2023 OESCA Health & Research Committee Seminar

OLD ENGLISH SHEEPDOG CLUB OF AMERICA

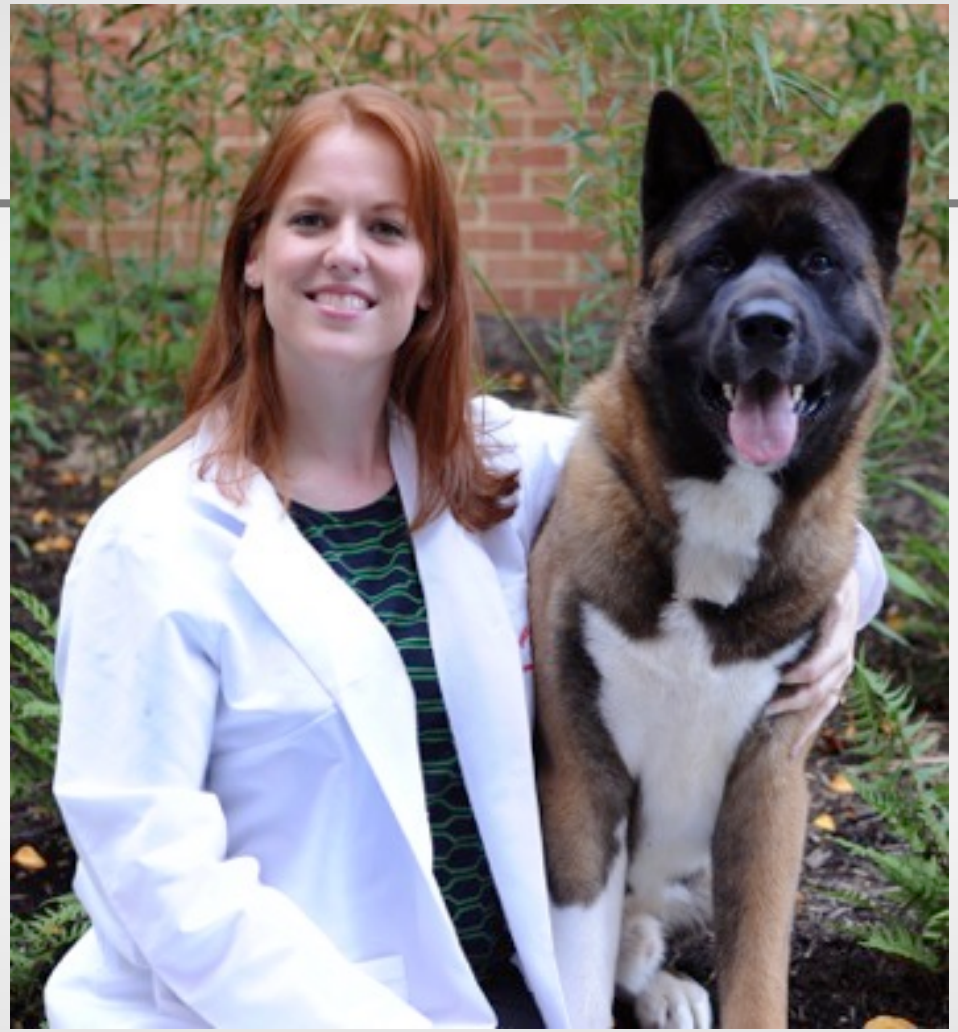
Let's Hear it For The Boys!

Erin E. Runcan, DVM
Diplomate, American College of Theriogenologists
Associate Clinical Professor Theriogenology

THE OHIO STATE UNIVERSITY
VETERINARY MEDICAL CENTER

Erin E. Runcan, DVM

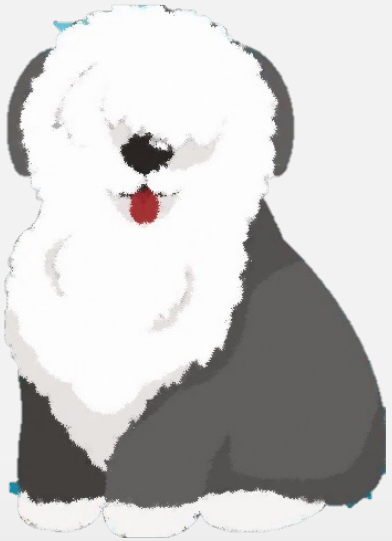
- Diplomate, American College of Theriogenologists (Repro Specialist)
- Associate Clinical Professor - The Ohio State University
- Research focus – canine reproduction – AKC sponsored research in pyometra/uterine health
- Breeder of Akitas, member of ACA



Email: runcan.1@osu.edu
Phone: 614-292-3551

What's in store?

- Immunity
- Gut Health/Microbiome
- Nutrition



- Semen Collection
- Reproductive Health

- Prostate Health
- Fertility/Maximizing Success
- Best Practices

Stage I – Puppyhood

Stage I - Puppyhood

Reproductive health starts in the whelping box!

Parents should be fertile and friendly with low COI (perfect world!)

