BRITISH COLUMBIA

Animal Health Centre

Ministry of Agriculture, Food and Fisheries

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From the Director

R.J. Lewis:

There has been a great deal of public and media interest in West Nile Virus (WNV) infection this year in both Canada and the United States. This virus was first recognized in North America (New York City) in summer of 1999 and has steadily progressed both south and west. The virus is spread from mosquitoes to birds which then act as reservoirs of infection for other mosquitoes. Over 10,000 WNV-infected, dead birds have been reported in the USA this year (6,000+ were crows). In crows and jays, the virus is particularly deadly although several other bird species have also shown evidence of infection and, sometimes, death. People and horses are dead-end hosts in that they may become infected but do not serve to pass the infection on to mosquitoes, other animals, or people. Most infected people and horses remain healthy but some become ill and a small percentage may die. Among mammals, horses seem particularly susceptible.

In 2002, WNV infection has been reported in 43 states and 5 provinces (Nova Scotia, Quebec, Ontario, Manitoba, and Saskatchewan). There have been 2736 cases in people in the USA and 146 have died; most deaths are in the elderly and those with other underlying disease problems. Over 9,000 horses have been infected in the USA and several of these have died (reported mortality rate approaches 30%). A vaccine is available and is now being widely used. To date, the closest to BC that WNV infection has been reported is northeastern Washington state. We are working closely with the BC Centre for Disease Control, wildlife rehabbers, and others to monitor for this infection in BC. To date, sixty birds from BC have been tested and all have been negative; the surveillance program will continue until the end of October. It seems inevitable that British Columbia will experience the first reported case of WNV infection in 2003. We recommend that horse owners speak to their veterinarian and consider a vaccination program for their animals.

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Several AHB staff participated in the annual *International Conference on Diseases in Nature Communicable to Man*, held at the University of British Columbia in August. Presentations on bacterial, viral, and rickettsial diseases affecting both man and animals were shared during the two days of discussion. This meeting demonstrated yet again the value of sharing information on diseases of man and animals. Early detection of animal disease (and resulting action) reduces risks to other animals but, in many instances, may also assist in the early detection of disease risks to people. There is good evidence to indicate that several diseases in people, in antiquity, originated from newly-domesticated animals. Measles in people likely originated with distemper in dogs or rinderpest in cattle and influenza virus infection probably also originated with animals. Other examples include smallpox and, possibly, AIDS from primates. It will serve us well to remember these relationships; closer communication with our counterparts in human health has been, and continues to be, of benefit to animals and people.

We hope that you continue to find this information bulletin of value and, as always, welcome your questions or comments at any time.

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Polymerase Chain Reaction (PCR) tests at the AHC:

J. Robinson

PCR testing is available for the following pathogens:

October 16, 2002

Actinobacillus pleuropneumoniae
Aeromonas salmonicida
Aleutian Disease virus
Avian Adenovirus
Avian Encephalomyelitis virus
Avian Infectious Bronchitis virus
Avian Infectious Laryngotracheitis virus
Avian Influenza virus
Avian Polyoma virus
Avian Reovirus
Bacterial 16S sequence identification
Bovine Adenovirus Type 3
Bovine Adenovirus Type 1, 2, 4-8
Bovine Coronavirus
Bovine Respiratory Syncytial virus
Bovine Viral Diarrhea virus
Brucella
Canine Corona virus
Canine Distemper virus
Canine Herpes virus
Canine Parvo virus
Infectious Salmon Anemia virus
Koi Herpesvirus
Kudoa thyrsites
Lawsonia intracellularis
Leptospira (multivalent)
Loma salmonae
Malignant Catarrhal Fever virus-Sheep
Malignant Catarrhal Fever virus -Wildebeest
Mink Enteritis virus (Parvo)
Mycobacterium avium
Mycobacterium paratuberculosis
Mycobacterium - Universal
Mycobacterium Universal identification (Sequencing)
Mycoplasma bovis
Mycoplasma gallisepticum
Mycoplasma hyopneumonia
Mycoplasma iowae
Mycoplasma meleagridis
Mycoplasma synoviae
Mycoplasma (Mollicutes) Universal
Myxobolus cerebralis

