

Science & Environment

English Bulldog health problems prompt cross-breeding call

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29 July 2016

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English Bulldogs are loving family dogs. But as a breed they suffer from health problems

Crossing the English Bulldog with another breed is the best way to ensure its survival, scientists have argued.

Due to centuries of selective breeding for physical traits, the Bulldog has become so inbred it cannot be returned to health without an infusion of new bloodlines, a genetic study suggests.

The US researchers say the Olde English Bulldogge, a related breed from America, is a viable candidate.

The study appears in the journal *Canine Genetics and Epidemiology*.

Study co-author Niels Pedersen, from the University of California, Davis, told BBC News: "We tried not to be judgemental in our paper. We just said there's a problem here, and if you are going to decide to do something about it, this is what you've got to work with.

"If you want to re-build the breed, these are the building blocks you have, but they're very few. So if you're using the same old bricks, you're not going to be able to build a new house."

National symbol

The English Bulldog breed - also known as the British Bulldog - has a long-standing cultural association with the UK, but is also sought after worldwide because of its child-like appearance, gentle temperament and because they are, in Prof Pedersen's words, "good apartment dogs" - a low-maintenance breed.

But the dogs suffer from a variety of health issues due to centuries of selective breeding. For example the Bulldog's distinctive short face and snout (known as brachycephaly) has led to breathing difficulties, which are the leading cause of ill-health and mortality in the breed. Skin allergies (which can cause considerable discomfort) and mobility problems are also common - as are reproductive issues.





To many the Bulldog is a national icon, symbolising pluck and determination

Females tend to have a narrow pelvis, meaning litters often have to be born through C-section. And breathing problems mean the males often have trouble sustaining intercourse.

Prof Pedersen and colleagues from the Center for Companion Animal Health at UC Davis examined the DNA of 102 registered English Bulldogs.

They wanted to know whether there was enough genetic diversity - a measure of relatedness among individual dogs - to breed out the harmful traits through programmes that use existing genetic stock.

But the analysis revealed they had very low levels of diversity resulting from a small initial pool of founding dogs, followed by so-called bottlenecks, caused by selective breeding for "desirable" traits like the short nose, which have further reduced variety in the Bulldog gene pool.

In their paper, the researchers say efforts to return the breed to health by using existing bloodlines alone are "questionable".

Prof Pedersen told BBC News: "Some small breeds with a small number of registered dogs have attempted this. But it's not common for breeders to admit that they've reached a point with health problems where they have to do something drastic such as reverse breeding.

"The fastest way to get genetic diversity is to outcross to a breed that looks similar but is genetically distinct... Trying to manipulate diversity from within a breed if it doesn't have much anyway is really very difficult. If all your dogs are highly related to one another, which ones are you going to pick?"



Winston Churchill, famed for his tenacity, was often likened to a bulldog

Although some diversity still exists in the Bulldog gene pool, including in genes that affect the brachycephaly trait, other genetic loci show very little variety.

"There are some English Bulldogs that can breed normally and give birth normally. There are some that are more mobile than others, there are some that can breathe better than others, some that don't have the skin allergies and auto-immune disorders," said Prof Pedersen.

"But they're relatively few and it's hard to find one individual that contains all of those traits. You may have one English Bulldog that does not have the extreme changes in the head so that they breathe easier, but they may have lots of skeletal

problems that lead to extreme arthritis."

Breeders differ widely on what should be done to tackle the illnesses. Some argue that any deviation from the breed's standards would no longer make it an English Bulldog.



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There is debate among breeders about how best to proceed



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The dogs are sought after pets worldwide

Others argue that the English Bulldog has constantly evolved over the centuries and favour the introduction of new genetic material, known as outcrossing.

One candidate mentioned in the paper is the Olde English Bulldogge, a 1970s attempt by an American breeder to recreate the healthier working bulldog that existed in England during the early 1800s.

In 2009, the UK Kennel Club revised its standards for several pedigree breeds, to ensure they were "fit for their original function". This prompted criticism from some bulldog breeders.

In a statement, the RSPCA said: "The RSPCA remain concerned that many pedigree dogs are still suffering because they're bred and judged primarily for how they look rather than with health, welfare and temperament in mind.

It added: "It is recommended that registration rules are revised to put a limit on the number of offspring that can be fathered by any one sire (stud dog). Using the same dog for many matings increases the level of inbreeding and the risk of inherited disease."

Comparisons between the 102 registered bulldogs, and an additional 37 animals referred to vets for health problems, suggested there was no difference genetically between the registered animals and dogs from commercial breeders.

Some of those who breed dogs for show had placed the blame for Bulldog health problems on practices used by commercial operators and so-called puppy mills - large-scale facilities which have been criticised for placing profit above welfare.

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