Replacement stud dogs should have 2 scrotal testes by 9 weeks of age

Healthy neonates grow into healthy stud dogs

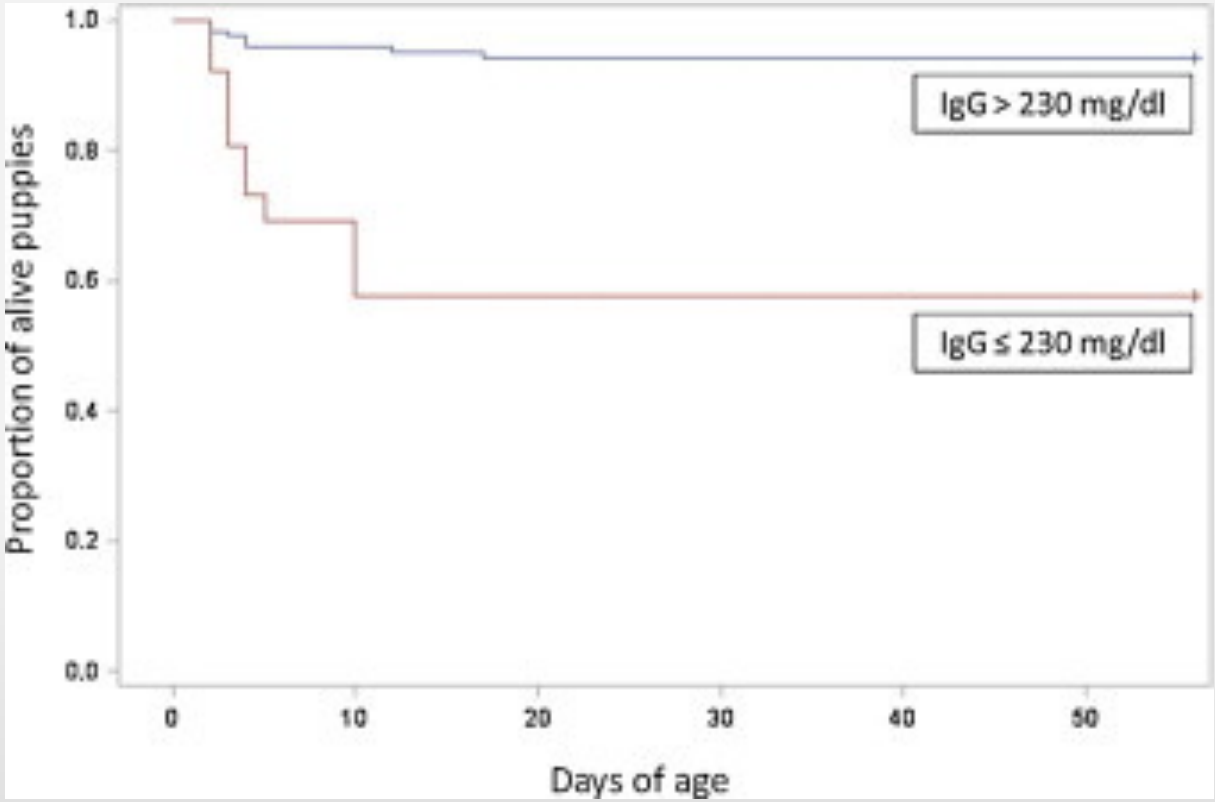
- Immunity
- Gut health/microbiome
- Nutrition

Van der Waaij, et. al. 2008; England, et. al. 2010

Stage I - Puppyhood

Immunity of the dam passed to offspring through colostrum

- Gut closure at 12-16 hrs post whelp
- Colostrum intake essential for survival!
- Plasma/serum may be alternative if colostrum not available
- Immune system function genetic and breed related

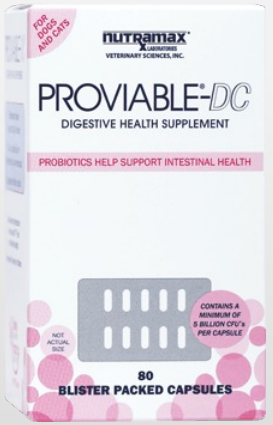


Mila H, et. al. 2014 Day MJ, 2007

Stage I - Puppyhood

Importance of the microbiome and gut health

- Supplementation of dam with probiotics (*E. faecium* and *L. acidophilus)* throughout gestation
- Greatly decreases presence of gastroenteritis up to 9 weeks of age
- Bitches produced higher quality colostrum



Melandri et. al., 2020

Stage I - Puppyhood

Intestinal episodes	1	2
	N (%)	*N* (%)
Control group (CG)	23/31 (74.2)*	10/31 (32.3)*
1 week (1WG)	12/30 (40.0)**	0/30 (0)**
4 weeks (4WG)	5/32 (15.6)***	1/32 (3.1)**

Different superscripts (, **, ***) denote statistical differences within columns ($p < 0.05$).*

Melandri et. al., 2020

Stage I - Puppyhood

Vaccinations/titers – immunity of dam essential for protection of pups

- Antibodies to diseases passed to pups in colostrum – maintains for several weeks
- Exact amount of time variable! (6-12 weeks of age)
- Puppies fed milk replacer before colostrum will have premature gut closure

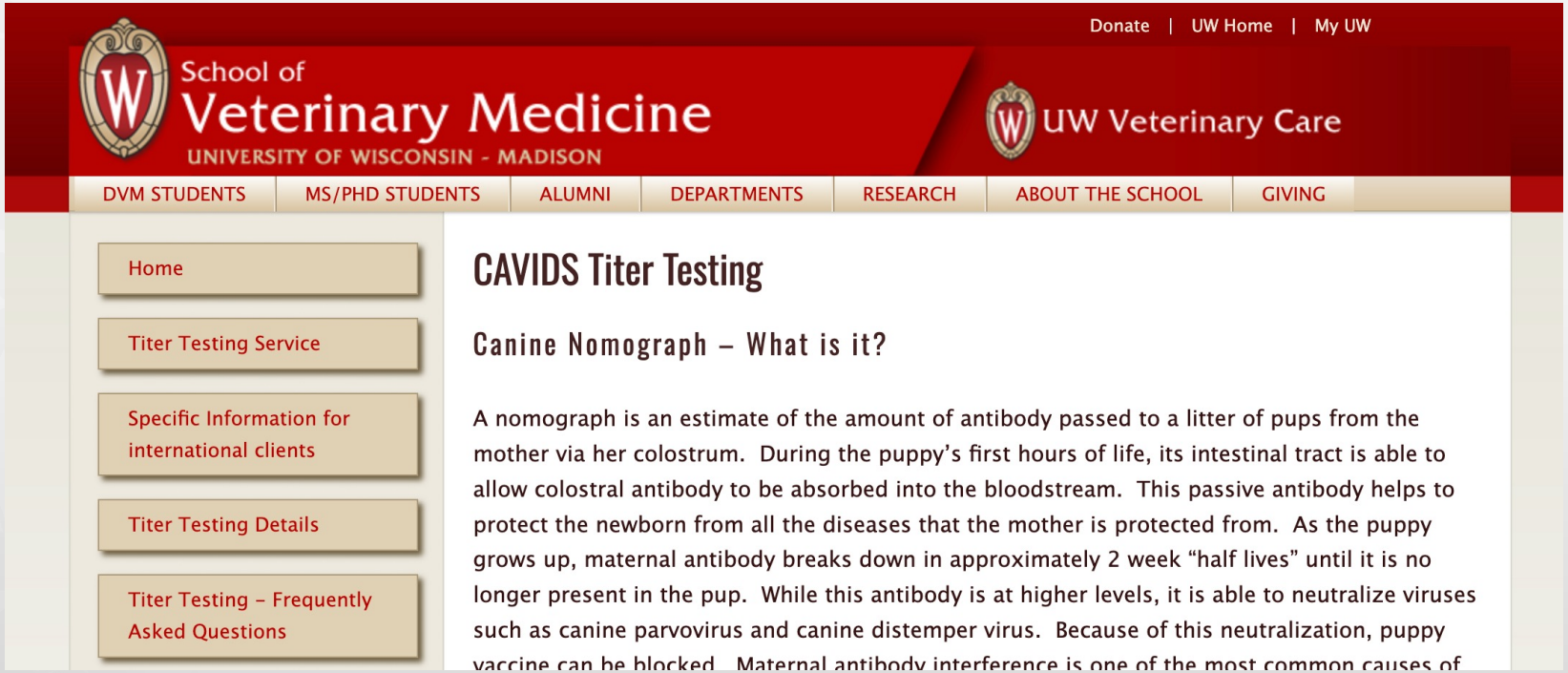
Canine nomograph – University of Wisconsin CAVIDs

