The GI Lab
VETERINARY MEDICINE & BIOMEDICAL SCIENCES
TEXAS A&M UNIVERSITY
Promoting Gastrointestinal Health in Companion Animals
Newsletter - **Summer 2024** Steiner, Gould, Lidbury, Giaretta, Cavasin, Aicher & Suchodolski Layout by: RK Phillips

What's Inside This Issue:

News from the Gastrointestinal Laboratory

As I do every year, I would like to update you on what is happening at the GI Lab at Texas A&M. It was just a few years ago when we were able to dramatically expand our floor plan in the basement of the small animal clinic, and at that time, we thought that we would have room to grow for the next 20 years. But with submissions continuing to increase (thanks for your continued patronage!), we have once again outgrown our space. One could look at this as a problem, but I look at it as a daily reminder that our services are important to practicing veterinarians. We pledge to do our very best to continue being relevant to your everyday practice by continuing to explore new ways to diagnose and treat gastrointestinal diseases in dogs and cats!

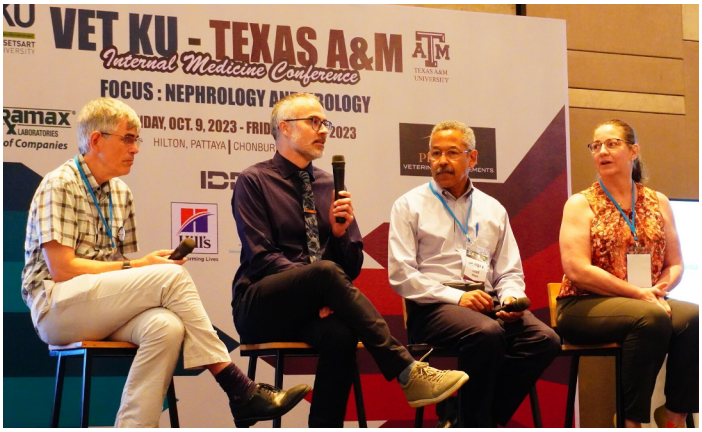
This newsletter highlights just some activities of the GI Lab team over this past year. We continue on our quest to expand our services by creating a clinical nutrition program at the GI Lab (please see the article on Dr. Katie Tolbert). As you all know, nutrition is crucially important to many, if not most, of our patients with GI disease. While we as veterinarians have a basic knowledge of clinical nutrition, there is just so much more to know. This is why it is critically important to integrate a clinical nutrition program into the GI Lab. We will keep you posted as our efforts progress.

We also continue to create endowed chairs for all of our faculty members. At first sight this may seem inconsequential to you, but chairs provide a stream of funding for faculty in perpetuity – meaning there will be permanent financial support for scholarship in veterinary and comparative gastroenterology. We have been able to find matching funds of $500,000 each for several of these endowed chairs, but we need naming donors that will donate the other $500,000 for the endowment to go into effect. So, if you have any clients that are thinking about creating a legacy in the world of veterinary gastroenterology, please contact us. We are very fortunate that two industry partners have recently established such endowments. Last year, Nutramax Laboratories Veterinary Sciences endowed a Chair in Canine Hepatology and this year Nestle Purina endowed a Chair in Microbiome Research (please see the article on Dr. Jan Suchodolski). We still need naming donors for a Chair in Gastrointestinal Pathology, a Chair in Small Animal Clinical Nutrition, and a Chair in Comparative Gastroenterology.

We were also fortunate to have our second Hagler Fellow in the GI Lab this year. The Hagler Institute for Advanced Studies at Texas A&M University (HIAS), established almost 15 years ago, invites 15-20 of the world's premiere scholars and subject matter experts to join Texas A&M faculty for one year as Hagler Fellows. To date, the Institute has recruited 4 Nobel laureates, 36 members of the National Academy of Engineering, and 31 members of the National Academy of Sciences. You may recall from last year that Dr. John Cullen was the first Hagler Fellow to join us here at the GI Lab – he was also the first veterinarian ever to be named a Hagler Fellow. We are grateful for all of his contributions to the GI Lab so far. This year, Dr. Jody Gookin from North Carolina State University has joined us as a Hagler Fellow as well (read more about her exceptional talents later in this newsletter).

Our involvement in the HIAS program has also expanded the GI Lab's impact here at Texas A&M University. We have taken a lead in exploring the means by which we can elevate our faculty and student experiences across campus and beyond. For example, Dr. Jonathan Lidbury and I organize an international internal medicine conference in Thailand every year (see photo from last year below). We also organize a meeting series where we bring together our most distinguished faculty from all disciplines with young scientists from all across campus. And we are leading a program through which TAMU is taking young scientists from both Texas A&M University and from across the US to the Lindau Nobel Laureate Meeting held in Germany. In 2023, I was able to lead a group of 5 young scientists to participate together with 600 other young scientists from across the globe to meet with 42 Nobel laureates for a week. In 2024 we will be taking 30 students to this transformational conference.

In this newsletter you will also find information on some of the studies we are involved in. Jan Suchodolski and his team continue to explore intestinal dysbiosis, how to diagnose it using the dysbiosis index, and novel ways to manage it, including the use of fecal microbiota transplantation (FMT; see article inside). We were also involved in studies that led to the conditional approval of Panoquell-CA1 (fuzapladib sodium), the first drug that has shown any benefit in the treatment of acute-onset pancreatitis in any species. We recently published our findings in the *Journal of Veterinary Internal Medicine* (Steiner JM, Lainesse C, Noshiro Y, et al. Fuzapladib in a randomized controlled multicenter masked study in dogs with presumptive acute onset pancreatitis. *J Vet Int Med* 2023; 37: 2084-2092). We also continue to explore copper hepatopathy and novel diagnostics for liver disease. While there is much we don't yet know about gastrointestinal disease in dogs and cats, we are enthusiastic to learn something new every day.



