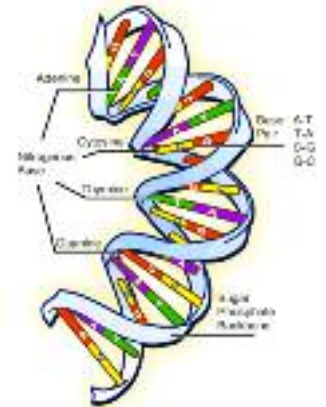


Dogs Get the SNP

Dr Jeff Sampson

The last 10 years have seen a huge explosion in our understanding of canine genes. It takes around 22,000 different genes to make a dog. Each gene is found on one of the dog's 39 chromosomes. Research in the '90s focused on the generation of chromosome maps. The aim was to put easily identifiable 'markers' at regular intervals along each of the 39 canine chromosomes. These maps have been crucial in the search for individual canine genes and by the end of the '90s they were dense enough to allow us to use them to track down individual mutant genes involved in canine inherited disease. Progress has been rapid, so that today we understand the genetic cause for around 25 per cent of all known single gene inherited diseases in the dog. More importantly, we now have simple DNA tests for these conditions. The whole of molecular

biological progress achieved in the last half of the 20th Century was only made possible by Watson's and Crick's discovery of the structure of DNA in the early 1950s. The next major discovery for canine genetics came in 2005 with the publication of the entire genome sequence of the dog. This led to the discovery of a new type of genetic marker, Single Nucleotide Polymorphisms, or SNPs ('snips'). We now have two million SNPs to create new generations of maps. The SNP markers allow a 1,000-fold increase in map density. The time taken to identify new single gene mutations will be reduced from months/years to possibly weeks. More importantly, these new maps will allow the search for multiple genes involved in polygenic diseases at the same time. DNA tests for conditions like hip dysplasia really are just around the corner.



The DNA double helix

Post-it® Notes

Everyone knows what Post-it® Notes are: They are those great little self-stick notes. Most people have Post-it® Notes. Most people love them.

But Post-it® Notes were not a planned product. No one got the idea and then stayed up nights to invent it. A man named Spencer Silver was working in the 3M research laboratories in 1968 trying to find a strong adhesive. Silver developed a new adhesive, but it was even weaker than what 3M already manufactured. It stuck to objects, but could easily be lifted off. It was super weak instead of super strong. No one quite knew what to do with the stuff.

Then one Sunday four years later, another 3M scientist named Arthur Fry was singing in the church's choir. He was using markers to keep his place in the hymnal, but they kept falling out of the book.

Remembering Silver's adhesive, Fry used some to coat his markers. Success! With the weak adhesive, the markers stayed in place, yet lifted off without damaging the pages. 3M began distributing Post-it® Notes nationwide in 1980— twelve years after Silver developed the super weak adhesive. Today Post-it® Notes are one of the most popular office products available.

*“Post-it® Notes
—an accidental
invention!”*

Tired!

An old, tired looking dog wandered into the yard. I could tell from his collar and well fed belly that he had a home.

He followed me into the house, down the hall, and fell asleep in a corner. An hour later, he went to the door, and I let him out.

The next day he was back, resumed his position in the hall, and slept for an hour. This continued for several weeks.

Curious, I pinned a note to his collar: “Every afternoon your dog comes to my house for a nap.”

The next day he arrived with a different note pinned to his collar: “He lives in a home with ten children—he’s trying to catch up on his sleep. Can I come with him tomorrow?”



That's refreshing!

Common Foods That Are Harmful to Dogs

Chocolate

Chocolate contains theobromine which can cause increased heart rate, vomiting, seizures and coma. In large doses it may be fatal. Baker's chocolate is the most dangerous because it contains a larger proportion of theobromine. Symptoms may not show for several hours.

Grapes and Raisins

Grapes and raisins can cause renal failure.

Onions

Onions may cause anaemia by destroying red blood cells. Even small amounts of onion (cooked, raw or powdered) can cause cumulative damage over time.

