

Starting a breeding program

Breeder Booklet No. 3



This is the third in a series of booklets developed to support the successful breeding of racing greyhounds.

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Thinking about breeding greyhounds

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**Developing a breeding program -
understanding genetics**

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Developing a breeding plan and establishing what you want to achieve

When developing a breeding plan, the first step is to learn everything you can about greyhounds, greyhound racing and breeding. It may be that you attend seminars, read books and articles, or search the internet for information. Talking with your mentors and seeking expert advice is also a good idea. However, the decisions are in your hands and you need to decide what it is that you want to achieve, and how you plan to achieve it.

Some of the questions you might consider are identified in Table 1 and are intended to help you think about the range of matters that form part of a comprehensive Breeding Plan. There is also a useful **Template for Breeders** provided in Appendix One which provides information on how you can make informed breeding decisions based on evaluating both the breeding female and choosing a sire.

Breeding decisions should not be made on the spur of the moment when you realise that your female is coming into season.

Breeding decisions should be made with your goal in mind, thinking ahead one or two generations at least.

You should always be critical of your plan and in making decisions on which greyhounds are going to breed.

Table 1: Questions to consider in a breeding plan

Who will you mate and to whom?

Have your proposed breeding greyhounds completed all the required testing for suitability, health and disease surveillance, or will you have to wait for results or schedule tests?

When will you breed, and how often?

Have you got the time and resources to rear more than one litter at a time?

Do you plan to keep any of the pups from the mating?

Will these become a 'replacement' for your current breeding stock in time?

How will you select pups to retain?

Will keeping some of the pups increase your numbers and affect your need for a permit with the local council?

When will you decide whether or not a greyhound will be bred again?

When will you decide when that greyhound has reached the end of its breeding career?

What will you do if an unexpected health or behavioural issue crops up?

How will you ensure that the next litter is more successful, healthier, and closer to being disease-free than your last?

How will you make sure that your pups are prepared for a racing career?

What will you do if someone wants to return a greyhound to you?

It is always good to be critical of any greyhounds you are thinking of breeding from. An important next step then is selecting sound breeding stock.

Selecting suitable breeding females

Starting off with the best female that you can should be a priority.

She should be sound (mentally and physically) and healthy, have a good race record and you should be aware of her family history of disease or common injuries.

Your breeding females need to be in good body condition, and you need to make sure they are kept fit so that they have the best chances of falling pregnant and whelping a litter without too much effort. You must get a veterinarian to conduct a general health check before commencing breeding.

Not everyone can start with a top-class female (this can take generations) with a good pedigree, but you should certainly look at the female's form. If she has been mated previously, check the form of her pups before deciding if you think she has the potential to produce good quality pups.

The behaviour of any animal or human is partially **genetic** ('nature'), partially **learned**, and partially due to the immediate **environment** ('nurture'). Socialisation and handling, combined with positive experiences and training can certainly have a huge impact on behaviour, but they rely on the underlying genetic temperament of the animal being sound.

Temperament factors are often more highly heritable (more likely to be passed on) than many other traits, so you should definitely avoid breeding from females who are nervous, anxious, fearful or shy. Not only are they harder to handle themselves, but there is a high chance their pups will display a similar temperament. Obviously, any animal that shows signs of inappropriate aggression should not be bred from either.

Unless there are problems with the male's fertility, it is actually the female who determines litter size based on the number of eggs produced. Look for a female who has come from a large litter herself, rather than one who came from a small litter. Smaller litters are more likely to lead to problems such as the need for caesarean section, and of course the costs of the litter are spread over fewer pups.

Ask the previous owner for as much information as possible about the female's reproductive cycle - ask about matters such as when she was last in season, how she cycles and the day(s) she was mated. Also speak to your mentors and your veterinarian. The more information you have the better.



Litter size is usually quite constant over the lifetime of a female, although older females tend to have fewer pups. The female's mothering skills are also important. Select a breeding female that comes from a line of good mothers and avoid those that have been hand raised themselves. Having a litter is hard enough without having to bottle feed 10 pups because the mother won't feed them!!