Caprine Arthritis Encephalitis virus
Chicken Anemia virus
Chlamydia psittaci-Avian
Chlamydia psittaci-Ruminant
Clostridium perfringens
Coxiella burnetii
Dichelobacter nodosus
Dolphin Distemper virus (Morbillavirus)

Duck Viral Enteritis
Ehrlichia risticii
Enterocytozoon salmonis
Equine Herpes Type 1 & 4 virus
Equine Influenza virus
Equine Viral Arteritis
Escherichia coli toxin
Feline Herpes virus
Feline Panleukopenia virus
Flexibacter maritimus
Helicobacter bilus
Helicobacter hepaticus
Infectious Bovine Rhinotracheitis virus
Infectious Bursal Disease virus
Infectious Canine Hepatitis virus
Infectious Hematopoeitic Necrosis virus
Infectious Pancreatic Necrosis virus
Neospora caninum
Newcastle Disease virus
Nodavirus-Striped Jack
Ornithobacterium rhinotracheale
Piscirickettsia salmonis
Porcine Circo virus II
Porcine Parvo virus
Porcine Reproductive & Respiratory Syndrome virus
Psittacine Beak & Feather Disease virus
Renibacterium salmoninarum
Salmon Herpes virus
Seal Herpes virus
Serpulina hyodysenteriae
Serpulina pilosicoli
Swine Influenza virus
Torovirus- Porcine
Toxoplasma gondii
Transmissible Gastroenteritis virus
Tritrichomonas foetus
Ureaplasma diversum
Viral Haemorragic Septicemia virus
Western Equine Encephalomyelitis virus
West Nile virus
Yersinia ruckeri

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" It has been demonstrated that a species of Penicillium (a mould) produces in culture a very powerful antibacterial substance. It is a more powerful inhibitory agent than carbolic acid and can be applied to an infected surface undiluted as it is non-irritating and non-toxic."

— Alexander Fleming, British bacteriologist (1881-1955), on the discovery of the properties of penicillin, 1928, from his notebooks…. quoted in John Carey, ed., *Eyewitness to Science*, 1995.

Clostridial enterotoxemia in goats:

A. Britton

This fall we have had several cases of clostridial enterotoxemia in goats. The animals were presented to the Animal Health Centre with a history of either sudden death or diarrhea. The goats were all dehydrated, with internal signs of diarrhea and pulmonary edema. One goat also had fluid in the chest and pericardial sac. Diagnosis was made on the basis of typical history, typical microscopic changes (necrotizing enterocolitis with proliferation of large bacterial rods on the mucosal surface, significant pulmonary edema) and the culture of large numbers of ***Clostridium perfringens*** organisms from gut content in the absence of any other enteric pathogen.

Clostridial enterotoxemia is one of several clostridial diseases against which animals can be vaccinated. Unlike sheep, where the disease usually presents as sudden death in lambs, several clinical syndromes can be observed in goats. Sudden death is most commonly seen in young kids affected by enterotoxemia. Older goats can also suffer from clinical diarrhea and abdominal pain over a period of 2 to 4 days up to several weeks. In some cases, chronic wasting can result.

Vaccination of goats is highly recommended as an aid in prevention of clostridial disease. Vaccinated goats have a lower incidence of disease and the severity of clinical signs in affected animals is significantly reduced. Since vaccination is not completely protective, good management practices must also be observed in order to limit losses.

Clostridium perfringens is a normal inhabitant of the intestinal tract of animals and thus disease does not result simply from exposure to the bacteria. Under normal circumstances, *C perfringens* is present in low numbers in the intestinal tract and the toxic byproducts of bacterial metabolism are easily handled by the animal's immune system as well as the flushing action of intestinal motility. Enterotoxemia develops when there is excessive multiplication of *C perfringens* bacteria in the intestinal tract. As these bacteria multiply, they produce an ever-increasing amount of toxin. It is this toxin which damages the cells lining the intestinal tract and the cells lining blood vessels. Damage to these cells produces the changes typically observed with the disease. Overfeeding of grain, sudden changes in diet (especially those which increase the amount of grain fed) and intestinal stasis favour the multiplication of Clostridium. Thus, managers should aim to maximize roughage in the diet and introduce dietary changes gradually.

