Saturday, December 7th, 2024

Hill's®
Transforming Lives™

Small Animal Clinical Nutrition Symposium

AGING CATS & DOGS

AGENDA

Saturday
Dec. 7th
2024

7:30am — 8:30am	Registration
8:30am — 8:35am	Welcome
8:45am — 9:25am	Managing Common Senior Dog Health Conditions & Comorbidities with Nutrition Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
9:35am — 10:25am	Managing Common Senior Cat Health Conditions & Comorbidities with Nutrition Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
10:25am — 10:40am	Break
10:40am — 11:30am	Senior Pet Diets Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
11:30am — 12:00pm	Morning Session Q&A Camille Torres-Henderson, DVM, DABVP, DACVIM (Nutrition)
12:00pm — 1:00pm	Lunch
1:00pm — 1:30pm	Weighty Matters: Tackling Canine & Feline Obesity In Senior Pets - Insights from the Healthy Weight Clinic & Pet Health Center Katherine Oakes, DVM
1:30pm — 2:20pm	Canine Cognitive Dysfunction Susan Nelson, DVM
2:20pm — 2:40pm	Break
2:40pm — 3:30pm	Nutrition Tips and Tricks for the Senior Patient: Diets and Esophageal Feeding Tubes Ally Sptiz, DVM, (Residency Trained in Small Animal Clinical Nutrition))
3:30pm — 4:00pm	Afternoon Session Q&A

Hill's®
Transforming Lives™

Small Animal Clinical Nutrition Symposium

AGING CATS & DOGS

Hill's®
Transforming Lives™

Managing Common Senior Cat Health Conditions and Comorbidities with Nutrition

CAMILLE TORRES-HENDERSON, DVM, DABVP, DACVIM (NUTRITION)

Managing Common Senior Cat Health Conditions and Comorbidities with Nutrition

CAMILLE TORRES DVM, DABVP, DACVIM (NUTRITION)

Overview

CHANGES IN AGING CATS

NUTRIENTS

NUTRITIONAL MANAGEMENT OF COMMON CONDITIONS

Changes in Aging Cats

Defining age groups

Energy requirements

Digestion in aging cats

Microbiome

Musculoskeletal

Cognition

Age groups

Cats can be divided into ***4 life stages***:

- Growth
- Adult (up to 6 yr)
- Mature (7-12 yr)
- Geriatric (12+ yr)

Chronologic age does not always match ***physiologic age***

Patient needs must be addressed on an individual basis

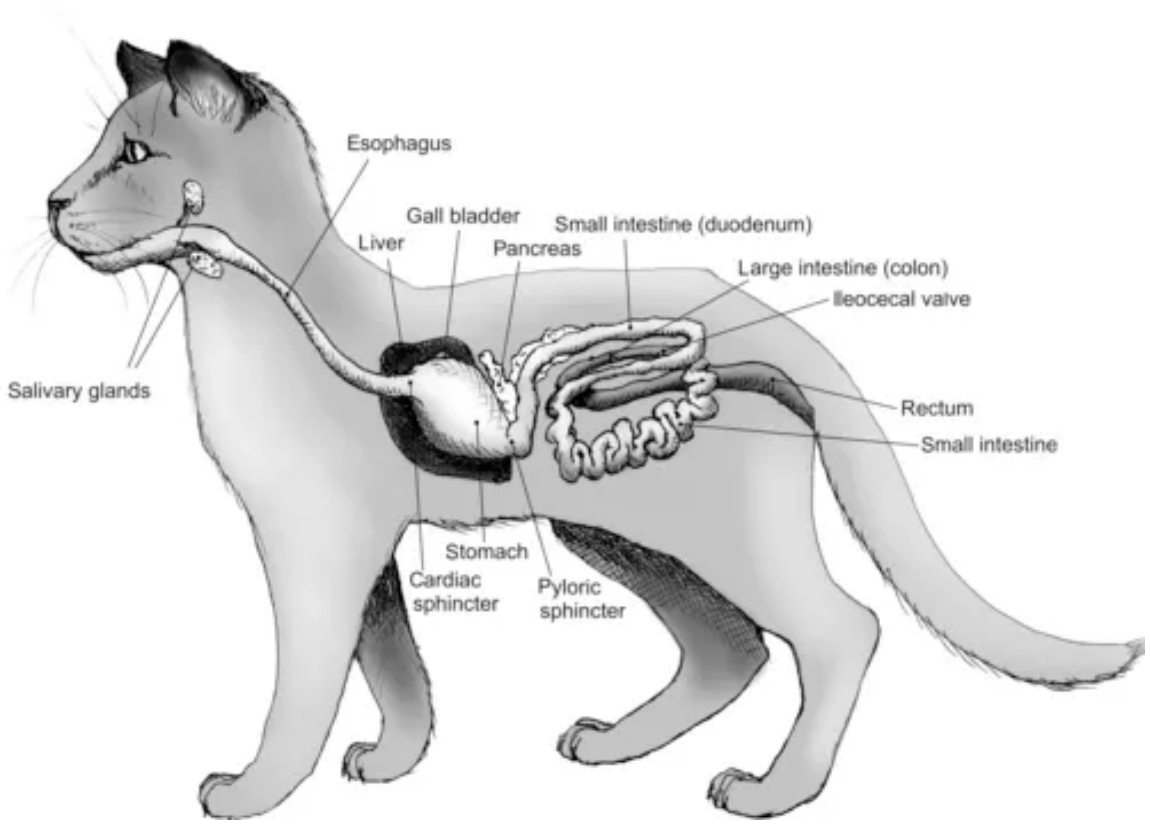
Energy Requirements of Aging Cats

Mature cats (7-12 yr) have ***reduced*** energy requirements

- More likely to become overweight
- More likely to show evidence of chronic disease

Geriatric (12+ yr) tend to have ***increased*** energy requirements

- More likely to be underweight



Digestion and Aging Cats

Reduced ability to digest fat

- 10-15% of mature cats demonstrate impaired fat digestibility
- 33% of geriatric cats have reduced fat digestibility

