



# VIRGINIA VETERINARY NOTES

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

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VETERINARY TEACHING HOSPITAL FACULTY

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BLACKSBURG, VA

*Kent Roberts*  
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 Kent C. Roberts, DVM  
 Extension Veterinarian

### THOUGHT FOR THE MONTH

Consider how hard it is to change yourself and you'll understand what little chance you have of trying to change others. --Jacob M. Braude

## HOST DEFENSES

W. B. Gross, DVM, PhD is retiring from the faculty of the University in Blacksburg on December 31, 1991. Bernie, as he is better known, is a researcher's researcher, a dedicated student of animal behavior and a man of great resourcefulness. He's a person you ought to know.

He graduated from the Ohio State University in 1946 when a man named Brumley was dean. He started work at Tech in 1949 in the Animal Pathology section of the Biology Department. This soon became the Veterinary Science Department and eventually the College of Veterinary Medicine. Despite the many changes going on around him, Bernie has kept his eye on the goal of original research, and has succeeded admirably. He has worked with poultry and their ability to handle stress for most of his career. He teaches courses in poultry diseases to veterinary students and poultry science majors (and will continue to after retirement). He spends long hours with his birds in uniquely contrived experiments designed to test the effects of environmental stress on their health and behavior, and ways to increase their resistance to this stress.

Here are a few examples of Bernie's writing on the subject of host defenses.

The outcome of exposure to an infectious agent is the result of an interplay between agent and host. When populations become more concentrated, stress levels increase, which in turn increases the host's resources devoted to defense. The response of a specific host is determined by genetic-environment interactions. If the host is unable to mount a strong defense, chemotherapy may not be effective against an invading agent.

Initial (and often long term) defense against bacteria is dependent on the effectiveness of the polymorphs. As stress levels increase, defense against bacterial infections also increase to a point of maximum resistance. Further increases in stress levels result in reduced resistance.

Host defense against viral diseases is through lymphoid cells. Their effectiveness is decreased by increasing levels of stress. The severity of a wide variety of viral infections can be reduced by administering the optimal dose of an adrenal blocking chemical.

The main objective of animals is to get their genes into the next generation. In order to accomplish this, species must maintain variability so that some can survive under a wide variety of circumstances.

Like people and governments, animals have limited resources with which to pursue their objectives. Activities such as growth, reproduction, adaptation to environmental changes and defense against disease require the expenditure of resources. Selection of animals for high productivity may leave fewer resources for defense and adaptability. Studies indicate that the characteristics of living organisms are controlled by complex genetic-environment interactions. Genetic-environment interactions which favor resistance to one disease often favor susceptibility to another.

The portion of a population which is susceptible to a given disease is constantly changing in response to life-long changes in genetic-environment interactions. For best productivity and well being, animals should have reduced levels of environmental stress and should have the physical characteristics and behavior traits compatible with the production environment.

Animals should have a good relationship with their human caretakers. The attitude of the humans in this relationship is very important.

Thank you Bernie, for many (42) years of service and commitment.

### MEDETOMIDINE/KETAMINE COMBINATION FOR ANESTHESIA IN CATS

Ketamine, a cyclohexylamine analogue, is an injectable dissociative anesthetic which produces cataleptoid unconsciousness and somatic analgesia. The mechanism of action is undetermined, but its main advantage over other CNS depressants is that it stimulates cardiovascular action.

Used alone, it often produces inadequate muscle relaxation or hypertonus. More often there is respiratory depression, apnea and prolonged recovery with hypothermia.

Ketamine has been used in combination with acepromazine, promazine, diazepam, morphine and xylaxzine to counteract these undesirable side effects.

A combination of ketamine with medetomidine, a selective and potent alpha 2-adrenoceptor agonist, was tested against other commonly utilized ketamine combinations and found to be the best combination. It induced a good degree of anesthesia with small doses and was free of major side effects. Atipamezole was shown in a separate test to be the best antagonist to medetomidine/ketamine. -- Versteegen, J. et al, Vet. Record 128 1991 as reported in Iowa State Cooperative Extension Service Newsletter #372-V720, July 1991.

