HEALTH REPORT – 2012

The matters of concern that I have to report to you this year are very unfortunately a new young hound fitting and that 2 young hounds have died from failed kidneys, the reasons were very different so unless you know of a hound who has kidney problems and can let us have the information we can only assume it is not a further breed problem at the moment.

The main topic of discussion has been regarding hypothyroidism, so I asked Katy Evans what the World Health Survey showed and the following is her reply:-

> "Regarding the question you asked about hypothyroidism. I've looked back at the forms of the affected dogs. 13 dogs were reported to have hypothyroidism. Age at onset and/or diagnosis was provided for 9 of them, and the median age at onset was just under 3 years with a maximum of 8 years and minimum of 6 months. The median age will have been brought down by the 6 months old dog – the actual ages reported were: 6 months, 2 years, 2.5 years, 2 yrs 10 months, 3 years, 4 years, 6 years, 7 years and 8 years. Two of the 13 dogs were described as "mildly" affected and not currently receiving/requiring and medication. Of the remaining 11 dogs, treatment was reported as L-thyroxine (soloxine) tablets at varying doses for 8 of them and treatment was left blank for 3 hounds.
>
> I don't really know who I could suggest you talk to regarding hypothyroidism and whether you should be breeding from affected hounds. The issue is complicated because there are different forms of hypothyroidism, and in most cases the exact form is not established. I would suggest that the hound diagnosed with hypothyroidism at 6 months does not have the same form of the disease as those which were diagnosed later in life. However, hypothyroidism is most commonly diagnosed in "middle-aged" dogs, and I would say that only 3 of the 9 dogs whose age at onset was reported fall into this category. It is suggested that 95% of cases of hypothyroidism in dogs are "primary hypothyroidism" and of these, 50% occur because of immune-mediated destruction of the thyroid gland (called lymphocytic thyroiditis) with the remaining 50% due to idiopathic atrophy of the thyroid gland."

I have a bitch who has had a slightly low thyroid result since she was 4 years old and she is on 0.5mg. Soloxine twice daily however, we do know of hounds who are much more seriously affected. The real questions underlying this condition are, of course, is it affecting our hounds' breeding capabilities and does it have any relevance to any of our fitting hounds? Should you have needed to have your hound's thyroid levels tested at any time, please get the results from your vet and either send them to Katy so she can work out a much better picture of the condition in the breed, or send them on to me or the two new members of your Health Committee, Rae Ganna and Vera Lyons, so we can let her have them. Thank you very much.

As I was out of action for a while the Kennel Club kindly said Rae Ganna could represent me at the KC Health Co-Ordinators Seminar and the following is her report:-

Kennel Club Breed Health Coordinator Seminar 18th November 2011

The Kennel Club held their annual Breed Health Seminar last week at Stoneleigh. The morning session was titled "Raising the online game" which covered quite simple, but effective suggestions on the structuring and layout of Breed Club websites. Dr. Sarah Blott from The K.C. Genetics Centre followed on with a presentation on the Mate Select tool and plans to introduce the next phase using EBVs.

After lunch the subject of Breed Surveys were covered, with lots of advice for those clubs preparing to undertake one. The last hour was an informal discussion on "Combatting Apathy", which seems to be an ongoing struggle in a lot of breeds. RAE GANNA

The two items that jumped out at me when I received the full version of the Seminar from the Kennel Club were firstly under IT "every breed absolutely must have a health information website/page." There is, of course, a fairly comprehensive independent Otterhound Health Website for everyone's use and open to further suggestions for content from everyone. However there is no actual health page on the Club Website, and I think it is high time that this was addressed giving good basic simple health advice on the breed.

Under the talk by Sarah Blott on Estimated Breeding values, managing the rate of inbreeding Sarah says "the goal is to constrain the rate of inbreeding to no more than 0.5% per generation, which is equivalent to an effective population size of at least 100.

To put the magnitude of this into perspective the last litters from the Club's Assured Breeders in alphabetical order Keepcott, Kingstree, Ottaryx, PCOH and Teckelgarth are according to the KC's Mate Select programme 9%, 7.5%, 16.5%, 28.8% and 23.8%. We know that as far as our breed is concerned Mate Select is far from an accurate tool as yet, however when we are able to ensure that all the hounds both historically and recent American and Dutch imports are included it will probably only make our inbreeding co-efficients even higher in some breedings.

The Kennel Club Breeders Seminar was extremely interesting this year, the whole day being devoted to the subject of Cancer and I set out below the write up of the day's lectures as sent to me by the KC.

THE KENNEL CLUB
Making a difference for dogs

pfma
pet food manufacturers' association

2011 Breeders' Symposium

CANCER IN DOGS

SUNDAY 27 NOVEMBER 2011

AT

ROYAL VETERINARY COLLEGE

HERTFORDSHIRE

Talk 1 - Clinical introduction:

Approach to the cancer patient

Sue Murphy BVM&S MSc (Clin Onc) dip ECVIM-CA (Oncology) MRCVS
Animal Health Trust, Lanwades Park, Kentford, Suffolk UK CB8 7UU

'Cancer' is a common disease process in us and our companion animals. It is a term that covers 200 different disease entities with very different potential outcomes but with a similar pathology-that of uncontrolled cell growth.

One in three humans is diagnosed with cancer. Until recently it was an almost unmentionable diagnosis associated, in most people's minds, with death preceded by unpleasant treatments and suffering, and understandably they wished to spare their pet such a fate by electing for early euthanasia.
Not many people appreciate that cancer is the most curable chronic disease. It is most often cured by good surgical practice. However, other treatment options like radiotherapy and chemotherapy, all have roles to play in appropriate treatment protocols. Most animals maintain an excellent quality of life during their treatment and after. Euthanasia may still be the best option for some cases but by no means the vast majority.

To rationally and compassionately deal with a likely cancer patient you need to know

A DIAGNOSIS

You cannot decide how to treat cancer if you don't know if you are dealing with cancer. To get a diagnosis you need a sample-either cells or part of the mass.

- ***If it is a tumour what type is it***

You cannot know how to treat this particular cancer if you do not know what type of cancer you are dealing with. Some cancers rarely spread and others rapidly spread to distant organs and knowing the type allows you to decide what treatment options are available to you. Sometimes it is obvious from a sample what the tumour is and sometimes you need special tests on the sample to know what type it is.

- *Is it likely to be at the aggressive end of the spectrum within its type (THE GRADE)*

High grade tumours generally have a worse prognosis than low grade and are more likely to spread.

WHERE IT IS RIGHT NOW (THE STAGE OF THE TUMOUR)

Staging a tumour involves assessing the size and invasiveness of the primary and looking for evidence of the tumour elsewhere. Where a particular tumour spreads to (and so where you should look for it) depends on its type.

Once you know what type of cancer you are dealing with, how aggressive it is likely to be and where it is in the body right now you can formulate a plan of action:

Broadly, if a tumour is of a type likely not to spread and *has not spread in this particular case* a local treatment such as surgery or surgery and external beam radiotherapy needs to be considered. If a tumour has metastasised (spread elsewhere) *or has a high probability of doing so* then a systemic therapy, treating the whole of the body, such as chemotherapy has to be part of a treatment plan.

The plan should also take into account:

- The realistic chance of success in comparison to the side effects. At all times the realistic aim of therapy should be kept clearly in mind. For example, an aggressive surgical procedure may be justified if there is a realistic chance of a cure. The same procedure would not be justified in an animal with a poor prognosis that may be condemned to spend its last few weeks recovering from surgery. Just because we can doesn't mean we should.
- The cost to the owner not only in money, but in time, and also the client's home circumstances and wishes.
- Other disease in the animal that might influence the choice of treatment or, indeed, whether to treat at all.

Supportive care

Although cancer is the most curable chronic disease, supportive care is needed for those animals for which there is no definitive treatment and often for animals undergoing treatment. Non Steroidal Anti-Inflammatory Drugs (NSAIDs) are very good at providing pain relief and dealing with inflammation around the tumour and should be asked for well before there is any overt clinical sign of pain.

