

The Backbone

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eSirius is Here!

By Julie Giordano
UCUCA

eSirius, the new online animal use application system for the University Committee on Use and Care of Animals (UCUCA), went live on September 15, 2005! eSirius is a web-based system for managing the submission, review and approval of protocols concerning the use of vertebrate animals at the University of Michigan. Once fully implemented, the UCUCA will be 100% web-based and the slow paper application process will no longer be used. In the future, it will also encompass animal requisitions, invoicing, and census management. With eSirius, investigators and their staff will be able to fill out, submit, amend, and monitor animal use applications online from any computer that has Internet access.



In the initial phase, **only** new/renewal applications can be submitted online. However, paper applications are being accepted up until December 1, 2005. **After December 1, 2005, paper applications will no longer be accepted and all new/renewal protocols must be submitted in the eSirius system.** The UCUCA Office encourages the use of eSirius rather than the paper Form 8225. Once protocols are entered into eSirius, all amendments and annual reviews will be done online, replacing the arduous paper process.

For currently-approved applications and applications in the review process, there will be no change. Submission of modifications for these applications will continue with the current paper system. There is the option to view animal usage and print online for these protocols.

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**ANIMAL CONCERN HOTLINE:
(734) 763-8028**



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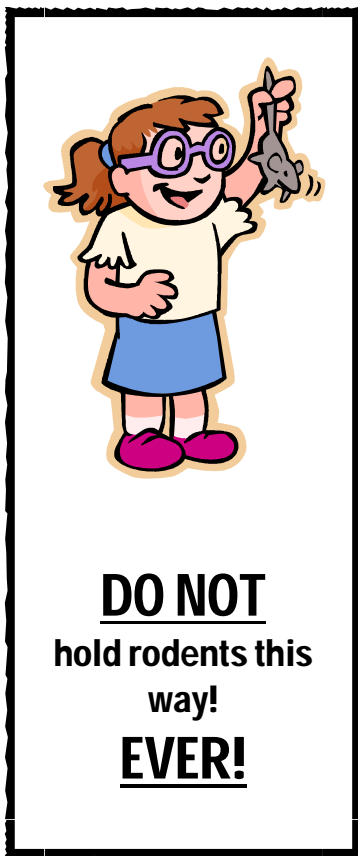
The Backbone is a quarterly publication of the University Committee on Use and Care of Animals (UCUCA)

MICE AND RATS: FRAGILE, HANDLE WITH CARE

By Steve Durkee
UCUCA

If you are like most folks working in animal research, you may find yourself faced with what could be a potentially unsettling encounter early in your research experience: picking up and handling a small rodent, namely a rat or a mouse.

Starting way back in childhood, your mother taught you not to play with any rats or mice you encounter. According to Mom, they carried disease, brought death and destruction, and generally meant you should have heeded her advice to “keep your room more clean, thank you very much, Mr. Messy Room!” Socially-ingrained, long-standing prejudices like these can interfere with your ability to perform important scientific work, finish that PhD, and provide humane treatment for the research animals. Fortunately, the mice and rats used in research are very different from the ones you were told to stay away from as a child. Mice and rats commonly used in animal research are born and raised in a controlled environment, free of dirt and disease. These aren’t the plague-bearing “vermin” your mother warned you about!



Someone who isn’t comfortable handling animals can easily transmit this fear to the animal through non-verbal communication. The rats and mice interpret this as a need to get away or make an escape. This is where injury to the animal or handler can occur, depending on how each one reacts. As a general rule, to help the animal feel secure, use a firm (yet gentle) hold on the animal, and provide support for it. Never dangle or hold a rodent out and away from your body, as this will result in a very nervous animal since this sensation is akin to us being suspended off the side of a cliff. The animal’s nervousness will only increase the discomfort of the animal handler. Even if you do experience discomfort when holding a rodent, handling it with confidence will allow you to have a more positive experience with these little fuzzy critters, rather than reinforcing the same old stereotypes.

Because animal-handling issues affect each one of us differently, it is best to become accustomed to being around rats and mice, observing their behaviors, and following a plan that allows yourself to become comfortable picking them up and handling them. This can be accomplished by attending (more than once, if necessary) the UCUCA *Laboratory Rat/Mouse Handling Techniques 101* classes. These classes are designed to provide a comfortable, safe, supportive environment to return and return and return to, in order to be comfortable handling rodents and performing techniques such as restraint, injection, and blood collection. These classes are also great for refreshing your skills after a time away from working with mice or rats. To sign up for the rodent handling classes, please visit the UCUCA website (www.ucuca.umich.edu) and click on “Training.”