- 2 weeks pre-whelp or 2 weeks post-whelp
- Improves response to vaccination
- Decreases amount of vaccine needed
- Test pups by 6 months of age to ensure immunity

Dr. Laurie Larson, 2021; Chastant-Millaird S, et. al., 2012

Link for Canine Nomograph

https://www.vetmed.wisc.edu/lab/cavids/canine-nomograph-what-is-it/



Canine Nomograph Report - Example

Animal ID	CPV HI assay titer	CDV SN assay titer
Moderate	320	128
Protected?	Yes	Yes
Next action	Titer in 1-3 years	Titer in 1-3 years

*every litter for brood bitches

Endpoint titers were determined by hemagglutination inhibition (HI) and serum virus neutralization (SN)

Suggested vaccination schedule for Moderate's puppies:

- **A dose of DP or DAP vaccine should be given at 8 and 12 weeks of age**
- **Titer test pups by HI and SN tests at 14 weeks of age**

This nomograph is unique to this dam and is an estimate of the age at which the maternal antibody that this mother may pass to her pups will be dissipated and no longer capable of interfering with pup immunization. This estimate is based on her antibody titers against distemper and parvovirus, which decrease in roughly 2 week half-lives in her pups, as shown in the graph below. **Due to potential failure of passive transfer, the nomograph is not to be used as an indication of protection from wild-type virus for the litter.**

Dr. Laurie Larson, CAVIDs, 2021

Stage I - Puppyhood

Nutrition essential for growth and reproduction!

- Ideal: Commercial diet formulated for growing puppies until 12 months of age
- Raw/Homemade diets
  - Often incomplete and imbalanced for growth
  - Work with veterinary nutritionist if desired
  - Understand risks to humans and pups!
    - Multi-drug resistant Salmonella
    - Fecal shedding of pathogenic bacteria
    - Hormonal aberrations

> J Anim Physiol Anim Nutr (Berl). 2019 May 29. doi: 10.1111/jpn.13118. Online ahead of print.

Abnormal bone mineralization in a puppy fed an in m

Sar

Case Reports > J Am Vet Med Assoc. 2009 Apr 15;234(8):1041-8.
doi: 10.2460/javma.234.8.1041.

Dif die bee

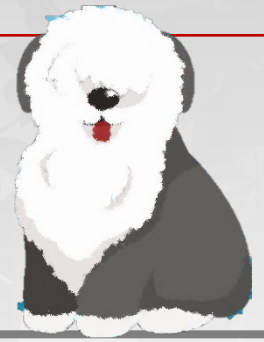
Mark

> Jpn J Vet Res. 1993 Nov;41(2-4):89-96.

Nutritional secondary hyperparathyroidism occurring in a strain of German shepherd puppies

K Kawaguchi [1], I S Braga 3rd, A Takahashi, K Ochiai, C Itakura

Stage II – Adolescence/Puberty

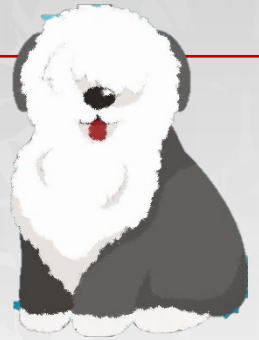


Stage II – Adolescence/Puberty

Do not punish reproductive behavior! Train what is and is not appropriate

Breeding is FUN! - Excellent positive reinforcement

Start EARLY – Once he starts showing interest in girls



Stage II – Adolescence/Puberty

- Nutrition is still important
- Beware the shiny bag!
- Sparkly does not equal better
- Watch out for phytoestrogens!
  - Ingredients in food that mimic the action of estradiol in the body
  - **SOY** -> Flaxseed -> Alfalfa -> Legumes
  - Have shown negative impact on fertility
  - Dogs are very sensitive!
  - Most pet food not tested for intact animals!
  - **ALWAYS READ THE LABEL** (Don't believe the kid at Petco!)

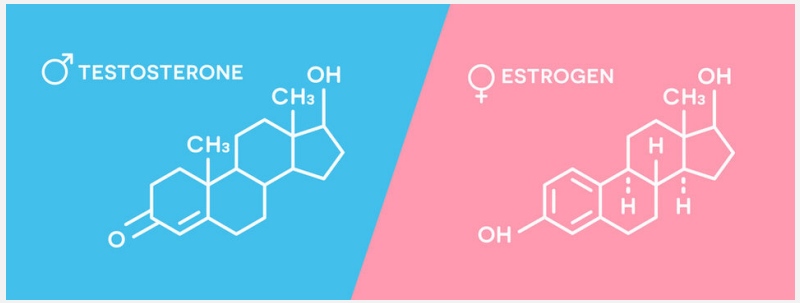
HINT – Good food
Should be marketed
By Veterinary
Nutritionists
NOT celebrities!

