



In Focus

The Newsletter of the Research Animal Resource Center



SUMMER IN THE FACILITY

OSHA* states:

Wearing opened-toe shoes, especially sandals, is not appropriate in a laboratory or vivarium setting.

If you use sharps, e.g. needles, glass pipettes, etc., or if you handle corrosives, radioisotopes, or biohazards - accidents can be expected!!



THINK AHEAD, be personally responsible and have a safe summer.

*Occupational Safety & Health Administration

A message from the Director

With this, our fourth edition, we have renamed this newsletter "In Focus" to reflect its goal of providing focused information on RARC's services as well as current issues pertaining to animal model development and use. As always, we appreciate receiving your suggestions for future newsletter additions.

There have been several recent changes in RARC's professional staff. We are pleased to announce the addition of Dr. Paula Ezell to our professional staff as a Senior Clinical Veterinarian. Dr. Ezell will be providing clinical veterinary support, especially in rodent medicine, an area in which she has considerable interest and expertise.

Regrettably, Dr. Krista LaPerle, who has played an instrumental role developing and leading both our Genetically Engineered Mouse Phenotyping Service and the Laboratory of Comparative Pathology, will be leaving New York City to return to her alma mater, The Ohio State University, later this summer. Many of you who have had the opportunity to "double-scope" with Dr. LaPerle will likely miss the interaction and support she has provided, as will we. Our two additional comparative pathologists, Drs. Suzi Couto and Julie White will continue to support the Tri-Institutes as we recruit for our third pathologist.

Emerging Diseases Series - Mouse Scaly Skin Disease *Corynebacterium*-Associated Hyperkeratosis

Hyperkeratosis in nude mice, associated with a coryneform bacterium, was first reported in 1990 as a severe disease resulting in nearly 100% mortality in suckling and transient disease in weanling mice. The disease is said to have been described as early as 1976 at Charles River Laboratories. In 1998, the causative agent was identified via 16S rRNA sequencing as *Corynebacterium bovis* - an aerobic, Gram positive, pleomorphic rod.

Within the MSKCC vivaria, *C. bovis* has been an endemic problem with severe outbreaks of disease occurring in the fall of 2005 and the spring of 2006. The methods of *C. bovis* introduction into the facility remain elusive. There are conflicting reports regarding the possibility that immunocompetent mice are carriers of the bacterium. Additional sources of the agent may include immunodeficient mice, which are not tested for *C. bovis*, and tumor and cell lines that are not screened appropriately. There are also anecdotal reports that humans can be carriers of *C. bovis* in their nasopharynx.

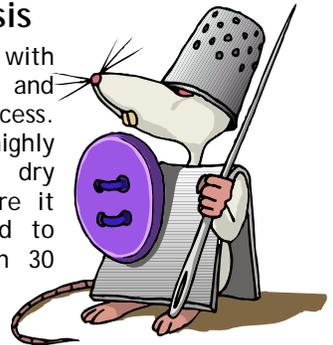
Once established within a facility, eradication has thus far only been

successful with depopulation and restricted room access. *C. bovis* is highly resistant to dry environments where it has been reported to survive more than 30 days.

The bacterium has been shown to persist on infected mice for at least 33 days following the onset of infection and clinically affected animals have been shown to remain infected after disease resolution. Transmission can occur by direct contact of infected mice and by various fomites, including contaminated gloves, gowns, and instruments.

Both immunocompetent and immunodeficient mice and rats have been reported to be capable of infection, but it is the clinical manifestation in nude mice that accounts for the term "Scaly Skin Disease." Seven to 10 days post-exposure, athymic nude mice develop yellow-white flakes adherent to their skin that begin on their dorsum and spreads along their back and flanks. Nude mice can also exhibit weight loss, dehydration, and generalized weakness. Untreated, clinical disease is

Cont. on pg. 3



Special Presentation in September:

Dr. Jacqueline Crawley

Chief, Lab of Behavioral Neuroscience, NIMH

See details on page 4!