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A disease by any other name:

V. Bowes

So, just what is a REPORTABLE DISEASE? Diseases in livestock are officially monitored at four different levels: the veterinary practitioner in the field, both provincial and federal agencies, and finally at a global level involving international agencies. The *Office International des Epizooties* (OIE), of which there are 143 member countries, is the global animal health organization. The OIE provides two lists of specific diseases that are to be reported on an occurrence basis (List A) or on an annual basis (List B). The ability of a country to export livestock products into the global market will depend on its disease status specific to these listed diseases.

At the federal level in Canada, the *Health of Animals Act* provides for the monitoring and eradication of foreign animal disease. A List A "foreign animal disease" is one that is exotic to Canada, spreads rapidly through a susceptible population causing

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economic hardship, and would immediately threaten global trade. Examples of such diseases are Foot and Mouth Disease, BSE *("mad cow disease"), and African swine fever. The only two List A poultry diseases are highly pathogenic Avian Influenza and Velogenic Newcastle Disease. The general response to a confirmed List A disease would be to quarantine, test, and slaughter, with compensation paid. List B diseases generally have less of an impact on animal health but have a significant impact on the export trade. The only 2 List B diseases in poultry are *Salmonella pullorum* and *Salmonella gallinarum*.

Another category of disease termed "notifiable" is presently under development; these are diseases that are not traditionally reported at the federal or provincial level but the *"freedom from"* status has been requested by various importing countries. In poultry, these currently include Avian Encephalomyelitis, Fowl Cholera, Ornithosis (chlamydia) and Infectious Laryngotracheitis (ILT).

Most of the western provinces have an appointed "Chief Veterinarian" who has the authority to limit the spread of contagious disease in animals through the *Animal Disease Control Act* or other similar legislation. In general, provincially reportable diseases usually impact productivity and it is in the best interest of the industry to have them under control. This can be accomplished through any means deemed necessary such as issuing disease alerts to industry, quarantine, testing or slaughter. In most instances there is no compensation available for impacted producers unless the industry itself has funds available for this purpose. Each province may have its own list of specific diseases or have a general discretionary statement to encompass any disease threat that may arise. Alberta and Saskatchewan have the discretionary clause for " diseases of economic importance" , while British Columbia specifically names ILT and MG in turkeys, and Manitoba names ILT.

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Short Cuts from the Post Mortem Room:

J.W. Coates

Lead poisoning, diagnosed by the veterinary practitioner**,** was confirmed in a mature female Sacred Ibis (an exotic species of bird) following the retrieval from the bird's gizzard, of a small metallic piece of lead-containing substance resembling a corroded fragment of trinket jewellery. The metallic object was round, 5 mm in diameter and one mm thick. The practitioner had previously diagnosed lead toxicity subsequent to clinical pathology analyses and radiographs of the bird. The bird showed clinical signs of inappetence, weakness, anemia, and inco-ordination. Liver lead levels were measured quantitatively at 12 ppm wet weight; kidney levels were recorded at 10 ppm.

Acute (atypical) interstitial pneumonia or **Fog Fever** (acute bovine pulmonary emphysema and edema) was diagnosed during late summer in submitted portions of lung from a 5 year-old mature Hereford cow found dead at pasture. Lung changes included extensive hyaline membrane formation, type 2 pneumocyte proliferation, and a bronchiolitis. No syncytial cells were observed within pulmonary alveoli; all viral studies were negative. This syndrome is often ascribed to exposure of cattle to increased amounts of ingested tryptophan following a change to improved pasture, with a subsequent marked increase in the rumen by-product 3-methylindole. In some instances however, the detected levels of 3-methylindole in these animals do not appear elevated. The 3-methylindole exerts a directly harmful effect upon the cell membranes of pulmonary alveoli and bronchioli (Radostitis et al: *Veterinary Medicine*, 9th ed., 2000).

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Suspected **kidney toxicosis** was diagnosed in a 12 day-old calf that had received excessively high and repeated injections of several antibiotics while suffering from severe dehydration following an episode of infectious diarrhea. Renal tubular necrosis was extensive.

Severe intestinal coccidiosis was observed in tissues from a two month-old goat kid. Eight of 24 young kids died prior to submission of a specimen for necropsy. Gross necropsy of the goat kid revealed a brown, watery diarrhea, emaciation, and severe anemia characterized by marked blanching of oral mucous membranes and conjunctiva of the eyes. Microscopically, there were extensive infiltrations of coccidial parasites within intestinal villus enterocytes, combined with a chronic proliferative inflammatory reaction. Blood loss with secondary anemia and malabsorption had resulted. Intestinal worm levels were not as significant a factor as the high levels of coccidial parasites, although often both agents may be present in significant numbers. Numbers of coccidial oocysts on fecal flotation were very high.