INGREDIENTS

Turkey, Turkey Meal, Salmon, Lamb Meal, Chickpeas, Peas, Chickpeas Flour, Pea Flour, Sunflower Oil (Preserved With Citric Acid), Duck Mea , Dehydrated Alfalfa Meal, Flaxseed, Natural Flavors, Salmon Oil, Salt, Potassium Chloride, Choline Chloride, Vitamins (Vitamin A Acetate, Vitamin D3 Supplement, Vitamin E Supplement, Niacin, D-Calcium Pantothenate, Thiamine Mononitrate, Pyridoxine Hydrochloride, Riboflavin Supplement, Folic Acid, Biotin, Vitamin B12 Supplement), Taurine, Mixed Tocopherols (Preservative), Minerals (Zinc Proteinate, Iron Proteinate, Copper Proteinate, Cobalt Proteinate, Manganese Proteinate, Calcium Iodate, Sodium Selenite), L-Carnitine.

Table 1. Foods high in phytoestrogen content.

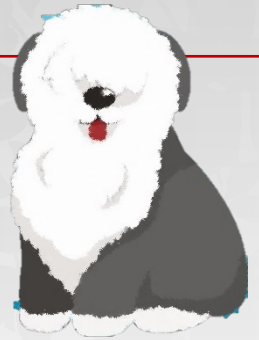
Phytoestrogen food sources	Phytoestrogen content (µg/100g)
Flax seed	379380
Soy beans	103920
Tofu	27150.1
Soy yogurt	10275
Sesame seed	8008.1
Flax bread	7540
Multigrain bread	4798.7
Soy milk	2957.2
Hummus	993
Garlic	603.6
Mung bean sprouts	495.1
Dried apricots	444.5
Alfalfa sprouts	441.4
Dried dates	329.5
Sunflower seed	216
Chestnuts	210.2
Olive oil	180.7



Raw feeders

- Avoid feeding ovaries/testicles
- Avoid feeding necks/gullets
- Avoid feeding kidneys

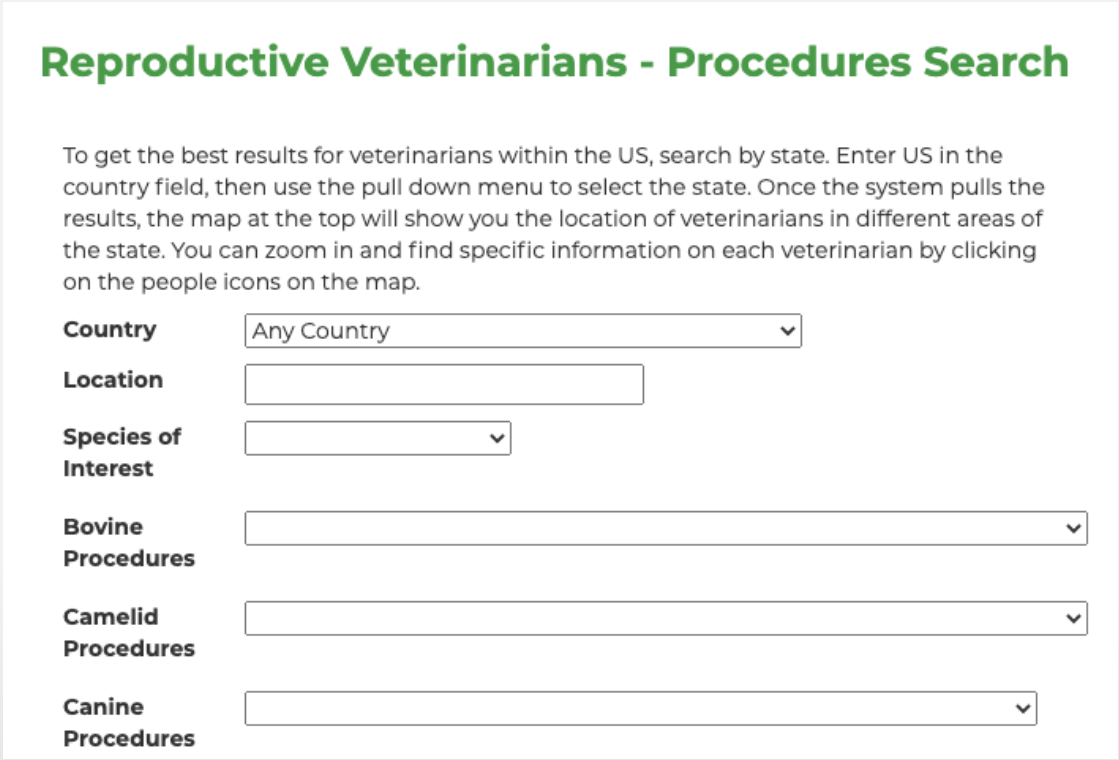
All have potential to contain reproductive hormones!



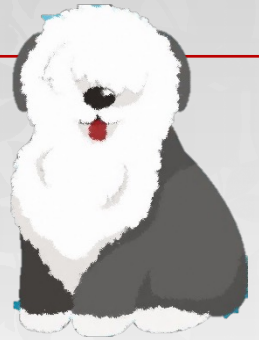
Stage II – Adolescence/Puberty

Start collecting semen! – 12 months of age

- "Pump and dump"
- Estrus bitch
- Establish a relationship with a reproductive vet <u>you trust</u>
- Boarded theriogenologist <u>OR</u> special-interest DVM
- Therio.org → Click "FIND A VET"



Society for Theriogenology
Veterinary Professionals Dedicated to Animal Reproduction

