FOUNDATION: 1997 Grant Reports All three grantees have acknowledged the support of the ACLAM Foundation. Drs. Whary and Fox said "This project was funded by the ACLAM Foundation which, in turn, is generously supported by our colleagues in comparative medicine and laboratory animal science." The Foundation Committee members add their acknowledgment of our donors to those of the grantees - well done!

Monitoring the Epidemiology of Helicobacter spp. Infection in Mouse Colonies

Whary, M.T., etal. 2000. Containment of Helicobacter hepaticus using Husbandry Practices. Comp. Med. 50(1): 78.

Whary, M.T., etal. 2000. Monitoring Sentinel Mice for Helicobacter hepaticus., H. rodentium, and H. bilis Infection by Use of Polymerase Chain Reaction Analysis and Serologic Testing. Comp. Med. 50(4): 436.

Does Helicobacter spread from naturally infected colony mice to sentinel mice through dirty bedding exposure? Can mice be maintained "clean" from Helicobacter hepaticus infection using a simple protocol of microisolator caging and forceps transfer of animals to new caging without the use of a change hood? Yes and Yes. MIT's Drs. Mark Whary and Jim Fox, both ACLAM Diplomates, provided the following summary of their findings:

Intestinal Helicobacters are readily spread to sentinel mice by dirty bedding transfer but detection by PCR and serology may require several months of exposure. This should be adequate for sentinel programs that rely on testing colony status every 2 to 6 months but should not be relied on when exposure times are short, such as quarantine testing of gift mice. Detection of infection by a serum IgG ELISA was very sensitive but specificity at the species level (screening for H. hepaticus, H. bilis and H. rodentium) was low. Mice seropositive on this ELISA should be considered infected by one or more Helicobacter spp. with species identification confirmed by PCR and culture. A mucosal IgA assay using fecal extracts had been previously demonstrated to be specific when testing mice that had been experimentally infected. In the ACLAM project, this assay was not sensitive enough to be of practical use for screening naturally infected mice which may reflect the difference in antigenic load between experimental challenge and natural infection.

Strict attention to a husbandry protocol involving use of microisolator caging, opening only one cage at a time and transfer of mice using disinfected forceps (Quatracide PV by Pharmacal), all procedures performed with the use of a change hood, maintained A/JCr and C57BL/6 mice PCR negative for H. hepaticus for the study period of 15 weeks. This method has practical importance because it allows an animal resource program to economically maintain mice free of Helicobacter spp. infection when space and husbandry resources to maintain separate groups of mice with different health status are limited.

Development and Evaluation of Diagnostic Assays for Newly Recognized Rodent Parvoviruses

Dr. David Besselsen, ACLAM Diplomate, from the University of Arizona, studied serodiagnosis of Mouse Parvovirus-1 (MPV). He experimentally infected several strains (BALB/c, C3H,

DBA/2, C57BL/6 and ICR) and ages (4-, 8- and 12 week-old) of mice and analyzed convalescent serum by the recombinant non-structural protein 1 (rNS1) ELISA, Minute Virus of Mice (MVM) ELISA, MPV IFA, MVM IFA, and MPV HAI. The rate of seroconverstion to MPV was highest in C3H/HeN mice, followed by BALB/c, ICR, DBA/2 and C57BL/6 mice. Seroconversion in mice inoculated at 12 weeks of age was detected only by MPV IFA and MPV HAI assays, with the exception of one BALB/c mouse which was also positive by MVM IFA. Seroconversion in mice inoculated at 4 and 8 weeks of age was detected by all immunoassays except the MVM ELISA. These results indicated mouse strain and age play significant roles in the ability of MPV to induce seroconversion in mice, and the source of diagnostic antigen is critical for the detection of seroconversion to MPV in mice exposed at 12 weeks of age. These factors should be considered when establishing reodent health monitoring programs, especially when sentinel mice will be used to detect MPV in mouse colonies. Dr. Besselsen also hoped to develop a hemagglutination inhibition assay (HAI) specific for Rat Parvovirus-1. While a great deal of effort went into the development of a Rat Parvovirus HAI test, the outcome was unsuccessful due to an inability to remove non-specific inhibitors of hemagglutination from rat serum.

Stress Produced by Gavage Administration in the Rat

Brown, A. P., Dinger, N., Levine, B. S. 2000. Stress Produced by Gavage Administration in the Rat. Contemporary Topics. 39 (1):17-21

How large a volume can be given to rats by gavage? The results of a study, among the first funded by the ACLAM Foundation, have now been issued. Drs. Barry Levine and Alan Brown, Toxicologists at the University of Illinois at Chicago, stated that the results of their study "suggested that dose volumes should not generally exceed 10mL/kg." In their research project, Drs. Levine and Brown examined the relationship between gavage administration of the vehicles used in toxicology experiments and the induction of a stress response, by clinical signs or increased plasma corticosterone levels. Three vehicles were studied: water, corn oil and 1% methylcellulose/0.2% Tween 80. The water and 1% methylcellulose/0.2% Tween 80 vehicles were given up to 30 mL/kg with increases in plasma corticosterone levels only in the individual animals that experienced reflux/aspiration of the vehicle. However, when corn oil was used, plasma corticosterone levels were increased in a volume-dependent fashion following administration of 20 mL/kg or greater, without reflux.

NOTE: Since these summaries can not capture the detail of the projects, we look forward to reading the full publications in the literature. We thank the authors and staffs for their efforts to expand the body of knowledge in our field.