Over the last few years, the cost of labor and the price for virtually all materials that we use to run our assays have continued to increase. This year, after remaining unchanged since 2018, we were forced to make the tough decision of adjusting our prices. Please find an updated price list on page 7 of this newsletter. We thank you for your understanding, and we hope to continue to have your trust in supporting your practice. Indeed, none of the work at the GI Lab could happen without your patronage: by sending us samples, by answering our questionnaires about the patients you see, or by enrolling your patients into one of our many clinical trials – you are a part of our team. Thank you! (Jörg M. Steiner)

Important: New Reference Interval and Decision Thresholds for cTLI assay

The canine trypsin-like immunoreactivity (cTLI) assay we use is a commercial assay made by Siemens that is widely used by veterinary laboratories worldwide. We recently became aware that there are dogs with a serum cTLI concentration that is higher than the previous cut-off value of ≤ 2.5 µg/L that appear to have exocrine pancreatic insufficiency (EPI). We gathered serum samples from more than 100 healthy dogs to determine if there had been a shift in the assay, and there does appear to be. Thus, we have adjusted our reference interval to ≥ 10.9 µg/L.

Importantly, we also needed to determine a cut-off value for the diagnosis of EPI in dogs. With help from many of our valued veterinarian clients, we recently completed an observational study to determine a new cut-off value for the shifted assay. We now consider values ≤ 5.5 µg/L to be diagnostic for EPI. Our recommendation for dogs with cTLI concentrations between 5.6 to 7.5 µg/L AND clinical signs consistent with EPI is to initiate a trial with pancreatic enzyme replacement therapy and to closely monitor the patient's response. Please note that some dogs with small intestinal disease, but without EPI, can partially respond to pancreatic enzyme replacement therapy. Further, repeating a measurement of serum cTLI 1 to 2 months after initial blood sampling can be helpful to determine whether serum cTLI has further decreased and the dog has EPI. In such equivocal cases, samples should be collected after withholding food for 12 to 18 hours. Dogs with cTLI concentrations between 7.6 to 10.8 µg/L are unlikely to have EPI and other differential diagnoses should be considered depending on the clinical signs observed.

Also, some healthy dogs have serum cTLI concentrations > 50 µg/L, but cTLI concentrations may also be increased in dogs with pancreatitis or renal insufficiency. Therefore, the clinical significance of a cTLI concentration > 50.0 µg/L is uncertain. If you are concerned about pancreatitis, consider running a serum cPLI test as this test is more reliable for diagnosing this condition. In dogs without clinical signs of pancreatitis or with a serum cPLI concentration within the reference interval, a cTLI > 50 µg/L is unlikely to be clinically important.

We will keep working to further refine these decision thresholds. As always, we are available to consult on any complex cases. (Jonathan A. Lidbury)

cTLI Concentrations	Updated Interpretation *[as of April 2024]*
0 – 5.5 µg/L	Diagnostic for EPI.
5.6 – 7.5 µg/L	Subnormal cTLI concentration; EPI cannot be excluded. If signs are consistent with EPI, consider assessing response to pancreatic enzyme replacement therapy and/or remeasuring cTLI in 1 to 2 months using a fasted sample (enzyme therapy will not interfere with testing).
7.6 – 10.8 µg/L	Subnormal cTLI concentration, but EPI is unlikely. Consider other differential diagnoses depending on the clinical signs observed.
10.9 – 50.0 µg/L	Result is within the reference interval.
> 50.0 µg/L	In dogs without clinical signs of pancreatitis or with normal cPLI concentrations, a cTLI concentration > 50.0 µg/L is unlikely to be clinically important.

Tolbert Double-boarded in Small Animal Internal Medicine and Clinical Nutrition

The continual advancement of both diagnostics and therapeutics for companion animal gastrointestinal (GI) diseases remains a cornerstone mission of the GI Lab. Thoughtful and individualized nutritional intervention for our patients is a paramount, but often overlooked, component to every successful therapeutic plan. It is for this reason that board-certified veterinary nutritionists commonly work together with general and specialty practitioners to provide the highest quality of care possible to our dog and cat patients. We are thrilled to announce that Dr. Katie Tolbert (pictured to the left of myself in the photo at right), one of our own small animal gastroenterologists, successfully passed her small animal nutrition certifying board exam in June 2023.

Katie, who joined the GI Lab in 2018 as an associate professor of Small Animal Internal Medicine, was previously an assistant professor with the University of Tennessee College of Veterinary Medicine (UTCVM). Throughout her early career as a small animal internist, Katie developed a passion for veterinary nutrition and has remained an advocate for the integral role nutritionists play in the success of internal medicine patients. In January 2021, while at UTCVM, she enthusiastically began her second residency. For the last 3.5 years, Katie successfully balanced her faculty duties as an internist with the rigorous clinical and didactic requirements of a nutrition residency. She is now board-certified in small animal nutrition and small animal internal medicine.

