

# Diagnostic Insights

[www.ksvdl.org](http://www.ksvdl.org)



## KANSAS STATE VETERINARY DIAGNOSTIC LABORATORY

Accredited by the American Association of Veterinary Laboratory Diagnosticians

November 2011

### Personnel Profile—Dr. Jami Henningson



Dr. Jamie Henningson has recently joined the KSVDL as a diagnostic pathologist. She graduated from the Kansas State University College of Veterinary Medicine in 2004 and is originally from Topeka, KS. After graduating with her DVM, she completed an anatomic pathology residency at the Nebraska Veterinary Diagnostic Laboratory in Lincoln, NE. Concurrent with her residency, she obtained a PhD degree that focused on altered viral proteins and their effects on virulence of Bovine Viral Diarrhea Virus (BVDV) in cattle and BVDV antigen distribution in persistently infected alpacas.

Upon completion of her residency/PhD program, she accepted an instructor position at the University of Wisconsin-Madison College of Veterinary Medicine where she was involved in teaching, service, and research. While at Wisconsin, she participated in collaborative studies examining the effects of vaccination on concurrent canine influenza and *Streptococcus equi* subsp. *zooepidemicus* infections and urethral bulking agents on canine urinary incontinence.

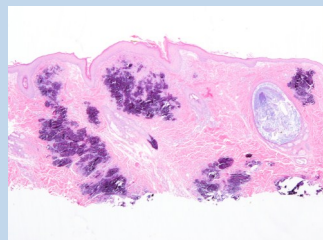
In 2009, she became a Diplomate of the American College of Veterinary Pathologists. After two years of the WI instructorship, she joined the Virus and Prion Research Unit at the National Animal Disease Center in Ames, IA where she was involved in research on swine influenza, pH1N1 in swine, and porcine reproductive and respiratory syndrome virus.

Dr. Henningson can be reached at: [heningsn@vet.k-state.edu](mailto:heningsn@vet.k-state.edu) or 785-532-4129.

### Dermatology Spotlight: Calcinosis Cutis—Dr. Kelli Almes



Calcinosis cutis is an uncommon skin condition in dogs, and rarely cats, characterized by inappropriate deposition of mineral within the epidermis, dermis, or subcutis. (Purple material in photograph below)



Clinically this condition may appear as chalky, white material that is visible under the

epidermis and palpates as firm gritty material. As the lesion progresses lesions often appear as red erythematous plaques and eventually there is extrusion of the mineralized material often resulting in ulceration and crusting. There may be single or multiple lesions and they may be located anywhere on the animal including the tongue.

Later lesions may be pruritic and self-trauma of the area leads to increased severity of the clinical appearance.

There are multiple causes of this condition with the most common being hyperglucocorticoidism. This can be

naturally occurring disease (Cushings) but more commonly this is iatrogenic due to overzealous treatment with steroids, sometimes for the ongoing undiagnosed skin condition.

Calcinosis cutis can also occur following a significant systemic illness. There is no treatment for calcinosis cutis but lesions typically resolve after extrusion of the mineralized material to the skin's surface if the underlying cause is identified and properly managed.

Dr. Almes may be contacted at [kalmes@vet.k-state.edu](mailto:kalmes@vet.k-state.edu) or 785-532-3995.

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## Sampling for Bovine Abortion Work-ups

### Dr. Gordon Andrews



Calving season is rapidly approaching so you will soon see cases of abortion, stillbirths, weak born calves and perinatal deaths. We frequently receive phone calls requesting what samples to submit for diagnostic testing. **The best sample by far is to deliver the entire calf and placenta to the lab.**

If this option is impractical and you submit samples, we suggest the following guidelines:

1. Examine placenta and fetus for any external gross abnormalities.
2. Measure and record crown-rump length for use in estimating gestational age.
3. Open abdomen and chest. With a sterile syringe and needle aspirate thoracic fluid, pericardial fluid, or heart blood. The cleaner the sample the better because hemoglobin released from lysed red cells can cause interference with some serological assays. Place in a sterile tube & label.
4. Aseptically aspirate fluid from the abomasum. Place in a sterile tube and label.
5. Collect remaining tissue samples listed below and record any abnormalities.

Supplies you will need for sample submission include a container with formalin, sterile tubes, syringes, and needles, whirl pack bags for fresh tissue, an insulated shipping box and ice packs to keep fresh tissues cool.

