

CANINE REPRODUCTIVE SEMINAR DR. ROBERT HUTCHINSON

1/8/02

DrHutch: What a wonderful way to spend a winter evening! I thank everyone for their interest in canine reproduction. I especially want to thank Karen Copley and Whelpwise for their sponsorship and Christie Keith from VIN for her help. For those that do not know me, I am tall, extremely handsome with wavy dark hair. For those of you who do know me, yes, I am still short, bald and dumpy! I do want to thank those who have attended my repro/pediatric seminars for their kind words on the message posts. Your questions have been excellent and very stimulating. I hope to cover as many as possible this evening. For us to understand canine reproduction, we must realize that the canine, and especially the bitch, is a unique individual when compared to all other domestic species. While most animals ovulate into an estrogen bath, the bitch ovulates into a progesterone environment. This fact is why we cannot use estrogen testing, vaginal smears or breeding guns for other than general timing of the bitch's estrous cycle.

The use of frozen semen and fresh-cooled semen showed us the true facts of canine breeding. Many testing methods that seemed to work only appeared so due to the extreme long life of fresh semen in the bitch.

I always pictured Mother Nature looking at us dog breeders and saying "those poor, poor fools. They don't have a clue what they are doing!" Progesterone testing has allowed us to anticipate ovulation, determine whelping dates and to schedule planned c-sections months in advance. Interpreting progesterone levels, unfortunately is still a mystery to many veterinarians and breeders. With these facts in place let's talk about your problems, concerns and interests!

Question: When you say "The use of frozen semen and fresh-cooled semen showed us the true facts of canine breeding. Many testing methods that seemed to work only appeared so due to the extreme long life of fresh semen in the bitch," what do you mean?

DrHutch: Basically, fresh semen lasts 5-6 days. Colorado state has found live semen ELEVEN days after breeding. This made up for a lot of our mistakes. Once we started using fresh cooled and semen, which last only a few days or hours, suddenly things that seemed to work in the past no longer seemed to work. Now with prosterone testing, we can get 83 percent conception rates with FROZEN semen....

Question: Bitches who keep missing. Several people asked a variation of this question: I have tried a number of times to breed my bitch, both with natural breedings and with AIs. She has missed repeatedly. Where do you start when trying to understand and resolve this problem?

DrHutch: Basically there are only SIX reasons a bitch misses, and we run around testing thyroid and doing cultures, which are really only minimal reasons for failure.

First, is the male sperm good.

Second, did she ovulate.

Three, was semen put in at the right time.

Four, did semen get to egg.

Five, did fertilized egg implant.

Six, did placenta develop enough to maintain (the pregnancy).

We have to work our way through the list to determine what the cause was. What we do is, first of all, have the male semen evaluated. That is NOT saying there is a drop of sperm on the slide, there is sperm or no sperm. Normal sperm evaluations consist of 10 million sperm per pound of body weight, 80 percent motility, less than 20 percent abnormal, and if your male sperm meets those criteria, probably it's not the problem.

The other five problems have to do with the bitch herself, and progesterone testing the DAY of ovulation is the day her progesterone goes above 5 nanograms. Even though she has this three week-plus heat cycle, there is a three to four day window we have to hit that varies from bitch to bitch. With progesterone testing, we can be sure the semen is put in at the proper time no matter what type of insemination method we are using.

In the bitch, the semen is pumped up into the uterus....so outside ties... poorly done AIs... that don't deposit the semen in the cervix, which is located in the abdomen above the bladder, prevent semen from being drawn up into the uterus.

As bitches age, they get cysts within their uterus which can obstruct the pathway - a good reason in an older bitch for considering a surgical insemination.

Conception takes place in the Fallopian Tubes regardless of the method of insemination.

An older bitch is any bitch over 5, by the way; several of you asked.