Congratulations, Katie! We are extremely lucky to have such an accomplished and passionate diplomate as a part of our community. (Emily N. Gould)

Prudent Pathology:

Best Practices for Histopathology Submissions of Gastrointestinal Samples

Histopathologic assessment of tissue samples is essential to achieve a definitive diagnosis of several gastrointestinal disorders, including neoplasia and chronic inflammation. Biopsy results can guide ancillary testing, provide useful prognostic information, and inform therapeutic decisions. These are some practical considerations to help you maximize the diagnostic utility of your gastrointestinal biopsies:

1. **Submission form:** Pathologists are heavily dependent on patient information provided in the submission form that accompanies the histopathologic specimens for making an accurate diagnosis. Effective histopathologic assessments begin with a concise and relevant clinical history. The history should include the main clinical signs and duration (e.g., acute vs. chronic), main clinical pathologic findings (e.g., serum albumin concentrations), endoscopic findings, imaging findings, and comorbidities. For ulcerated or mass-like lesions, it is crucial to include a gross description of the lesion including size, number, location, and ultrasonographic evidence of loss of normal layering. Listing current medications is sufficient, and detailed information (e.g., dose and duration) about previous and current treatments is not necessary in most situations. Clinical questions and the differential diagnoses you are considering are helpful to guide the analysis and additional testing. Incomplete submission forms can negatively impact the overall outcome leading to longer turnaround times, inappropriate interpretation of morphological changes in tissues, or even a misdiagnosis.

2. **Handling of gastrointestinal biopsy specimens**: Samples from different regions of the gastrointestinal tract (e.g., stomach, duodenum, ileum, colon) should be labeled and submitted in separate containers or tissue cassettes. Endoscopic biopsy specimens are small and fragile. To prevent artifacts, samples can be gently removed from forceps with a hypodermic needle and mounted to be oriented with the villi facing up on synthetic sponges previously moistened in saline or formalin. The quality of samples mounted on synthetic sponges is higher than specimens floating freely in formalin.

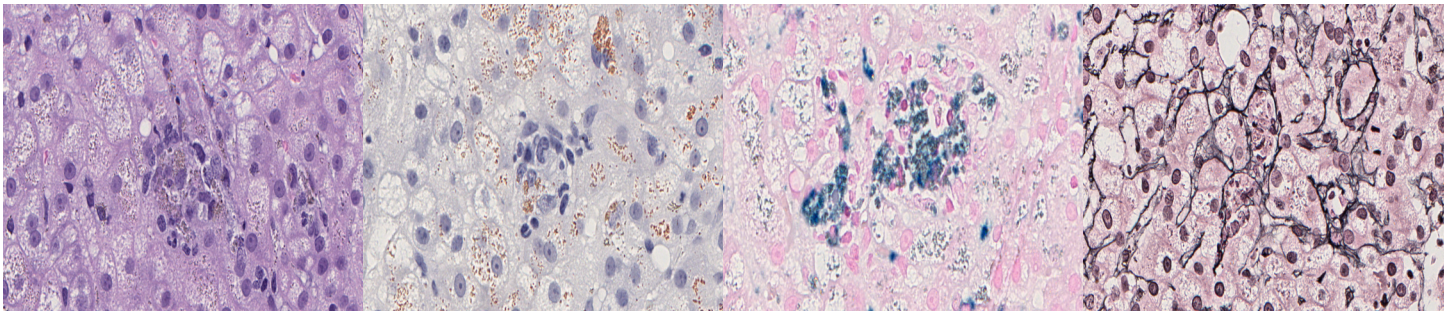
3. **Ancillary testing**: Based on the histopathologic findings, the pathologist may recommend additional testing such as immunohistochemistry, fluorescence in situ hybridization, or PCR for antigen receptor rearrangements (clonality testing) to confirm or rule out a diagnosis. However, there is often little benefit in requesting ancillary tests as stand-alone tests or before routine histopathology has been performed.

4. **Clinician-pathologist communication**: Do not hesitate to request a consultation with the pathologist if you have any questions or concerns about the histopathology report, the final diagnosis, or potential ancillary testing.

References:

Jergens AE et al. Maximizing the diagnostic utility of endoscopic biopsy in dogs and cats with gastrointestinal disease. *Vet J.* 2016, 214:50-60.

Ruiz GC et al. Comparison of 3 handling techniques for endoscopically obtained gastric and duodenal biopsy specimens: a prospective study in dogs and cats. *J Vet Intern Med.* 2016, 30(4):1014-21.



Best Practices for Collecting and Submitting Liver Biopsies

As discussed above, liver biopsy submissions require active collaboration between our pathologists and your team. We often rely on clinical data to interpret and contextualize our findings. For example, several congenital vascular disorders have stereotypical histological changes, and we often rely on imaging or biochemical findings to reach a final diagnosis. In addition to signalment and clinical signs, specific biochemical values and duration of alterations, images from surgery/laparoscopy, and diagnostic imaging findings are also important as we can then contextualize our findings.

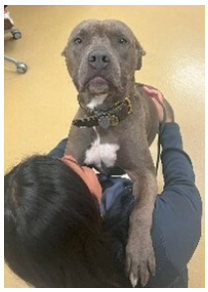
When performing liver biopsies, collecting samples from multiple lobes allows a better understanding of lesion distribution, reduces sampling error, and increases chances of identifying the predominant histological pattern. In general, if changes are homogeneous or all liver lobes are grossly identical, samples can be submitted as a single set. This enables us to process them on a single slide and perform a panel of histochemical stains on all submitted samples. However, if liver lobes are grossly distinct or masses are noted, samples should be submitted and labeled separately, which enables tracking of these during processing.