Small ruminants such as sheep and goats of any age require ongoing monitoring for intestinal parasites including nematodes (worms) and coccidia, as well as a regular schedule of preventive treatment combined with pasture rotation. External parasitism including lice (pediculosis), may also be of concern. Coccidiosis is one of the most important diseases of goats kept in larger numbers under intensive management conditions. Over 13 different species of coccidia have been identified in goats, world-wide. Keep in mind that deworming preparations do not affect coccidiosis – best to discuss any control programme with your veterinarian.

A **severe skeletal myopathy** of suspected (maternal) nutritional origin was diagnosed in a one day-old **Thoroughbred foal**, characterized by extensive microscopic degeneration of skeletal muscle; heart muscle did not appear directly involved. The animal was born relatively bright, but was too weak to stand. Liver selenium levels were measured at 0.19 ppm (wet weight); serum vitamin E levels were barely measurable at less than 10 mcg/dL, although some deterioration of the submitted blood serum sample had likely occurred. An immediate review of the nutritional status of the pregnant mares including any vitamin E – selenium supplementation, was recommended.

Bovine Blackleg, or systemic infection with *Clostridium chauvoei* was diagnosed in a one year-old steer with acute, severe, necrotizing heart muscle inflammation and vasculitis. Numerous bacterial bacilli with subterminal spores were observed microscopically. Heart muscle was strongly positive for the blackleg organism (*Cl chauvoei*) via the fluorescent antibody (FA) procedure. Bacterial cultures were negative for *Haemophilus somnus*. The owner had recently purchased 50 beef steers and heifers; four had died suddenly at pasture, with no clinical signs observed by the owner. At the time of the deaths, the owner had not yet vaccinated the animals for the bacterial agents responsible for blackeg and malignant edema. - *with thanks to Dr Donald McIntosh – Ed.*

Squamous cell carcinoma was diagnosed in a specimen taken from the eyelid of a slaughtered mature Hereford cross cow. The tumor had metastasized to adjacent cranial lymph nodes, where nests of neoplastic cells were readily observed microscopically.

Recent cases of **infectious abortion** diagnosed included **equine herpesvirus abortion** (EHV-1), as well as bovine bacterial abortions caused by the organisms ***Listeria monocytogenes*** and ***Arcanobacterium pyogenes*** (*Coryne pyogenes*). ***Neospora caninum (protozoal abortion)*** is still regularly diagnosed in dairy submissions of aborted fetuses, although the frequency of this diagnosis has dropped from previous years.

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Acute, embolic, necrotizing and hemorrhagic inflammation of the spleen (splenitis) was diagnosed microscopically in splenic tissue submitted form a slaughtered feeder hog. Light growth of ***Streptococcus suis type 2*** was identified on bacterial culture. Cultures were negative for erysipelas.

Severe **fibrinous bronchopneumonia** was diagnosed clinically and pathologically in submitted tissues from two calves recently weaned during foul weather. ***Mannheimia hemolytica*** (*Pasteurella hemolytica*) was cultured from lung tissues in heavy growth. Viral studies were negative.

Severe hydrocephalus was diagnosed in a 6 week-old purebred Norwich terrier that had demonstrated lethargy followed by severe clinical signs referable to the Central Nervous System. Cortical brain was largely absent, with only a thin enveloping membrane present that surrounded an excess of cerebrospinal fluid. The animal had a prominently domed skull with failure of closure of the frontal bones. Bacterial culture of the brain fluid was essentially negative, as were viral tests. The lesion in all likelihood represents a congenital malformation, existing prior to birth. In domestic animals, hydrocephalus is most commonly seen in pups, calves, and foals.

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"Pure logical thinking cannot yield us any knowledge of the empirical world; all knowledge of reality starts from experience and ends in it … Because Galileo saw this… he is the father of modern physics - indeed of modern science altogether.

—Albert Einstein.