Antibiotics may help with infected masses, anti histamines with mast cell tumours, and simple things like dietary changes to soft food can help animals with mouth tumours should not be overlooked.

It is important to have clear criteria of what constitutes good quality of life for both animal and owner; to regularly evaluate this and to act to improve it once it deteriorates or, if that proves impossible to decide on euthanasia at the appropriate time.

Conclusion

In conclusion cancer can be incredibly rewarding to treat. It is important always to keep a clear idea of what it is that we are trying to achieve-cure, a long period of remission or an improvement of clinical signs associated with the cancer, and to be able to work as a team to achieve it.

TALK 2 - Immunotherapy for treatment of dogs with cancer

IMMUNOTHERAPY FOR CANINE CANCER: CURRENT AND FUTURE DIRECTIONS

Brian Catchpole BVetMed PhD MRCVS, Dept. Pathology & Infectious Diseases, Royal Veterinary College

Tumour Immunology

The immune system is primarily designed to detect and destroy invading microorganisms to provide protection from infection. As well as recognising substances foreign to the body, the immune system can also detect "altered self", which particularly occurs during malignant transformation of cells, leading to tumour formation. Lymphocytes, present in the blood and lymphoid tissues are the key cells of immunity. They are designed to detect "antigens" which are usually proteins expressed by microorganisms or malignant cells that differ from those proteins normally present in the animal. Specialist antigen presenting cells called dendritic cells are required to process antigen and present these to the lymphocytes for detection. There are two main types of lymphocyte, B cells and T cells that have different roles to play in the immune response. B lymphocytes, when activated, produce ANTIBODIES that function like heat-seeking missiles, locking onto and destroying any microbe or cell expressing the antigen that triggered their release. T lymphocytes come in two forms; HELPER T cells that secrete cytokines (immunological hormones) that influence the activity of other white blood cells, and KILLER T cells that seek out and destroy target cells. In many instances, tumour surveillance by the immune system eradicates malignant cells before they cause disease. However, some malignant cells can evade immune detection and tumours form that can subsequently spread around the body. It appears that some tumour cells can specifically inhibit the immune system either by producing immunosuppressive molecules (e.g. interleukin 10; IL-10) or by killing the lymphocytes (e.g. Fas-ligand) that are trying to attack them.

Cancer vaccines

Most vaccines are designed to stimulate the immune system to generate protection against infectious disease. Some types of cancer are caused by infectious agents e.g. feline leukaemia virus (FeLV) causes lymphoma in cats, human papillomavirus causes cervical cancer in people, and vaccines against these oncogenic viruses can be used to protect against some forms of cancer. However, most cancers are not induced by viruses and are thought to be triggered via a complex interaction between host genetic and environmental factors. Therapeutic vaccines of the future will be designed to stimulate the immune system in humans / animals already suffering from cancer to harness the power of the immune system to target and destroy malignant cells.

One of the major hurdles of designing effective anti-cancer vaccines is identifying suitable targets for the immune system to attack. Some cancer cells express mutant proteins that are different from those present in healthy cells. Other cancers express very high levels of particular proteins, normally only seen in relatively low amounts. Where such proteins are identified, this allows development of vaccines designed to specifically target the malignant

cells without the immune system harming healthy cells. However, in some cases, stimulating this type of "controlled autoimmunity" by vaccination can lead to adverse effects, as the immune system is not able to discriminate effectively between cancer cells and healthy cells. There is currently a DNA vaccine licensed for use against canine malignant melanoma that uses a protein (tyrosinase) that is expressed specifically by melanocytes. The vaccine can induce a response against malignant melanoma cells, but which can also destroy some of the healthy melanocytes leading to a condition known as vitiligo (depigmentation). We are investigating cancer testis antigens (CTAGs) as potential vaccine candidates, since these proteins are often present in tumours, but not in healthy tissues. Thus a vaccine containing CTAGs could potentially be used in several types of cancer and would have minimal risk of damaging healthy cells and tissues. Other potential vaccination strategies include peptides, autologous tumour cells and recombinant viral vector vaccines.

Dendritic cell vaccination

Dendritic cells are the professional antigen presenting cells of the immune system. These cells can be utilised for vaccination such that, rather than injecting tumour antigen directly, dendritic cells are isolated and grown in the laboratory from the animal's blood or bone marrow and then artificially loaded with antigen and activated before being injected back into the patient. We have shown that this technique is possible in dogs suffering from cancer. However, the procedure is rather labour intensive and expensive to perform, which means that it is difficult to offer dendritic cell vaccination as a therapy in most cases.

Antibody-based immunotherapy

Rather than stimulating the immune system in the patient using antigens, an alternative strategy is to inject preformed antibodies that have been generated in the laboratory that can target the antigens expressed by malignant cells. Usually these antibodies have been modified in some way to make them better "heat-seeking missiles". One strategy is to attach a radioactive substance to the antibody, so that the radiation "payload" is delivered directly to the tumour cells, rather than from an external source, as is typically employed in radiation therapy. One other option is "antibody-dependent enzyme prodrug therapy; ADEPT" where the antibody is modified by addition of an enzyme that is capable of converting a relatively harmless prodrug to its highly toxic metabolite. In this case, the antibody-enzyme conjugate would be administered to the patient, which then accumulates on the surface of the malignant cells. Subsequent administration of the prodrug would then lead to specific activation of the prodrug to the cytotoxic agent in the tumour and at the sites of metastasis. This would potentially be more specific and have less adverse effects than administering a chemotherapy drug systemically to the patient.

Cytokine-based immunotherapy

Several cytokines (immunological hormones) have the ability to influence immune responses in the patient. Non-specific "immune modulators" e.g. interferon alpha might be beneficial in some cases. Intra-tumour injection of GM-CSF and / or IL-2 has been shown to be able to trigger an immune response to the endogenous antigens expressed by some tumour cells. Targeting of other cytokines (e.g. immunosuppressive IL-10) or cytokine receptors (e.g. the mutant stem cell factor receptor (KIT) in mast cell tumours) has great potential for therapy. Indeed, receptor tyrosine kinase inhibitors (RTKIs) such as masitinib (Masivet) and toceranib (Palladia) have recently been licensed for treatment of canine mast cell tumours and which might also be beneficial in other types of cancer, as a result of their anti-angiogenic properties.

<u>TALK 3 -</u> New treatments for dogs with cancer

Davide Berlato MSc (Clin Onc) MRCVS, Animal Health Trust – Oncology Unit, Lanwades Park – Kentford – Newmarket

INTRODUCTION

Cancer is common in pet dogs and cats. Factors such as improved veterinary care and nutrition have resulted in an increasingly geriatric pet population and neoplastic disease is a major cause of death in these animals. Accordingly, the last 20 years have seen exponential growth in the field of veterinary oncology and in the number of veterinary surgeons undergoing post-graduate training to become specialists in veterinary oncology. The outcome of pets with cancer has improved significantly because of the improved knowledge of tumour biology, the identification of prognostic markers, the discovery of effective systemic treatments and the increased in availability of advanced imaging techniques.

Diagnostic imaging is critical for the diagnosis of cancer, staging patients and following the response to therapy. Staging is an important part of the work-up of canine cancer patients and is performed to identify the tumour type, its location, extension (severity) and prognosis. Diagnostic imaging modalities evaluate the primary tumour, the regional lymph nodes and metastasis in distant organs. The most frequently used imaging modalities for the diagnosis of cancer are conventional radiographs and ultrasonography, but **computed tomography** (CT) and **magnetic resonance imaging** (MRI) have improved our ability to make an accurate assessment of the stage of the disease allowing to tailor the treatment to the individual patient. This is particularly important as the goal of cancer treatment in pet dogs and cats is to control the disease for as long as possible maintaining an acceptable quality of life.