Needle core samples should be transported within cassettes with sponges to avoid fragmentation. Laparoscopic cups usually yield a larger amount of tissue, but these specimens are more susceptible to crushing artifacts. This issue is further exacerbated in cases with hepatic fibrosis. If significant fibrosis is suspected, wedge samples should be considered. Wedge samples obtained during laparotomy tend to be more resistant to artifacts, but crush artifact and fragmentation are still common near the margins of the samples. Additionally, use of surgical staples in the sample submitted for histology should be avoided. Staples must be removed before histological processing, causing severe crushing and fragmentation of the sampled tissue. It is good practice in dogs to save a sample in a plain plastic cup for copper quantification. When collecting a specimen for copper quantification, avoid sampling regenerative nodules as these often contain less copper than other areas of the liver.

Overall, evaluation of liver biopsies requires strong collaboration between clinicians and pathologists. Having access to relevant clinical data, pictures, and any historical lab data can be vital to achieve an accurate diagnosis. Our team is happy to answer any questions regarding submissions, and we are always available to discuss these often complicated cases. You can reach us at ***gilabhisto@cvm.tamu.edu***. (Paula R. Giaretta & João P. Cavasin)

Update on Fecal Microbiota Transplant (FMT)

FMT is increasingly utilized in the management of chronic enteropathies (CE) in dogs and cats. Here we share additional information about FMT and a clinical vignette from our colleague Dr. Betty Chow at VCA Animal Specialty and Emergency Center about her lovely patient Rosie, who received FMT. We very much appreciate the willingness of Rosie's family and Dr. Chow to share this case.



Rosie (pictured at left) is a 5-year-old female spayed Pitbull Terrier with concurrent protein-losing nephropathy (PLN), protein-losing enteropathy (PLE) secondary to chronic inflammatory enteropathy, and historic skin allergy. While her PLN was well-controlled, she continued to have diarrhea, hypoproteinemia, and weight loss secondary to her chronic inflammatory enteropathy. In April 2023, she began to decline and developed regurgitation secondary to poor gut motility, which required hospitalization. She received symptomatic therapy, immunosuppressant medication, medications for her PLN, dietary fiber, and was fed a diet low in fat and protein, with a novel protein source. FMT was started as an adjunct therapy with 2 initial treatments spaced two weeks apart, followed by another treatment 4 weeks later. Improvements in her blood protein and body weight were observed and her GI motility medications could be discontinued. Two months after her last FMT, she began to lose weight again, so FMT was repeated at 4-6 week intervals. Over time, it was observed that she would begin to lose weight by 5 weeks after her last FMT, so she was switched to FMT at 4-week intervals, which she has received for the last 3 months. Rosie has been doing very well clinically and no longer needs any GI motility medications. Immunosuppressant medications were also tapered and discontinued as it became apparent to Dr. Chow that this medication was not effective at controlling her enteropathy. Rosie has been gaining weight consistently and has returned to great energy levels. She continues to be mildly hypoproteinemic; however, this measurement has continued to be stable. Her dysbiosis index (DI), a measure of the level of dysbiosis, has improved markedly after several FMTs from initially 2.9 to currently -2.1 (with values less than 0 considered normal; see Figure 3). While we know the beneficial effects will likely wane as soon as the repeated FMTs are stopped, this treatment has been a great adjunctive treatment for Rosie, and the owner is very happy with her progress!

Question: What are the indications for FMT?
Answer: Patients who have developed dysbiosis and/or diarrhea following antimicrobial therapy (e.g., treatment for urinary tract, respiratory, or skin infections). FMT may also be part of multimodal therapy for dogs and cats with CE. Importantly, FMT adds to, but does not replace, the use of dietary trials and standard diagnostic workup for patients with CE.

Question: Is this something that I can perform in my clinic for a patient?
Answer: Yes absolutely! There are commercial products available for purchase. However, it might be worth considering doing this in your hospital either for patients who may need to undergo repeated FMT treatments (more information below) or in the case that you anticipate providing this therapy to help multiple patients. Increasingly, this is a tool used both in specialty and general practice due to ease of use. A retention enema is the easiest way to start to do this in your practice.

Question: How do I perform a FMT via retention enema?
Answer: We recommend a dose of donor feces of approximately 5 g feces/kg of BW of the recipient patient. Feces are blended with 0.9% NaCl in an approximately 1:1 to 1:1.5 ratio to achieve a consistency that can pass easily through a catheter but is not too watery. The stool is then transferred as rectal enema via a 60 ml syringe with an attached 12- or 14- French red rubber catheter (see Figure 1). The recipient dog does not need to be sedated in most cases. If possible, do not feed and restrict the recipient dog's activity for 4-6 hours after the transplant to lessen the chances of a premature bowel movement.

Figure 1. Dr. Betty Chow administers FMT to Rosie via a retention enema.

Question: How do I store donor feces?
Answer: Feces can be fresh or stored at 4°C for 1-2 days. When feces need to be frozen for longer storage, mixing the stool with glycerol before freezing may better preserve bacterial viability. Protocol: Add concentrated glycerol to the feces/saline slurry to achieve an approx. 10% final glycerol concentration. Feces can then be stored in syringes (see Figure 2) at –20°C for 3-6 months.