Special interest articles inside:

THE DIET CRAZE

~ ~

What's all the fuss about Overcrowding?

When the Staff is Away the Mice Still Play! A Vacation Reminder



Summer is here and the time is right... for vacation! This means that at some point during the coming months you or your colleagues may be away from your laboratories.

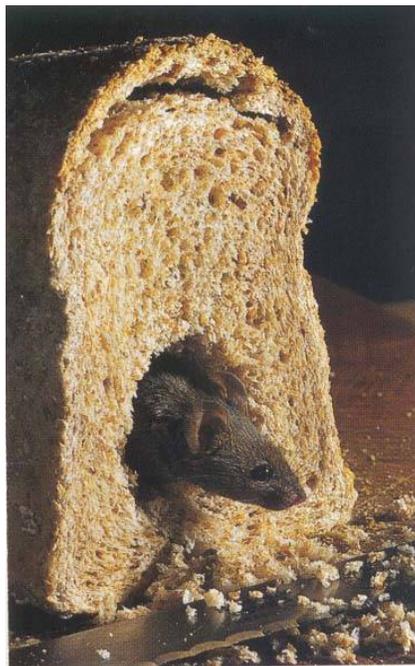
PLEASE remember that your animals in the vivarium need to be observed at least weekly and often on a more frequent basis depending on their research use. This is imperative especially if you manage a breeding colony as overcrowded conditions can develop quickly.

Please make contingency plans to ensure your animals are being monitored during your absence.

If you find you need help, RARC's Veterinary Services section may be able to assist.

Contact Veterinary Services to discuss your needs at RARC_VS@med.cornell.edu or 212-746-1079.

Everybody's on a Diet - but which one? Special Diets Routinely Offered by RARC



RARC's Veterinary Services section, in conjunction with Husbandry and Operations, maintains a stock of various medicated diets. Many of these are specially compounded and manufactured to RARC's standards. To produce these diets, specific pharmaceutical agents are added to a grain based or purified diet, and are then pelleted. The medications are added at specific concentrations to ensure accurate dosing. Before distribution, medicated diets are gamma irradiated to prevent introduction of unwanted infectious agents which may have contaminated diet components. Because medicated diets contain prescription medication, these diets are available only after consultation with Veterinary Services staff. To ensure medicated diets are not mixed with one another or standard diets, food coloring is added so that each diet is a distinct color. If you have ever wondered about the rainbow of colored diets, the following is a list of diets that you might encounter:

Red diet contains **AMOXICILLIN & VITAMIN E**. This diet is frequently used to treat mice with ulcerative dermatitis, and other forms of skin disease.



Green **AMOXICILLIN** diet is used for the treatment of *Corynebacterium bovis* infections, but is also used to treat other infections caused by bacteria sensitive to this agent.



Purple diet contains **SulfaTrim** antibiotic.

Trimethoprim and sulfamethoxazole are used to prevent and treat *Pneumocystis murina* pneumonia in immunocompromised mice. This diet has other uses, including treatment of susceptible skin infections.



Dark Blue diet contains the anthelmintic **IVERMECTIN**.

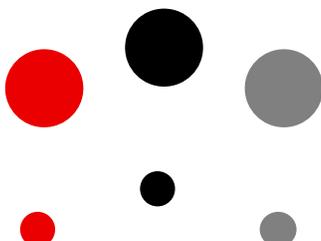
Ivermectin feed is used to control and eradicate internal and external parasites.

