-2006	10th Annual Feline Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
02-2006	GUTSKI 2006, 5th Annual Meeting of the Comparative Gastroenterology Society, Winter Park, CO
12-2005	Annual Exotic Pets Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
11-2005	Small Animal Emergency and Critical Care Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
10-2005	Clinical Neurology Conference, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
05-2005	23rd Annual Forum of the American College of Veterinary Internal Medicine, Baltimore, MD
04-2005	9th Annual Feline Symposium, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, TX
10-2003	2nd Symposium on Small Animal Gastroenterology, Athens, Greece Symposium on Small Animal Dentistry, Athens, Greece 9th Hellenic Veterinary Congress, Thessaloniki, Greece
09-2002	European Congress of Veterinary Anesthesiology, Crete, Greece Symposium on Canine Leishmaniosis, Thessaloniki, Greece
03-2002	3rd Hellenic Congress on Echinococcosis - Hydatidosis, Thessaloniki, Greece
03-2002	1st Symposium on Small Animal Gastroenterology, Thessaloniki, Greece
02-2002	Iams Seminar on Nutrition for Large Breed Puppies, Thessaloniki, Greece
11-2001	3rd Hellenic Large Animal Veterinary Congress, Thessaloniki, Greece
10-2001	16th Congress of the Hellenic Society for Neuroscience. Thessaloniki, Greece

06-2001	Hill's Seminar on Canine and Feline Food Allergy, Thessaloniki, Greece
	Iams Seminar on Client Management, Thessaloniki, Greece
03-2001	6th Hellenic Small Animal Veterinary Congress, Athens, Greece
12-2000	Waltham Symposium on Small Animal Gastroenterology, Thessaloniki, Greece
05-2000	Hill's Seminar on Canine and Feline Chronic Hepatic Diseases, Thessaloniki, Greece
	8th Hellenic Veterinary Congress, Athens, Greece
11-1999	Hill's Seminar on Canine and Feline Renal Insufficiency, Thessaloniki, Greece
05-1997	Seminar on Animal Behavior and Welfare, Thessaloniki, Greece

CONFERENCE SCIENTIFIC COMMITTEES

- **Feline Internal Medicine – Monthly Grand Rounds** (webconference) College of Veterinary Medicine and Biomedical Sciences, Texas A&M University (College Station, Texas, 2019)
- **5ο Forum of the Hellenic Companion Animal Veterinary Society** (Thessaloniki, March 2014)
- **7ο Forum of the Hellenic Companion Animal Veterinary Society** (Thessaloniki, March 2016)
- **9ο Forum of the Hellenic Companion Animal Veterinary Society** (Thessaloniki, March 2018)
- **11ο Forum of the Hellenic Companion Animal Veterinary Society** (Thessaloniki, March 2020)

OTHER SCIENTIFIC ACTIVITIES

2019 – present	Member of the Committee for the National Veterinary Drug Handbook of the National Organization of Medicines
2019 – present	Member of the European Key Opinion Leader for Gastroenterology της Idexx Laboratories
2019 – present	President and founding member of the Feline Medicine Group of the Hellenic Veterinary Medical Society in cooperation with the International Society of Feline Medicine

RESEARCH GRANTS AWARDED

- **Diversity and abundance of probiotic bacterial species in the duodenum of dogs with inflammatory bowel disease.**
  Xenoulis PG*, Suchodolski JS.
  Granting agency: **Comparative Gastroenterology Society**
  Amount: **$5,960**
  Date granted: **December 2005**

Date completed: **April 2007**

- **Identification of a genetic marker for hypertriglyceridemia in miniature schnauzers.**
  Xenoulis PG*, Steiner JM, Bishop MA, Suchodolski JS.
  Granting agency: **Morris Animal Foundation**
  Amount: $37,206
  Date granted: **July 2008**
  Date completed: April **2011**

- **The effect of a low-fat diet on select biochemical parameters in Miniature Schnauzers with primary hypertriglyceridemia.**
  Xenoulis PG*, Steiner JM.
  Granting agency: **Royal Canin**
  Amount: **$11,970**
  Date granted: **May 2010**
  Date completed: **May 2011**