Question: How do I find donors to use for FMT?
Answer: Many practices will screen dogs and cats that belong to staff members or long-term clients (see Figure 2), who will be likely to easily bring feces to the clinic. You might have more than one dog and cat donor screened, just so that you have a back-up plan if your donor is not immediately available or has a change with their suitability as a donor. A donor dog or cat should be screened as described below.

Question: How do I screen a donor cat or dog?
Answer: The International FMT Consortium is working on guidelines, which will be shared with the veterinary community in the near future. In the interim, we have the following recommendations as a framework for screening donors. Donors need to be clinically healthy based on history and physical examination (including a BCS of 4–6/9). Preferred age is a minimum of 12 months. Feline donors should be indoor only cats, in the same household in which they have resided for at least several weeks. Animals should have no antibiotic history within the last six months and no acid suppressants within the last 2 weeks (please also ensure that the use of acid suppressants does not indicate chronic GI disease). We recommend to exclude animals that have been fed raw diets within the last month as there is an increased risk of asymptomatic carriage of enteric pathogens.

Question: What testing is recommended on donor patients?
Answer: Our recommendation at this time is that donor animals should have a normal DI (measurement < 0 and that all taxa are within normal ranges).We recommend testing donor feces for *Salmonella, Campylobacter jejuni, Giardia, Cryptosporidium,* as well as intestinal parasites. In cats, we recommend testing potential donor cats for intestinal parasites, FeLV/FIV, enteric coronavirus, and *Tritrichomonas foetus/blagburni.*

Question: Can you perform the recommended testing on donor feces at our lab?
Answer: Yes, we can perform all testing with the exception of FeLV/FIV and some of the intestinal parasite testing. As the prevalence of enteric coronavirus in the cat population is high, you

Figure 2. Top left: Blue, one of our canine FMT donors. Bottom left: Gretchen, one of our feline FMT donors. Right: storage of FMT preparation in ready-to-go syringes in -20°C freezer.

can request this as a standalone test first when screening feline donor candidates. If the test is negative, simply call or email us to request the DI and rest of the infectious disease screening to be performed. If the enteric coronavirus test is positive, we recommend that you screen another candidate donor cat.

Question: Once a donor has been identified, do I need to do re-screening at any interval?

Answer: We recommend repeating history briefly before every donation and physical examination, infectious disease testing, and DI testing at 6-month intervals to make sure that the donor feces are suitable and safe for continued use.

Question: How quickly will a patient clinically respond to FMT? How often should they receive FMT?

Answer: Some patients may clinically respond (improved fecal scores or energy level) within 2-3 days or need a second FMT performed approximately 1-2 weeks later. A patient who developed diarrhea and/or dysbiosis secondary to antimicrobial therapy may only need 1 or 2 treatments to maintain clinical control. These patients often have a normal or only mildly increased DI before FMT. Some patients may have no response or may have adverse effects, typically mild and self-limiting (e.g., changes in fecal consistency or changes in appetite), secondary to the FMT procedure (Toresson 2023). However, most patients with longstanding CE that respond to FMT will have clinical relapse some number of weeks after their initial improvement, requiring FMT to be repeated multiple times. These patients typically also have a markedly increased DI at baseline that persists 4-6 weeks after the first series of FMTs, a likely sign of chronic GI dysfunction. These patients will most likely require multiple FMTs. This was observed with Rosie as described earlier, with a persistently high DI (see Figure 3) after the first FMT and concurrent relapse of clinical signs, which led to Dr. Chow's plan to repeat FMT every 4 weeks to maintain the best control of Rosie's CE. (Kate M. Aicher & Jan S. Suchodolski)

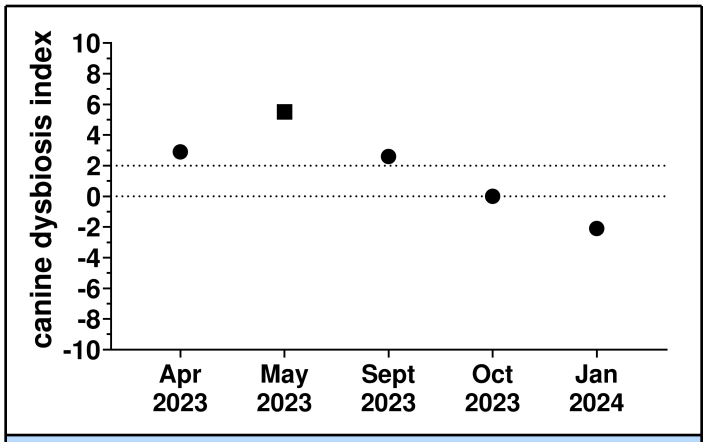


Figure 3. Trending DI over time with FMT. Rosie's baseline Dysbiosis Index (DI; < 0 is normal)) was 2.9 and remained increased after the first series of FMT at 5.5, often a sign of persisted GI dysfunction and suggestive for the need for repeated FMTs. After a series of monthly FMTs, the DI decreased to normal with concurrent control of clinical signs.

References:

Toresson L, et al., (2023): Clinical Effects of Faecal Microbiota Transplantation as Adjunctive Therapy in Dogs with Chronic Enteropathies-A Retrospective Case Series of 41 Dogs. *Vet Sci*, 10(4). doi: 10.3390/vetsci10040271

Sung CH, et al., (2023): Correlation between Targeted qPCR Assays and Untargeted DNA Shotgun Metagenomic Sequencing for Assessing the Fecal Microbiota in Dogs. *Animals (Basel)*. 2023 Aug 11;13(16):2597. doi: 10.3390/ani13162597

Suchodolski Named Purina PetCare Endowed Chair for Microbiome Research

It brings us great pleasure to announce that the GI Lab has recently partnered with Purina PetCare to establish the $2 million Purina PetCare Research Excellence Fund, which will run from 2023 through 2028 and will support diagnostic and interventional research conducted at our Microbiome Research Laboratory. The fund will also facilitate training of future research leaders (PhD students, postdoctoral students, and visiting scholars) in the understanding of the pet microbiome.