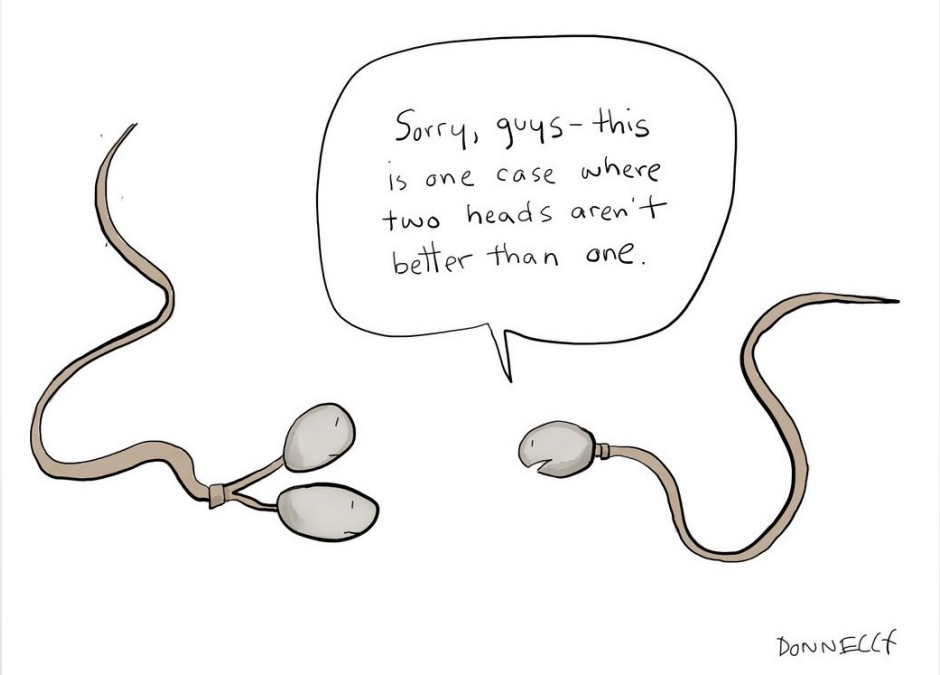


Stage II – Adolescence/Puberty

Happy visits at vet (separate breeding from pain!)

Normal semen parameters

- 10 million sperm/lb of body weight
- >70% progressive motility
- >80% normal morphology
- Normal spermiogram is important!
  - Young dogs may take time!
  - 18 months+



How breeders select a stud dog

Ethical purebred preservation breeder

*Health clearances

*Working Titles

*Conformation titles

*Complimentary conformation

*Stable temperament

*Full review of ancestors health and temperament

*Research likelihood of recessive genetic traits showing up

Designer dog breeder

*Testicles (One or two)

*Odd color

*Cute

"Sorry Ben, I never noticed the baby-sitting clause in the stud contract."

Stage III – Stud Dog Achievement Unlocked

Stage III – Officially a Stud Dog

Protect your investment!

- Semen evaluation does NOT guarantee fertility
- Puppies = fertility
- BUT semen evaluations can help!
- Recommend evaluation before marketing
- Disclose problems
- BE HONEST – BE FAIR – BE KIND

"Nik"
MBIS, MBISS, GCH Mojo's Continuation Of A Myth ROMX
AKC Top Ten: #1 2017
100+ BIS Wins

Stage III – Officially a Stud Dog

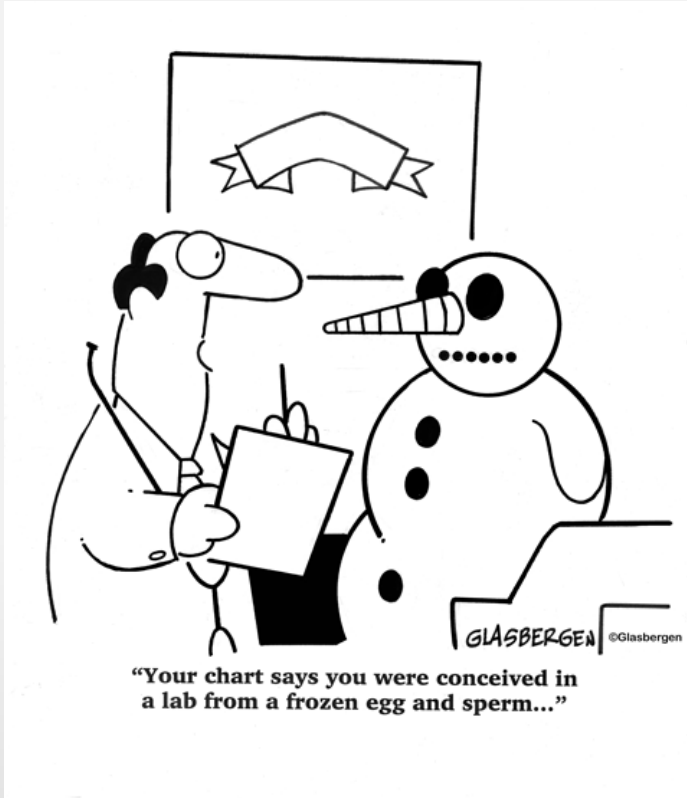
Semen collection for bitch owners

- Recommended to use a reproductive vet
- Best “bang for your buck” if done well
- Protects your end of the deal
- If you collect/ship yourself
  - Do it correctly – correct media, dilutions, etc.
  - INCLUDE PAPERWORK
  - Please, please, please label the tube

Stage III – Officially a Stud Dog

Time to think semen freeze!

- Do it NOW (2-5 years of age)
  - You can always toss it later!
- Don't wait until retirement or there's a "problem"
- Not at dog shows!
- Not when campaigning!
- You should receive:
  - FULL semen analysis including total # of sperm
  - Motility pre- and post-thaw (>40% required for 70% PR)
  - Percentage of normally shaped sperm
  - Number of available units/breedings/straws post freeze
  - Recommend 150 million+ live motile sperm in THAWED sample