If you are seriously considering breeding, try to make sure that you find a good foundation female to start with - well before the breeding is to take place. Consider factors such as:

1. Age
2. Health status
3. Temperament/behaviour
4. Racing success
5. Litter size
6. Litter success

Selecting suitable sires



If you are using a breeding male (or sire) that you do not own, then you need to work out an agreement with his owner on matters such as stud fees and availability. You may need to arrange with your veterinarian to do blood testing of your female to determine the best time to breed her, or you may choose to employ artificial mating techniques using frozen semen. The stud dog owner may want your female to have a swab test (veterinary test for infection) prior to mating to ensure she does not pass anything on to the male that may affect his fertility or infect other females he mates. They may also want to see or have copies of the results of any health testing for your female.

Selection of a suitable male for your female is a very hard decision. How do you find the dog that is right for your female? You should not just use the popular stud of the day, or the dog that seems to have done the most winning. It is far more important to seek out the sire that actually produces the traits that you desire in their progeny, and one that complements your female.

Although the cost of the stud fee may be a factor, don't just use the cheapest stud, or the one that is located conveniently close to home thinking you will save money. The cost of the stud fee is only a small

part of the cost of whelping and raising a litter - it costs just as much to whelp and raise lesser quality pups as it does good quality pups!

The first step in selecting a suitable male should be to list the strengths and weaknesses of your breeding female. Once you have these, you need to prioritise the things you would like to improve. This then becomes your 'shopping list' as you consider each male. When considering a male, remember you do not want to double up on faults or weaknesses.

Sires advertised on greyhound websites often list the achievements of the male during his racing career, along with the contact details of the stud master. Carefully read the information supplied. Just because a breeding male is well advertised, does not mean that he is a good breeding dog when matched with your female.

Next, you need to list each of the available sires and decide which of these has the desired traits that you are seeking, and which don't. You will also need to look at the progeny he has already produced to ensure that he passes these traits on to his pups as well. Progeny data is probably the most important information as this tells you what the dog actually produces.

There are many good racing dogs who have failed to produce winning pups when they have stood at stud. Take a good look at the greyhounds a stud dog has produced before deciding whether or not he is likely to produce winners for you.

A good place to start is to look at the 'top ranking' lists that compare the number of winners for each breeding male. Remember, these lists do not tell you how many pups were produced to reach these totals, so you are not necessarily comparing apples with apples. For example, if two male dogs have both produced 15 city winners each, and are equally ranked based on winning progeny, the one who has sired 150 litters is nowhere near as efficient at producing winners as the one who has sired 30 litters to achieve the same result.

Knowing when a breeding male started his career is also important. If the sire is in his first or second breeding season, he probably will not have many of his pups racing as they will be too young. This will influence the amount of progeny data that is available, and he may appear lower on the ranking list. If possible, look at the performance of any pups from females that are related to yours as this will give you the best idea of whether the two dogs are likely to work well.

Remember when looking at progeny, you need to look at the average over all progeny, not just the feats of one or two exceptional pups. More progeny data can be obtained from FastTrack. This is a very valuable resource with incredible amounts of information for those who are eager to study pedigrees.

As we know, each pup in a litter gets slightly different genes. This means that mating your female to the brother of a top sire is not the same as mating her to him. The lesser brother is likely to be that way because he does not have quite so many of the 'good' genes, and hence he will not have them to pass along to his pups.

Next you will need to select a stud dog that will complement your female and any faults she might have. Maybe you are looking for earlier speed, maybe for more strength or endurance. Discuss the list of potential mates with your mentor. Your aim should be to use the sire that is best for your female, not just the dog down the road that belongs to a friend and is convenient to access.

It is also important not to mate brothers and sisters, or fathers and daughters or mothers and sons. This is sometimes referred to as line breeding or first-degree mating (but is actually in-breeding). These can increase the risk that any negative genetic traits or genes can and are passed down through the generations.

Once again, try to make sure that you find a good sire to start with - well before the breeding is to take place. Consider factors such as:

1. Age
2. Health status
3. Temperament/behaviour
4. Racing success
5. Litter size
6. Litter success

Testing/screening for hereditary diseases

You should be aware of any common greyhound related problems.

You need to determine whether or not your chosen female exhibits signs of diseases or defects, or is likely to carry them, based on her pedigree or family tree. Before including a female in your breeding program, she should be examined by a veterinarian or tested for important hereditary diseases where possible.