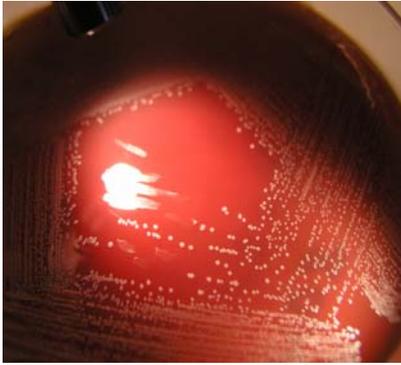


Yellowish **DOXYCYCLINE** diet (below left) is similar in appearance to non-medicated rodent feed (below right). Doxycycline, although also to treat bacterial infections, is most commonly used to modulate gene expression in conditionally mutant mice.



If you would like to request one of these diets please fill out a Special Husbandry Form which can be found on RARC's intranet site; go to Husbandry & Operations and click on special water and diets. If you would like more information about our special diets and or medicated water please contact veterinary services at RARC_VS@med.cornell.edu.





C. bovis growth on CNA media

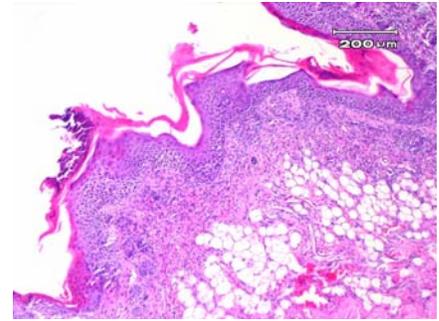
Mouse Scaly Skin Disease, cont. from pg. 1

reported to resolve 7 to 10 days later, but our experience is that mice may suffer a more severe illness, potentially leading to death, due to stress from experimental manipulation.

Haired immunodeficient mice (e.g., SCID) can develop a less severe form of the disease, exhibiting alopecia and scaling dermatitis on the back, flank, neck, and face.

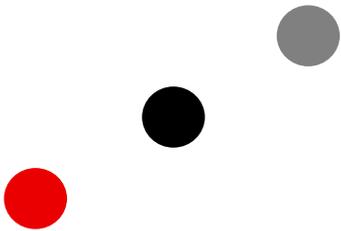
There are implications for research when animals are infected with *Corynebacterium*-associated hyperkeratosis. Mice can exhibit significant weight loss or a depressed rate of growth. Pertinent to cancer research, tumor growth rate may be depressed and the toxicity or efficacy of chemotherapeutics may be affected sometimes with an associated increase in mortality. Natural killer cell activity may also be affected.

RARC is currently conducting studies to better understand the epidemiology of *C. bovis* infection to improve rodent health and minimize research complications. Nude sentinels have been placed in



Orthokeratotic hyperkeratosis and acanthosis of the skin

various mouse holding rooms to examine the possibility that immunocompetent mice may serve as carriers. The efficacy of our cage change SOP for preventing cross-contamination is being evaluated. We are also currently evaluating the efficacy of the two week amoxicillin diet prophylaxis for all incoming nude mice. In the near future, we will determine if antibiotic treatment effectively clears *C. bovis* from infected animals, or if only clinical signs resolve. With new information, we hope to more effectively manage this disease.



TRAINING SESSIONS: JULY - SEPT.

RARC Orientation

- Tuesday, 7/1/08, 2:00-4:00
- Thursday, 7/17/08, 10:00-12:00
- Tuesday, 8/5/08, 2:00-4:00
- Thursday, 8/21/08, 10:00-12:00
- Tuesday, 9/2/08, 2:00-4:00
- Thursday, 9/18/08, 10:00-12:00

Xenograft Training

- Monday, 7/21/08, 2:30 - 3:30
- Monday, 8/18/08, 2:30 - 3:30
- Monday, 9/15/08, 2:30 - 3:30

Hazardous Materials Training

- Wednesday, 7/23/08, 2:30 - 3:30
- Wednesday, 8/27/08, 2:30 - 3:30
- Wednesday, 9/24/08, 2:30 - 3:30

Rodent Surgery

- Friday, 7/11/08, 10:30-12:00, wet lab
- Monday, 7/21/08, 10:30-11:30
- Friday, 8/1/08, 10:30-12:00, wet lab
- Monday, 8/18/08, 10:30-11:30
- Friday, 9/5/08, 10:30-12:00, wet lab
- Monday, 9/15/08, 10:30-11:30

Isotope Room

Ad hoc

Rodent Breeding

- Wednesday, 9/27/08, 10:00-11:30

Why it is important to adhere to WCMC's Policy for Maintaining Mouse Cage Populations.