The main treatment modalities for cancer are **surgery**, **radiation therapy** and **medical treatment**. Often a combination of treatments or **multimodality treatment** is the best chance for a long-term control or a cure. Surgery and radiation therapy provide local control and are often combined to achieve the best possible outcome. Systemic chemotherapy is used to downgrade tumours allowing local treatment (neoadjuvant or primary), as an adjuvant treatment to eradicate occult tumour spread (micrometastases) or to prevent local recurrence after incomplete excision, or as a palliative treatment when surgery or radiotherapy are not an option.

RADIOTHERAPY

There are three main types of radiation therapy: external-beam radiation, brachytherapy and plesiotherapy.

Conventional external beam radiotherapy is delivered with single beams or using parallel opposed portals. Dose is manually calculated to a reference point in the treatment field, usually the tumour isocenter. This type of radiation therapy is the standard of care for adjuvant treatment of incompletely resected soft-tissue sarcomas and mast cell tumours of the extremities. The **Three Dimensional Conformal Radiation Therapy** (3DCRT) and **Intensity Modulated Radiation Therapy** (IMRT) are new radiotherapy techniques. They use CT-based imaging to generate 3D images of specific internal structures and of the tumour allowing a more precise description of the prescribed dose to the tumour and to normal tissue structures limiting the exposure if the normal surrounding tissue and decreasing side effects. Customized blocks and multileaf collimators are used to shape the beam. The patient positioning is crucial.

Brachytherapy is a form of radiotherapy where a radiation source is placed inside or next to the area requiring treatment such as the tumour bed or the tumour itself. Brachytherapy in veterinary medicine is primarily Iridium-192 and it is used in the treatment of feline cancer (injection-site sarcoma) or equine cancer (sarcoids).

Plesiotherapy involves the administration of beta irradiation via direct contact with a strontium-90 applicator. It is the treatment of choice for superficial tumours such as feline nasal planum carcinoma and feline cutaneous mast cell tumour and for periocular tumour after surgical debulking.

Currently in UK there are 5 radiation facilities (6 with the AHT) and therefore this treatment modality is becoming more accessible. In Europe there are only 5 radiation facilities, but it is likely that the number will increase in the next few years.

UPDATE IN THE MEDICAL TREATMENT

New use of old drugs. Traditional cytotoxic chemotherapy is used in the treatment of various malignancies. The primary principle is the use of the **maximally tolerated dose** (MTD), in which the highest drug dose tolerated by the patient is used as frequently as possible to maximise the effect on the tumour. Cytotoxic chemotherapy is non-selective tackling all cells that rapidly dividing. Thus, side effects occur as well in normal tissues and particularly in the tissues with rapid cell turnover such as the bone marrow toxicity and the gastrointestinal tract. After each dose of MTD chemotherapy a recovery period must follow to allow these normal tissues to recover, but during this break in treatment tumours may proliferate. Some of these proliferating cells have developed resistance to the drugs used, resulting in relapses. In addition, the endothelial cells lining tumour blood vessels are damaged by MTD chemotherapy, but rapidly repair during the intervals between drug doses. In an attempt to ameliorate this proliferation of resistant tumour cells and blood vessels during treatment breaks, scientists have pursued the investigation of continuous, low-dose chemotherapy, also known as **metronomic chemotherapy**. There is also evidence that this treatment regimen may improve the recognition of cancer cells by the patient's immune system facilitating their destruction. Metronomic chemotherapy consists in the daily administration of an oral chemotherapy (most commonly cyclophosphamide) associated with an anti-inflammatory drug (meloxicam, firocoxib, robenacoxib, ect.) and it is most commonly used as an adjuvant chemotherapy after incomplete removal of soft tissue sarcomas. New trials are evaluating its efficacy in other tumours' type as osteosarcoma and haemangiosarcoma.

Targeted drugs (Tyrosine kinase inhibitors - TKi). Tyrosine kinases (TKs) are a very important class of signaling proteins which are found mainly on the cell surface (TK receptor) and play a vital role in regulating cells growth and differentiation. In the normal cell, a growth factor can bind to its TK receptor, which then becomes activated and passes on the signal to proliferate internally to the call nucleus. Examples include Kit, epidermal growth factor receptor (EGFR), vascular endothelial growth factor receptor (VEGFR), and platelet-derived growth factor receptor (PDGFR). Evidence suggests that in both human and veterinary malignant tumours these proteins are often abnormally activated leading to uncontrolled cell proliferation and survival. The classic example of TK dysregulation in human cancer is chronic myelogenous leukemia (CML). These cancer cells have a mutation that causes chronic activation, which leads to chronic abnormal cell growth and survival of these abnormal cells. In dogs, mutations in the RTK Kit, which lead to constant activation, have been found in 20% to 30% of mast cell tumours (MCTs). Dogs with MCTs with Kit mutations have an increased chance of tumour recurrence and a decreased survival time. Therapies that inhibit TKs signaling have become an integral part of human cancer therapy

over the past 5-10 years. In the last 3 years two drugs, Palladia and Masivet, have been approved for the treatment of non resectable canine mast cell tumour with a clinical response of 40% and 15% respectively. Recent trials have shown that Palladia and Masivet have also effect against a number of canine tumours, but their full potential has not been yet exploited. TKi have a similar toxicity profile of traditional chemotherapy. Both Palladia and Masivet can induce anorexia, vomiting, diarrhoea and gastrointestinal bleeding. Palladia can also induce mild decrease of the white blood cell and localised muscle cramp. Masivet have been shown to induce kidney disease and in rare cases haemolytic anaemia.

Immunotherapy. Canine malignant melanoma (CMM) of the oral cavity, nail bed, foot pad and mucocutaneous junction is a spontaneously occurring, highly aggressive and frequently metastatic neoplasm. CMM is a relatively common diagnosis representing ~ 4% of all canine tumours and it is the most common oral tumour in the dog. Canine patients with advanced disease have an average survival time of 1-5 months with standardised therapies. A combination of radiation therapy and chemotherapy has a reported an average survival time of one year in early stage oral CMM. Most dogs die of metastatic spread. The melanoma vaccine (Oncept™) target tyrosinase which is a glycoprotein essential in melanin synthesis. Xenogeneic vaccines use DNA coding for the same protein, but from a different species, to try to overcome the immune system's reluctance to recognize self-antigens. By injecting DNA from a different species, the immune system is expected to see the protein product of this DNA as foreign and therefore have a response. Clinical trials have shown that the survival of dogs with CMM treated with the vaccine after good local control (surgery +/- radiation therapy) is significantly increased (up to 3 times). The vaccine is administered intramuscularly with a special needle-free device and it is very well tolerated with rare mild side effects. A full course consists in a dose every 2 weeks for 4 times followed by a booster every 6 months.

TALK 4 - Identifying molecular markers for cancer

Mike Starkey BSc PhD MSc(CCI)(Open), Head of Molecular Oncology, Animal Health Trust

A major objective of the cancer research programme at the Animal Health Trust is the identification of 'molecular markers' for cancers that affect pedigree dogs. A molecular marker is a '*biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease*'. We are seeking to identify molecular markers that (1) Predict how tumours will behave and respond to treatment, (2) Identify dogs belonging to certain breeds that have an increased risk of developing specific cancers, and (3) Enable early diagnosis of cancer, or tumour metastasis, before clinical signs are visible.

The ability to accurately predict how a tumour will behave assists a vet to make an informed decision about the most appropriate treatment for a dog with cancer. It enables a vet to determine whether a dog will benefit from an aggressive treatment, thus ensuring that a dog that requires treatment receives it and that a dog that will not benefit is spared the rigours and possible hazards associated with treatment.

The conventional approach for predicting how a tumour will behave, and thus deciding on an appropriate form of treatment, relies on the tumour being classified on the basis of histopathological 'grade'. For tumour grading it is necessary to anaesthetise a dog and surgically excise a tissue sample that will be examined under a microscope by a pathologist in order to assess the degree to which the cancer cells have lost the specialist structure that is characteristic of the tissue in which the tumour is present. However, grading is

subjective, and for many cancers does not reliably predict metastasis, response to treatment, or local recurrence. At best grading will assign a dog's tumour to a category associated with a certain probability of having a particular outcome. However, within such a category tumours may still exhibit significant variation in behaviour.