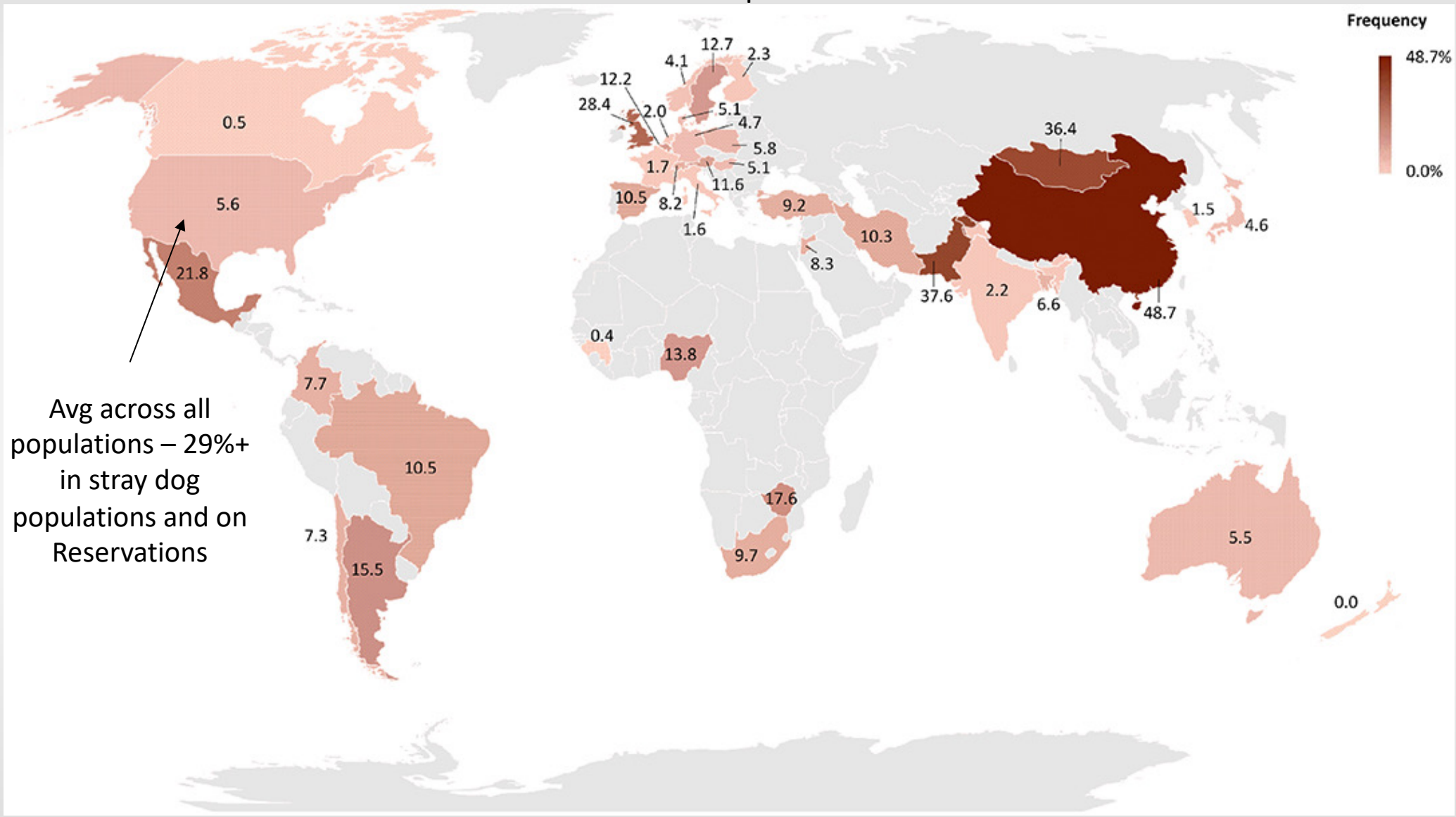


Stage III – Officially a Stud Dog

Brucellosis – yes, it's real and yes, it's a problem

- *Brucella canis* – Bacterial organism
- Transmitted in bodily fluids – semen, urine, vaginal secretions, blood transfusions, AI, vaginoscopy, ticks/fleas (?)
- NOT JUST LIVE COVER
- Wildlife reservoirs (canines)
- Infection from raw-feedings
- NO CURE – Transmissible to humans
- Adult dogs often have no clinical signs
- Persists in environment up to 8 months

World-wide Seroprevalence



Avg across all populations – 29%+ in stray dog populations and on Reservations

Santos R, et. al. 2021; Daly R, et. al. 2020

Stage III – Officially a Stud Dog

Recommend screening all breeding dogs for *B. canis* infection every 6 months or before every litter (females)

- Simple blood test performed by your vet
- False positives possible – need confirmatory test

Michigan outbreak 2007-2016 – Seropositive Incidence

Non-commercial breeders – 0.7%

Commercial breeders – 9-83%

Exposure of 53 people in 11 states and 20 euthanized pet dogs!

Johnson CA, et. al. 2018

Stage III – Officially a Stud Dog

Maximizing fertility – avoid stress

- Campaigning/working males have lower semen quality
  - Stress leads to increased cortisol levels in the body
  - Cortisol blocks LH secretion – responsible for testosterone secretion in males
  - Lowers testosterone
  - Decreases sperm concentration, motility, and normal sperm
- Heat in coated breeds negatively impacts semen quality
  - Increased temperatures cause sperm defects

Baptista Sobrinho CA, et. al. 2009

Stage III – Officially a Stud Dog

18 healthy, fertile male Rottweilers	Motility	Major Defects	Total Defects
Working	57.62%	26.8%	40.34%
Resting	72.63%	16.01%	29.61%
P value	<0.001	<0.0001	<0.0001