### HEARTWORMS IN CATS

The prevalence of heartworm infection in cats may be higher than realized, especially in endemic areas such as the Southeastern United States. Clinically affected cats range from 1 to 17 years of age. Outdoor cats and males are more likely to be affected. There is no breed predisposition. Several cases have been seen at both Georgia diagnostic laboratories and recently, three cats having heartworms were necropsied at the Athens Diagnostic Laboratory. Two were young to middle aged females and the third was an adult female of unknown age. Two were outdoor/indoor cats and the other was an outdoor cat. Two of the cats made a strange sound (owners reported), like a hoarse cry, immediately before death. The cause of sudden death has been attributed to circulatory collapse and/or respiratory failure from acute pulmonary arterial obstruction. A second theory suggests that irritation of heart muscle by heartworms leads to fatal arrhythmias. Unlike dogs, only a few heartworms (2 or 3) will cause clinical signs in cats. Many feline heartworm cases are diagnosed at necropsy, but it is possible to make an antemortem diagnosis. Affected cats may have eosinophilia. As in dogs, basophilia is highly suggestive of heartworm disease. A microfilaremia is rarely seen, and multiple testing using larger amounts of blood is recommended. The ELISA test can be used to detect occult heartworm disease. While neither Georgia laboratory offers this test, a relatively inexpensive test kit is available from pharmaceutical companies. These tests can, however, result in false positive reactions. The indirect fluorescent antibody test can also be utilized as a diagnostic test. This test is reportedly more sensitive and is performed by some commercial laboratories. --K. P. Carmichael, Georgia Veterinary Diagnostic Laboratory, Winter, 1990 as reported in Animal Health Spectrum, Vol. 2, No. 2, Oct. 1991, Mississippi State University.

### ULTRASOUND DEVICES INEFFECTIVE AGAINST RODENTS

An EPA Administrative Law Judge ruled in a five-year case against Impex Industries that the company's ultrasound rodent devices don't work and thus were misbranded. The devices were Sonitron Model C and Super C. The company made exaggerated claims. Substantial evidence found they were ineffective. -- Pesticide & Toxic Chemical News, July 10, 1991, as reported in Animal Health Beat, Vol. 7, No. 6, 1991, University of Nevada, Reno.

## HEALTH WATCH - THE MIND-BODY CONNECTION

When Illinois Bell divested from AT&T in 1984, about half the executives came down with colds, suffered backaches and other ills. The rest weathered the breakup without so much as a sniffle. The two groups studies had similar job situations or outside-life stresses. What kept half of the healthy and made the other half sick? ATTITUDE.

No matter how else they differed, the healthy managers all had one crucial thing in common, "personality hardiness" according to the University of Chicago study's director Suzanne Ouellette Kobasa, PhD. The three components of this trait, says Kobasa, are commitment - that is, being engaged in various parts of one's life; control, the feeling that one has control over what's going on in one's life; and challenge, seeing change as positive and dealing with changing experiences in a flexible way.

The study was just one of many that concluded that the mind has a powerful influence over the body's ability to stay healthy. Research is mounting that indicates that people who enjoy what they do and who have a sense of control over their lives are better able to handle the demands of a high-stress job. In fact, a Cornell University study found that people who describe their jobs as being "high in demands and low in control" are five times more likely to have high blood pressure.

The good news is that this kind of positive mindset can be learned. The techniques are simple, but yield high returns. What is needed, of course is a belief that the results will be beneficial. --Teamwork, May 21, 1990, as reported in Veterinary Newsletter, Dec. 1990, Utah State University, Logan, UT.