In this talk I will outline the strategy that we have adopted to identify molecular markers that predict how canine cancers will behave, and by way of example I will describe studies to develop improved prognostic tests for two canine cancers, mast cell tumours and uveal melanomas, respectively.

As is the case for people, many cancers in dogs arise spontaneously and affect many breeds. However, a number of breeds develop certain cancers more often than most other breeds, suggesting that some dogs belonging to these breeds carry inherited genetic risk factors. In most cases an inherited predisposition to cancer is thought to result from the combined effects of several hereditary genetic alterations, each of which is insufficient to cause cancer but confers a low to moderate increase in the risk of developing a specific cancer. The risk is believed to increase according to the number of alterations inherited.

The identification of inherited cancer susceptibility genetic alterations will enable the development of DNA tests that can be used to identify dogs that carry the gene mutations conferring an increased risk. This information gained from these tests will be useful to vets as it will identify dogs that may benefit from careful monitoring for early detection of cancer, and thereby early treatment. Breeders can also use this information to reduce the number of dogs that develop the cancer concerned. Research to identify genetic risk factors for cancer will also increase understanding of how tumours develop, ultimately assisting the development of new therapies.

On the basis of the similarity (in appearance and behaviour) of some cancers in dogs and the equivalent cancers in people, genetic alterations that predispose particular dog breeds to developing certain cancers may also be responsible for cases of the same cancer in affected human families. Consequently, research to identify genetic risk factors for cancers in dogs may also be relevant to identifying the underlying causes of inherited human cancers.

In this talk I will describe the strategy most often employed to identify inherited genetic alterations that confer an increased risk of developing cancer, and outline some of the difficulties associated with conducting genetic studies of cancer susceptibility in dogs. I will provide an update on the progress of studies seeking to identify the inherited genetic alterations associated with an increased risk displayed by several dog breeds to developing mast cell tumours and osteosarcoma, respectively.

OTTERHOUND - DECLARED FITTERS FROM ANY CAUSE

in alphabetical order

BALTHAZAR SORCERER Ottersdream Playboy of Balthazar ex Ottersdream Prudence of Balthazar
Siblings: Swashbuckler, Solomon, Sultan
Full Siblings later litters : Teaboy, Teddyboy at Cairo's, Tomboy, Topboy, Toyboy, Taffeta, Maestro, Magnum, Masquerade, Musketeer, Mimosa at Dineleas, Minuet at Cairo's, Mistletoe

BARILLA DESTINY Actaeon's P'Nash ex Boravin Dancer

BARILLA DECOROUS
Siblings: Barilla Dominant, Dynasty, Dance Away, Dauntless at Ladestar, Destiny, Dewdrop, Donna, Dutiful

BLACKCAP OF TWINRIVERS Kentenes Razor ex Falconcrag Nutmeg of Nanhelen
First seizured at approximately 5 years following trauma. Medicated for epilepsy, drugs so altered her personality she was put to sleep.
Siblings: Blazor of Twinrivers, Blackberry, Bryony at Teckelgarth Kingstree Belmont, Barley, Bilbery of Carlbay, Bluebell, Bramble
Full Siblings earlier litter: Annan Kingstree, Acorn, Allspice, Angler of Twinrivers, Amethyst of Drakesleat, Aniseed, Wise of Nanhelen, Amber of Nanhelen

BORAVIN DRAYMAN Boravin Ostler ex Actaeon's Promise
One "funny turn" as a youngster. First fit at 6 years. Had possibly another two fits during the next 2 years. Probably had a further two fits aged 8 years and had to be put to sleep.
Siblings: Daggler, Dancer, Daylight

BORAVIN GALA Boravin Yankee ex Boravin Easter
Recorded fitting in the U.S.A
Siblings: Gaoler, Goshawk, Galaxy, Gossamer, Graceful, Greybird

BORAVIN PLAINSMAN Dumfriesshire Clansman ex Kendal Pastime
Severe liver damage at an early age prevented definitive diagnoses
Siblings: Peeler, Plover, Puffin
Full Siblings from an earlier litter: Kendal Tempest, Kendal Testa

BORAVIN QUINTAIN Dumfriesshire Tracker ex Boravin Oakleaf
Fitting occurred when there were bitches in season in the kennel, ceased after castration.
Siblings: Quantock, Quarryman, Queensbury, Queller, Quail, Quaintly, Quarley, Quaver, Quicksilver, Quillet

BORAVIN UMPIRE Boravin Ostler ex Vison Treasure
Seizures occurred during the first year only – no loss of consciousness – believed to be diet related. Died of old age.
Siblings: Urchin, Unity, Useful

BORAVIN VANNER Dumfriesshire Cypher at Trevereux ex Boravin Nutshell
BORAVIN VANITY
Recorded fitting in the U.S.A.
Siblings: Valesman, Vanguard, Verderer, Villager at Teckelgarth, Vivid, Vixen, Viva of Trevereux

BUNNAHABHAIN RANSOM PCOH Donald Bunnahabhain ex Bunnahabhain Liberty
Siblings: Ramsay, Ranger, Ricochet, Rafferty, Rangle, Ruthven

CAIRO'S DUMBLEDORE Lutrakai Maskell ex Balthazar Minuet at Cairo's Dumbledore
Medicated for epilepsy for some time, died age just 3years.
Gryffindor started fitting age just over 2 years, diagnosed idiopathic epileptic, died within months.
Hogwarts Xpress started fitting age 13 months, vet considered it was epilepsy, but did not treat, died age 17 months
CAIRO'S GRYFFINDOR FOR SPINNOTTA
CAIRO'S HOGWARTS XPRESS

Siblings: Arry Otta, Padfoot, Hufflepuff, Madam Pomfrey, Ravenclaw

CULMSTOCK WATCHMAN Boravin Woodman ex Songstress Songbird
Medicated for epilepsy lived to approx 9 years
Siblings: Wader, Wellington, Wizard, Saucy, Seagull, Sunset, Seaweed of Cilgwri
DUMPDON SCANDAL Sothic Sailor ex Boravin Echo
Had grand mal fits
HALSDON SANDPIPER
Had grand mal fits
LOVERSPIT SHOWMAN
Had grand mal fits
WINDGATE SONNET OF CILGWRI
Had grand mal fits
Siblings: Beacon Sinbad, Dumpdon Scandal, Hensemoor Stormer

KINGSTREE CLUDEN Boravin Peeler ex Acorn Kingstree
KINGSTREE CHESTNUT OF MAYCUP
Cluden first seizured at approximately 5 years, had on average three to four seizures per year, never treated, died of old age.
Chestnut first seizured around 6 years of age, seizures only occurred during or after her seasons.
Siblings: Chieftain, Craftsman, Cedar, Classic, Clover, Credit

KINGSTREE FOREMAN AT CAVANERO Otterbobs Orbit with Kingstree ex Actaeon's Precocious with Kingstree
First seizured at approximately 6 years, died shortly after.
Sired two young fitting hounds, both dead before 3 years.
Siblings: Ferryman, Fisherman, Footman, Freesia at Cairo's

KINGSTREE HULOFF Kingstree Governor ex Kingstree Dewdrop
First fit age 10 months. At 11 months diagnosed idiopathic epileptic at the Animal Health Trust, Cambridge. Treatment not recommended at that stage, went into stasis overnight at 13 months, put to sleep.
Siblings: Hannibal, Highlander, Hoddom, Hussar, Hazel, Heather, Holly

KINGSTREE KENTUCKY Scentasia's Doonesbury ex Aberdeen's English Ivy
Started fitting 3 weeks short of his 7th birthday shortly after his lifelong canine companion died. Fitting controlled by medication, died aged 9 years.
Siblings: California, Michigan, Nevada, Texas, Connecticut, Indiana, Minnesota

KINGSTREE ROWENA Teckelgarth Damacles ex Kingstree Nutmeg
Started fitting at 2 years of age, treated for epilepsy, kept breaking through treatment and died age, kept breaking through treatment and died aged 4 years.
Siblings: Rugger, River, Reiver, Rebel, Rascal, Rapid, Rambler at Ottaryx, Russet