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An epizootic of yersiniosis cause by *Yersinia pseudotuberculosis* in addax antelopes *(Addax nasomaculatus)*:

S. Raverty

In early fall, within 48 hours of delivering a healthy male neonate, an adult female addax died acutely with no premonitory signs. Over the course of the following week, five of six adult addax antelopes and one adult female white fallow deer also succumbed. There had been no recent introductions into the herd. All affected animals were in fair to moderate body condition, and no clinical signs had been observed. In the initial case, a sudden drop in environmental temperature had been noted two days prior to parturition. The animals were fed alfalfa hay and a small amount of concentrate.

Necropsy findings on affected animals during the initial stages of the outbreak included segmental inflammation of the mid-jejunal portions of the small intestine (10-20 cm), with the lumen containing small amounts of acute hemorrhage and fibrin. Later necropsy cases demonstrated more widespread involvement of the small intestine and to a much lesser extent the large intestine, which were dilated by abundant amounts of fibrin and hemorrhage. There was marked inflammation of the mesenteric lymph nodes (lymphadenitis) and at times disseminated necrosis of the liver and spleen. Cause of death of these animals was attributed to the cumulative effects of enterocolitis, mesenteric lymphadenitis, and generalized sepsis.

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Aerobic culture of multiple viscera yielded a heavy, pure growth of *Yersinia pseudotuberculosis*. Yersiniosis is a recognized disease of a number of wild and domestic animal species, including sheep, cattle, goats, pigs, buffalo, deer and birds, and may be caused by either *Y pseudotuberculosis* or *Y enterocolitis*. Microscopically, the hallmark of yersiniosis is microabscessation of tissues punctuated by microcolonies of coccobacilli.

An understanding of all possible factors favoring proliferation of this infectious disease has not been fully resolved. Environmental contamination may occur through fecal shedding of reservoirs hosts (such as rats or birds), or by asymptomatic carriers. Clinical disease is generally secondary to environmental stressors such as inclement weather, transport, poor nutritional status, or onset of the breeding season. In this outbreak, recent parturition and a sudden reduction in ambient temperature were probable contributing factors. Prime differentials include other bacterial diseases such as salmonellosis, campylobacteriosis or possibly shigellosis; parasitic conditions such as coccidiosis and gastrointestinal helminthiasis also merit consideration.

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Net-pen liver disease in farmed Atlantic Salmon (*Salmo salar*):

S. Raverty

Atlantic salmon smolts weighing between 80 -100 gm were introduced into salt water net-pen facilities in late winter and early spring. Over the course of 2 - 4 weeks, there was a gradual minor increase in morbidity and mortality, with no other significant clinical findings. In late winter, lights had been attached to the net-pens to enhance smoltification (physiologic adaptation to salt water) and to accelerate growth. Although the fish were off feed (not consuming pelleted ration) throughout the enclosure, they were actively consuming massive numbers of invertebrate larvae and algae.

On necropsy, the extent of gross lesions progressed over the course of the disease. Initial observations included multiple hemorrhages throughout the serosal surfaces of the small intestine, swim bladder, and abdominal peritoneum. In a small number of fish, the vents were swollen and reddened. Along the ventrum, scales were raised and scale beds occasionally featured acute hemorrhage. In the latter stages of the disease (3-4 weeks after initial presentation), the most salient lesion was a firm, tan green, rounded liver with variable amounts of tan-yellow fluid within the body cavity (ascites).

Microscopically, the most significant lesions include enlarged hepatocytes with vesiculated nuclei, occasional pseudo-inclusions (invaginations of the nuclear membrane), ceroid deposition, biliary ductular hyperplasia, as well as hepatocellular degeneration and necrosis. These lesions are morphologically compatible with net-pen liver disease due to microcystin toxicity. Liquid chromatography-linked protein phosphatase analysis (LCPP) of liver tissue may be utilized diagnostically, but presumptive diagnosis is generally based on histopathology. Because of the hemorrhages observed in the fish on gross examination, the stock had been evaluated for a possible viral infection; these studies proved negative.

References:

1. Kent ML, Meyer MS, Hinton DE, Eaton WD, and Elston RA. Suspected toxicopathic hepatic necrosis and megalocytosis in pen reared Atlantic salmon *(Salmo salar)*. *Diseases of Aquatic Organisms* 1988;4:91-100.

2. Kent, M L. Netpen liver disease (NLD) of salmonid fishes reared in sea water: species susceptibility, recovery, and probable cause. *Diseases of Aquatic Organisms* 1990;8:21-28.