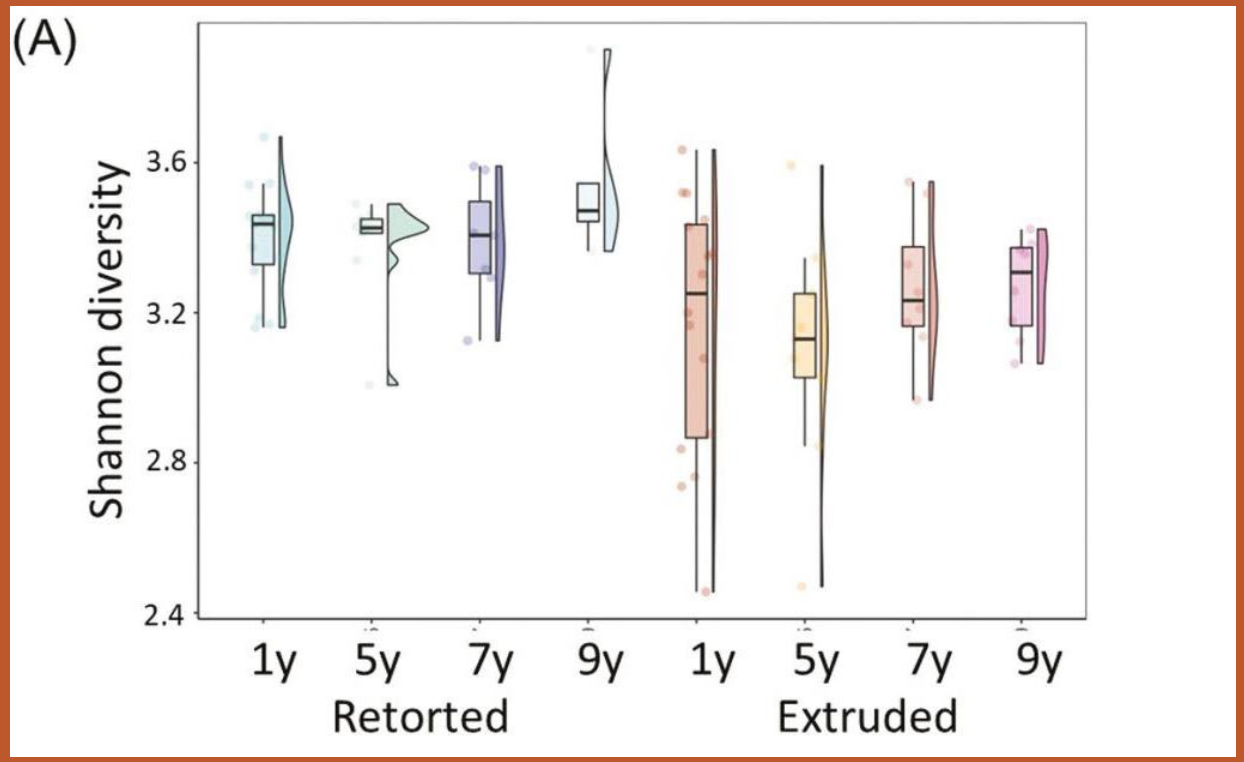
Reduced ability to digest protein in 20% of cats >14 years of age

Decreased gastric motility- may see constipation

Result: Weight loss

- Decreased ability to digest nutrients
- Gradual with age
- Common first sign of disease

Microbiome- diversity



Bermingham, E.N., Young W., Butowski C.F., Moon C.D., Maclean P.H., Rosendale D., Cave N.J., and Thomas D.G... 2018. The fecal microbiota in the domestic cat (Felis catus) is influenced by interactions between age and diet: a five year longitudinal study. Front. Microbiol. 9:1231. doi: 10.3389/fmicb.2018.01231

ANIMAL FRONTIERS
OXFORD UNIVERSITY PRESS

Anim Front. 2024 Jun 20;14(3):5–16. doi: 10.1093/af/vfae008

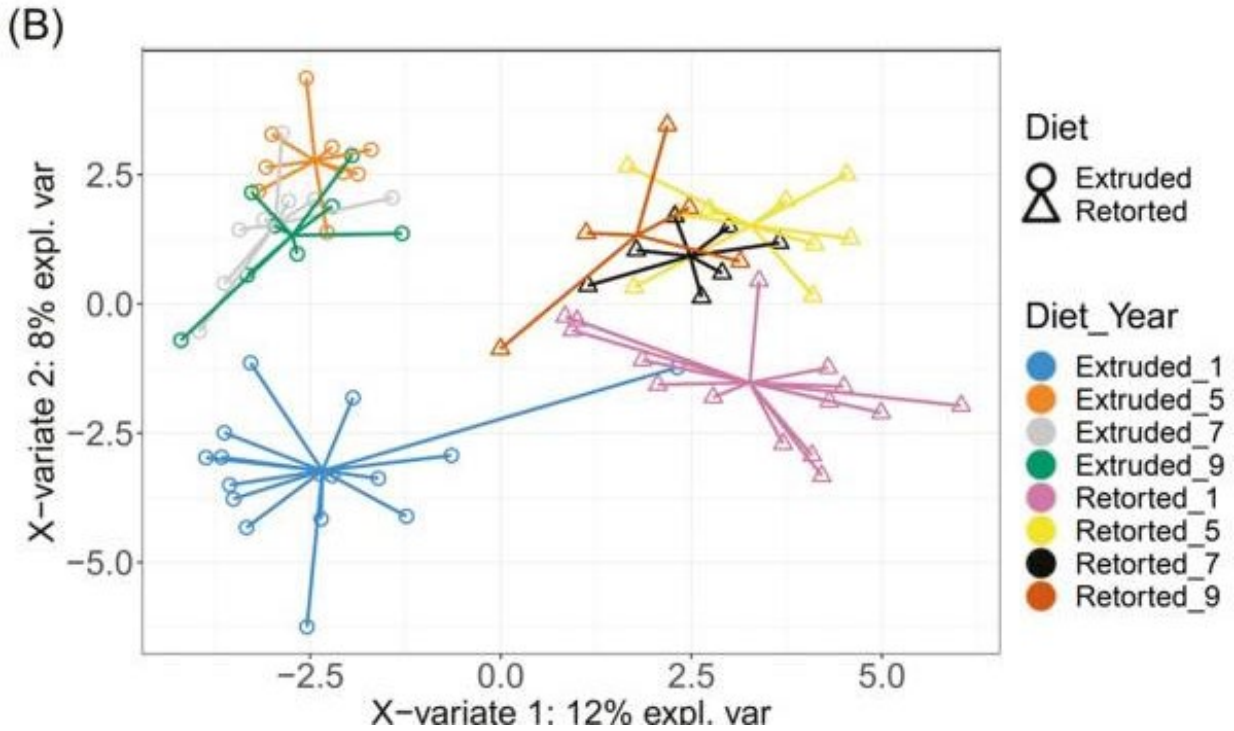
Nutritional needs and health outcomes of ageing cats and dogs: is it time for updated nutrient guidelines?