KINGSTREE TRADEMARK Teckelgarth Quintus ex Kingstree Quest
Started fitting in January 2011. Is known to have had five more fits since then mostly lasting between 5 to 6 minutes, but with his owners soothing the last 2 fits have only lasted about 2 minutes. He has had every test available to establish the cause except an MRI scan and his veterinary surgeon considers him to be idiopathic epileptic. He is not yet on any medication.
Siblings: Tamar, Tracker, Tripper, Thistle, Ticket, Tippet, Trouble, Trusty

OTTERSDREAM PAVLOVA Ottersdream Pedro ex Lyonesse Columbine
Siblings: Pippercorn, Poet, Protégé, Prelude of Crosswinds, Parthan, Perfection of Dinaleas

OTTERSDREAM PHANERA Ottersdream Protégé ex Ottersdream Phloozie
OTTERSDREAM PINUP AT KEEPCOTT
Started having seizures age over 2 years, medicated for epilepsy died just 3.
Siblings: Potiphar, Pandemonium, Pandia, Pavalla, Pendle, Preponsa, Prote, Pizzazz of Crosswinds, Primadonna of Crosswinds

SAFRANIN SAFFRON Boravin Verderer ex Boravin Silverleaf
Started fitting age 2 years
Siblings: Sandpiper Tussock, Slipstream Bullrush, Sothic Sailor, Vansitart Magnum, Viking Warrior, Songstress Songbird, Venus Venusian

SHREENWATER CAPRICE Hazzard at Otterbobs ex Boravin Frolic
SHREENWATER CALAMITY with Clunebrae
Caprice died in stasis, had been on medication which caused severe personality changes. Calamity, fitted, but died of heart failure.
Siblings: Chancer, Caprice, Careful, Caution, Cautious, Chaotic

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Known Seizures & Possible Seizures in US Otterhounds

March 2011

Thanks to all the breeders and owners who have provided this information.

Name	Age 1st seizure	Age at death	cause of death	Info. on seizures	Source of info
Aberdeen's Bently O' Corcra Gael Sire : Follyhoun Oro'Lin of Wo'Ken Dam : Aberdeen's Alien Siblings : Aberdeen's Beetlejuice, Blue Jacket McCarter, Prince Oliver, Bananas, Belinda, Bombshell, Bonkers, Bonnie Banner	7+ years	10+ years		petit mal, only at vet's office Notified after his death.	breeder
Aberdeen's BluJacket McCarter Sire, Dam & Siblings as above	2 years	6 years	seizure	6SzPhenobarb for 4+ yrs	breeder
Aberdeen's Dynamo Hum Sire : Boravin Quarryman Dam : Aberdeen Bonkers Siblings : Aberdeen's Dragonslayer, Dipity Doo	4+ years	8+ years	seizure	Age 4+8+Sz 1st seizure when litter was 4 weeks old	breeder

Dinker, Douse De'light, Dreamer, Dewy MacMurphy of Aberdeen, Fitzcaps Dlirious O'Aberdeen					
Aberdeen's Excaliber Merlin Sire : Avitar's Front Page New Dam : Aberdeen's Alien Siblings : Aberdeen's Elmer Fudd Tails End, Elwood Kimmel, Energizer, Excalibar, English Ivy, Equisitely Corcra	6+ years	9+ years	bloat		breeder
Aberdeen's Fiddle Dee Dee Sire : Scentasia's Doonesbury Dam : Aberdeen's Alien Siblings : Aberdeen's Famos Amos, Fat Albert, Fig Newton, Frosted Flake, Femme Fatale, Fandango de Molnmix, Flat Foot Floozie, Funny Girl Janora French Kiss, Caveman, Chi Town Colossus, Chucky Cheez Osi, Cool Henry Luke, Count Frederick, Cauzn Confusn Osi, Chance, Cocoa Puff of Osi, Cosnik Debris, Sangre de Cristo Cleona	5 years	14 years		infrequent, never medicated ??? Notified after age 12	breeder
Aberdeen's Good Golly Sire : Aberdeen's Caveman Dam : Aberdeen's Dynamo Hum Siblings : Aberdeen's Gee Whillikers, Gone Fishin', Gorilla, Gotcha, Great Gringo	2 years	3 years	seizure		breeder
Aberdeen's Gone Fishin' Sire, Dam & Siblings as above	5 years	12+ years		grand mal, monthly, medicated	breeder
Aberdeen's Gotcha Ditto	3 years	5 years	seizure	sired 1 litter prior to seizures - no known get w/seizures	breeder
Aberdeen's HotLips Echovesna Sire : Greyfields Justin the Nick of time Dam : Aberdeen's English Ivy Siblings : Aberdeen's Heidi-Heidi Ho, Hog Wild O'Foxfire, Hostess W'Th Mostes Amz, Hurricane Hannah	5+ years	9 years	bloat	started after head injury at 5yrs	breeder
Aberdeen's Jose Cuervo Sire : Aberdeen's Caveman Dam : Aberdeen's Hog Wild O'Foxfire Siblings : Aberdeen's Jeepers Creepers	2 years	5 years	seizure	potassium bromide for 3+ yrs	breeder

Avitar's Green Field Of Dreams Sire : Furaha Farrier Dam : Avitar's Classical Jazz Siblings : Avitar's Great Little Follower, Good Time Jazz	4 years?		seizure related	had been hit hard on head, euthanized when seizures could not be controlled	breeder
Avitar's Much To Do Sire : Darby's Holy Smoke Dam : Avitar's Goodtime Jazz Siblings : Avitar's Maple Leaf Optimist, Make my day, Masked Marvel, Maxmillan Mischiefmaker, Motor City Sound, My dear Dr. Watson, My Name is Casey, Mocha Almond Fudge, Mighty Fine Jazz, Midsummer Frenzy	2 years	4 years	seizure related		breeder
Avitar's New Age Jazz Sire : Riverrun A'gus Dam : Avitar's Mighty Fine Jazz Siblings : Avitar's Nannu O'Canada, Not 'Til I Say So, Notorius Gangster, Nonchalant Nelli, Northern Lights	2 years			started with 1 a year, eventually medicated – First 7 years had one a year, then two within a 2 week period, always at night. Rescue Remedy always worked bringing her out of the seizure. At 9 years, still only a few a year and her last was the word (Feb 2011) and choose to put her on meds.	owner
Avitar's Northern Lights Sire, Dam & Siblings as above				seizures	breeder
Avitar's Not 'Til I Say So Sire, Dam & Siblings as above	9.5 mos.			grand mal, 8-14 day intervals w/o med., medicated – Buck had his first grand-mal seizure at 9.5 months old. Before medication he would have a seizure every 8-14 days. My vet recommended that I take him to a Neurologist. After testing he was diagnosed with idiopathic epilepsy. H was started on potassium bromide initially as it was thought to have less toxicity to the liver. It did not reduce the frequency of his seizures, so Phenobarbital was added as well. That combination did finally reduce the frequency. H gets his blood checked every 6 months to determine the med levels and also to check his liver & kidney functions. At almost 9, so far everything has check out normal. The only side effect seems to he his hind end weakness attributed to the potassium bromide. The early onset and frequency of his seizures, did however eventually cause him to become shy of strangers (strangers being anyone he hadn't met before onset of seizures) at about 1 year old. The dosages of the meds have been	owner

