

Assessment of Nutritional Status

Created by: Shelly Sterk and Dr. Ellen Dierenfeld, PhD CNS

2016 OSGA

What makes a good diet to you?

- The ingredients?
- Variety of Vegetables and Fruit?
- It Sounds Nutritionally Balanced
- Time Tested?
- Community Recommended?

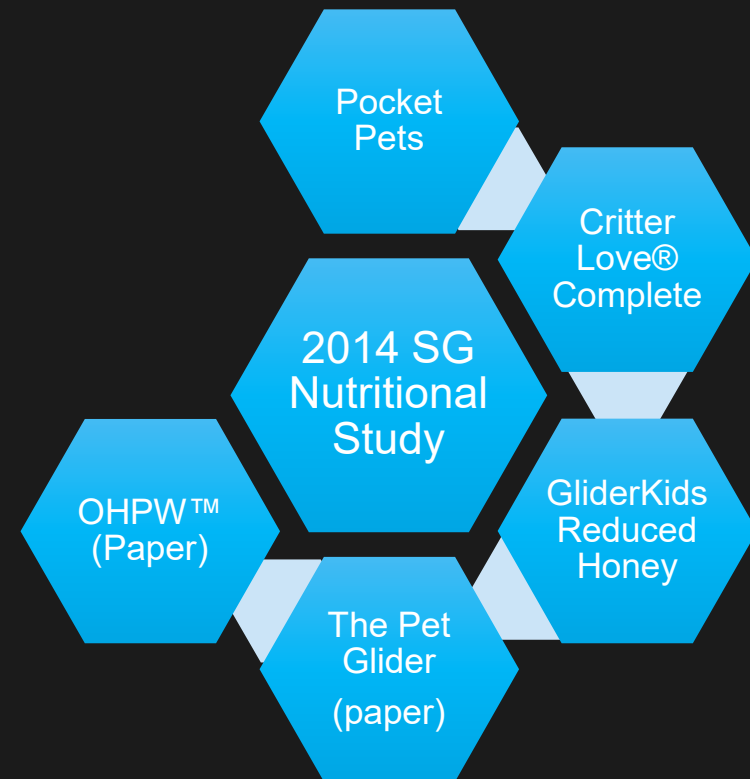
We need to look further...

- The ingredients?
 - Its not the ingredients, it's the NUTRIENTS
- Variety of Vegetables and Fruit?
 - Random variety can actually cause an imbalanced diet – proven by testing
- It Sounds Nutritionally Balanced
 - What sounds good may not be
- Time Tested?
 - Have they survived on these diets, or have they THRIVED?
- Community Recommended?
 - Popular, or time tested doesn't mean they are optimal for our sugar gliders

What has been done?

2014 Sugar Glider Nutritional Study

- Soluble Fiber Fermentation
- Gut Microbiota
- Tested 3 Diets
 - Selected by online community vote
- Reviewed 2 Diets on Paper
 - Selected by online community vote