In addition, we are pleased to announce the establishment of the Purina PetCare Endowed Chair for Microbiome Research. Dr. Jan Suchodolski (pictured at right), who serves as a Professor and Associate Director for Research at the GI Lab, was named as the Chair.

Recently, Sheri Smithey, senior vice president, Global Petcare R&D at Purina, and several other members of the senior management team of Purina PetCare visited the GI Lab to envision future directions for research in small animal microbiome and intestinal health. The shared goals of Purina and the GI Laboratory are to understand the intestinal microbiome of dogs and cats and how it relates to overall health. Through this partnership, researchers from Texas A&M and Purina will collaborate to push the field of companion animal microbiome research forward with the goal to develop new diagnostics and nutritional solutions for pets.

The Purina PetCare Research Excellence Fund will also invest in the training of future research leaders in this space.

We believe that the research projects and training made possible through this Research Excellence Fund and the newly endowed chair will yield novel strategies for veterinarians to use for the management of patients with chronic GI disease and other conditions believed to be associated with intestinal dysbiosis. (Jörg M. Steiner)

Gookin Named 2023 Hagler Fellow

The Hagler Institute for Advanced Study at Texas A&M University *(https://hias.tamu.edu)* aims to bring the most notable scientists in any field to our campus for a limited time. Every year, a faculty scientific advisory panel picks individuals who have made an outstanding impact in their field from those nominated to become a Hagler Fellow. It is our great pleasure to announce that Dr. Jody Gookin (pictured at right) was inducted as a Hagler Fellow of the Class of 2023-2024.

Dr. Gookin is a Diplomate of the American College of Veterinary Internal Medicine in Small Animal Internal Medicine and is an internationally recognized expert in companion animal gastroenterology. She is credited with discovering that *Tritrichomonas foetus/blagburni* is the most common, worldwide infectious cause of colitis in domestic cats. Dr. Gookin is also the world's leading expert on gallbladder mucocele formation, an emergent and significant cause of morbidity and mortality in dogs. Her research efforts are focused on the pathogenesis of this deadly disease to find means of prevention, earlier detection, and non-surgical resolution.

While the Hagler Institute for Advanced Study has brought several Nobel laureates to Texas A&M University over the last decade, Dr. Gookin is only the second veterinarian to be selected as a Hagler Fellow. Dr. Gookin is joined by 14 other world-experts in their field in the class of 2023-2024. We are so very excited and honored to have her here with us. In her appointment as a Hagler Fellow, she will spend time in College Station playing an active role in planning and conducting clinical research, as well as mentoring junior faculty, graduate students, and residents. A great big welcome to Dr. Jody Gookin! (Kate M. Aicher)

Consultants' Corner:

Getting the Most out of your Consult Calls

As many of you know, the GI Lab offers a complimentary consultation service to veterinarians who use our laboratory. Our team of board-certified internists is comprised of myself (Emily Gould), Jörg Steiner, David Williams, Katie Tolbert, Jonathan Lidbury, Kate Aicher, Chee-Hoon Chang, and Agostino Buono. We are happy to talk about results that you already have in hand or simply talk about what tests we think would be helpful in assessing your patient. To set up a consult, just call the lab at **(979) 862-2861** and talk to one of our customer service representatives.

As we all take consultations in addition to our other clinical, research, and teaching responsibilities, if we are not available to talk to you immediately, our staff will take a message, and the consultant on duty that week will call you back. To increase the chances of us connecting with you promptly, please give us a 4-hour window during which to return your call. It can also really help to let your reception staff know that you are expecting our call and to let them know if it is okay to pull you out of an exam room.

When more than just an interpretation of results is needed, it is also really helpful if you have patient information available at the time of the consult call. As there are many differentials that might cause similar clinical signs in your patients with GI, pancreatic, or hepatobiliary disease, our consultants will typically ask certain questions to help prioritize the best diagnostic and therapeutic plan for a particular patient. **Following are some questions we will often ask you about your patient.** Having this information available when you call will allow us to provide more comprehensive recommendations while simultaneously maximizing the use of your time. We know how busy you are!

What is the nature and chronicity of the patient's current clinical signs?

Clinical signs we will ask about include weight loss, changes to the total amount of or enthusiasm for food consumed (e.g., hyporexia, anorexia, dysrexia), and the presence of vomiting, diarrhea, nausea, borborygmi, or bloating.

If diarrhea is present, is it small bowel, large bowel, or mixed bowel in nature?

Localization of the diarrhea requires describing the frequency and volume of bowel movements, along with presence of mucus, and fresh blood vs. melaena. Whether or not the patient has any vomiting, lost weight, and whether they show signs of dyschezia is also important to know.

If there has been weight loss, is this in the face of a good, normal, or poor appetite? And if the patient is eating the same amount of food, have there been changes in the interest level or the total time which it takes that animal to finish the food?

Appetite qualification really helps us prioritize differentials and diagnostics of importance.

What was the patient's diet (including treats) at the onset of clinical abnormalities, and have there been any diet changes? If there have been recent changes, was there a positive or negative impact on clinical signs following that switch?