			increased periodically over the years. He is now given 4cc's of KBr 2x's daily and a total of 430 mg phenobarb (split into 2x's daily). Although since 2007 he has become prone to cluster seizures (twice leading to an ER visit & hospitalisation), the frequency of his seizures have been greatly reduced. After his first hospitalisation with his most severe case of clusters, he was blind in one eye for about 10 days and very weak and unsteady especially in the hind end. He has gone as long as 6 months between seizures in the past couple of years otherwise. His seizures are always upon awakening from sleep, or a nap. They last about 2 minutes. He has never lost bladder, or bowel control during a seizure, but I must get him outside to defecate shortly after. The after phase (post-ictal phase) lasts anywhere from 15-45 minutes. I do let him outside to go potty and move around, but under very close supervision. I do not confine him during this phase. During that time he is very disorientated and not very aware of my presence. Also, now to avoid clusters, I do administer 18-20cc's of diazepam (best to wait until after they poop), after every seizure. He naps after and upon awakening is back to normal. Despite the seizures, he is otherwise a very healthy, happy, calm, sweet, affectionate boy.	
Baymore's Alaskan Liv Sire : Hooters Follyhoun Rodney Dam : Hooters Corcra Rhapsody Siblings : Baymore's Augie, Commander Lynus, Hoover at Quietwood, Royal Hudson, Populaer Luxe, Regina, Tellus Lily	6 years		grand mal, 10-12 week intervals, medicated – Liv started having seizures in 2009 about 4 months after her last litter, hers are every 10-12 weeks give or take a month or so, that's on a calendar or 5 somewhere but I can't find them. Hers are grand mal and last usually less than a minute, she comes out quickly and is ready to go do something as soon as she comes out. She was found to have a low thyroid and is on .8mg of soloxine twice daily. Have seen no negative results with either the seizures or meds. Liv will be 8 in June , we think we missed some signs while Liv was growing up now that we think back, salivating a lot at times, slapping her jaws, but always very quick and often at the same place while travelling.	owner
Baymore's Tobias	10	10+	started a few months before his death –	owner

Sire : Kelevala Protector's Legacy Dam : Hooters Corcra Rhapsody Siblings : Baymore's Bailey's Anthem, Troubador, Suite Nelly Dean	years	years		Toby started having seizures about once a month the last few months of his life…..having expired at ten and a half years. Whether they were related to his impending death or epilepsy, I'll never know. He had 10 healthy years, thank heavens. I might add, it took both of them a long time to recover from their seizures. Both dogs returned to their same old selves afterward.	
Belle River Riverboat Gambler Sire: Dyfrgi's Silent Searcher Dam : Ottertail Otterly Ridicqlus Siblings : Belle River Colonel Reb, Cotton Picker, Delta Queen, Dixieland Jazz, Magnolia Blossom, Graywaves Belle River Rebel Yell	7 years	9 years	bloat	3 known grand mal seizures	breeder
Boravin Quarryman See Boravin Quintain in UK list	8 years	10+ years	prostate cancer	a few seizures while on chemotherapy, none after	breeder
Boravin Vanner As recorded in UK list	19 mos.	21 mos.	see details	probable seizures – Vanner started seizuring in probably August of 1987. To be honest, I do not recall actually seeing him seizure, but would crate him while I was gone, and would come back and find him lying in a pool of liquid and he would be woozy and disoriented. He would run into the side of doors coming and going after the episode. He was tested for liver issues and was okay. He had the first seizure, maybe a month later another, another in a shorter time span—a week or two, and another the next day. Our vet has us put him on phenobarbitol. He was not himself—I assumed it was the pheno, but perhaps it was residual from the seizures, he would cry to go outside and cry to come in, not complacent either place. I was going to travel to Texas at the end of October for an extended period of time and did not know what to do, so I just decided to put him to sleep, there were some contributing circumstances for the decision. I had recently moved to Iowa and knew almost no one for a doggy support system. My first two-legged child was born the same month Vanner started seizuring—indeed, I think the people visiting at our house may have kicked Vanner into a stress that started them. The other factor is that Vanner was	owner

			a basket-case shy if I may put it that way. And he was afraid of my husband—I would be leaving him with Steve. I got Vanner at maybe9 months old? When he arrived from England I, for probably two weeks, had to pull him out of the back of his crate and feed him by hand, almost force feed—he was very distressed. His breeder told me later she would never ship another nervous hound, so he was nervous before he came. Another English breeder thought the flight caused the seizures, panic from the flight?,but Vanner's sister seizured also, died from them…also the flight over? We had him several months before he started seizuring. Prior to seizures, Vanner would be excited to go places, jump in the car to go, but when we got to the new place, he was afraid to come out of his crate. I would try to take him places, the mall and sit outside where he would tremble and tremble and tremble, to classes where he would start to heel and after a few minutes just vomit from nerves. H was so sweet and so sad to see, so shy—I had just told him he could stay in the back yard from now on. Shortly after, my son Harry was born and we had overnight company for several nights, and the seizures began. So, they would be described as grand mal as he voided everything and was woozy when I found him? He was medicated briefly, but we needed to work on adjusting medication, and I just hoped to put him down as I was not able to deal with how he was dealing. I put him down in October of 1987. Poor Vanner.
Follyhoun Qcumber Geez Lueez Sire : Avitar Follyhoun Kahootz Dam : Chaucer's Queen Guinevere Siblings : Chaucer's Rocky Hill Robinhood, Hydramagic Chance, Sir Duff of Bearsden, Mydramagic Charm, Rum and Coke, Follyhoun Oro'Lin of Wo'Ken, Jenell Number Five, Ottertail's Max in a Million, Mischagas Gipper, Sampsonite, Beaver, Olivia, Trouble	18 mos.	12 years	began after choked on a toy, twice yearly, never severe, medicated owner

Brewing, Ottertail Otterly Ridicqlus, Monty the Python, Some like it Hoot, Follyhoun Hootenanny					
Greyfield's One Way Ryder Sire : HB Twilight Trumpeter Dam : Tar Beach Blythe of Greyfield Siblings : Greyfield's Ragtime Kelly Girl, Razzmataz, Tar Beach Greyfield Rufus	3 years				owner
Hooters Churchill O'Bearsden Sire : Chaucer's Sir Duff of Bearsden Dam : Aberdeen's Bombshell Siblings : Hooters Rembrandt O'Bearsden, Rockefeller O'Bearsden, Hatteras Cuhaven, Russian Roulette	10 mos.	9 years	stomach cancer	grand mal, 2-6 month intervals, medicated – His first one was around 10 months, I though I was going to lose hi, even though it was focal, with limbs buckling and not able to walk, it went on and on. I got him to the vet where Churchill was given multiple shots of phenobarb before he started to come out of it. Meanwhile his temp had gone way up. Churchill went on to have a seizure every 2 to 6 months until his death at 9 years from stomach cancer. All his seizures were focal. He never lost consciousness but was slightly out of it and always very afraid. He'd try and stand, get half way up only to fall l down with one or two limbs buckling. They usually lasted 1-3 minutes. Churchill was a fearful dot and my vet wanted me to put him down at 1 year as he had some people aggression issues. I think the seizures were a big factor in his fearfulness. I couldn't bring myself to put him down and kept him safely sequestered.	owner
Hooters Corcra Gael Range Rover Sire : Aberdeen's Bently O'Corcra Gael Dam : Hooters Hatteras Cuhaven Siblings : Hooters Ginger, Hooters Corcra Always Ready, Rumor Has it, Samson, Random Reaction, Hooters MacTagert O'Bearsden	8 years	9 years		seizures	breeder
Hooters Russian Roulette Sire : Chaucer's Sir Duff of Bearsden Dam : Aberdeen's Bombshell Siblings : Same as Hooters Churchill	3 years	14 years		grand mal clusters, widely spaced, medicated – Russia had 2 known grand mal seizures, one right after another, but amazingly lived to nearly 15.	owner