Garlic

Garlic is a part of the onion family. Garlic contains only a small amount of the problematic substance that is in onions, but

large amounts can cause the same problems as onions. If you are using garlic as a natural flea repellent, always follow dosages carefully.

Milk and Dairy Products

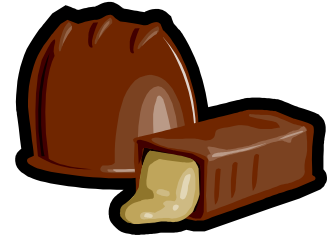
Lactose, which is found in milk and dairy products, is not digestible by dogs.

Macadamia Nuts

Macadamia nuts can cause weakness, muscle tremor and paralysis. These symptoms are usually temporary.

Fruit Pits

Apple seeds, cherry pits, peach pits, pear pits, plums pits, and apricot pits contain cyanide, which is poisonous. While a few apple seeds may not cause a problem, the effects can accumulate over time if they are given to dogs regularly.



Chocolate is dangerous for dogs

DNA Profiling

Each dog has a unique DNA signature that we call his DNA profile or fingerprint. Each DNA profile is unique to an individual dog. The DNA profile can therefore be used to uniquely identify a particular dog. Unlike the microchip, however, the DNA profile can provide more information than this. Since a dog inherits half of his DNA from his dam and the other from his sire, this means that half of a dog's DNA profile is inherited from his dam and the other half from his sire. Therefore we can also use a dog's DNA profile to verify that his registered parents are in fact his biological parents.

The profile can also be used to check the authenticity of a DNA sample being used to screen for the presence of disease-causing genes. Many such tests are being developed and it would be invaluable to be able to verify that the correct dog's DNA is being tested for the presence of the defective gene.

A DNA Profile can be prepared from cells that are easily removed from the inside of a dog's cheek, called buccal cells. All that is required is to gently rub a small plastic brush against the inside of the cheek. The brush, containing the cells is then returned to the laboratory for analysis.

“Each dog has a unique DNA profile or fingerprint.”

The Police Dog

It was the end of the day and the policeman parked his police van in front of the station.

As he gathered his equipment, his K-9 partner, Jake, was barking, and he saw a little boy staring in at him.

'Is that a dog you got back there?' he asked.

'It sure is,' the policeman replied.

Puzzled, the boy looked at the policeman and then towards the back of the van.

Finally he said, 'What did he do?'



A police dog breaks the law

The Newsletter from
Fernamber Golden Retrievers

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*Golden Retrievers are
the Clever Companions*

See our previous issues at
www.fernamber.com/page9.html

**Visit us at
www.fernamber.com**



"You can say any foolish thing to a dog, and the dog will give you a look that says, 'Wow, you're right! I never would've thought of that!'"

Dave Barry

Until next issue,

Cheryl and Goldens,

April, Teagan, Paddington & Ashley 

Why Dogs do not Live as Long as People...

Being a veterinarian, I had been called to examine a ten year old Irish Wolfhound named Belker. The dog's owners, Ron, his wife, Lisa, and their little boy, Shane, were all very attached to Belker and they were hoping for a miracle.

I examined Belker and found he was dying of cancer. I told the family there were no miracles left for Belker, and offered to perform the euthanasia procedure for the old dog in their home.

As we made arrangements, Ron and Lisa told me they thought it would be good for four year old Shane to observe the procedure. They felt Shane could learn something from the experience.

The next day, I felt the familiar catch in my throat as Belker's family surrounded him. Shane seemed so calm, petting the old dog for the last time, that I wondered if he understood what was going on. Within a few minutes, Belker slipped peacefully away.

The little boy seemed to accept Belker's transition without any difficulty or confusion. We sat together for a while after Belker's death, wondering aloud about the sad fact that animal lives are shorter than human lives.

Shane, who had been listening quietly, piped up, "I know why."

Startled, we all turned to him. What came out of his mouth next stunned me. I'd never heard a more comforting explanation.

He said, "Everybody is born so that they can learn how to live a good life— loving everybody and being nice, right?" The four year old continued, "Well, animals already know how to do that, so they don't have to stay as long."