Emma N Bermingham [1,✉], Keely A Patterson [2,3], Anna K Shoveller [4], Karl Fraser [5,6], Christina F Butowski [7], David G Thomas [8]

Microbial diversity remains consistent with age

Extruded= dry food

Retorted= wet food



Microbial Diversity

- **Microbial Diversity**: Wet diets **increased diversity** compared to dry diets, regardless of age.
- **Age-Associated Profiles**: Young cats had distinct microbiomes compared to older cats.
- **Diet-Dependent Populations**: Wet and dry diets resulted in **different microbial populations**.

Musculoskeletal changes

Aging leads to a reduction in lean body mass and an increase in fat mass.

- reduced strength and mobility

Sarcopenia can be exacerbated by insufficient dietary protein or negative energy balance

Degenerative joint disease more common with age.

Reduced physical activity due to joint pain further impacts quality of life.

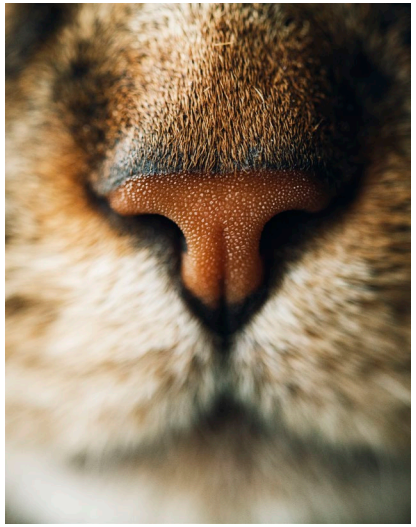
Brain Health

Feline cognitive dysfunction- affects 28-50% of geriatric cats

- Behavioral changes
- Excessive vocalization
- Inappropriate elimination
- Altered sleep habits
- Mood changes

What to do:

- Environmental enrichment
- Middle-aged cats fed a combination of fish oil, antioxidants, arginine and B vitamins enhanced brain function
- In cases of severe cognitive dysfunction implementing a change can have negative effects due to poor coping ability.



Sensory

Reduced:

- Taste
- Smell
- Vision

Impacts their interest in eating -> leading to weight loss

Solution:

- Ease of access
- Food with different aromas and flavors
- Modify temperature (preferred temperature is 98°F)

Summary so far…

Energy requirements change as cats age

Digestibility of protein and fat decreases with age

Musculoskeletal changes

Sensory and cognitive changes

Nutrients

Nutrients that provide energy

Protein

Carbohydrates

Fat

Protein

Cats have higher protein requirements than dogs

- Protein turnover
- Continuous gluconeogenesis

When dietary protein is not adequate, cats will use protein from muscle to support protein synthesis

Protein

Estimated amount of protein to maintain lean body mass

- Adult cats
  - 5 g protein/kg body weight (34% protein ME)

For cats with **low energy requirements**, the diet may need to be **higher in protein** to meet their needs

Use muscle condition scoring

Carbohydrates

Cats have a requirement for glucose at a cellular level but they do not require carbohydrates from the diet

Cats can effectively digest and absorb carbohydrates

Cats can synthesize glucose using gluconeogenic amino acids from the diet or from endogenous sources

Carbs and Cats: Nutrition Myths and Realities

- Cats do not have glucokinase activity in the liver
  - Enzyme responsible for conversion of glucose to glucose 6 phosphate
  - This enzyme functions under high glucose loads and lack of this enzyme may slow use of glucose
- Decreased levels of amylase, sucrase and lactase in the pancreas and intestine compared to dogs
  - Diets containing lactose and sucrose decreased protein digestibility by 4-5% compared to carbohydrate free
  - Digestibility of simple sugars remains 98%-100% despite lower enzyme levels
- Constant hepatic glucose production (gluconeogenesis)
  - Cannot downregulate aminotransferases and urea cycle enzymes
  - Cats increase glucose production after a meal to offset increased levels of insulin

Carbs and Cats: Nutrition Myths and Realities

- Pet food has complex carbohydrates rather than simple sugars
  - Simple sugars are not metabolized as efficiently but complex carbohydrates are
- In a low carbohydrate diet fat and protein must increase to account for the energy that would have come from carbohydrates
- Fat deposition is higher with a high fat diet and lower with a high carbohydrate diet
- High fat diet compared to a high carbohydrate diet
  - Delayed glucose clearance
  - Decreased insulin response to glucose administration
  - Explanation: high fat diet may cause decrease pancreatic insulin secretion and/or decrease beta cell response to glucose