Editor’s Note: A special thanks to Janet Hoff for suggesting this topic!

LEADING THE RAT RACE: MEET DR. STEVEN BRITTON



By Linda Stegmeyer
ULAM

Eighties-era exercise guru Richard Simmons admonished, “You fed it, you lift it.” While that kind of challenge might get some people to their feet, others might be more inclined to settle deeper into the sofa, convinced that exercise simply is not worth the effort. Warnings that lack of aerobic exercise can lead to heart disease and diabetes bring some people to their senses, but again, many others can’t see that far into the future, and choose to leave what lies ahead to chance. What, however, do you think those same people would do if they knew that genetics might have something to do with their drive to exercise, and that they could be trained to become better at exercising? There is evidence supporting both these statements based on research done with rats and treadmills, and it’s leading to new questions about heredity and its connection to risk factors associated with cardiovascular disease.

Researchers from the Norwegian University of Science and Technology, the Medical College of Ohio, and the University of Michigan Medical School collaborated on this groundbreaking effort. Representing the University of Michigan in this picture are Steven Britton, PhD, professor of physical medicine and rehabilitation, and Lauren Gerard Koch, PhD, assistant professor of physical medicine and rehabilitation. A recent interview with Dr. Britton revealed why this research is so exciting, and why it holds so much promise. But let’s start at the beginning.

With a background in physiology and biophysics, Dr. Britton was intrigued by what he calls “the profound complexity of biosystems.” Together with like-minded colleagues at the Medical College of Ohio, he wanted to find out how to use what was already known about biosystems to further medicine. Dr. Britton narrowed his search to heart disease because it is the number one killer in the United States. His idea for creating a model with treadmill-running rats emerged in 1993, and in 1996 he recruited Dr. Koch to start development of rat models of heart disease. Meanwhile, the Norwegian group in Trondheim had become expert in phenotyping rats for cardiovascular traits, which lead ultimately to an excellent collaborative effort. Drs. Koch and Britton formed a team in 2001 to evaluate disease in the rats, and in 2004 they joined the University of Michigan Medical School. The excellent reputation of the Unit for Laboratory Animal Medicine (ULAM) was a major factor in the move to the University of Michigan. It was here that Drs. Koch and Britton have been able to extend their collaborative efforts that now include 15 laboratories in 8 countries.

Koch and Britton rats were selectively bred to create offspring with low and high aerobic exercise capacity. Those rats that showed high capacity for running on a treadmill were bred with other high-capacity runners (HCRs). Those rats with a low capacity for running on a treadmill were bred with other low-capacity runners (LCRs). After 11 generations, rats with low aerobic exercise capacity scored higher on cardiovascular risk factors than their high-aerobic counterparts. Among those risk factors were insulin resistance, higher levels of fatty acids in the blood, and greater body weight. The most significant of these risk factors was the finding that the low-aerobic-capacity rats had deficits in the biochemical pathways that lead to the formation of the energy-transfer molecule called ATP. ATP is produced when glucose and fatty acids break down and combine with oxygen. It is a source of energy for every cell in the body. The 11th generation LCRs had abnormally low levels of the proteins necessary for production of ATP, meaning that they were unable to adequately utilize oxygen. It is this point that seems to create the strongest connection between reduced total-body aerobic capacity and cardiovascular and metabolic disease. And it is this point that makes the scientific community so excited. Additionally, the researchers learned that training on the treadmill helped even the low-capacity rats to achieve higher exercise capacity. That’s good news for those among us who rail against exercise.

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WHAT IS eSIRIUS?

FREQUENTLY ASKED QUESTIONS

The following eSirius FAQs also appear on the UCUCA website (www.ucuca.umich.edu).

WHAT IS eSIRIUS?

eSirius is a web-based system for managing the submission, review, and approval of applications for the use of vertebrate animals at the University of Michigan. In the future, it will also encompass animal requisitions, invoicing, and census management.



WHO WILL BE ABLE TO USE eSIRIUS?

The program is for Principal Investigators and members of their staff who submit and edit protocols. If you (the PI) would like a lab member to access the system to fill out protocols on your behalf, they will need to be included on the eSirius Access Request Form as well.

HOW DO I GET ACCESS TO eSIRIUS?

Principal Investigators must complete the eSirius Access Request Form and return it to the UCUCA Office. You can download a PDF copy of the form by clicking [here](#), although the form must be submitted on paper since original signatures are required.