*Please submit the following samples for diagnostic testing along with a completed general submission form that includes the clinical history.*

**Fresh Tissues:** (place in clean bags, i.e. whirlpacks)

Lung, liver, kidney, lymph node, spleen, heart, thymus, placenta-2-3 sections with cotyledons (place in separate bag)

**Fresh Fluids:** (place in individual sterile labeled tubes)

abomasal contents, thoracic fluid, pericardial fluid, or heart blood that has been centrifuged and serum separated

**Fixed Tissues:** (place in formalin)

placenta (4-5 sections), thyroid gland, heart, lung, spleen, liver, kidney, adrenal glands, skeletal muscle (3 sections), and brain. If the brain is too large for your formalin container collect sections of cerebral hemispheres, midbrain, brainstem and cerebellum.

Tests that are routinely performed include histopathology, aerobic and campylobacter culture of abomasal fluid, PCR testing for leptospira and BVDV, and serology of fetal fluid for neospora, bluetongue, BVDV, and leptospira(5 serovar MAT). If no specific tests are requested the pathologist will run appropriate tests at their discretion.

Additional tests that may be run include nitrate analysis on fetal ocular fluid and virus isolation on pooled fetal tissues. Ocular fluid nitrate testing is only completed at the submitters' request and requires the entire eye, or ocular fluid you have collected and placed in a labeled tube. BVD persistent infection of the calf can also be determined by immunohistochemical (IHC) testing on a formalin fixed ear notch and is more economical than BVD PCR testing on fetal tissues.

This information and suggested abortion diagnostic protocols for other species are on the KSVDL website: <http://www.vet.k-state.edu/depts/dmp/service/abortion.htm>

Dr. Andrews can be reached at: [andrews@vet.k-state.edu](mailto:andrews@vet.k-state.edu) or 785-532-4459.

## KSVDL Specializations

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785-532-4012

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**SEROLOGY**

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**TOXICOLOGY**

DR. DEON van der MERWE  
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**VIROLOGY**

DR. RICHARD HESSE  
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### Help us help you:

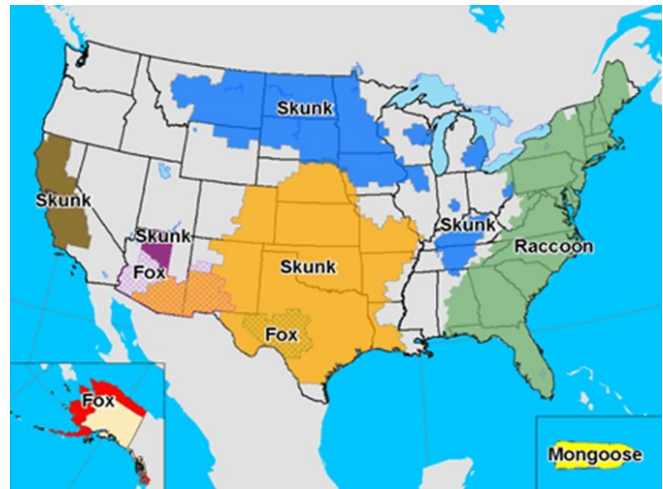
- E-mail and Fax: Please make sure we have your correct email and fax information.

## Rabies Virus Variants—Dr. Mike Moore and Rolan Davis

Typically, viruses are highly species-specific and establishment of a virus in a new host is a rare event. However, rabies virus, due in part to its highly variable RNA genome, has become highly diverse and is capable of infecting all mammals. This brings into the discussion of control efforts the concept of variants.

These variants are typically defined by the reservoir species that maintains them and can be differentiated by genomic differences. Kansas generally deals with only one terrestrial variant referred to as South Central Skunk Variant and is maintained within the striped skunk (*M. mephitis*). The picture to the right shows the regions of the United States that are affected by distinct rabies variants and the associated reservoir species.

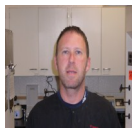
Variants are important when one considers a recent statement from the Centers for Disease Control and Prevention that we no longer have dog variant rabies virus within the United States. Does this mean that biting dogs are no longer a threat to infect humans with the virus? NO! This only means that the family of viruses commonly transmitted dog-to-dog is no longer circulating in our country within dogs. Dog variant viruses still continue to kill an estimated 55,000 humans a year in such places as Africa and southeastern Asia.



The KSVDL rabies diagnostic laboratory performs follow-up testing to determine the variant for each rabies positive sample submitted to the laboratory as well as providing this service for several other mid-western states. In this way, we hope to have early detection in the event of the introduction of a unique viral variant to our state.

The rabies lab can be reached at: [mcmoore@vet.ksu.edu](mailto:mcmoore@vet.ksu.edu) or 785-532-4503.