Carbs and Cats: Nutrition Myths and Realities

Canned Food

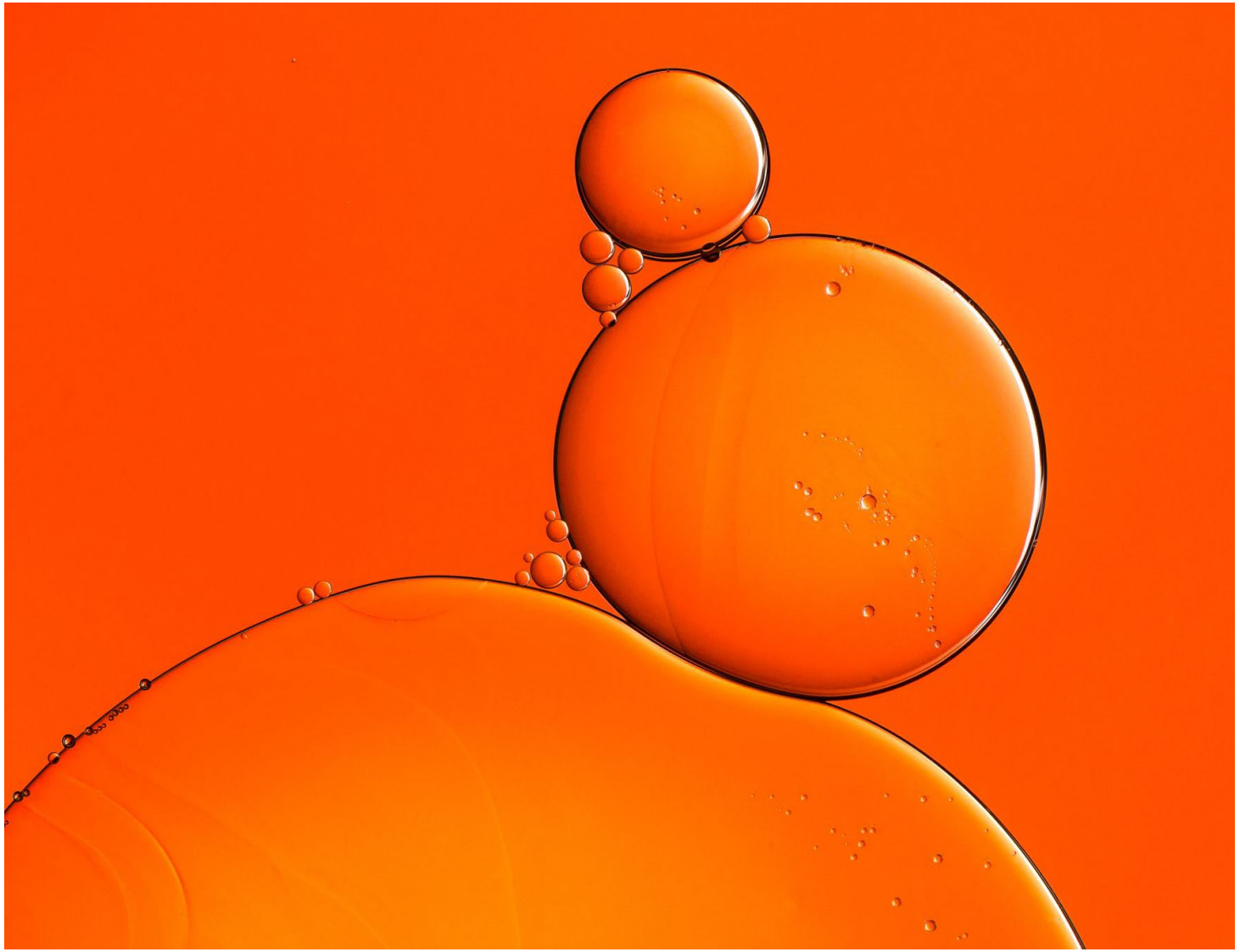
- Perception: Canned food is low in carbohydrates
- **Fact**: each diet should be evaluated individually for the caloric distribution

Obesity

- Perception: High carbohydrate diets cause obesity
- **Fact**: High fat diets are more likely to cause obesity

Diabetes

- Perception: High carbohydrate diets cause diabetes
- **Fact**: Elevation in blood glucose and insulin is a normal physiologic response and have not been proven to be detrimental
- **Fact**: Obesity led to insulin resistance and delayed clearance of glucose rather than the amount of protein or carbohydrate in the diet



Fat

Concentrated source of energy that can be stored or used

Cats typically can tolerate a high fat diet

Improves palatability

Geriatric cats may need to eat more calories to maintain weight in comparison with younger cat that is the same size

- But…33% of geriatric cats have reduced fat digestibility

True or False?

I recently diagnosed a 12-year-old cat with chronic kidney disease (IRIS stage 1, non proteinuric, non hypertensive).

I should change her diet from an adult maintenance diet to a senior cat diet.

False: Senior diets for cats are similar to adult maintenance diets

Senior diets differed in crude fiber but otherwise there weren't any significant differences in nutrients compared to maintenance formulas

AAFCO does not have guidelines for senior pets

The nutrient profile for senior cat diets is variable

It is a misconception that all senior diets are lower in a specific nutrient like phosphorus or protein

ACVIM American College of Veterinary Internal Medicine

JOURNAL OF VETERINARY INTERNAL MEDICINE Open Access

STANDARD ARTICLE | Open Access

Evaluation of nutrient content and caloric density in commercially available foods formulated for senior cats

Stacie C. Summers, Jonathan Stockman, Jennifer A. Larsen, Anais Sanchez Rodriguez, Lei Zhang

First published: 10 July 2020 | https://doi.org/10.1111/jvim.15858 | Citations: 9

Summary of nutrients…

Inadequate dietary protein intake can result in muscle loss

While cats have differences that effect glucose metabolism, they can still eat diets that include carbohydrates.