- **The effect of a low-fat diet on inflammatory markers and lipoprotein profiles in Miniature Schnauzers with primary hypertriglyceridemia.**
  Xenoulis PG*, Steiner JM.
  Amount: **Royal Canin**
  Ύψος χρηματοδότησης: **$8,820**
  Date granted: **February 2011**
  Date completed: **February 2012**

- **Specificity of SNAP fPL in clinically healthy and sick cats.**
  Xenoulis PG*, Saridomichelakis MN.
  Granting agency: **IDEXX and Petline**
  Amount: **€3,000**
  Date granted: **February 2014**
  Date completed: **February 2015**

- **Prevalence of and risk factors for seropisitivity against feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) in cats in Greece.**
  Xenoulis PG*, Saridomichelakis MN.
  Granting agency: **IDEXX and Petline**
  Amount: **€3,000**
  Date granted: **February 2014**
  Date completed: **February 2015**

- **Metagenomic and metabolomic analysis of the short-term and long-term effects of antibiotic therapy on the intestinal microbiota in growing kittens and their relation to the overall health status of these kittens.**
  Xenoulis PG*, Suchodolski JS, Steiner JM, Stavroulaki E.
  Granting agency: **Winn Feline Foundation**
  Amount: **$34,800**
  Date granted: **November 2018**
  Date completed: **Ongoing**

- **Metagenomic and metabolomic analysis of the short-term and long-term effects of antibiotic therapy on the intestinal microbiota in growing kittens and their relation to the overall health status of these kittens.**
  Xenoulis PG*, Suchodolski JS, Steiner JM, Stavroulaki E.
  Granting agency: ESPA (Government of Greece)
  Amount: **€41,000**
  Date granted: **April 2019**
  Date completed: **Ongoing**

REVIEWER FOR SCIENTIFIC JOURNALS

2007	American Journal of Veterinary Research (1)
2008	American Journal of Veterinary Research (1)
	Journal of the American Veterinary Medical Association (2)
	Medical Science Monitor (1)
2009	American Journal of Veterinary Research (1)
	Journal of Veterinary Internal Medicine (1)
	Journal of the American Veterinary Medical Association (2)
	The Veterinary Journal (1)
2010	Journal of Veterinary Internal Medicine (1)
	Veterinary Research Communications (1)
	The Veterinary Journal (2)
	American Journal of Veterinary Research (1)
	Journal of the American Veterinary Medical Association (2)
2011	Journal of Veterinary Internal Medicine (1)
	American Journal of Veterinary Research (1)
	The Veterinary Journal (1)
2012	New Zealand Veterinary Journal (1)
	The Veterinary Journal (1)
	Journal of Veterinary Internal Medicine (2)
	Journal of the American Veterinary Medical Association (2)
2013	BMC Veterinary Research (1)
	The Veterinary Journal (2)
	Journal of Veterinary Internal Medicine (1)
2014	The Veterinary Journal (3)
	Journal of Veterinary Internal Medicine (1)
	Journal of the Hellenic Veterinary Medical Society (1)
2015	PLOS One (1)
	Journal of Veterinary Internal Medicine (1)
	The Veterinary Journal (2)
	Companion Animal Medicine (1)
2016	Journal of Small Animal Practice (1)
	Journal of the American Veterinary Medical Association (1)
	Journal of the Hellenic Veterinary Medical Society (2)
	Journal of Veterinary Internal Medicine (1)
	The Veterinary Journal (2)
2017	Journal of the American Veterinary Medical Association (1)
	The Veterinary Journal (1)
	Journal of the Hellenic Veterinary Medical Society (1)

2018	Journal of the Hellenic Veterinary Medical Society (2)
	The Veterinary Journal (1)
2019	Journal of the Hellenic Veterinary Medical Society (3)

SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

- Member of the European Society for Comparative Gastroenterology (2019-present)
- Member of the Hellenic Small Animal Veterinary Society (2013-present)
- Member of the Hellenic Veterinary Medical Society (2004-present).
- Member of the Geotechnical Chamber of Greece (2004-present).
- Member of the Comparative Gastroenterology Society (2005-present).
- Member of the European Society of Veterinary Internal Medicine (2006-present).
- Member of the Society for Comparative Endocrinology (2011-present).
- Member of the American Gastroenterological Association (2005-2008).
- Member of the American Society for Microbiology (2007-2008).