1. Density standards provided in the *Guide for the Care and Use of Laboratory Animals* (Guide) are designed to ensure that animals are housed in a manner that promotes their health and well being. WCMC is required to adhere to these standards.
2. NIH's Office for Laboratory Animal Welfare (OLAW), specifically states that chronic failure to provide space for animals in accordance with the Guide's recommendations, unless approved by the IACUC and based on written scientific justification, is a reportable offense and may place institutional funding at risk.
3. Pups born into a cage containing an older litter may not be able to compete for the dam's milk. This may be particularly problematic for delicate transgenic lines.
4. There is a higher incidence of morbidity and mortality in young litters stepped on by older animals.
5. The added workload on RARC's Husbandry & Operations and Veterinary Services staff addressing overcrowded cages results in higher per diem costs for investigators and takes precious time away from other duties. This results in inequity for those laboratories properly managing their breeding protocols.
6. Excessive food and water consumption may lead to animals going without food and/or water.
7. The excessive heat generated by large numbers of mice and noxious build up of ammonia and carbon dioxide in these cages can significantly impact the health and welfare of both young and old animals and could potentially interfere with research results.
8. The best way to ensure a healthy, uncompromised animal model suited for generating quality experimental data is to provide a clean, healthy environment.

For more information or to address inquiries about the training opportunities available please contact rarceqa@med.cornell.edu

**July & August
Investigator
Training
Seminars**

*All are
welcomed to
attend!*

UPCOMING SEMINARS

**HANDLING AND EXPERIMENTAL
TECHNIQUES IN RODENTS**

Speaker: Caroline Murray, BS, RLATG, CMAR,
Education & Quality Assurance Specialist

Date: Wednesday, July 16

Time: 2:00 - 3:30 PM

Place: MSKCC campus, RRL, Room 101

**GENETICALLY ENGINEERED MOUSE MODELS:
ADVANCING AND UNDERSTANDING OF HUMAN
DISEASE**

Speaker: Ravi Tolwani, DVM, PhD, Diplomate ACLAM.
Research Associate Professor, Associate Vice
President and Senior Director of CBC, The Rockefeller
University

Date: Wednesday, August 20

Time: 2:00 - 3:30 PM

Place: Rockefeller campus, Weiss 302

WE ARE PLEASE TO ANNOUNCE A SPECIAL TOPIC SEMINAR IN SEPTEMBER:

**STRATEGIES FOR BEHAVIORAL PHENOTYPING
OF TRANSGENIC AND KNOCKOUT MICE**

Speaker: **Jacqueline N. Crawley, Ph.D.,**
Chief, Laboratory of Behavioral Neuroscience,
National Institute of Mental Health

Place: ZUCKERMAN RESEARCH CENTER (ZRC), RM. 105

Date: Wednesday, September 17

Time: 2:00 - 4:30 PM

About our department-

Office of the Director: (212) 746-1031
Office of the Manager: (212) 746-1023

Administration & Information Services: (646) 888-2406
rarc_adm@med.cornell.edu

Biosecurity: (646) 888-2403

Education & Quality Assurance: (212) 746-1077
rarc_eqa@med.cornell.edu

Husbandry & Operations: (646) 888-2413
rarc_ho@med.cornell.edu

Laboratory of Comparative Pathology: (646) 888-2422
rarc_lcp@med.cornell.edu

Veterinary Services: (212) 746-1167
rarc_vs@med.cornell.edu

EMERGENCY: (212) 746-1022