Hooters Corcra Smokey Robnsn Sire : Aberdeen's Bently O'Corcra Gael Dam : Hooters Follyhoun Rainie Siblings : Hooters Corcra Be I N Gee, Mr. Emmet, Carbon Copy, Gael Riley Imp, Sadie OH What a Lady	2 years			petit mal, infrequent, never medicated – Smokey had at least 2 absence seizures, starting at age 2 the day after the other dog he lived with caught her collar on a fence and strangled. He had been one of a group of dogs rescued from a severe neglect situation, and had been emaciated. The day after his dog buddy died, he went to a dark corner of the basement, stood in place unresponsive, and trembled all over to a couple of minutes. The seizures never got bad enough for Smokey to be medicated.	owner
Howlaway's Pac Man Sire : Wag'N Hollow's Colorado Hometun Dam : Howl-Away J-N-I's Alexandra Siblings : Howlaway's Belle, Outburst, Howlaway's Qcumber Pinbalwizard	4 years	12 years	died in surgery	not clear that his episodes were seizures – Although it was never determined that Gunner's "episodes" were actually seizures, I'm now thinking it's possible that they might have been. Our vets eventually thought his symptoms were most likely a pain response to a problem in his back/neck brought on by unusually active days of running and jumping. In retrospect, I suppose it's also possible that he had more than one problem going on. Although Gunner was never actually diagnosed with seizures, I thought a summary of his symptoms and history should be passed along since you are keeping a record of affected hounds. Regretfully, I didn't have his blood drawn and submitted because I was under the mistaken impression that the study only applied to dogs with confirmed epilepsy. 1999 – 4 years Symptoms: *Weight loss (10 pounds in less than a year) *Loss of muscle mass, particularly in hindquarters *Increased thirst *Brief (30 sec) episodes of stopping to just blankly stare at the floor *Three episodes of staggering and loss of control of hindquarters (about 10 minutes/episode) First was at three years of age, Second and Third were back to back at 4 years of age *Periodic brief (couple of seconds) stiffening of right hind leg while standing or walking – seemed to bother him, as he	owner

looked back at it and sometimes pressed his nose to the area.
*Times of unusual restlessness and wanting out in the middle of the night.

Tests :
Blood Chemistry – low sodium
ACTH Stimulation – normal, which ruled out Addison's Disease
UA – normal
ECG – normal

Note :
Gunnar had been severely choked at almost 3 years of age (prior to the above symptoms) when Havana's jaw got caught in his collar during one of their play sessions. By the time I got to him, he was bleeding from the nose and his eyes had turned red. The vet said that might have caused a brain injury with subsequent metabolic changes and possibly seizures. Suggested we just keep a close eye on him for the time being.

2000 – 5 years
An episode that started with lack of coordination, salivating, restlessness, and a desire to be comforted. He would try to lay down for a minute, but would then be back up again. After about 10 minutes of this, he vomited, and then his legs just gave out and he went down. He never seemed to lose consciousness, but continued to pant and salivate for another 10 minutes. Eventually he started wagging his tail and was able to get up and move about fairly normally.

2001 – 6 years
Episode of restlessness, lack of coordination (front and rear), need to be comforted, vomiting and aspiration through his nose (needed antibiotics), staring at floor, hunching back. Vet suggested this was a response to pain – probably a disc in his neck. Put on prednisone for several weeks. Had another episode during treatment, which was mostly just a lack of coordination.

Tests :

				Liver Enzymes elevated. ALT-1107, AP-181, AST-high Cholesterol on high end Bile Acids Test for liver function – normal to high normal Over the remaining years of his life, he would periodically have these wobbly episodes, but seemed aware and responsive. When he would lay down, it was obvious that his muscles were contracted (no twitching or paddling) just very tight. Massage seemed to help and within about 10 minutes he would start stretching, his muscles would relax and he would soon be up and back to normal once again. We started noticing that these incidents would be most likely to happen when he had had a particularly active day. As he grew older and was less active, he had fewer episodes. The vets felt they were probably a pain response to a problem in his neck/back. 2007- 12 years His final, longest and most severe episode of muscle spasms lasted almost half an hour, and the next day he was still somewhat wobbly. Two weeks later he was still dragging his feet a little. Four months later he died during surgery while having several sebaceous cysts removed.	
Howlaway's The Colorado Wookie Sire : Follyhoun Winchester Dam : Chaucer's Rum & Coke Siblings : Wag'n Hollow's Abby, Eloise, LucyRay, Shelby Sioux, Tess, Howl-Aways Jim-N-I's Alexandra	2 years	9 years	cancer	grand mal, medicated	owner
Muddcreeks Sprite Sire : Scentasia's Yorktown Patriot Dam : Sonsies Looney Tune Siblings : Muddcreeks Sir Watson Holmes, Spring Harvest, Stream Keeper, Sunday Surprise, So Gladys Youre Ours, Sweet Lady Sophie, Sweet Molly Malone, Simply Irristible	4 years			not clear yet if her episodes are seizures – River – We haven't figured out what happened with her yet. She had two episodes of some kind in June and September of 2010. They didn't resemble any type of seizure I'm familiar with, or had seen, or read about. The closest thing I could find was in the description & video of what they call a "Chinook" episode, or seizure. She was completely conscious and aware and sitting up,. Just her hind	owner

			legs started drawing up to her body, like a severe muscle spasm. It made her nervous while it was going on, but she didn't exhibit any pain symptoms, or disorientation. She was completely responsive. After the legs relaxed (1-2 minutes), there were no after effects. I had some initial blood-work done the day of her first episode…normal, except for some minimal irregularities in the thyroid panels (not enough to concern the Vet). I am awaiting word from U of Missouri in response to some questions about these episodes. I will also pursue further testing when I find out what those tests should be. Too new yet to share the full scoop as the jury is still out on what this is exactly. When I find out more, I'll let you all know.	
Ottertail Otterly Ridicqlus Sire: Avitar Follyhoun Kahootz Dam : Chaucer's Queen Guinevere Siblings : As Follyhoun Qcumber Geez Luiz	6 years	cancer	grand mal, started at 6 mo. intervals then increased, medicated beginning age 9	owner
Poplar Hill's L'ville Rosebud Sire : Scentasia's Yorktown Patriot Dam : Poplar Hill's Ophelia Siblings : Poplar Hill's L,ville Hot Brown, Unbridled Spirit, Belle of L'ville, Mint Julep	5 years		grand mal, 1 month intervals – aka Rose, had her first seizure 8/9 at 5 years. Denise took Rose to a neurologist who diagnosed her with idiopathic epilepsy. Rose did test positive for taxoplasmosis, a parasite that can cause neurological problems and was treated with an antibiotic. My understanding of taxoplasmosis is that it is difficult to "cure" and can live in cystic areas in the dog and when these cysts burst it becomes active. Rose has had 5 more seizures since the first, averaging about one per month. They all occur early in the a.m. and last for about 1 minute. They are grand mal and she loses bladder control. Rose is shaky for about ½ hour after the seizure and then returns to her normal self. Denis keeps Valium suppositories on hand but hasn't had to use them as the seizures are so short. Rose is being treated with Chinese Herbs and is just now up to the recommended dose. She has just started taking Neuroplex, a nutritional supplement that is supposed to help seizures. Rose also goes for acupuncture once a month.	breeder
Poplar Hill's L'ville Hot Brown Sire, Dam & Siblings as above	3 years		1 probably seizure, none since – AKA Angus, and Rose's brother, had one seizure	owner

			at age 2-3 years after eating a whole pan of turkey drippings. Kathy Mcknight's 8yr old daughter saw it and called her mom. Angus was coming out of it when Kathy saw him. At the time, their vet felt that Angus' blood chemistries had been thrown out of whack by ingesting so much fat and that was the cause. Angus has had no problems since.	
Riverspruce's Spurr Of The Moment Sire : Shreenwater Blackjack Dam : Baymore's Alaskan Liv Siblings : Riverspruce's Danas Dewey, Magnus from Snowy River, No Redoubt About it, Plenty of Sweet Kiska, Purple Hayes,	8 mos.		clusters, medicated – Feeona has been having seizure since before her 1st birthday, most are clusters of 5 or so and she is on a heavy doze of Pheno and Potassium Bromide.	breeder
Scentasia's Bad To The Bone Sire : Scentasia's Just a Gigolo Dam : Scentasia's Warrior Princess Siblings : Scentasia's I'm Ready, Johnny Be Good, Leader of the Pack, Shake Rattle N Roll, Be Bop a Lula	5 years		owner reported seizures	breeder
Scentasia's Good Time Charlie Sire : Cheery OH's Return to Scentasia Dam : Scentasia's Million Dollar Baby Siblings : Scentasia's Just a Gigolo, Rhinestone Cowboy, Shenanigans, Daughter of Joy, Good time Girl, Hot to Trot, Otter be Ashamed, Shady Lady		11 years	owner reported seizures	breeder
Scentasia's Ironman Sire : Aberdeen's Caveman Dam Scentasia's Kiss me Kate Siblings : Scentasia's Batman, Captain America, Howlaway Prince Valiant, Warrior Princess, 'N Aberdeen's X-Man AMZ	2 years	10 years	treated with Chinese herbs – Tony had seizures starting just after his 2nd birthday. They increased through the years – up to every 4-6 weeks - at which point I put him on Chinese herbs. These maintained him for many years at 1 seizure every 8-9 months. After many years on Chinese herbs, I took him off and he continued to have 1 seizure every 8-9 months. He did have a subarachnoid cyst that was found at the end, I think it swelled around his 10th birthday – I can remember exactly when his behaviour changed (he acted like he was light sensitive and had a migraine) I	owner