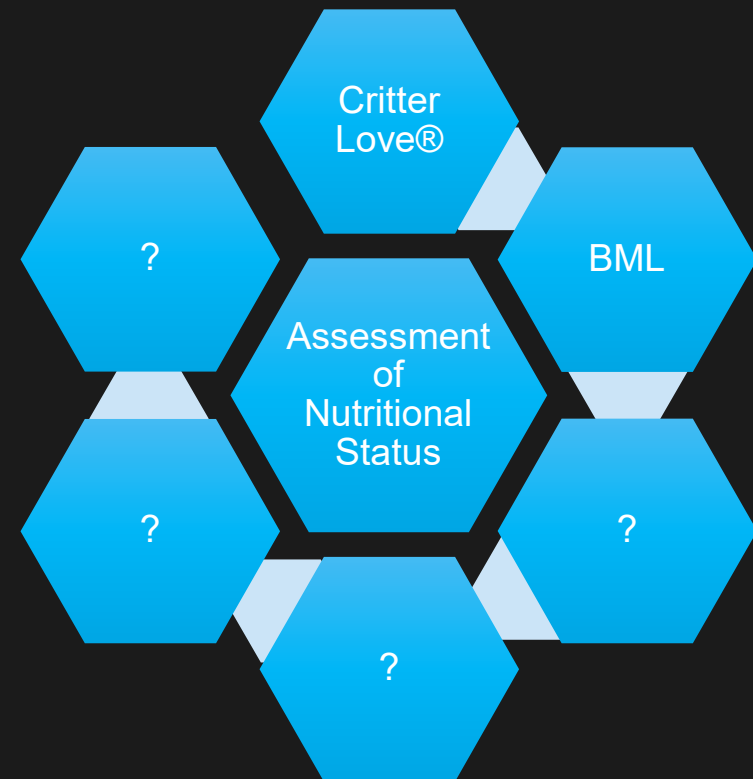


What is next?

Dietary Links with Blood Mineral & Vitamin Concentrations

YOU DECIDE!

- BML
 - Need another round of tests for statistical comparisons & diet tested
- Critter Love® Diet Plans
 - **EXCLUDED**
Critter Love® has done their own analysis; these diets will not be a part of this testing



Control Group

- 12 Sugar Gliders at maintenance level
- Identical Cages (36"x33"x22")
- 12" Exercise Wheel
- Interactive/Foraging Toys
- Constant Room Temperature
- Day/Night
- Staple, Vegetables, Fruit, Water



photo courtesy: Glider Nursery

Testing

No Sugar Gliders are Harmed during Testing!

- 10 Day adaptation period
- 90 Day feeding trial
- Feed two diets as directed on a rotational basis for sequence of diets effect
 - Cages 1 & 2 fed diet A while cages 3 & 4 are fed diet B ~ then switch after blood draws
 - Cages 1 & 2 fed diet B while cages 3 & 4 are fed diet A ~ final blood draws
- Blood Draw
 - Minerals
 - Vitamin D
 - Fat Soluble Vitamins (A, E & β -carotene)

Testing on Diet

- Written Description of Staple

- Ingredients in Grams

- Written Description of Vegetables and Fruits

- Ingredients in Grams

Submit for Analysis

- Protein
- Fiber
- Sugar
- Starch
- Fat
- Minerals
- Vitamin D

Blood Draws



Photos courtesy Glider Nursery, taken in 2015 for BML analysis, blood draw conducted by Wellington Veterinary Clinic under the supervision of Dr. Matthew Klingman, DVM

Results

MICHIGAN STATE UNIVERSITY

DCPAH
Diagnostic Center for Population & Animal Health

Director: Dr. Thomas P. Mullaney
4125 Beaumont Road
Lansing, MI 48910-8104
Phone: 517-353-1683
Fax: 517-353-5096
www.animalhealth.msu.edu

REPORT OF LABORATORY EXAMINATION

Client: Wellington Veterinary Clinic (22034)
PO Box 387
Wellington, OH 44090

Owner: Sterk, Shelly

Rcvd Date: 10/23/2014 12:16:00 PM
Admitted By: Klingman, Dr.
Ordered By: N/A
Encounter: 01791125
CR#: AP

Animal: SUGARGLIDERSPOOLED
Species: Other Mammal
Age: Adult
Tag/Reg ID: Sugar Gliders
Other ID:

MRN:
Breed: Mammal, Other
Gender: Unknown

C h e m i s t r y

Clinical Chemistry

Collected Date/Time (If Provided)	10/21/2014 12:18:00		
Procedure		Ref Range	Units

Blood samples for laboratory analysis will be submitted to the Michigan State University – Diagnostic Center for Population & Animal Health (DCPAH)

Diet samples will be submitted to Dairy One

Dr. Dierenfeld, PhD will interpret and report the results

Results will be submitted for review for publication in animal nutrition and/or veterinarian journals.

Why?

Why do we need to do this testing?

- We have some data on normal circulating levels of biochemical importance in health assessment
 - Electrolytes
 - Specific Enzyme activities
 - Measures of protein
 - Carbohydrate metabolism

What we DON'T know

- We do not know:
 - The impact of various diets/nutrient blends on these values has not been assessed systematically
 - Specific measures of nutritional status have not been evaluated - particularly with respect to dietary nutrient concentrations.