Baptista Sobrinho CA, et. al. 2009

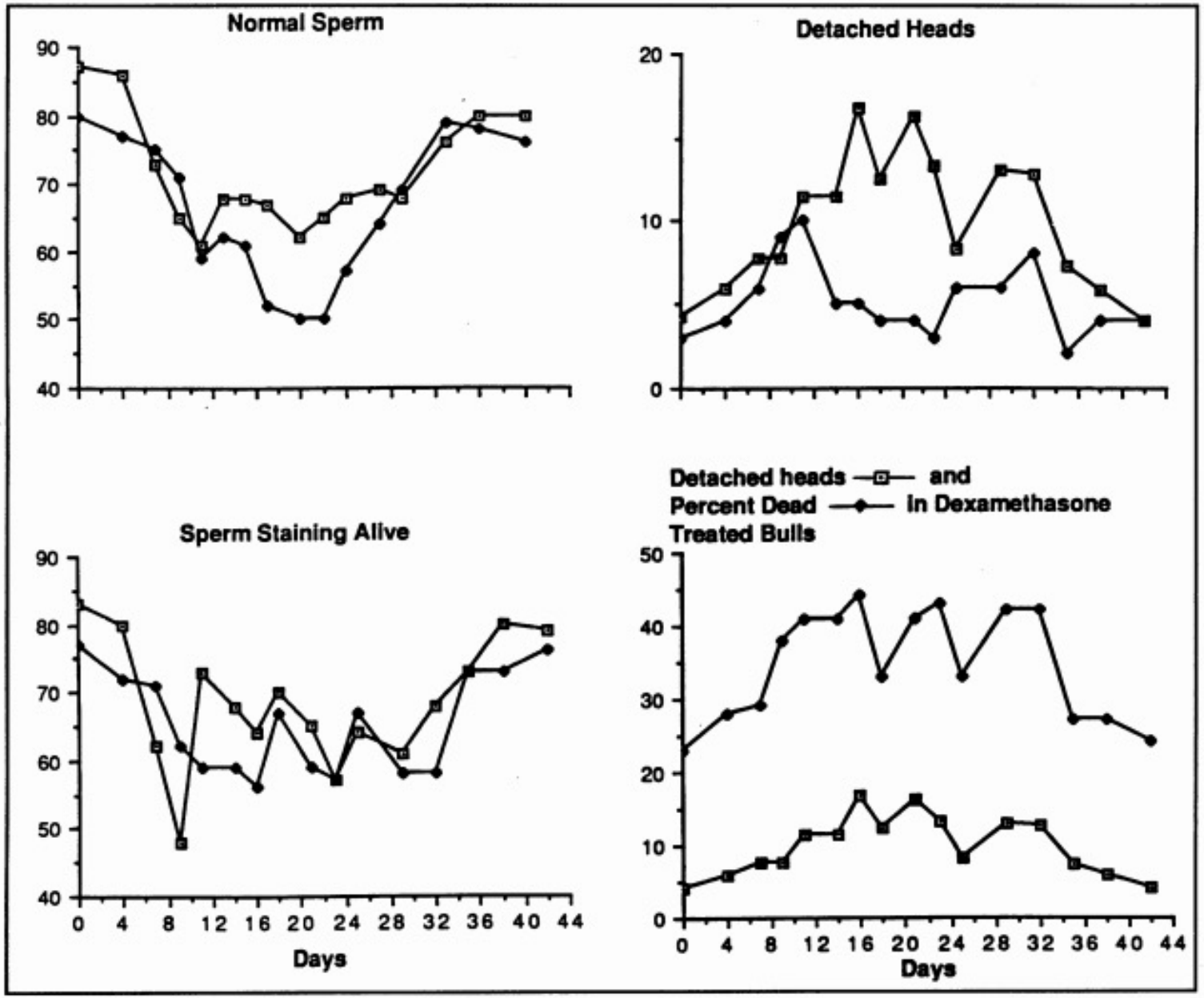


Figure 1. Changes in mean percent of normal sperm, percent "alive" or "dead" on eosin-nigrosin stain, and detached heads in four insulated (—◆—) and four dexamethasone-treated (—□—) bulls. The Y axis is in percent and the X axis is in increments of two days with day 0 being the day of initiation of treatment.

Barth and Bowman, 1994

Stage III – Officially a Stud Dog

Maximizing fertility – healthy weight!

- In rats, male offspring from obese mothers have lower fertility
  - Obese offspring from obese dams have even worse fertility (Youngson NA, et. al. 2019)

- In humans, obese fathers impact fertility of offspring up to two generations!
  - "Transgenerational epigenics" - alterations in DNA passed from parent to offspring
  - Reduced sperm motility, increased DNA damage of sperm
  - Offspring from obese fathers have lower fertility (Ou XH, et. al. 2018)

Breed standards??

Stage III – Officially a Stud Dog

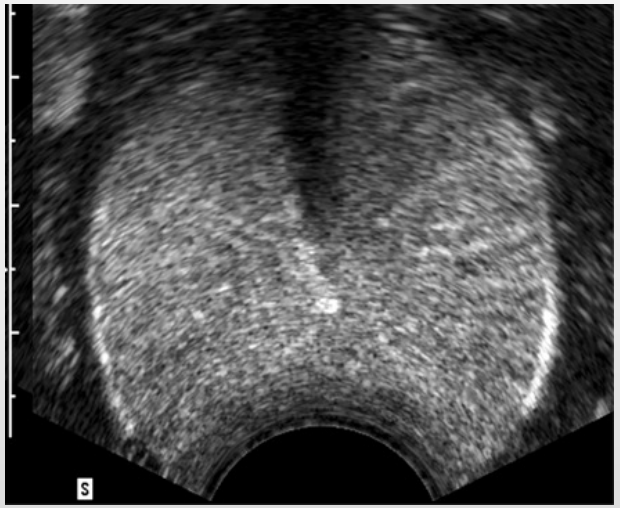
Maximizing fertility – dietary supplements

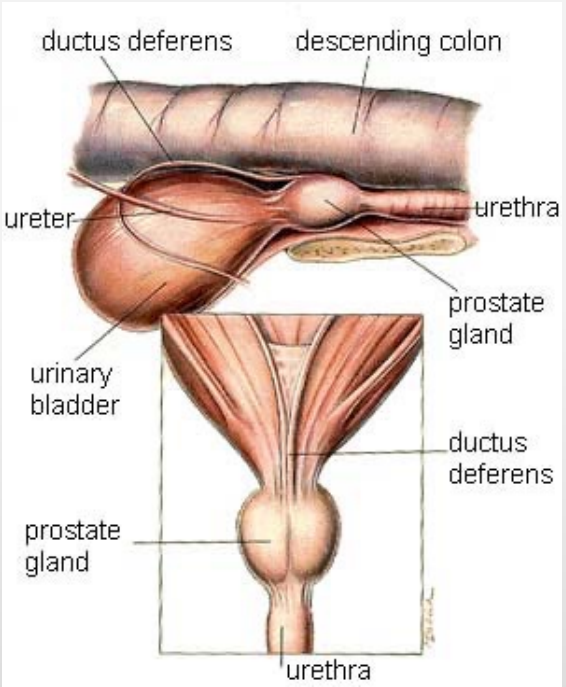
- MAY help a subfertile dog improve semen parameters but will not make a normal dog better
- Very little research in effectiveness – beware bad products
- READ THE INGREDIENTS
- Ingredient recommendations
  - Glucosamine
  - Green-lipped mussel (DHA)
  - Omega-3 Fish Oil – arsenic/mercury free/soy free
  - Vitamin E
  - L-carnitine
  - Zinc

Stage III – Officially a Stud Dog

Maximizing fertility – don't forget about the prostate!