Having a full understanding of the diet (e.g., manufacturer name, formulation, flavoring) at the time of disease onset is paramount. This allows us to ensure we are meaningfully adjusting this if that is deemed necessary by the consultant.

What is this patient's current body condition score (BCS) and muscle condition score (MCS)?

This allows us to help you formulate caloric intake requirements of the nutritional therapeutic plan moving forward. Multiple different standardized scoring systems are available for cats and dogs, and all are good options as long as the same scoring system is used to serially monitor trends over time.

Is there evidence of dermatologic disease, which might indicate environmental or food allergies (e.g., alopecia or pruritis of the head and/or feet)?

If these clinical signs are present, this might raise our suspicion for a food allergy or intolerance and help us prioritize a novel, hydrolyzed, or home-cooked diet plan.

Are results from a minimum database (i.e., CBC, biochemistry, urinalysis) available?

Hematologic abnormalities of interest include changes to the neutrophils, lymphocytes, eosinophils, and hematocrit. Decreases in albumin, globulins, and cholesterol are also important, as the presence of protein losing enteropathy (PLE) often changes our diagnostic and nutritional therapeutic recommendations. If patients have hypoalbuminemia, evaluation for protein in the urine can be helpful. An FeLV/FIV test is recommended for sick cats, as well as a T4 when appropriate for age. The presence of co-morbidities is also important and will often be reflected on a minimum database.

Formulation of a final plan will of course entail more conversation, but having this information ready will help our consultants provide full recommendations! Don't be afraid to call – we try to help where we can, but GI disease can be quite complex and sometimes we are as stumped as you are. Frequently, the discussion of a case may bring new thoughts and help you feel a little less alone. (Emily N. Gould)

Serum Submissions

Assay	Vol. req'd	Price
TLI, PLI, Cobalamin, Folate, Cortisol (dogs only)	2.0 ml fasted	$96.00
TLI, PLI, Cobalamin, Folate	2.0 ml fasted	$86.00
TLI, Cobalamin, Folate	1.0 ml fasted	$63.00
PLI, Cobalamin, Folate	1.0 ml fasted	$63.00
TLI, PLI	1.0 ml fasted	$63.00
Cobalamin, Folate	1.0 ml fasted	$42.00
TLI	1.0 ml fasted	$33.00
PLI *Note: Spec cPL or Spec fPL test is only offered as part of a panel or alone as a follow-up*	1.0 ml fasted	$33.00
Canine C-reactive Protein	0.5 ml fasted	$33.00
Bile Acids	Pre-feeding: 1.0 ml fasted	$24.00
	2 hrs post-feeding: 1.0 ml	$24.00
Methylmalonic Acid	0.5 ml fasted	$66.00
Gastrin	0.5 ml fasted	$33.00
Triglycerides	0.5 ml fasted	$18.00

Fecal Submissions

Assay	Price
Canine Alpha-1 Proteinase Inhibitor Note: A set of 3 fecal samples must be submitted in pre-weighed tubes for testing. Email *gilab@cvm.tamu.edu* to order fecal α_1PI collection tubes (15 for $25.00).	$64.00
Dysbiosis Index: Canine or Feline	$52.00
Canine Enteropathogen Panel Canine panel includes PCR testing for: net F toxin gene-*C. perfringens*, *C. difficile*, *Campylobacter jejuni*, canine parvovirus, *Salmonella* spp., and IFA testing for *Giardia* and *Cryptosporidium*	$116.00
Feline Enteropathogen Panel Feline panel includes PCR testing for: net F toxin gene-*C. perfringens*, *C. difficile*, *Campylobacter jejuni*, feline panleukopenia virus (FPV), *Salmonella* spp., *Tritrichomonas foetus*, and IFA testing for *Giardia* and *Cryptosporidium*	$126.00
Real-time PCR Assays First PCR assay Each additional PCR assay *Tritrichomonas foetus*, *Campylobacter jejuni* and *C. coli*, *Heterobilharzia americana*, canine parvovirus (CPV-2), feline panleukopenia virus (FPV), *Salmonella* spp., net F toxin gene-*C. perfringens*, feline coronavirus (for FMT donor screening only)	 $42.00 $15.00
Immunofluorescence Assay (IFA) for *Giardia* and *Cryptosporidium*	$44.00
Bacterial Toxin Assays (ELISA) for *Clostridium difficile* Toxin A and B	$42.00

Sample submission forms customized with your clinic's information are available on our website at **https://vetmed.tamu.edu/gilab** under **CLINIC LOGIN**.

For any questions or to set up a new account, please contact us by phone at **(979) 862-2861** or by email at ***gilab@cvm.tamu.edu***.