The fertilized eggs are then released into the uterus, but don't implant until day 17-18 after ovulation. So if there are uterine lining problems, we either don't have implantation OR...the placenta, which actually grows into the lining of the uterus, can't grow or be maintained, and the puppies are reabsorbed. It will develop as the night goes on, how to detect some of these problems.

When a bitch ovulates, whether we breed her, don't breed her, or pretend she's not in season, the progesterone HAMMERS the uterine lining for sixty-plus days. The progesterone level is NOT affected by pregnancy. In the cow for example, if the uterus does not get communication from the fertilized egg by day 16, the whole process starts over again. In the bitch, you don't have that luxury. Even though the bitch's body produces the progesterone, the progesterone is inflammatory to the uterine lining, so that after a heat cycle, the bitch's uterus is never as healthy as it was before the heat cycle. So we go from a normal uterus... and this start's with the first cycle of her life...to an endometritis to endometrial hyperplasia, which some of you have been asking about - this is when the uterus starts to thicken and we start to get bubbles in the lining of the uterus - these changes affect the uterine lining so much so that eventually the uterus cannot control the bacteria, and the ultimate end stage is pyometritis.

So, in the bitch... So breeding back to back... or even back to back to back to back....this is WHY it's such a crime we don't have Cheque drops on the market now, to preserve the bitch's uterine lining. Several of you have asked when they will be back on the market....one company promised by this spring.

Pyometritis is a hormonal disease, of which the infection is only secondary. Cheque drops is a wonderful product.... that was Mibberolone...a male hormone derivative that could safely delay a bitch coming in season for up to two years. Ovaban is a different product, same as human Megace. These are progesterone products, the exact hormone we are trying to preserve our uterus from. We should NEVER use ovaban or megace in a bitch we want to breed in the future. Cheque drops are NOT progesterone. We could show bitches, we could field trial bitches, and still have a uterus that was only 2-3 years old in a five year old bitch! Cheque drops preserve and promote fertility by preserving the uterine lining. The average bitch after going off Cheque drops came in after 70 days. The biggest problem is they had to be given every day. Pyo is EXTREMELY rare in a young bitch; remember, bitches do not go into menopause. Only humans and gorillas do. When a bitch's reproductive life is over she should be spayed. It's very good to spay an older bitch, because the uterus is always going to be hammered by progesterone every heat cycle.

Side effects from Cheque drops: One percent tear from the eyes; they tend to muscle up and get more coat, because it's a male hormone derivative. The biggest misunderstood side effect, however, was mucous around the vulva... like a puppy vaginitis. Unfortunately, many veterinarians diagnose any goop around the vulva as pyometritis. Cheque drops PREVENTED pyometritis by protecting the uterine lining. Cheque drops were only removed from the market because they were not profitable enough. There was no medical reason.

Case History, STUD DOG:.

Proven stud dog who was recently diagnosed as being sterile. .He is being treated for a prostate infection using Ormax 68mg for 2 weeks. Vet found prostate normal on exam but lots of bright red blood in semen. Will we be able to restore fertility? Thoughts?

DrHutch: Male dogs age the same as human males age... with a change in the type testosterone being produced from the testicles.

One of the effects in the dog is benign prostatic hyperplasia (bigger prostate). This is a routine happening in all males over six years of age, being especially prominent in the Doberman. Unfortunately, it is misdiagnosed as an infectious process by many veterinarians. So they often times are treated by antibiotics, often with no subsequent improvement with often the drastic suggestion that the male be neutered. The PROPER treatment is one of hormone therapy, using one of two products: either Ovaban, that dreaded product we wouldn't use in the bitch, or Proscar, which is finasteride, which is a human product.

These work by countering the change of the testosterone causing the prostate to shrink back down to a normal size, stopping the bleeding, making the dog reproductively normal. A dog with a prostate INFECTION will have PUS in the ejaculate, not blood. A dog with a true prostate infection runs a fever, or shows many of the signs of a bitch with pyometritis. Prostatic cancers do occur in the dog, but are more common in neutered dogs than in non-neutered dogs.