Canned food is not always low in carbohydrates

High fat diets are more likely to contribute to obesity, and obesity is more likely to cause insulin resistance

The nutrient profile for senior diets is variable, review the nutrient profile of the diet and compare to the current diet

Nutritional management for senior cats

Assessment of the Patient

Physical exam

- Body condition score is a good indicator of body fat
- **Muscle mass score** is an indicator of lean muscle mass
- Decrease in lean body mass (LBM) can indicate disease or malnutrition
  - Maintenance of LBM may delay morbidity and mortality
  - Non obese cats that maintain fat and LBM lived longer than cats losing fat and LBM
  - Preservation of body weight and body condition has the strongest correlation with survival
- Unintended weight loss should be investigated

General Diet Recommendations for Senior Cats

Evaluate the current diet

Commercial diets labeled for senior cats can vary greatly in the nutrient content

Some senior diets are formulated to be lower in calories which may not be appropriate for senior cats that are losing weight

Diet recommendations should consider a patient's individual needs

Provide specific diet and feeding recommendations

Common Conditions in *Overweight* Senior Cats

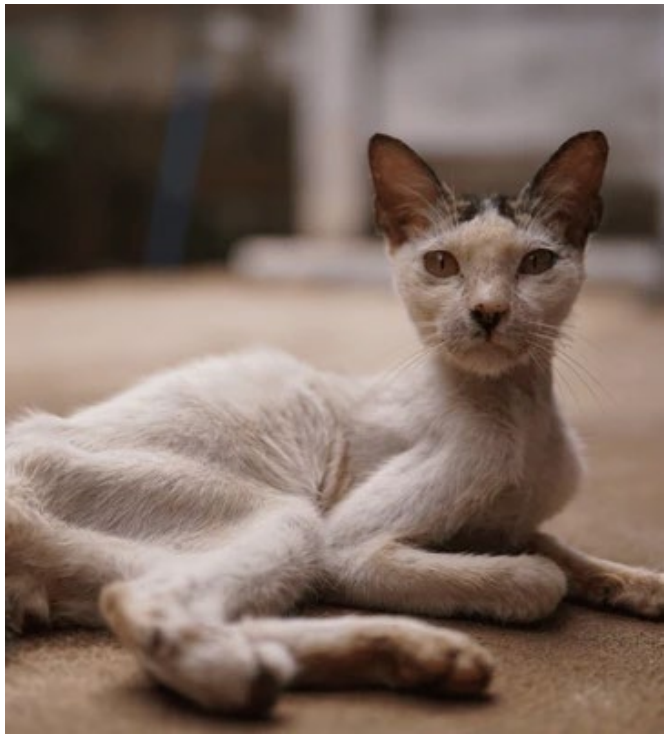
Obesity contributes to decreased life span and is associated with weight related diseases:

- Diabetes
- Lameness
- Lower urinary tract disease
- Hepatic lipidosis
- Skin problems

Common Conditions in *Underweight* Senior Cats

First step: determine if weight loss is associated with changes in food intake

- Weight loss despite ***normal to increased*** intake
  - Hyperthyroid
  - Diabetes
  - IBD
  - Lymphoma
- Weight loss with ***decreased*** intake
  - Reduced sense of smell or taste
  - Pain- periodontal disease
  - Reduced digestive function
  - Organ dysfunction- renal, pancreatitis, triaditis



Shutterstock Photo ID: 1655707849

Addressing Unintentional Weight Loss in Senior Cats Without a Medical Condition

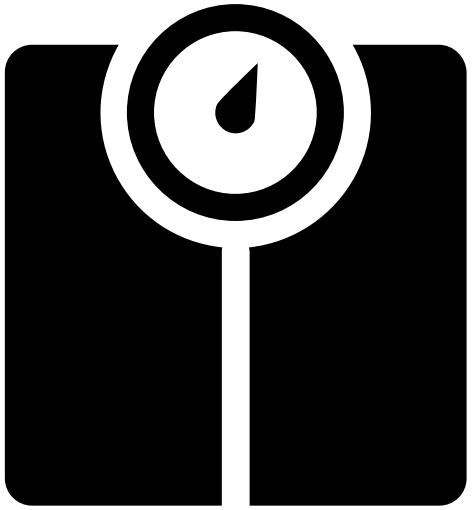
Highly palatable diet

High energy density

Highly digestible

Small amounts frequently

Increased protein intake can helpreduce but not prevent age associated lean body mass loss (sarcopenia)



Accommodations for Aging Cats

Easy access to food, water, litterbox and bedding

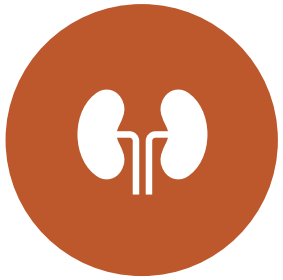
Use ramps or place food and water on lower surfaces for ease of access

Provide multiple places for resting with padded comfortable bedding

Litterbox- 1+ the number of cats in house, low sides for ease of access

Provide hiding places, including elevated sites

Nutritional management of disease



Renal disease

Gastrointestinal disease

Chronic Kidney Disease in Cats

Feeding cats with CKD a therapeutic renal diet resulted in longer survival with fewer uremic crises.

There is no evidence that feeding a renal diet to cats before IRIS stage2 will slow progression (?)

- Control of phosphorus is considered primary goal at early stage

Goals of therapy

- Provide complete nutrition
- Address metabolic changes

Omega 3 fatty acids from fish oil may be beneficial to cats with IRIS stage 2 disease

Cats with proteinuria (at any stage of CKD) may benefit from protein restriction and omega 3 fatty acids

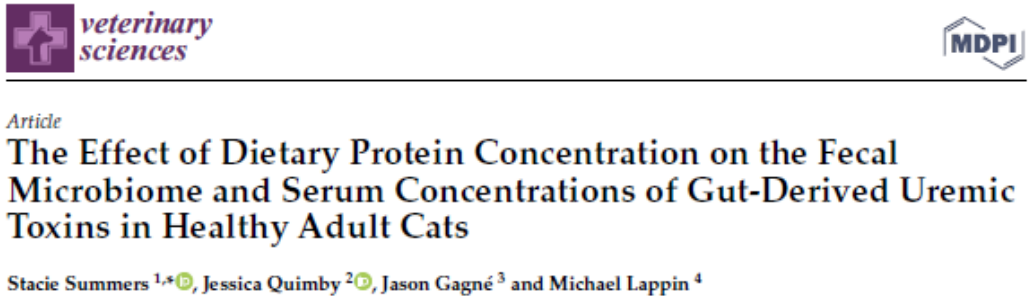
Controversy!