## Virology Lab Offers New Bovine Neonatal Diarrhea Panel Joe Anderson



In an effort to further strengthen the commitment to full service diagnostics, the virology lab at KSVDL has enhanced its offerings for diagnosing infectious agents associated with bovine neonatal diarrhea.

**An antigen enzyme linked immunoassay (ELISA) test panel for detecting bovine rotavirus, coronavirus, *Cryptosporidium parvum*, and *Escherichia coli* K99 is now available to clients.**

This test is a rapid and sensitive screening method for identifying these important calf-diarrhea associated pathogens. Testing for individual pathogens will be available, and there will be a price break for requesting a screen for all four agents.

**Laboratory results may be accessed online 24 hours a day, 7 days a week!!**

We're on the web @ [www.ksvdl.org](http://www.ksvdl.org)

## Potential for Nitrate Poisoning From Drought-Stressed Forages

Dr. Deon van de Merwe



The summer of 2011 was characterized by an unusually hot and dry spell in many parts of Kansas during July and early August.

In places, corn became severely stunted due to heat and drought stress, and producers sometimes chose to cut the affected corn for hay. Corn cut under such conditions have an increased risk of containing toxic levels of nitrate. Other forages such as sorghum, sudan, sorghum-sudan hybrids, and oat hay often contain elevated nitrate levels when grown under drought conditions.

Nitrate levels in bailed hay can remain high indefinitely, especially if it is kept dry, and it is not unusual to see nitrate poisoning during the winter months from hay harvested the previous summer. Drought-related scarcity of good quality hay may force many producers to use sub-optimal hay during the coming months, which further increases the likelihood of feeding drought-stressed corn hay to susceptible animals.

Ruminants, such as cattle, are most susceptible because they efficiently convert nitrate to the more toxic metabolite, nitrite. Nitrite is a fast-acting poison that reduces the ability of the blood to carry oxygen, and mortality rates can be high. **Before feeding hay that was produced during drought and heat-wave periods, the hay should be tested for nitrate concentrations.**

Nitrate levels may vary widely between different parts of a field and therefore between different hay bales and even between different areas of the same bale.

To test a bale for nitrate, a sample should be selected in such a way that it will represent the material eaten by animals, which typically includes all plant parts incorporated into hay, and taken from several areas within the bale. The total amount should weigh at least a pound. Testing bales that originated from different areas of a field may be needed to ensure that areas with high nitrate concentrations are not missed.

Cattle can become adapted to moderately high levels of nitrate, but nitrate concentrations exceeding 10,000 parts per million (dry weight) is acutely toxic to most cattle. Nitrate concentrations above 5,000 parts per million may be toxic to the most susceptible animals, such as un-adapted pregnant cows (picture above).



Un-adapted pregnant cows found dead after consuming high-nitrate sudan grass

For questions about toxicology, **Dr. van de Merwe can be contacted at: [dmerwe@vet.k-state.edu](mailto:dmerwe@vet.k-state.edu) or 785-532-4333.**

## Proper sample media for *Tritrichomonas foetus* submissions

The only acceptable media for submitting bovine or feline samples for *T. foetus* analysis (both PCR and culture) is the InPouch TF™. Unique media for each species has been developed by the pouch manufacturer to suppress the commensal microflora associated with each species-specific sample. **Therefore, according to the manufacturer and *T. foetus* researchers: 1.) a bovine pouch should NOT be used for feline samples and vice versa; 2) for feline samples use ~0.05g-0.1g of feces (size of pea) or rectal swabs.**



## Developing, Delivering Accurate, Innovative Diagnostic Services

*The mission of the Kansas State Veterinary Diagnostic Laboratory (KSVDL) is to develop and deliver accurate, innovative, and timely diagnostic and consultative services to the veterinary and animal health community while providing support for teaching, training, and research programs.*

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We're on the web!  
[www.ksvdl.org](http://www.ksvdl.org)

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### Continuing Education

**November 19, 2011**

KVMA Fall Conference

**December 9, 2011**

Annual Small Ruminant Conference

**January 6, 2012**

Bull Evaluation and Management Clinic

<http://www.vet.ksu.edu/CE/Conference.htm>

### Test Results & Schedules

*Laboratory results may be accessed online 24 hours a day, 7 days a week!!*

To set up an account go to:

[www.ksvdl.org](http://www.ksvdl.org)

**KSVDL will be closed on the following days:**

Thanksgiving: November 24 and 25, 2011

Christmas: December 26, 2011

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