Question: Is it safe to breed a bitch the next season after stopping the Cheque.

DrHutch: Absolutely. It's suggested not to skip a season, because we have been preserving the uterus from the effects of progesterone; what would be the benefit of exposing her uterus to two months of progesterone?

Progesterone's effect on the uterine lining is the reason why bitches six and over have a 33.3 percent less chance of conceiving than bitches under 6 years of age.

Back to the case study.... neutering does not cause prostatic cancer....but it does not prevent it.

I'm getting many questions on Ovaban.

Ovaban will decrease the amount of blood and prostatic fluid, not actually INCREASE sperm. The treatment is a daily treatment for 3 weeks; after that once a week indefinitely. It's a control medication countering the aging and hormonal changes of the testicle. 80 percent of a dog's sperm production is based on the size of their testicles; that's where we get the 10 million per pound of body weight. Changes can take place due to cortisol, from STRESS... we don't appreciate the effect of stress on the reproductive health of our dogs. Interestingly THYROID has little to do with the reproductive health of our dogs (males) a study at Michigan State took male dogs and completely destroyed their thyroid and found it had no effect on sperm production. The thyroid is probably not a consideration in a dog with a low sperm count. We should look for hormonal problems in the body, infection problems in the body. And in many dogs, immune and genetic problems. Thyroid in bitches also has very little importance in reproduction. The main sign of a reproduction problem related to female hypothyroid is they don't come in season. There is no proven benefit of giving thyroid to a normal thyroid individual, reproductively. My main concern with thyroid, depending on which of the three types of hypothyroidism it is, is the immune-mediated type has genetic implications. If they have even SOME thyroid, that is probably all that is needed to maintain a pregnancy. Studies out of Florida show bitches with even ZERO thyroid function, did have trouble maintaining a pregnancy and had a type of dwarf puppy, but bitches with ANY thyroid function, that come into season, thyroid will probably not cause any further problems. So once you've proven your bitch's thyroid is normal, there is no reason to be going to six different veterinarians to have her retested. Save your money, take Dr. Hutchison to lunch

Question: What about the dreaded mycoplasma?

DrHutch: Unfortunately, an article published in the early 90s blamed mycoplasma for infertility in males, bitches aborting their puppies, husbands fooling around with their secretaries. We as dog people jumped on this like there was no tomorrow. Mycoplasma is a normal organism at all body openings. A routine culture of a bitch's vaginal tract will show strep, staph, e coli, pastuerella, and mycoplasma. The vaginal tract is not sterile so routine culturing of a normal, healthy bitch is totally unwarranted. You need to appreciate the purpose of normal flora or normal bacteria: they keep the BAD bugs out so a routine culture, that shows mycoplasma, e coli, and strep, is not a cause for treatment but a cause for celebration because the bitch is normal

Question: What about bitches who did not become pregnant before antibiotics, but do afterward?

DrHutch: Putting on bitches on antibiotics pre-breeding actually makes them more prone to infectious disease by killing normal organisms, especially when we use the GOOD drugs like Baytril. Occasionally, we may see a bitch with an infection... but there will be signs of that infection - redness, abnormal discharge, smelling - just like if you have an infection in your ear, you're not going to not know it. Bacteria does not equal infection. When we see problems with mycoplasma, for example, it is not the mycoplasma that caused the problem. Mycoplasma only took the opportunity of the infection, just the same as the staph on the skin causes a hot spot because the dog has fleas, for example. Most of the individuals that see who do have mycoplasma infection, would not have been prevented by a routine culture, as the primary problem was stress, steroids, or other types of immune deficiency. They are only secondary problems. Something like pyometritis is not caused by routine bacteria; the normal bacteria were allowed to flare up by the inflammation of the uterine lining

Question: Isn't it true that an e coli infection can be passed to the puppies in the birth canal, causing fading puppies and the loss of the whole litter?