There is concern that protein restriction adversely effects lean body mass which has a negative effect on patient outcomes

Consensus has not been reached on whether to start a renal diet for IRIS stage 1 cats and dogs

Kidney remnant model found that dietary protein did not matter in renal disease

However…



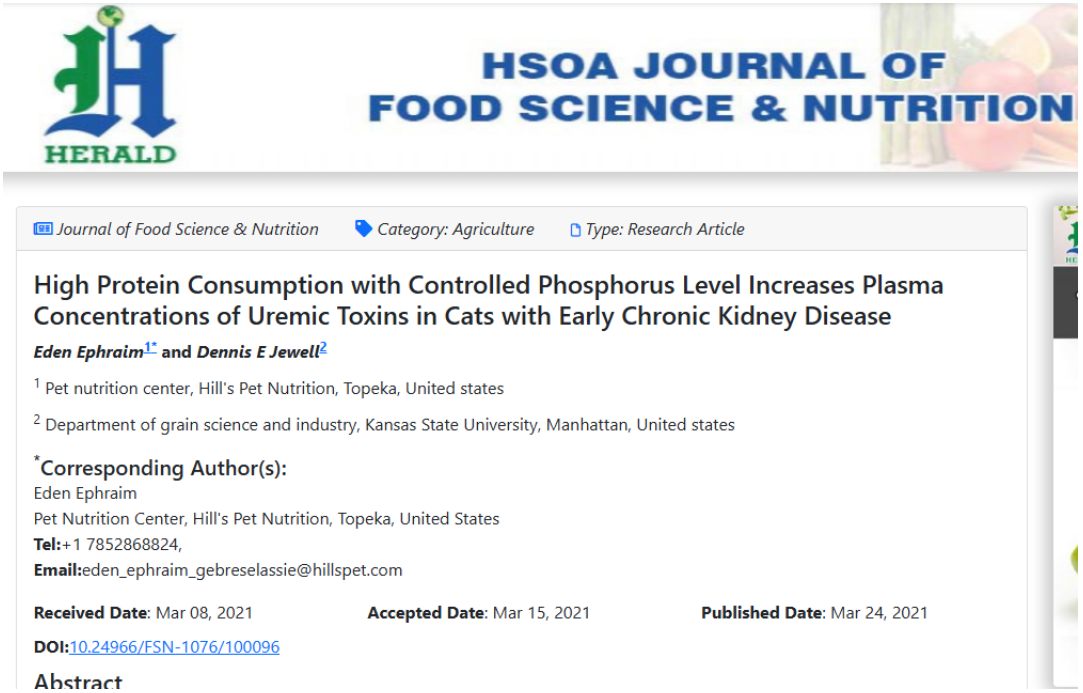
veterinary sciences

MDPI

Article

The Effect of Dietary Protein Concentration on the Fecal Microbiome and Serum Concentrations of Gut-Derived Uremic Toxins in Healthy Adult Cats

Stacie Summers [1,*], Jessica Quimby [2], Jason Gagné [3] and Michael Lappin [4]



HERALD

HSOA JOURNAL OF FOOD SCIENCE & NUTRITION

Journal of Food Science & Nutrition | Category: Agriculture | Type: Research Article

High Protein Consumption with Controlled Phosphorus Level Increases Plasma Concentrations of Uremic Toxins in Cats with Early Chronic Kidney Disease

Eden Ephraim[1*] and *Dennis E Jewell*[2]

[1] Pet nutrition center, Hill's Pet Nutrition, Topeka, United states

[2] Department of grain science and industry, Kansas State University, Manhattan, United states

*Corresponding Author(s):
Eden Ephraim
Pet Nutrition Center, Hill's Pet Nutrition, Topeka, United States
Tel:+1 7852868824,
Email:eden_ephraim_gebreselassie@hillspet.com

Received Date: Mar 08, 2021 **Accepted Date**: Mar 15, 2021 **Published Date**: Mar 24, 2021

DOI:10.24966/FSN-1076/100096

Abstract

Dietary protein ***may*** have more of an impact than we realized…

Protein and uremic toxins

Protein that is not absorbed reaches the colon and supports growth of proteolytic bacteria (20% of geriatric cats have decreased ability to digest protein)

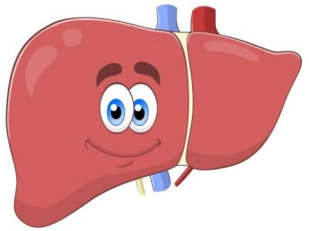
Bacteria ferment amino acids and produce indole and phenol (uremic toxins)

Cats with CKD have increase blood concentration of urea, creatinine and ***uremic toxins***

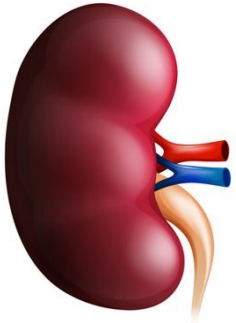
- Uremic toxins have a negative impact on the kidneys (inflammation, increased oxidative stress)

When cats with early CKD were fed a controlled phosphorus diet that was high in protein they had an increase plasma concentration of uremic toxins (Ephraim 2021)

- High protein diets may have a negative impact on renal disease even if phosphorus is controlled
- Feeding CKD cats protein restricted diet may slow progression by reducing accumulation of uremic toxins



With declining kidney function there is a buildup of waste products from metabolism



What is in a renal diet?