WHEN AND WHERE ARE THE TRAINING SESSIONS FOR eSIRIUS?

Go to the Animal Use Personnel Training page to view a list of eSirius class times and locations. We do encourage you to sign up for training before you are in need of submitting a new protocol to the UCUCA office.

WHAT CAN BE SUBMITTED THROUGH eSIRIUS AND WHEN?

New and renewal animal use applications can be submitted through eSirius, and amendments and annual reviews to those applications approved in eSirius, beginning September 15, 2005. All protocols that were approved in the paper format (Form 8225) will continue to have amendments and annual reviews submitted via memo format.

WILL I BE ABLE TO SUBMIT PROTOCOLS USING THE PAPER FORM 8225?

Yes, paper Form 8225 applications will be accepted until December 1, 2005. After December 1, 2005, all new and renewal applications will be accepted only through eSirius. Amendments to those protocols already approved in paper form will remain in paper form until the protocol expires, unless the UCUCA Office staff converts the protocol into the electronic format. You will be notified if and when this happens.

HOW DO I KNOW I SUBMITTED THE PROTOCOL PROPERLY ON eSIRIUS?

With every part of the process, an email is sent to you from the eSirius program. You can also check your eSirius home page, which will tell you if the protocol is at the UCUCA Office, if it is undergoing review by the UCUCA Committee reviewers, or if the protocol is awaiting your response to Committee questions.

Continued on next page...

WHAT IS eSIRIUS? FREQUENTLY ASKED QUESTIONS

FAQs...Continued from previous page

HOW DO I KEEP TRACK OF THE PROGRESS OF MY NEWLY SUBMITTED PROTOCOL?

Protocols will remain on your eSirius home page until the protocol has been approved. You will see the progress of your protocol through the Work Flow Status, which will tell you if the protocol is at the UCUCA Office, if it is undergoing review by the UCUCA Committee reviewers, or if the protocol is awaiting your response to Committee questions.

HOW DOES eSIRIUS AFFECT MY PROTOCOLS CURRENTLY UNDERGOING REVIEW?

If you currently have an application or modification under review, it will be completed in paper format. eSirius will only affect new or renewal protocols submitted after September 15, 2005, and modifications to those protocols. However, paper applications will be accepted until December 1, 2005.

HOW DOES THIS CHANGE MY CURRENTLY APPROVED PROTOCOLS?

All amendments or modifications to currently approved protocols will continue to be submitted in the memo format until the protocol is converted to the web-based system by the UCUCA Office staff. Those investigators whose protocols are converted by the UCUCA Office staff will be notified by email after their protocol has been entered into the system. After your protocol has been converted, all modifications and annual reviews will be submitted electronically via eSirius.

WHO DO I CALL FOR PROBLEMS OR QUESTIONS ABOUT eSIRIUS?

If you have questions about eSirius or if there is a problem with the program while you are entering information, please contact the UCUCA Office at ucuca.office@umich.edu. Please include the name of any error message that appears. Please remember, this is a new program and there may be problems. Without your help, we cannot fix them.



eSirius...Continued from page 1

In order to submit your new/renewal protocol in the eSirius system, you must gain access by filling out an eSirius access form. The PI, and anyone to whom a PI delegates the responsibility of entering a protocol, are required to obtain access in order to submit animal use applications for UCUCA review. It is suggested that you also attend an eSirius training class.

The UCUCA Office has begun offering training courses on eSirius. Training classes are posted on the UCUCA website (www.ucuca.umich.edu) as they become available.

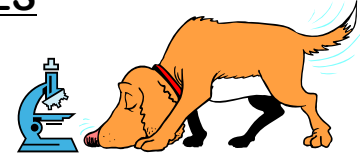
The eSirius Access form is also found on the UCUCA website.



BONE FRAGMENTS

UCUCA LAB INSPECTIONS: PERUSING THE FACILITIES

By Steve Durkee
UCUCA



According to the Public Health Service (PHS) Policy, an animal facility is defined as “any and all buildings, rooms, areas, enclosures, or vehicles, including satellite facilities, used for animal confinement, transport, maintenance, breeding, or experiments inclusive of surgical manipulation.” Based on this definition, the UCUCA visits ALL areas where animals are used. For those of you who have never had the UCUCA visit your laboratory, this means we will be coming to see you soon. There is nothing to fear, though, for we are here to help!