DrHutch: In normal healthy puppies, no. Think of puppies like the lions surrounding the antelopes looking for the weak ones. If a puppy is stressed, unhealthy, otherwise compromised, then the e coli can flare up but it's not because we allowed the e coli to be there, it's because we allowed the puppy to be unhealthy.

We cannot sterilize vaginal tracts no matter how many antibiotics we give because air goes in, air goes out. Just because there is vaginal bacteria does not mean there is intrauterine bacteria (bacteria in the uterus).

I want to say I LOVE LOVE LOVE these questions!

New question: Can't these bacteria be transmitted to the stud dog?

DrHutch: The male HAS all of these organism, so no, they are NOT contagious. This is why one of the most absolute crazy things I have ever heard of, is people treating their whole kennel because they had one dog with mycoplasma. This would be the equivalent of treating your whole kennel because one dog had a hot spot. Every dog has this. It's not contagious.

Brucellosis.... is a whole other world.

Brucellosis is NOT a normal organism of the male or the female. Brucellosis is a very serious disease that all bitches should be tested for every time they are going to be bred, and males should be tested for every six months if they only breed a negative female.

Brucella bacteria can be passed through all body discharges, not just through breeding, so even individuals that have never been bred but who have been to a show, a kennel, a field trial, need to have a negative brucellosis test. Brucellosis is not common, but because it is extremely deadly... I myself consulted with a kennel a few years ago who put down 26 dogs because of an infected male they brought in. It is a serious disease which is primarily associated in the bitches with aborting puppies, and in the male causing inflammation of the testicles and subsequent infertility.

It is at this point not curable to the point of returning to reproduction. Do not wait until the last minute to have your brucella test run because the slide test run by veterinarians in their office, actually made from sheep brucellosis, one dog out of five has a false positive

Even with AIs, you can protect the male, but not the female, from a dog who has brucella. Because you put the prostatic fluid and ejaculate into the bitch, along with the brucella. When we freeze semen, it is critical to us to be certain the male is negative for brucellosis, so we aren't preserving these bacteria for a thousand years!

Most dogs (with brucellosis) do not have to be put down, but they must be neutered and put on antibiotics for 4-5 years. And it is transmissible to humans too.

These questions are SO GREAT... they are fabulous!

Question: Herpes?

DrHutch: Herpes is not the same as brucellosis. It is part of the kennel cough complex. Any dog who has been to a show or a training class probably has herpes virus. Herpes virus is common. That is why it is rare having a problem with it. Herpes virus is only deadly to puppies during the first three weeks of life, because a newborn puppy's average body temperature does not reach 100 degrees until 3 weeks of age. If the bitch has never been exposed to herpes, and has no antibodies to pass through the colostrum to the puppies, the puppies could be affected. Once a bitch has a litter with herpes, she will have the antibodies to pass through the colostrum to the next puppies, so they will be protected. Many people believe that a bitch should be taken to shows etc so they are exposed and have the protection to pass on to their puppies. Puppies can be infected in utero, through the vaginal tract, or by other dogs coming to sneeze on them. Isolation is a good idea for the first three weeks. Treatment for herpes: raise the body temperature to 100 degrees, herpes goes from being a deadly to virus to causing nothing more than a minor cough.

Question: Comparing AI methods - Can you compare the success rates of fresh chilled vs. frozen semen, and surgical implant vs AI vs transcervical insemination?

DrHutch: The type of insemination method depends on two things: Age of the bitch and health of the semen you put in.

Unfortunately, a misnomer exists that the transcervical insemination replaces surgical insemination. This is totally false. Transcervical insemination improves upon VAGINAL artificial insemination, it does not replace the surgical.

