

CPB 69700 RESEARCH SEMINAR

DEPARTMENT OF COMPARATIVE PATHOBIOLOGY

Jenelle Johnson, DVM
Graduate Student in Laboratory Animal Medicine
Purdue University

Thurs., November 19, 2009
VPTH 112
3:30 pm

“The Effects Of Individually Ventilated Cage (IVC) Racks
On Reproductive Performance In C57Bl/6 Mice”

Abstract:

Individually ventilated cage (IVC) systems were developed to comfortably house per unit area, the growing numbers of animals being used in research, and as a means of decreasing labor loads on animal care staff. These systems provided a better use of available facility resources, while decreasing labor costs and improving intracage ammonia and carbon dioxide levels.

However, there have been concerns expressed regarding this type of housing and its effects on the animal's physiology, especially reproductive performance. The primary adverse effects are due to high ventilation rates, constant noise and vibrations from the motors used to drive the ventilation. Studies have suggested that these systems have contributed to decreased litter sizes, decreased numbers of weanling mice and adverse effects on blastocyst production in mice. Most of the work done in this area have placed multiple cages on IVC racks in 1-2 animal rooms or facility, and made conclusions that may be rack, room or facility specific.

This study aims to place cages of breeding pairs on multiple racks, rooms, facilities and institutions in order to provide more definitive general statements on the effects of this housing system, if any. We therefore ask 2 questions:

1. What effects do IVC rack systems have on the reproductive performance of C57BL/6 mice?
2. If effects are found, are they mitigated by the presence or absence of factors such as ventilation rate, noise, vibrations? Or by cage location in the IVC System?

The findings of this work hope to improve the welfare of mice used in Biomedical research by reducing the overall numbers of mice used and identifying limitation factors that may help refine breeding study designs.