- Responsible for fluid in semen (seminal plasma)
- Healthy fluid important for fertility
- Enlarges secondary to testosterone
- Encircles urethra

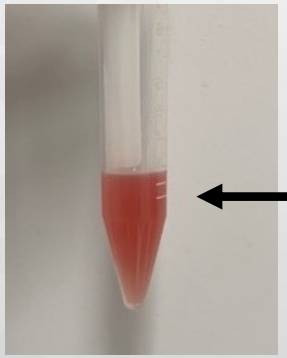




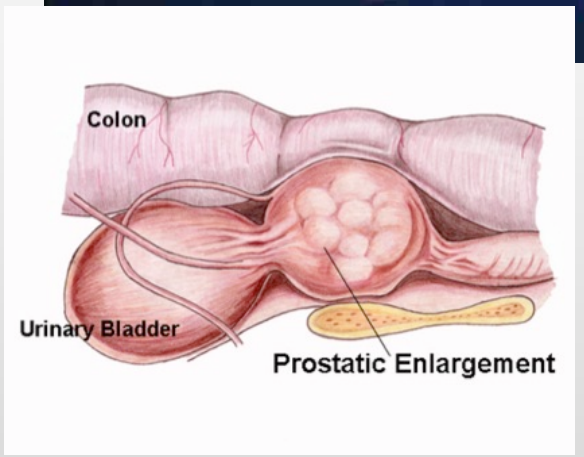
Stage III – Officially a Stud Dog

Prostate gland enlargement = BPH

- Benign Prostatic Hyperplasia
- Age-related condition
- 80% of dogs over 5 years of age
- 95% of dogs over 9 years of age
- Often asymptomatic



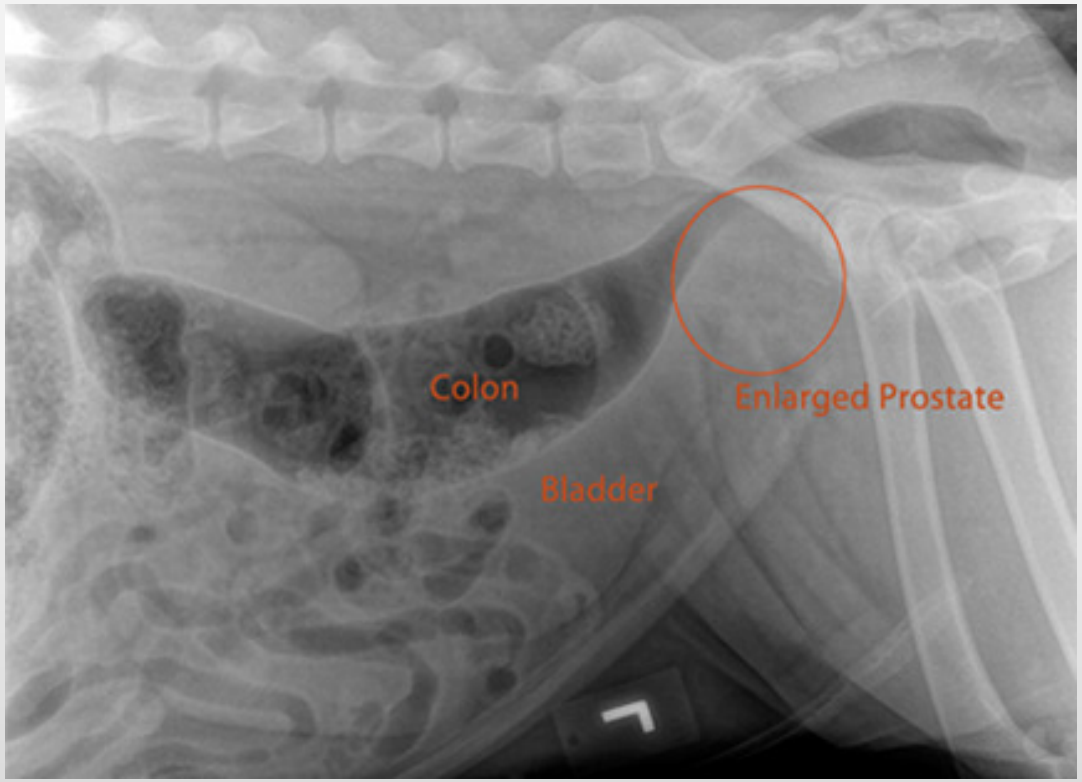
Blood in ejaculate



Stage III – Officially a Stud Dog

Prostate gland enlargement = BPH

- Poor freezability of semen
- Poor shipping of semen
- Abnormal prostate fluid
- Abnormal sperm
- Abnormal DNA in sperm
- May lead to infection



Stage III – Officially a Stud Dog

Treatment and Prevention

- Frequent ejaculation – decreases incidence of prostatic disease
  - "Clean outs" every week? Month?
- "Watch and wait" every 3-6 months
- Castration – permanent and resolves clinical signs in 14 days
- Oral medications – "Finasteride"
  - Taken daily to every other day
  - Controls BPH signs but may take up to 3 months to work
  - Not permanent
  - No affect on fertility (will decrease prostate fluid!)

Stage IV – Retirement and Love!

In Closing…

- Nothing can predict a “GREAT” stud dog, but there is much we can do to pave the way for one
- Great dogs start with great genetics, caring breeders, and healthy animals
- Find a reproductive veterinarian that you trust and can work with at all phases of your dog’s life (it’s worth it!)
- Start early! You can always toss semen from a young dog who doesn’t pan out when he’s old; much harder to make semen from an old dog as fertile as it was when he’s young.

Thank You!