In a regular AI, vaginal, the semen is deposited at the entrance to the cervix, the tie is simulated, often by taking a rubber glove and stroking the vaginal tract, which causes oxytocin release. which causes the semen to be pumped up to the uterus. So we know compromised (frozen) semen, which is weaker and will only live about 12 hours, needs to be deposited into the uterus. Conception rates from frozen semen put in vaginally are 11 percent Conception rates from frozen semen put into the uterus are 83 percent The transcervical is taking an endoscope, visualizing the entrance to the cervix, and putting a catheter through the cervix and putting the semen into the uterus. It does not require anesthetic; the bitch just stands there. In our practice we just watch it on television... better than watching Oprah. The drawback to a transcervical insemination is you don't get a chance to evaluate the uterus. In a surgical insemination, I have the uterus in my hand. I can feel for cysts, I can visualize where to put the semen. In many cases, by breaking down cysts, I can take conception rates from zero percent to 100 percent. Using fresh semen in a young bitch is still a regular vaginal AI. Compromised semen which is either poor quality semen, fresh cooled semen, or frozen semen, in a young bitch, should be transcervical insemination. Using poor quality semen in a bitch 4 and a half to five years or older, you want to do a surgical insemination so the uterus can be evaluated. A surgical insemination is always your greatest chance of having puppies.

Question: Do we need to spin down the semen for a transcervical insemination?

DrHutch: Since the uterus only holds less than a teaspoon, we will oftentimes centrifuge the semen so that the whole volume will stay in the uterus rather than running out through the cervix. Because the cervix is open in a bitch in season, bacteria can go back and forth into the uterus, so the transcervical insemination does NOT introduce more bacteria than normal into the uterus, no matter which insemination is used, including natural. Conception occurs from all of these in the same place, the Fallopian tubes, so the method of insemination does not alter the location of the puppies in the uterus, the lack of ease of delivery, or positioning of the puppies.

Question: What part of the ejaculate is the semen in?

DrHutch: The male ejaculates in three distinct fractions. The first fraction just cleans the pipes. The second fraction contains the sperm; that's the part that should look milky and thick. You stop collecting when you see the prostatic fluid, which looks like water. Volume is not important; no one has a trophy for collecting a quart of dog semen.

Question: How is a surgical AI done?

DrHutch: A surgical insemination is a minor procedure that is done under an anesthetic. I use propofol and sevoflurane, the same anesthetics we use for c-sections, for our surgical Ais. The procedure lasts approximately ten minutes. I make an incision into the abdomen, like a mini mini spay incision - unless I sneeze, then it gets bigger - then I isolate the uterus in my hand. The semen is injected into the uterus using a 22 gauge needle, the same size needle used for vaccine. This will not negatively impact future breedings.

It is SO COOL because I can see the uterus fill with the semen; it's like watching the Discovery Channel. I put in three stitches, five staples, the whole procedure from the time she walks in the door is less than an hour.

Question: How long does frozen semen last, stored?

DrHutch: Frozen semen lasts stored, probably forever. It uses minimal energy when it's stored in the liquid nitrogen at minus 322 degrees F. We had a litter recently from semen that had been stored 25 years, it looked just as good as the day it was frozen. It was great to see the sperm swimming around again, happy to be warm!

The way we package our frozen semen is by the number of normal live sperm cells per dose. A dog with a great sperm count may get multiple multiple breedings out of each collection... a dog with lower sperm count may get one. We calculate our dose so that each breeding has a set number of live normal sperm, rather than by volume or by a set number.

Question: When there is a poor semen sample, is there a way to isolate the viable sperm?

DrHutch: We don't worry about the abnormal sperm, other than mathematically eliminating them, because abnormal sperm does not cause abnormal puppies, so there is no reason to eliminate them

Question: Oxytocin (Pit shots).

Can you discuss the proper use of oxytocin injections during whelping? It seems that many breeders use oxytocin early on in the whelping process, when they feel it isn't progressing fast enough.

DrHutch: A puppy in the uterus has only two elements maintaining its oxygenation and life, one being the heartrate of the puppy, two being the blood pressure from mom to the uterus. The whole goal in whelping is to maintain vital elements. Oxytocin I use in a very specific manner. If you've gone three hours without a puppy, I use one dose of oxytocin. My dose of oxytocin is two units per ten pounds of body weight. Oxytocin is normally 20 units per ml; I never use more than half an ml, no matter how big the bitch is. I give one injection; if nothing happens, I give a second injection 20 minutes later. If nothing happens, I go to a C-section.