DNA sequencing in the Bacteriology Laboratory:

S. Byrne

In the bacteriology laboratory, samples are received from a wide range of sources, leading to the isolation of many unusual bacteria. Most can be identified using standard biochemical tests (called phenotypic identification). However, we periodically isolate organisms which are slow growing, biochemically non-reactive, or otherwise difficult to identify. These organisms could be pathogens, and their identification by standard methods requires significant manpower and resources.

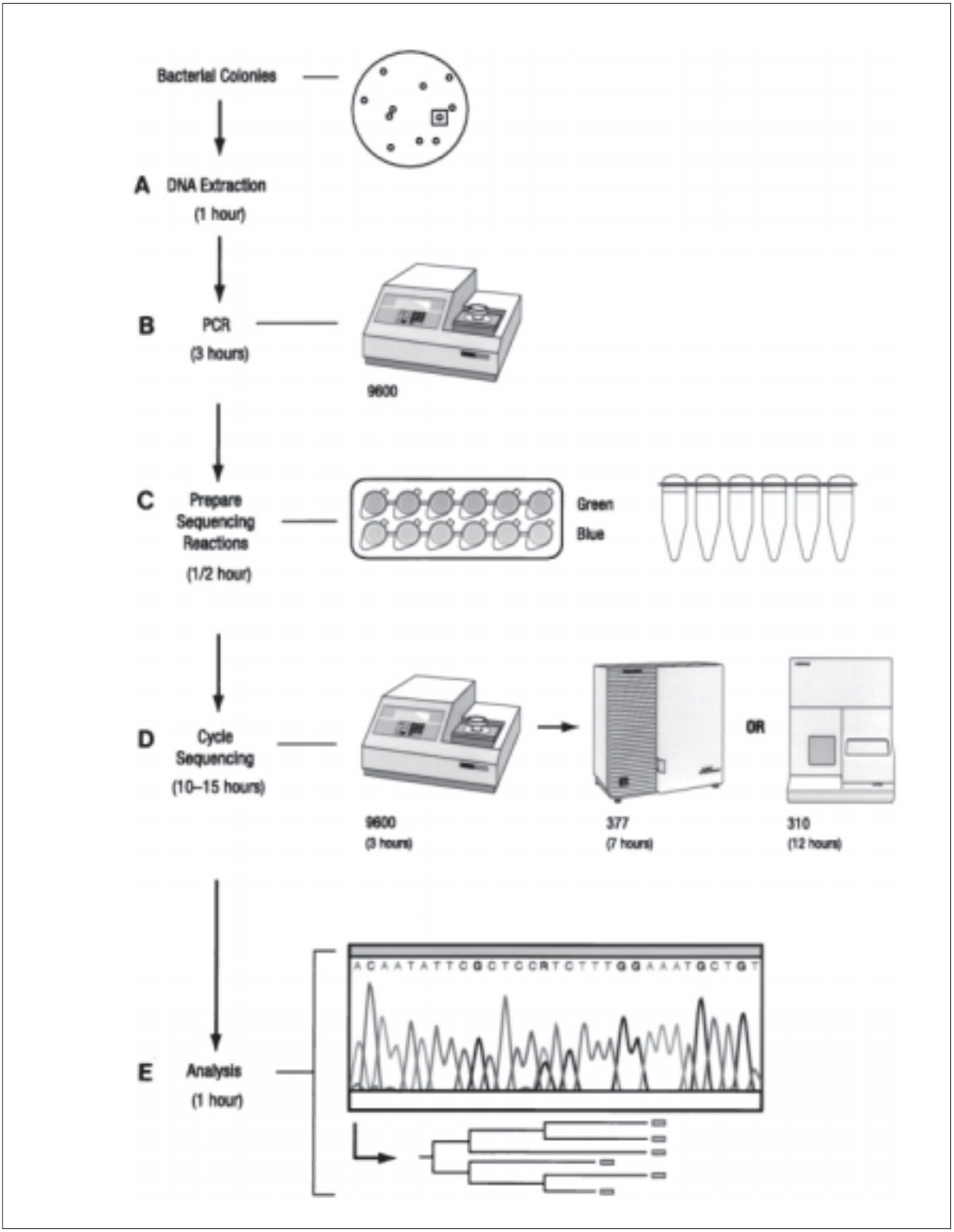
Alternatively, we can identify these bacteria using DNA sequencing, an approach called genotypic identification. This approach provides rapid, unambiguous identification of bacterial isolates. Typically, a well-conserved region on the bacterial genome which differs between species is analysed. One such region is the small-subunit (16S) rRNA gene which is found in all bacteria.