- Lower in protein
- Phosphorus restriction
- Omega 3 Fatty acids
- Acid base balance
- Antioxidants
- Electrolyte balance

Early Renal vs Renal Cat Diets

	Early Renal Diets: Protein g/1000 kcal	**Early Renal Diets**: Phosphorus g/1000 kcal	**Renal diets-** Protein g/1000 kcal	**Renal diets-** phosphorus g/1000 kcal
Purina NF canned cat food	95	1.0	67	0.9
Purina NF dry cat food	90	0.9	69	0.9
Hill's k/d canned	76	1.3	66-76	1.1- 1.2
Hill's k/d dry	79	1.3	66-68	1.2
Royal Canin Renal Support canned	84	1.2	66-70	0.8-1.0
Royal Canin Renal Support dry	73	1.3	58-65	1.0-1.1

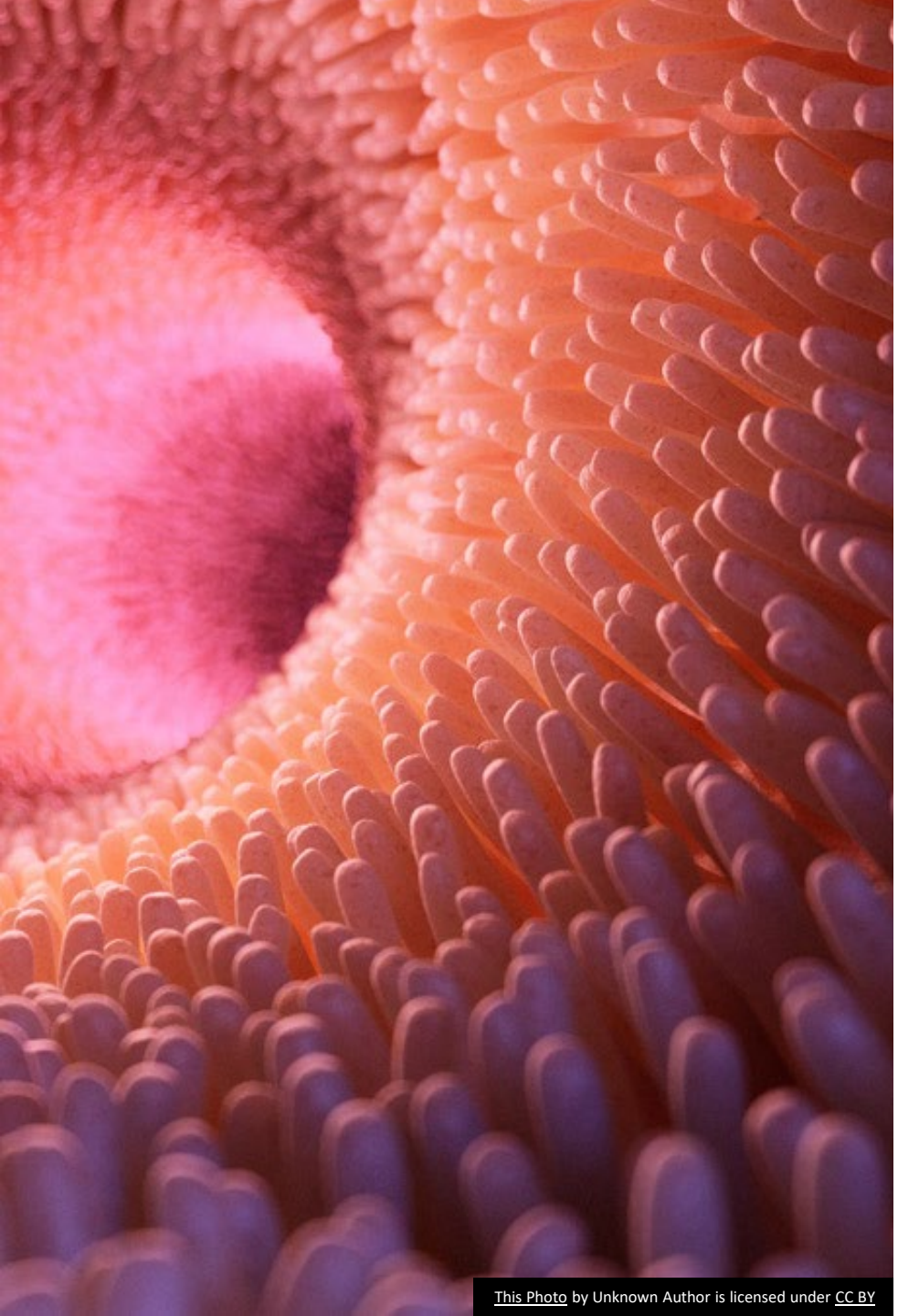
Gastrointestinal disease in cats- signs

Vomiting

Diarrhea

Weight loss

Inappetence



Food Responsive Chronic Enteropathy

Consider one of the most common disorders in senior cats (incidence is increasing)

Definition: Presence of clinical signs for more than 3 weeks with no apparent cause

Age of onset: Food responsive enteropathy- median age 7.7 years; 10.4 years for IBD (Jergens et al 2021)

Most common signs: weight loss> vomiting > diarrhea (compared to dogs: diarrhea)

Diagnostics

Ultrasound- may reveal thickening, loss of layering and thickened muscularis layer

Gastrointestinal panel (cobalamin, folate, TLI and PLI)

- Low cobalamin indicates **distal** small intestinal disease
- Low or increased folate indicates bacterial shifts in the **proximal** small intestine
- Low TLI suggests exocrine pancreatic insufficiency (EPI)
  - Cats often have **decreased** appetite and weight loss with EPI, whereas dogs often have increased appetite, weight loss and diarrhea
  - May occur with chronic pancreatitis
- High PLI supports pancreatitis

Triglycerides (fasted)

- While most cats tolerate dietary fat, high triglycerides is an indication to feed a lower fat diet

Diet trial- how to select a diet

Diet history- critical first step that is often overlooked

Nutrients of concern

- Types of protein
- Consider the caloric distribution of current diet as well as previous diets
- Amount of fiber
- Type of fiber
- Digestibility