If you get too much oxytocin at a time, you will cause the puppies not to be expelled from the uterus but shrunk wrapped IN the uterus. The two injections of oxytocin actually increase the blood pressure to uterus which is beneficial to the puppies. If we keep giving them, we LOWER the blood pressure to the uterus, which robs the puppies of oxygen.

Using calcium with the oxytocin... now that we can monitor calcium levels in our practice I do not normally give calcium if the bitch is normal, because it causes the heart to slow down. If I need to give calcium I now use Calsoorb, an oral gel that is absorbed almost as quickly as injectable. I can give it in small amounts more often, and don't have to worry about the side effects of injected calcium.

To clarify, my standard protocol (with oxytocin) is two injections; if two don't do it, two, four, ten, twenty, is not going to do it. In most cases I keep score by how many live puppies I deliver, not how many C-sections I avoid. I wait three hours from the last puppy.

My signs of dystocia are:

Temp just before labor readjusts back up to normal;

If I have no puppy born in four hours.

That is my definition of primary uterine inertia.

Straining hard for an hour... that is when you would NOT give oxytocin. Longer than three hours between puppies, that's when you DO give oxytocin.

Any black, red, or green discharge before any puppies are delivered indicates placental detachment and needs attention. Ultrasounds, fetal monitoring devices, are critical to determine fetal well being. The ability to monitor the fetal heart rate is essential with WhelpWise or having an ultrasound. I have worked and consulted with breeders using WhelpWise; it's ESPECIALLY important if a veterinarian does not have ultrasound, because there is no other way to monitor the whelps and fetal health

Question: What is WhelpWise?

DrHutch: WhelpWise is the sponsor of this event, actually... it is a fetal monitoring service. You can monitor your bitch's labor progression and fetal heart beat at home. They work well with your veterinarian. They are at www.whelpwise.com. Thank you Karen! Karen Copely, the owner and founder of WhelpWise.

I believe that we have the right to expect every puppy that our bitch carries; I am not one who believes you get a litter because you expect to throw one away. The ones we work the hardest on, often turn out to be the best!

Question: Is there any reason to suspect ultrasound causes reabsorption of puppies?

DrHutch: Ultrasounding is normally done day 26-28, when the heart starts beating on the puppy, so we can monitor viability as well as pregnancy. Absorption can occur up until around day 37-38. Now that we are ultrasounding, we are REALIZING that absorption is not uncommon in the bitch, but ultrasound is only diagnosing it, it's not causing it. Just as x-raying a bitch at day 52 does NOT cause cataracts or whatever in the bitch; it gives us a WHALE of a lot of information about how many pups, their size, their positioning, and their health. That is an urban legend.

Absorption is most commonly caused when the uterus is not able to support the placenta and give nutrition to the puppies; genetic problems that stop the puppies from developing; there can be some viral or infectious causes; there have been some toxins identified in large animals more so than in small animals. Trauma probably plays no role, such as palpation or jumping off the porch.

Question: Reliability of progesterone testing?

I have seen the progesterone testing of a bitch to determine ideal breeding times, to be off by as much as three days.....according to my stud dog...and the successful breeding LATER than the test suggested. Care to comment on this???

DrHutch: It is best if one can obtain progesterone numbers, which should not be a problem in this day and age. Progesterone tests are not species specific, so can be run in human labs, dog labs, horse labs. The biggest mistake people make in running progesterone tests is they stop before the progesterone goes above five nanograms. The day the progesterone goes above five nanograms is the day of ovulation. The whole world revolves around five nanograms. The fact that we could determine just the initial rise (rise to 2-3 nanograms of progesterone) is a total fallacy. You must confirm ovulation. I start testing around day 6 of the cycle. You need to run your progesterone every 2-3 days.

