CU I&E Submission: Environmental Sampling for Research Rodent Health Surveillance [1]

Submitted By

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Project Team

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Project Description

Infectious diseases within research rodent colonies can threaten the animals' quality of life and validity of scientific data. For over 50 years, universities and private research organizations have used a subset of rodents as sentinels to ensure colony health. These sentinels are exposed to soiled bedding from research rodents and are later euthanized and tested for pathogens. Recent advances in PCR testing allow sensitive detection of rodent infectious agents from dust particles, eliminating the need for live animals. In 2021, the Office of Laboratory Animal Resources (OLAR) committed to eliminating rodent sentinels and worked to replace them with exhaust air dust testing for rodent health surveillance. Over the past year, we performed a cost-analysis, piloted new procedures, developed new SOPs, and created a training video to help staff make the transition. Our new rodent health surveillance program saves staff time, $41,500 annually, and 2,200 animals/year that would be euthanized as sentinels.

Project Efficiency

Dust in exhaust air from our institution's rodent caging system is used as a replacement for live animals. Efficiencies are obtained on multiple levels. By eliminating sentinel rodents, we have added over 500 cage spaces for housing research rodents. Diagnostic samples no longer require blood collection or necropsy, which decreases technician time by more than 100 hours/year. Factoring in the cost of PCR tests, by eliminating the purchase, shipping, and care of thousands of sentinel animals, the new program saves $41,500 annually. Finally,

sentinel rodents no longer need to be euthanized, which helps decrease compassion fatigue among our staff.

Project Inspiration

As veterinarians that oversee animal-use in biomedical research, our goal is to find ways to reduce the number of animals that need to be used to obtain scientifically valid results. For this project, we were inspired by the ability to not just reduce the number of animals, but to completely eliminate the use of animals. Further, with this change, our rodent research colonies are at least as safe from infectious agents due to the increased sensitivity of PCR based diagnostic assays.

Future Plans

Educate other institutions on the obstacles and challenges that we overcame for a successful transition from live-animal sentinels to an exhaust air dust capture system for rodent health surveillance. We will achieve this through presentations and posters at regional and national meetings for research animal care professionals, webinars, and publication in industry journals or periodicals.

What Makes You Happiest about this Project?

We are saving approximately 2,200 animal lives every year.