Pannus for example, is a condition of ongoing inflammation of the cornea (the surface of the eye) that occurs in greyhounds. It is thought to be an inherited, autoimmune disease and symptoms generally start to appear when the dog reaches 2-5 years of age. Over time, particularly when

untreated, it can result in visual impairment. The condition can generally be managed in a racing greyhound. GA recommends breeders should carefully consider breeding with affected greyhounds and that stud masters should disclose the condition to breeders if their stud dog develops pannus. However, there is currently no genetic test for pannus.

Some hereditary defects that do not have a DNA test can be detected during a veterinary examination such as:

- greyhounds with incorrect 'bites' - undershot and overshot jaws (refers to how the teeth align);
- heart murmurs;
- cataracts; or
- construction faults such as a slipping patella (knee-cap that move in and out of the patella groove causing lameness) or bent or deformed legs that mean a greyhound will be likely to develop other leg and joint problems due to inappropriate wear.

Some of these defects are obvious from a young age, but others may take time to become noticeable or require a specialist veterinary examination.

There are other diseases and defects that there are no tests for, and which are not always obvious on a veterinary examination, such as epilepsy.

What to do after selecting your breeding dogs



Once you have decided on the stud dog, it is time to contact the stud master. They will want to know when your breeding female is next due on season, so that they can know when to expect her. Remember that stud dogs are limited to the number of females that they can serve each quarter. You will also need to discuss with the stud master the costs associated with the mating and any conditions of service (for example conditions of a return service or refunds should your greyhound fail to produce pups). It is best to have a written contract listing exactly what is expected and what is included.

Remember: If you are seriously considering breeding, start to think about understanding stud dog selection and the conditions of a stud service - well before the breeding is to take place.

Things to ask the stud master



There are a range of things you might want to ask a stud master.

Aside from the stud fee, are there other costs involved?

Additional costs may include progesterone testing (a blood test that indicates when your female should be inseminated), AI using fresh semen or boarding costs.

If you are buying frozen semen, where is it stored?

You may need to ship the straw(s) of frozen semen to your facility of choice and there will be a fee to do this.

Are there any requirements prior to mating?

Some stud masters insist that the female has a swab (veterinary test for infection) done prior to mating, and if so, you will have to find out when they would like it done. It is normal for the swab to come back indicating some bacteria - the healthy reproductive tract has a normal population of 'good' bacteria. If your female has unusual levels of 'bad' bacteria, she may need a course of antibiotics prior to mating, but it is important not to use antibiotics unless they are needed as they also kill the 'good' bacteria, which can then pre-dispose the female to more serious issues developing.

Reviewing your success



Regardless of how careful you are in selecting breeding animals, there will be times where a greyhound owner contacts you about an issue or where you are disappointed in the quality of the litter produced. Sometimes a known genetic disease crops up, sometimes you may get feedback relating to other health and behavioural issues or performance of a litter.

A good breeder is very critical of their breeding program and having the ability to record information about the breeding animals is very important. This information can then be used to influence future breeding decisions and may even mean an animal will need to be retired from the breeding program all together. Make sure that your record system allows room for this kind of information and be critical of what an animal has produced before you plan to breed that animal again.

Once again, refer to the **Template for Breeders** in Appendix One.

Appendix One: Template for breeders

Desired Outcome: enhanced or balanced traits in offspring with improvements in attitude, size and/or physical shape.

Important Considerations: Temperament, physical conformation, blood lines, past litters and racing abilities of both potential parents.

Temperament: Temperament drives attitude, behaviour, and stress response, all of which can affect a greyhound's desire and willingness to race. Some greyhound sires are known for producing offspring with undesirable traits or a pre-disposition to aggression, barking, stubbornness or fear which means potential sires should be evaluated carefully against a brood's traits to avoid duplicating undesirable traits.

Stress during pregnancy causes the brood's body to produce the stress hormone cortisol. Broods with higher levels of anxiety, timidity, or nervousness will naturally release higher levels of stress hormones. Puppies exposed to high levels of stress hormones during pregnancy can show reduced resilience and higher stress responses after birth.

Furthermore, the behaviour of the brood after birth, particularly during the critical socialization period, will also impact on the stress response and behaviour of puppies. Puppies use their mother's behaviour as a guide to how they should respond to different stimuli or situations. If the dam is timid or fearful, it may result in offspring having attitude or behaviour issues that negatively affect their racing or rehoming prospects.