Question: What is the most reliable in house test?

DrHutch: At this point, I recommend you find an outside lab to give you a number, as opposed to running in house tests; they are not as accurate.

Question: Doesn't the time lag cause a problem?

DrHutch: You should be able to get the results back in 24 hours max. If there IS a time lag problem, check with a human hospital, or if nothing else, overnight them to me! I can have them that same afternoon!

Question: What about the LH surge?

DrHutch: Because the LH test has to be run every day, and LH is species specific, and in most cases even running the LH we still put most faith in the progesterone tests, I do not run the LH except in very, very specific cases. And the bitches appreciate not being BLED every day for 14 days in a row.... the urine LH is not successful.

Question: What about supplementing progesterone?

DrHutch: The bitch's sole source of progesterone is the ovary. She does not switch the source of progesterone to the placenta like the horse or the cat, therefore it is very uncommon for a bitch to lose a litter due to a premature drop in progesterone. Giving progesterone when it's not needed will cause birth defects in the female puppies. If we need to supplement progesterone, I use progesterone in oil injections, as they do show up on progesterone tests, which tells us when to give the next dose. There is an oral synthetic progesterone called Regumate which is used on horses. It will not show up on progesterone tests and therefore will not be monitored. We only need 2 and one half nanograms of progesterone to maintain a pregnancy. Most bitches during a pregnancy have 8-10 times that amount. A bitch dropping from 20 nanograms to 15 nanograms would still have plenty, and you would definitely not supplement. I only supplement if the bitch drops lower than 5 nanograms and we have longer than 7 days to our anticipated due date. The bitch's due date, 63 days from her ovulation date, the date she went above 5 nanograms progesterone. Breeding date has nothing to do with whelping date. It's the OVULATION date. So if you know the day your bitch goes above 5 nanograms, you can set her due date at 63 days from that as her whelping date: set up your whelping box, take the day off work.

Question: After progesterone reaches 5 nanograms, what are the best days for breeding?

DrHutch: The bitch ovulates an immature egg that has to mature for 48 hours before it can be fertilized. The breeding depends on the anticipated life of semen. A natural breeding can be done the day of 5 nanograms, the day after... the life of the semen is going to cover it. The fresh cooled semen should be 48 hours after 5 nanograms. Frozen, we breed 72 hours after 5 nanograms, because frozen semen only lives 12 hours. Slightly later is better than slightly early because you want the egg to be ready to be fertilized.

Question: Dr. Hutchison, are we intervening too much and harming our breeds with all these AIs, surgical inseminations, etc?

DrHutch: I don't believe that ignoring technological advances, advances our breeding. I believe anything we can do to make breeding successful, like using frozen semen... is good. Anything we can do to improve our dog breeding and have more live, healthy puppies, interventions in safe, healthy manners, can only be a positive. I think the Cornell study that showed you get more live puppies from a c-section, showed us that intervention can be a benefit by saving those normal puppies who by some reason cannot get through the birthing process. Being able to go back to breed to frozen semen from a dog from 25 years ago can only be a positive thing, bringing some of those lost traits back into our lines. Plus I need to do this, I have a high maintenance wife.

There were so many great questions, but we have just run out of time... we will have more information in a follow up email... but I just love you guys - you ask the best and the greatest questions and I would like to get to each and every one of them.

So many exciting things lie ahead for us dog breeders. Embryo transfer, in-vitro fertilization, frozen ova to name a few. Yet, I always am amazed at the number of people, especially veterinarians, critical of us for wanting to breed our bitches. They blame us for the great pet over-population problems, like breeding uncontrolled, mixed breeds is our goal.

**Go forth, improve your breeds, and good luck on your next litter, it may contain the best one ever!!
"Puppies are like veterinarians, way too many, just not enough good ones!!"**

Thank you, Thank you, Thank you!!! Good night.