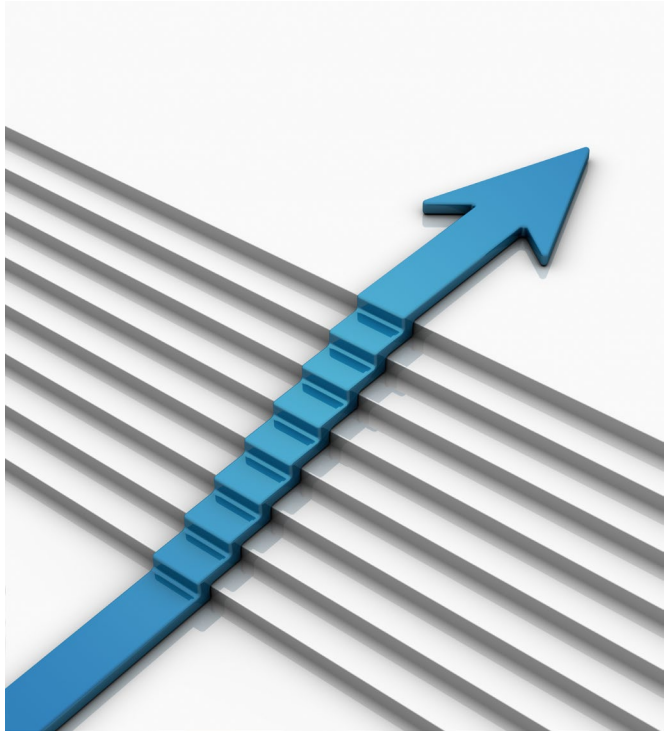
Diet trial- how to select a diet

Try a diet that hasn’t been tried

- Novel or hydrolyzed protein
- Look for a diet with lower fat (if indicated or if they have only been fed high fat diets)
- Look for a different fiber profile (total dietary fiber is best)
- Try a lower carbohydrate diet if they have had diets that were higher in carbohydrates (or vice versa)
- Feed a highly digestible diet

Summary of Steps for Success

1. Diet history
2. Consider nutrients of concern
   - Protein
   - Fat
   - Fiber
   - Digestibility
3. Select a diet that differs from what has been tried
   Type of protein
   Compare nutrients per 100 or 1000 kcal
   Compare caloric distribution
   Compare type and amount of fiber
4. Reevaluate



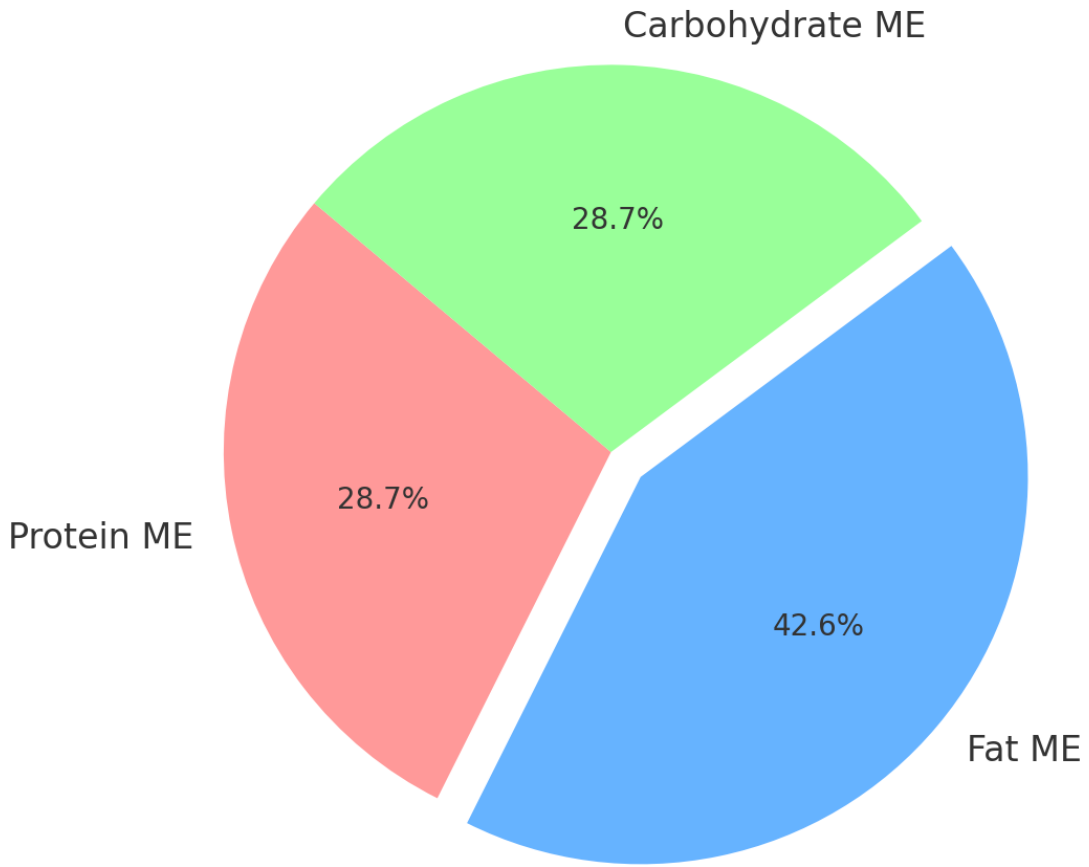
Example- Gracie

Gracie is a 2 year old spayed female Himalayan

Chronic enteropathy - weight loss, vomiting, diarrhea (watery, occasionally soft with mucus)

Diet history:

Hydrolyzed dry cat food
29% protein ME
43% fat ME
29% carbohydrate ME
Total dietary fiber 12 grams per 1000 kcal (1.2 grams/100 kcal)



Caloric distribution of diet

Fast Cat Running Down Stairs | Stable Diffusion Online

Important take away…

CASES DIFFER, STEPS DON’T—FOLLOW THE PROCESS TO FIND THE RIGHT DIET!

Summary

As cats age, their energy needs shift, protein and fat digestibility decline, and they experience musculoskeletal, sensory, and cognitive changes.

Adequate protein intake is important in preventing muscle loss, and muscle condition scoring helps monitor lean body mass.

Cats can tolerate carbohydrate-inclusive diets and high-fat diets are more likely to contribute to obesity and insulin resistance.

Nutritional management of senior cats with and without disease involves taking a stepwise approach to select a diet that will meet their needs, but it always starts with looking at the current diet

Thank you!

Camille Torres
ctorres@colostate.edu

Take Our Survey

Scan the QR code to provide feedback on today's continuing education

Thank You for Joining Us

Hill's®
Transforming Lives™

Small Animal Clinical Nutrition Symposium

AGING CATS & DOGS

TECHNICAL DIFFICULTIES

Please stand by

Small Animal Clinical Nutrition Symposium

AGING CATS & DOGS