				don’t think the cyst had anything to do with his seizures, but since I never did an MRI before the end, I don’t know that for sure.	
Scentasia's Jasper Sez Sire : Cheery OH’s Return to Scentasia Dam : Scentasia’s Lady Liberty Siblings : Scentasia’s Bingo Grumbler, Scattergories, Skiing in Switzerland, Texas Hold ‘Em, The Price is Right, Jumping Rope with LuLu, Surf’n Sea Ayre, Truth or Consequences, Wheel of Fortune				seizures	breeder
Scentasia's Johnny Be Good Sire : Scentasia’s Just a Gigolo Dam : Scentasia’s Warrior Princess Siblings : same as Scentasia’s Bad to the Bone	5 years			grand mal	breeder
Scentasia's Jumping Rope With LuLu Sire : Cheery OH’s Return to Scentasia Dam : Scentasia’s Lady Liberty Siblings : same as Scentasia’s Jasper Sez		4 years	cancer	petit mal	breeder
Scentasia's Leader Of The Pack Sire : Scentasia’s Just a Gigolo Dam : Scentasia’s Warrior Princess Siblings : Same as Scentasia’s Bad to the Bone	4 years			grand mal	breeder
Scentasia's Moxie Sire : Rinjan’s Knight de mon Plaisir Dam : Billikin’s Amanda Grizzlet Siblings : Scentasia’s Fanta Frederick, Gotta Have My Tab, RC Cola And A Moon Pie, Squirt, Stonebridge Mtn Dew, Orange Crush, The Real Thing, Yoo Hoo		10 years		owner reported seizures	breeder
Scentasia's Oberon Sire : Bearsden’s McDougal Argyll Dam : Scentasia’s Hot to Trot Siblings : Haleys Comet,				owner reported seizures	breeder

Shooting Star, Sirius Mischief, Sirius Star, Aurora Borealis, Planet Claire, Solar Winds					
Scentasia's Scattergories Sire : Cheery OH's Return to Scentasia Dam : Scentasia's Lady Liberty Siblings : Same as Scentasia's Jasper Sez	2 years	5 years	cancer	grand mal clusters, medicated – Rupert started having grand mal cluster seizures at age 2. They were well controlled with potassium bromide. Soon (one month) after he turned 5 yr, he succumbed to cancer. I might add, it took both of them a long time to recover from their seizures. Both dogs returned to their same old selves afterward.	owner
Scentasia's Shooting Star Sire : Bearsden's McDougal Argyll Dam : Scentasia's Hot to Trot Siblings : Same as Scentasia's Oberon		7 years	seizure		breeder
Scentasia's Stonebridge Mtn Dew Sire : Rinjan's Knight de mon Plaisir Dam : Billikin's Amanda Grizzlet Siblings : Same as Scentasia's Moxie				owner reported seizures	breeder
Scentasia's Two Good Tobe True Sire : Scentasia's Yorktown Patriot Dam : Scentasia's Hostile Takeover Siblings : Scentasia's Double Q Quest, Double Trouble	3+ years			grand mal, 6-7 month intervals, medicated – Tucker started sometime after Liv and his are every 6-7 months give or take a month or two, info is on the same calendar. His are grand mal and last about a minute, when he comes out we usually have time to get him out to pee and pooh (neither has let go during a seizure) and get him back in, then the little ones start coming where he glares over and stares wobbling, his toes and body parts twitch and these will just go on and on and on and on unless we give him valium rectally which brings him out and he goes to sleep, he isn't the same boy I brought home from SC but he still has lots of awesome to go. He is on Phenobarbital 64.8mg 1-1/2 tablets twice a day. It took him awhile to get the dose balanced but he does good now. I make sure he has time to stable out from when he gets his meds to when we practice agility or have a trial. He is also on the soloxine. Both he and Liv get alot of exercise,	owner

		Tucker has agility training every week and is entered in several trials this summer, when home they do outside duty during the day until -20 degrees when they then come indoors, they are outside on and off for an hour or so several times a day down to -40 and whenever needed if its colder than that	
Scentasia's Yankee Doodle Dandy Sire : Scentasia's Poplar Hill To Be or Not To Be Dam : Scentasia's Million Dollar Baby Siblings : Scentasia's Boston Minuteman, Howlaway Semper Fi, Pawl Revere, Yankee Doodle Dandy, Yorktown Patriot, Glimpse of Glory, Lady Liberty	20 mos.	grand mal, widely spaced, medicated – Keone's seizures began almost exactly 7 years ago(on the night we returned from Louisville in 2002) when he was just about 4 months shy of his 2nd birthday. All have been Grand Mal seizures which have occurred at widely varying intervals and according to no discernible pattern. It was more than 18 months between his first and his second seizures and he has had 2 episodes of clusters. He was treated holistically for a long time and now is on a daily dose of potassium bromide, not that I can see it's made any big difference. Last July he had what was evidently a very bad seizure when I was not at home (first time I wasn't there). Consequent to that, he developed Bells Palsy on the right side of his face ---could not blink his right eye, lip drooped and food fell out, etc. He also showed significant ataxia (balance problems). He has improved somewhat: has weak blink reflex, food doesn't fall out so much and he is walking somewhat better. Frankly, if there had not been signs of improvement early on, he would have been put down as his quality of life was so compromised. An MRI showed fluid on his brain but, of course, since an MRI had not been done previously, there is no way to know if this was a new condition. While he has improved some, he is showing weakness and loss of muscle on his right side and sadly, he has lost a great deal of the love and life and enjoyment that made him Keone. Sometimes he shows flashes of the old Keone but only briefly. His walks, which were our very favourite thing to do together (and, in his eyes, a close second to his very favourite thing – food) are now something he tolerates rather than enjoys.	owner
Scentasia's Yoo Hoo Sire : Rinjan's Knight de mon		owner reported seizures	breeder

Plaisir Dam : Billikin's Amanda Grizzlet Siblings : Same as Scentasia's Moxie			
Scentasia's Yorktown Patriot Sire : Scentasia's Poplar Hill To be or Not To Be Dam : Scentasia's Million Dollar Baby Siblings : Same as Scentasia's Yankee Doodle Dandy	8 years		breeder
Wild West Batman Ott'r Find it Sire : Kalevala Jack the Lad Dam : Wild West Sugar Britches Siblings : Wild West Annie Get your Otter, Yo Yo Otter Rodeo		I have asked Ron to remove my dog Batman, CT Wild West Batman Ott'R Find It, from the frozen semen list. He will not be bred due to his recent diagnosis of epilepsy. Prior to passing his VST test, Batman had 2 Grand Mal seizures. Since there were only 2, the vets were unsure of his condition but did suspect.. At the end of December the time frame between his Grand Mal seizures increased, and he was placed on phenobarbital. This is disappointing to me but l have to roll with the changes. My fun loving dog is responding well to his meds.	Breeder/ Owner

NB : To Save space no titles have been included and Kennels Names have not been repeated where it did not seem necessary.