To perform 16S sequencing, DNA is first extracted from a pure culture of the organism (fig.1). The 16S ribosomal RNA gene is amplified by PCR to produce millions of copies of the DNA fragment. This PCR product is then used as a template for sequencing using our ABI 310 DNA sequencer.

The sequence data is compared to over 80,000 16S DNA sequences in *Genbank*, a huge DNA sequence repository. Those species showing the best match with our sequence are chosen for consideration. From this preliminary list, we select a species having a high similarity score of gene sequences, multiple hits to the same species, matching with a type species and ATCC strains, and having biochemical or serological characteristics matching the unidentified organism.

Since January of 2002, we have identified over 500 bacterial isolates using DNA sequencing. The method has proved particularly useful for the identification of bacteria from fish and for other unusual organisms not normally found in clinical or veterinary laboratories.

Figure 1. Bacterial Genotypic Identification Flow chart (Tang et al 1998)



Japanese pieris (*Pieris japonica*) toxicity in a goat herd:

J. Coates

A pregnant five year-old dairy goat died after a bout of acute distress characterized by staggering and weakness, repetitive vomiting, bloat and colic, that continued for 20 hours. Three or four other mature pregnant females in the same paddock were similarly affected but less severely, and recovered with the aid of veterinary care. A neighbour had disposed of a quantity of freshly trimmed plant cuttings by dumping them over the fence into the goat paddock the previous day.

Gross necropsy findings: the heavily pregnant doe (triplets) was in good body condition. Both heart chambers were dilated. The rumen was moderately distended with a homogeneous, porridge-like mass of macerated, dark green plant material. No grain was present within the rumen. Despite extensive maceration and dissolution of rumen contents, relatively intact fragments of plant leaves were readily collected, all identical in appearance. The elliptical leaves salvaged from the rumen had distinct, finely toothed or serrated edges, and were positively identified by a plant specialist at the Abbotsford Agricultural Centre as Japanese pieris (*Pieris japonica*). These specimens were identical to fresh plant cuttings retrieved from the goat paddock.

Microscopic findings were minimal. Additional laboratory findings: trace mineral analysis revealed low liver copper levels of 9.5 ppm (wet weight); kidney levels were 3.4 ppm; selenium levels were considered adequate at 0.3 ppm (0.25-1.20 ppm). Bacterial culture of brain tissue for *Listeria sp* was negative on enrichment culture; brain was negative for organophosphate poisoning.

Native to Japan , Japanese pieris is a member of the heath family (*Ericaceae)*, many of which are toxic, including azaleas, various species of rhodendrons, and laurel. All contain grayanotoxin (formerly known as andromeda toxin) that causes abdominal pain and vomiting when ingested. Grayanotoxins have digitalis-like cardiotoxic effects (although unrelated to digitalis), and also increase the permeability of nervous tissue to sodium ions, a mechanism similar to pyrethroid insecticides. The specific grayanotoxin found in a plant varies with the species. In food animals, there are no antidotal agents reported effective against grayanotoxins. The evergreen nature of the foliage predisposes to its consumption in winter – as in this case - when other browse may be less available. The toxins are found in the stems, leaves, and flowers. Honey made from these plants has been reported to cause cardiac arrythmias, vomiting, mild paralysis and convulsions in humans, and is known as “mad honey” disease. Despite the dilated heart in this goat, no significant myocardial lesions or changes were observed microscopically.

Principal Reference: Plumlee KH, Van Alstine WG, Sullivan JM. *Japanese pieris toxicosis of goats*. J Vet Diagn Invest 1992; 4: 363-364.

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New Staff Appointments at the AHC:

Ms. Fiona Downer

Ms. Jaime Gerun

Ms. Erin Whitton

(i) Necropsy Section:

Ms Fiona Downer was recently appointed to the Necropsy Room area, where she now works with Ms. Kim Carlsen. A native British Columbian, Ms Downer entered a science programme at Langara College, later studying vertebrate and invertebrate zoology at Capillano College. President of her class, Fiona graduated from Kamloops University College of the Cariboo in 1992, and is a registered Animal Health Technician. Since graduation, Ms Downer has gained valuable work experience with a variety of animal species in several Lower Mainland veterinary practices. We welcome Fiona to the Animal Health Centre.