Physical conformation (shape/structure): A greyhound's conformation impacts size, speed, stride length, running action and pre-disposition to injury. Successful parents will usually have good physical structure, be strong boned and well proportioned, with a deep chest, strong yet flexible toes and hare-like feet.

Bloodlines: Ideally, the brood's bloodlines should have produced highly successful dogs across multiple generations, as well as some middle of the road performers. The sire should have dam-lines containing multiple successful producers across many generations.

Past Litters (offspring): Any offspring of either parent old enough to be racing should be identified and evaluated for ability, racing habits and results.

Past Litters (pregnancy): How a brood coped with pregnancy, whelping her puppies, caring for and feeding them should also be assessed. Some broods are not as maternal as others, some may have had whelping complications previously, or have issues with milk production or mastitis, all of which can affect her puppies.

Racing Abilities: Ideally, each potential parent should, barring exceptional circumstances, have had a successful racing career that produced multiple wins on a variety of tracks, across multiple distances and classes. Preferably, sires will have enjoyed success at the highest level over a lengthy career, supported by durability, a desire to win and excellent race habits.

The checklists on the following pages have been developed to assist breeders to make well considered breeding decisions.

Evaluating the Brood

I want to breed a litter of pups with: _____ Age: _____

This will be her _____ litter.

I want to: Sell all ☐ Sell some and keep some ☐ Keep all ☐

Attribute	Things to think about or identify	Comments	Strength	Weakness
Temperament	Calm, relaxed, outgoing or friendly			
	Nervous, anxious, shy or aloof*			
	Aggressive, highly strung or fearful**			
Physical Appearance	Hereditary issues (e.g. undershot jaw, pannus)			
	Weight (kg)			
Conformation	Body length (long or short)			
	Leg length (tall/short, even both sides / front to back)			
	Frame (e.g. lightly boned, heavy muscle)			
	Feet (e.g. flat, splayed toes, tight toes)			
Racing	Race habits (e.g. hard railer, wide runner)			
	Race Results (e.g. city class, country class, mixed)			
	Early pace, endurance, stamina			
	Field smarts			
	Chase/ Focus / Courage			
	Best distance (e.g. short, sprint, middle, stayer)			
Pedigree	Littermates (e.g. ability, race results)			
	Dam-line success			
	Sire-line success			
Previous Litters	Pregnancy health			
	Ease of Whelping / complications / C-Sections			
	Litter sizes, puppy health			
	Milk production/ feeding / complications			
	Attitude towards pups (e.g. patient, aloof, playful)			
	Offspring to race			

* Timid, anxious and fearful Broods can create pups that lack resilience due to hormones excreted by the brood during pregnancy and their behaviour during the first 8 weeks of the pups' lives.

** Aggression has been shown to be inherited from the sire in dogs.

Choosing a Sire

When deciding on a suitable sire, perhaps ask yourself: “What am I looking to improve in my brood?” and “Does the sire offer these improvements without potentially affecting her strengths?”

Sire: _____

Service Type: Natural ☐ Fresh ☐ Chilled AI ☐ Frozen A ☐

Interstate Transport of brood required for mating / service? Yes ☐ No ☐

Attribute	Things to think about or identify	Comments	Strength	Weakness
Temperament	Calm, relaxed, outgoing or friendly			
	Nervous, anxious, shy or aloof			
	Aggressive, highly strung or fearful**			
Physical Appearance	Hereditary (e.g. undershot jaw, missing or undescended testicles)			
	Weight (kg)			
Conformation	Body length (long or short)			
	Leg length (tall/short, even both sides / front to back)			
	Frame (e.g. light or heavy boned, thickset)			
	Feet (e.g. flat, splayed toes, tight toes)			
Racing	Race habits (e.g. hard railer, wide runner)			
	Race Results (e.g. city class, country class, mix)			
	Early pace, endurance, stamina			
	Field smarts			
	Chase/ Focus / Courage			
	Best distance (e.g. short, sprint, middle, stayer)			
Pedigree	Prepotency *			
	Dam-line success			
	Littermate success			
Previous Litters	Litter sizes			
	Offspring to race			
	Identified bloodline nicks			
	For repeat mating, early offspring results			

* Prepotency is the ability of a sire to throw his best characteristics dominantly to offspring, across many different dam bloodlines, which may also include conformation and colour.

** Aggression has been shown to be inherited from the sire in dogs.

Notes