## IMMUNOLOGIC RESPONSE TO HUMAN DIPLOID CELL RABIES VACCINE

Serum samples from 946 individuals across the United States and overseas Peace Corps Volunteers (PCV) were analyzed for longevity of rabies antibody response after initial vaccination with either intramuscular (IM) or intradermal (ID) human diploid cell vaccine (HDCV). Serum was assayed for antibody to rabies using the Rapid Fluorescent Focus Inhibition Test (REFIT). A pairwise comparison between the rabies antibody titer, sex of the individual, type of vaccination received (IM or ID), and whether the individual was a PCV or non-PCV revealed significant differences between IM and ID across all strata. Survival analysis and frequency tables using the Chi square statistic determined that at 2 years after initial vaccination the percent probability of maintaining a titer of 1:5 was 93% for IM and 85% for ID, and was 85% for IM and 50% for ID at 4 years after initial vaccination. This study will enable veterinarians and laboratory workers at high risk of exposure to rabies to estimate the longevity of their rabies antibody titer after primary vaccination with HDCV. --Abstracted from Briggs, D. J. and J. R. Schwenke, AAVLD Abstracts, 1990 as reported in Notes from the Extension Veterinarians, Kansas State University, September 1991.

## WEIGHT ESTIMATION IN HORSES

In a recent survey of equine veterinarians and horse owners, estimates were given for 5 different horses of various age, sex and breed. The horses had been weighed on a calibrated scale within 12 hours of the trial. The lay owners averaged 15 years experience working with horses. They had routinely estimated weights of horses when determining feed and medication dosages. Eighty (80%) of the answers were underestimations. The average guess was 166 pounds or 15% under the actual body weight. (Obviously, this common mistake among horse owners could lead to incorrect deworming dosages, antibiotic treatments and nutritional requirements.) --L. Anquithj, AAEP Convention, Lexington, KY, Dec, 1990, as reported in Veterinary News, Nov. 1991, Penn State University, University Park, PA.

**CONTINUING EDUCATION OPPORTUNITIES  
SPRING 1992 SCHEDULE**

<u>Date</u>	<u>Program</u>	<u>Location</u>	<u>Hours</u>
*March 13-14	Diagnostic Clinical Cytology	Blacksburg	10
March 19	Small Animal Medicine Update	Charlottesville	4
*March 20-21	Urogenital Radiology	Blacksburg	10
*March 27-28	Spinal Surgery	Blacksburg	10
March 29	Small Animal Medicine Update	Charleston, WV	4
*April 10-11	Gastrointestinal Endoscopy	Blacksburg	10
*April 24-25	Ultrasonography	Blacksburg	10

\*Limited enrollment. These courses feature hands-on laboratory experience.

Note: Program brochures are mailed 6-8 weeks prior to course dates. Course reservations cannot be accepted until the brochures are mailed. For CE course information, please contact:

Kent Roberts, DVM  
VMRCVM, Blacksburg, VA 24061-0442  
(703) 231-7181

**REPTILE MEDICINE SYMPOSIUM**

The Wildlife and Exotic Animal Club, VMRCVM, is sponsoring a reptile medicine symposium on February 28-29, 1992 at the College in Blacksburg. Dr. Frederic Frye, a noted authority in the field of herpetological medicine, will be the featured speaker. Dr. Frye will lecture and demonstrate useful techniques during the laboratory session. CE credit of 10 contact hours is offered for the complete symposium.

Preregistration is necessary and will be available beginning January 2. For further information on registration and symposium content, please contact: Kathleen Berg, SCAVMA Office, VMRCVM - Virginia Tech, Blacksburg, VA 24061.

**A SHORT EPIDEMIOLOGICAL NOTE ON BSE**

Bovine Spongiform Encephalopathy (BSE) is a major new cattle disease problem. This new disease, the first subacute transmissible spongiform encephalopathy identified in cattle, is postulated to be the bovine expression of infections with the sheep scrapie agent. Epidemiologic investigations suggest that cattle are exposed through the consumption of feed containing infectious rendered products from scrapie-infected sheep. While BSE has not been definitively diagnosed in the U.S.A., sheep scrapie does exist, along with the feeding of rendered sheep products to cattle.

If BSE were diagnosed in the U.S.A., the most likely routes of transmission would be: 1) The U.S.A. imports cattle infected with BSE, 2) The U.S.A. imports meat and bone meal contaminated with BSE, and 3) The U.S.A.'s cattle are exposed to the domestic scrapie/BSE agent orally through contaminated animal protein feedstuffs. --Taken from Animal Health Insight, 1991, by Luis V. Melendez, Professor of Virology, VA-MD Regional College of Veterinary Medicine, Blacksburg, VA.

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