(ii) Bacteriology Section:

Ms Jaime Gerun was recently appointed senior microbiologist in the Bacteriology Section (supervised by Dr Sean Byrne, Head of the Section). A native of Edmonton, Jaime graduated with a BSc degree from the University of Alberta, specializing in Microbiology related to Food Safety. Following graduation she began work for Alberta Agriculture, Food and Rural Development, where her main focus was disease surveillance in poultry and swine populations. Later, Jaime moved to Saskatoon where she worked for 18 months at the Western College of Veterinary Medicine, expanding her interest and knowledge in veterinary microbiology. With her varied background in both animal and food safety microbiology, Ms Gerun is a real asset to the Animal Health Centre and the clients we serve. Welcome Jaime.

Ms Erin Whitton was recently appointed as a microbiologist in the Bacteriology Section. Graduating from Abbotsford Senior Secondary, she entered a Bachelor of Science program at the University College of the Fraser Valley. Following two years of study Ms Whitton moved to New Zealand and began work in a private medical laboratory. During this time she developed a greater interest in microbiology, enrolled in training at the University of Waikato, Hamilton, New Zealand, and completed her BSc degree. Registration in the N.Z. Society of Medical Laboratory Scientists soon followed. While in NZ, Erin participated in numerous medical conferences and training sessions. Upon returning to Canada in 2002, Erin was employed as a technologist with the UBC Virology Department at St. Paul's Hospital, Vancouver. We welcome Ms Whitton to the AHC.

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Benefits of flaxseed (*Linum usitatissimum*) supplementation in horses with Culicoides hypersensitivity:

"…Six horses that displayed a positive skin test for allergy to extract from *Culicoides sp* participated in the 42-day, placebo controlled, double-blind, cross-over trail. Results showed that supplementation with flaxseed for 42 days in our experimental horses reduced the mean skin response to *Culicoides sp*. This observation was concurrent with a significant decrease in the long-chain fatty acids behenic acid (22:0) and lignoceric acid (24:0), in the hair of horses receiving flaxseed… It was concluded that in this small pilot study, flaxseed was able to reduce the lesional area of the skin

response of atopic horses, alter the fatty acid profile of the hair, reduce inflammation, and did not elicit any negative side effects in the experimental horses."

— O'Neill W, McKee S, Clarke AF. Flaxseed (*Linum usitatissum*) supplementation associated with reduced skin test lesional area in horses with *Culicoides* hypersensitivity. Can Jour Vet Res 2002;66:272-277.

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French X-ray finds a loose screw:

It was reported from Cannes that doctors could scarcely believe their eyes when a routine x-ray of a man complaining of headaches showed a seven-inch screwdriver embedded in his skull.

On further examination they found the tool was not in the man's head – but in the x-ray machine where it had been left by a careless technician.

— from *More of Mould's Medical Anecdotes*, by RF Mould; published by Adam Hilger of Bristol and New York, 1989.

The last word:

Another *Diagnostic Diary* has been sent off to you, the reader. Hopefully a few of the above topics have interested you, and provided information as to what is happening in your provincial diagnostic veterinary laboratory and around the province, animal health-wise. Are we hitting the mark? Do you find the written material easy to read and generally interesting? Are there particular topics that you might like to have discussed, from a BC point of view? Please let the Editor know your thoughts – phone, write, or fax me. By the way, the next edition of *Diagnostic Diary* will introduce you to a new, regular column scribed by Dr Ann Britton. I know the subject matter will interest many of you. Stay tuned! *Ed*.

Quotes of Interest:

"The important thing is not to stop questioning. Curiosity has its own reason for existing. One cannot help but be in awe when he contemplates the mysteries of eternity, of life, of the marvellous structure of reality."

— Albert Einstein, from *The Great Quotations,* compiled by George Seldes, pub.1967.

"There is also no way of guessing which breed of animals will take the throne of the "Dictator of the Earth", and we may well look with suspicion and rivalry at any small creature that may now be crawling at our feet!"

— George Gamow, physicist, *A Planet Called Earth*.