TEXAS A&M UNIVERSITY
Gastrointestinal Laboratory

Current studies	Study description
Evaluation of markers of pancreatic disease in cats before and after switching to a special diet for kidney disease or diabetes mellitus (The CATPAD study) Dr. Yu-An (Andy) Wu – *yuanwu@cvm.tamu.edu*	The CATPAD study is a project that looks at cats' pancreatic health and the possible association with diet. We are currently enrolling **cats** that are about to be switched to a commercially available therapeutic diet intended for cats with kidney disease or diabetes mellitus. More information is available at: https://vetmed.tamu.edu/gilab/research/catpad-study/.
Evaluation of anti-inflammatory and cytotoxic properties of acid suppressants on canine resectable mast cell tumors (MCTs) Dr. Emily Gould – *egould@cvm.tamu.edu*	Study aims are to evaluate blood and tissue cytokines, MCT viability, and quantifiable histamine (and/or histamine metabolites) before and after acid suppressant or placebo therapy in **dogs** with surgically resectable MCTs. Study includes a total of 3 visits (initial appointment, surgical resection of tumor, and one post-operative recheck) and will cover $1000 of the patient's surgical bill at Texas A&M.
Diet trial for treatment of exocrine pancreatic insufficiency (EPI) in dogs Dr. Kate Aicher – *kmaicher@tamu.edu*	This clinical trial aims to assess the efficacy of a new diet compared to pancreatic enzyme replacement therapy for the treatment of exocrine pancreatic insufficiency in **dogs**. Study includes a total of six study visits, and the costs of all visits are provided by the study. In addition, dogs will be provided with diet and pancreatic enzyme replacement therapy for the duration of the study. Patients enrolled in this study are seen at their primary care veterinarian's office for study visits.
Medical management for gallbladder mucocele in dogs Dr. Kate Aicher – *kmaicher@tamu.edu*	This clinical trial aims to determine if daily supplementation with a mixture of vitamins, standard of care treatments, and feeding of a veterinary therapeutic low-fat diet will result in resolution of gallbladder mucocele formation in **dogs**. Participation in the study will generate approximately $5,000 in cost savings by providing free prescription dog food, free medications, free abdominal ultrasound examinations, and free blood work over a period of 1 year. Study visits are only at Texas A&M University or North Carolina State University.
Prevalence of *Heterobiliharzia americana* in high-risk Labrador Retrievers in Texas Dr. Kate Aicher – *kmaicher@tamu.edu*	This study aims to determine the prevalence of *Heterobilharzia americana* in a high-risk breed (**Labrador Retriever**) with a high-risk lifestyle (four or more entries per month into freshwater bodies) within Texas. A voided fecal sample will undergo testing via zinc sulfate centrifugation flotation, fecal sedimentation, and *Heterobilharzia americana* PCR testing at no charge to the owner.

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Vet Ku – Texas A&M 2024 Int. Med. Conference

Focus: Feline Medicine

After a 3-year hiatus due to the COVID pandemic we were delighted to hold the Vet KU – Texas A&M University Internal Medicine Conference in Pattaya, Thailand, in October of last year (see photo on page one). We were joined by over 120 veterinarians from the US and from across Asia. Our focus was nephrology and urology. The lectures were highly informative, and I can certainly say that I learned a lot. It was also a great experience to spend time with colleagues from all over the world. The conference was made possible by generous support from Nutramax Laboratories, Nestlé Purina, IDEXX Laboratories, and Hill's Pet Nutrition.

In partnership with the Faculty of Veterinary Medicine at Kasetsart University in Bangkok, we are very excited to announce the 2024 Internal Medicine Conference. The conference will be held at the family-friendly five-star Hilton Pattaya, Thailand, between Monday, October 7, and Friday, October 11, 2024. The focus of this forthcoming conference will be feline medicine. A panel of internationally renowned experts will deliver 25 hours of top-quality continuing education.

Our in-depth program focuses on providing you with the latest practically relevant information on a wide variety of feline medical conditions (including cardiology, infectious disease, ophthalmology, respiratory disease, and endocrinology). Several sessions will outline a logical diagnostic approach to challenging but common problems, while others will help you formulate better treatment plans. The final hour of each day will be an interactive session, covering complex and controversial topics. We have been fortunate to recruit some fantastic speakers: Vanessa Barrs and Julia Beatty from City University of Hong Kong; Lynelle Johnson and David Maggs from University of California, Davis; Megan Sleeper from the University of Florida; as well as Andrew Bugbee, Jörg Steiner, and myself (Jonathan Lidbury) from Texas A&M University. Lectures will run between 8:00 am and 1:10 pm each day, allowing you free afternoons to enjoy the beautiful venue. Thanks to our generous sponsors, a social program will be offered in addition to the educational program. This will provide an excellent opportunity for you to network and mingle with colleagues from the United States and across Asia.

Boasting sweeping ocean views, the 34-story Hilton Pattaya is adjacent to Central Festival Pattaya Beach – southeast Asia's largest beachfront shopping center. It is also less than a mile from Pattaya Walking Street. The outdoor infinity pool boasts panoramic views from the 16th floor, and there are three restaurants, a rooftop bar, and a spa to enjoy. We have negotiated a fantastic room rate for conference participants. Please book early as this hotel is very popular! The drive to and from the main airport in Bangkok is easy and convenient and takes approximately one and a half hours using local drivers. Multicultural, vibrant Pattaya lies on the east coast of the Gulf of Thailand and is about 90 miles from Bangkok. The Hilton has a superb beachfront location offering soft white sands and warm water. Pattaya Beach, the most popular in the area, is close by and offers a wide variety of water sports. The bustle of Central Pattaya with its electrifying nightlife is only a walk away. Other famous attractions in the area include the beautiful island of Koh Larn, Pattaya floating market, and the unique ornate Sanctuary of Truth.

For more information on how to secure our discounted room rate and to register for the conference, please visit our conference website (***texasimconference.tamu.edu***). If you have any other questions please feel free to contact our administrative associate, Rhonda Rosa (rrosa@cvm.tamu.edu), at **(979) 458-1662**.

We hope that you can join us for what promises to be another unforgettable event! (Jonathan A. Lidbury)