When a regulatory compliance associate from the UCUCA Office comes to visit, it will be unannounced. The goal of these visits are to fulfill the regulatory requirements, review areas in the laboratory where animals are used, review records (e.g., controlled substance usage, surgical records, etc.), meet laboratory staff, and provide information or answer questions related to regulatory matters and animal use. The UCUCA fully supports a coaching environment, which means you should not be afraid or nervous when we visit, as our goal is to create a collaborative, compliant environment at the University of Michigan.

Please feel free to contact the UCUCA Office by email (ucuca.office@umich.edu), phone (763-8028), or visit our website (www.ucuca.umich.edu) if you have any questions about these visits or any other matters related to animal care and use.



“Every dog must have his day!” — Jonathan Swift

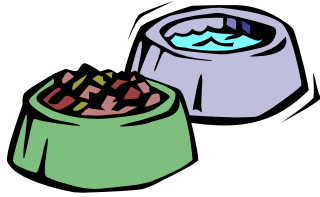
Dr. Britton...Continued from page 3

This research, from the Koch and Britton laboratory and their colleagues from Norway and Ohio, was published in the January 21, 2005 issue of *Science*. Since that time, Drs. Koch and Britton have been surprised and delighted at the demand for collaborative research with their rats.

While the connection between aerobic capacity and disease is promising, it has yet to be proven at the cause and effect level. Dr. Britton is eager to continue his search for answers. His primary question is: “Mechanistically, what is it that the low-disease animals have that makes them *different*?” Dr. Britton wants to continue his research at the genetic and protein level. Diagnostic factors to look at include genetic and physiological factors that underlie the differences in oxygen metabolism between LCR and HCR rats. Is there a way to apply these future findings to therapy for obesity, diabetes, and heart disease? Can his research result in more successful lifestyle interventions that will result in lower levels of heart disease? It remains to be seen, but Drs. Koch and Britton, who currently maintain a colony of 700-900 rats under the care of ULAM, are optimistic. Especially important for this work are Lori Gilligan and Ashley Duval, who provide the frontline effort in the breeding and phenotyping of these special rats. Their knowledge about and concern for these rats is a large part of what keeps the rats a useful resource. For those of us with an aversion to exercise, let’s wish success for the Koch-Britton laboratory

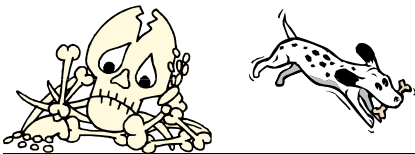


BONE FRAGMENTS



GOT FEEDBACK?

Do you have questions, comments, corrections, or suggestions about *The Backbone*? Is there a topic you would like to see covered in a future issue? We want to hear from you! Email us at ucuca.office@umich.edu or call (734) 763-8028 and tell us about it!



GET A BACKBONE!

Readers wishing to receive future issues of *The Backbone* can be included on the mailing list by completing and returning the request form on the back page of the newsletter. Additional copies of *The Backbone* are also available from the UCUCA office.

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WE'VE GONE BATTY!

Here are some fun facts about these flying fur balls to get you in the Halloween spirit! (information from www.batcon.org and www.batworld.org)



- # Bats are not flying rodents. They are of the group *Chiroptera*, a name that means "hand-wing."
- # Bats are the only mammals that truly fly.
- # There are over a thousand species of bats; this is about a quarter of all mammalian species.
- # Bats range in size from the smallest mammal on earth (the Thai bumblebee bat, which weighs less than a penny) to behemoths with a wingspan of six feet (Indonesian flying foxes).
- # Most bats only produce one pup per year, making them the slowest-reproducing mammal for their size.
- # North American little brown bats can live to be over 32 years old, making them the longest-lived mammal for their size.
- # Although their primary mode of navigation involves echolocation, bats are not blind.
- # Bat echolocation is more sophisticated than any system developed by human scientists.
- # Bats are also good listeners. African heart-nosed bats can hear a beetle's footsteps from six feet away, and frog-eating bats differentiate poisonous frogs from non-poisonous ones by listening to their mating calls.
- # Contrary to popular myth, bats do not entangle themselves in people's hair.
- # Bats help keep the insect population down; one little bat can eat over a thousand mosquitoes in one hour.
- # Vampire bats do not attack people; nor do they turn into Dracula!
- # Vampire bats are also quite philanthropic. They adopt orphan pups and also share food with other bats.
- # Bats are responsible for pollinating and spreading the seeds of many species of plants.
- # In some parts of the world, it is good luck to have bats in your belfry.
- # Bat research has resulted in advancements in navigational systems, various types of drugs, and even artificial insemination.



The Backbone

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Topics/areas of interest you would like to see explored in future issues: _____

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