Test Results will show:

- Blood values of specific minerals and vitamins will remain within a relatively stable range unless diets are imbalanced, or contain excessive or deficient levels.
- The use of homemade diet blends and/or supplements - some for which we have limited knowledge of nutrient content - can lead to potential and undesired nutrient imbalances.
- Comparison of vitamin and mineral levels in various diets, in relation to blood metabolite status in animals consuming those diets, will provide further information regarding the overall nutritional balance, suitability, and health implications
- **This will lead us closer to determining actual nutritional requirements of sugar gliders!**

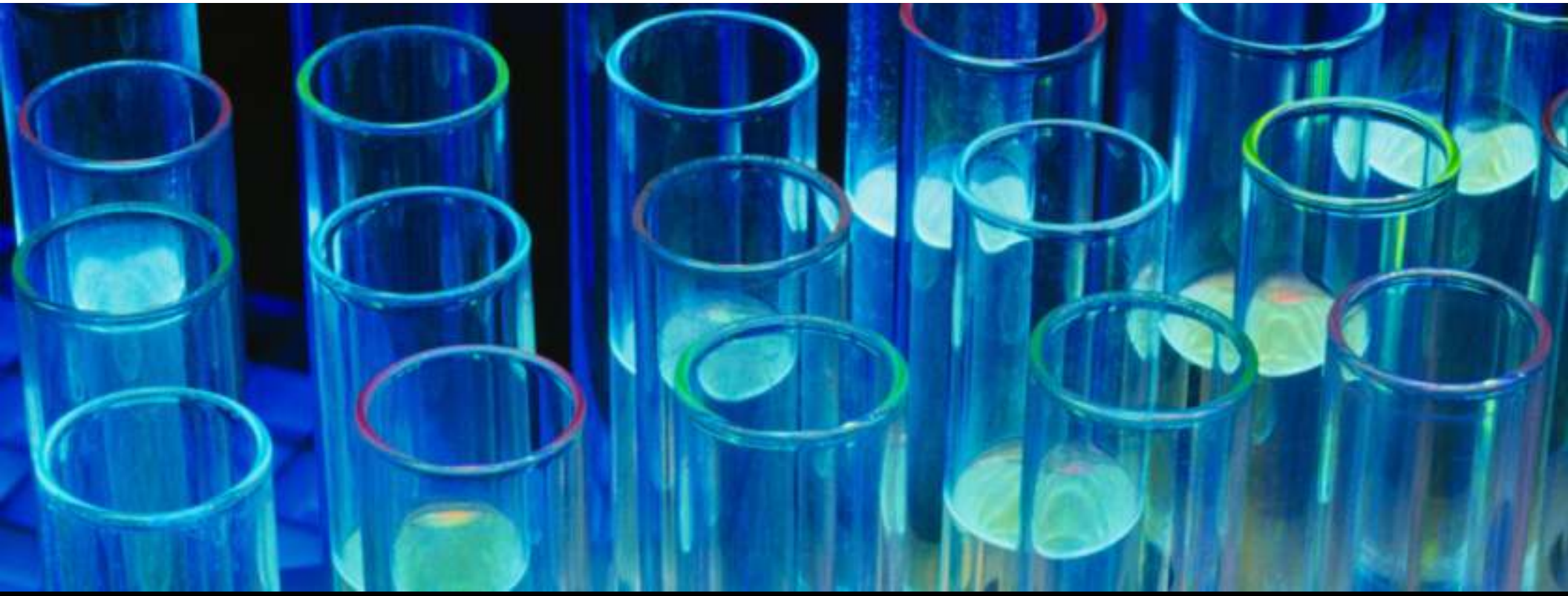
What will this research get us?

Today, we do not know what nutrients a captive sugar glider needs.

We need to understand their needs to:

- Evaluate our current diets
- Update current diets to meet any nutritional deficiencies
- Develop new diets with Captive Sugar Gliders in mind

For the **HEALTH, WELL BEING, and LONGEVITY** of our
captive Sugar Gliders!



Research: The Key to Success