



WAR ANIMALS: From Horses to Glowworms: 7 Incredible Facts!!! By History.com Staff

1. World War I, in which 10 million soldiers died, also resulted in the deaths of 8 million military horses.



Whether pulling chariots, transporting equipment or carrying people to battle, the horse has seen more action in wars than any other animal; in fact, the earliest equine training manual dates back to 1350 B.C. By the outbreak of World War I, advances in military technology meant that conditions on the front were often more dangerous for horses than for humans. In just one day during the 1916 Battle of Verdun in France, for instance, some 7,000 horses were killed, including nearly 100 animals that died after being struck by a French naval gun blast. Horses were also more susceptible to the elements, and thousands succumbed to exhaustion, disease and poison gas attacks. Many more might have been lost without the efforts of units such as Britain's Royal Army Veterinary Corps, which treated more than 2.5 million injured horses during World War I. Of these patients, 75 percent were successfully returned to service.

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“By the outbreak of World War I, advances in military technology meant that conditions on the front were often more dangerous for horses than for humans. In just one day during the 1916 Battle of Verdun in France, for instance, some 7,000 horses were killed...”



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2. Sergeant Stubby, the most decorated dog of World War I, captured a German spy and outranked his owner.



In 1917, a stray puppy wandered onto the Yale University campus, where members of the 102nd Infantry Regiment were training. The pit bull mix won over the unit with his antics, participating in drills and even learning how to salute with his right paw. Private J. Robert Conroy adopted the dog, named him Stubby and smuggled him to the front lines in France. There, exposure to mustard gas left Stubby highly sensitive to the noxious fumes and able to warn the 102nd of imminent attacks. He also learned to locate wounded soldiers during patrols. One day, Stubby spotted a German spy and attacked the bewildered man until reinforcements arrived; the achievement earned him the rank of sergeant. In his 18 months of service, Stubby participated in 17 battles, survived a series of wounds and provided a much-needed boost of morale to his fellow soldiers. After the war he returned to the United States with Conroy (who never made it past corporal himself) and became a national icon, leading parades and receiving awards until his death in 1926.

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3. Camels drafted by the U.S. Army fled to Canada in the 19th century.



Camels have long taken part in combat operations, most notably in the Middle East and North Africa during both World Wars. They also took part in an improbable experiment that by all accounts failed miserably. In the mid-19th century, the U.S. Army faced the difficult task of hauling supplies across newly acquired lands in the Southwest, where the arid and inhospitable terrain proved too harsh for traditional beasts of burden such as horses and mules. Enter the U.S. Camel Corps, composed of 60-plus camels that were purchased and shipped to America in the 1850s. At first, the camels performed admirably on numerous surveying missions, impressing their military handlers with their strength and ability to survive on little food and water. But trouble soon arose when the dromedaries' famously irritable and stubborn dispositions started spooking other army animals. Shortly after the outbreak of the Civil War in 1861, the Camel Corps was discontinued entirely. Some of its members fell into the hands of private citizens, while others escaped into the wild and traveled as far as Canada—where residents reported seeing feral camels up until the 1930s.

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4. World War I soldiers brightened the trenches with glowworms.

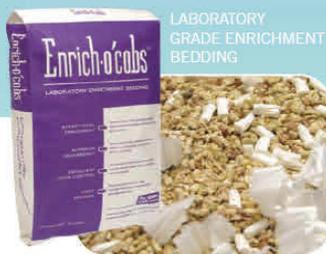
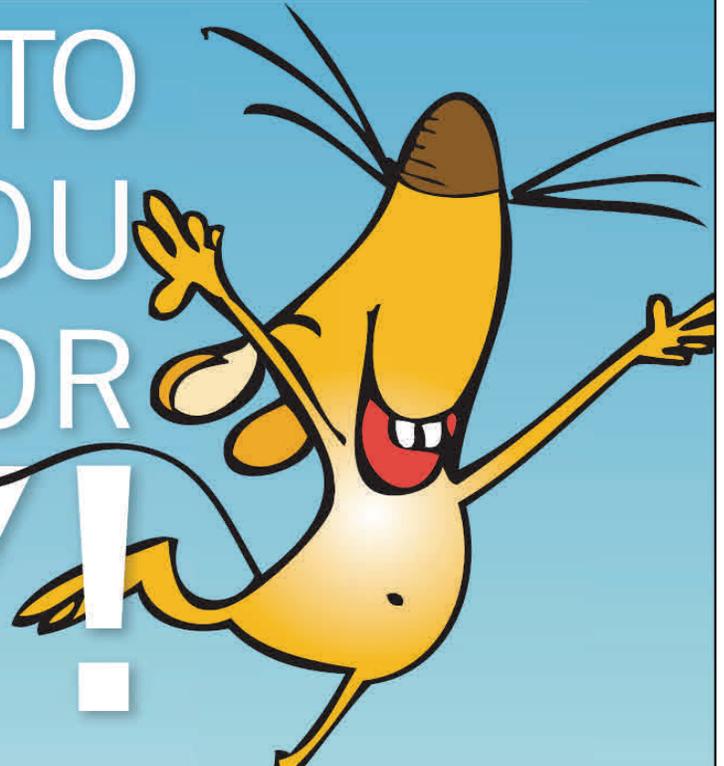


One of the most unlikely nonhuman contributions to World War I was made by *Lampyrus noctiluca*, more commonly known as the European glowworm, which emits light through bioluminescence. Huddled in dank, dark trenches, enlisted men and officers alike turned to the incandescent insects for help, collecting them in jars by the thousands. These instant but ephemeral lanterns allowed soldiers to examine intelligence reports, study battle maps or simply read comforting letters from home. According to a 2010 study, just 10 glowworms can provide the same amount of illumination as a modern-day roadway light. (Image: Dymorodrepanis/Wikimedia Commons)

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“One of the most unlikely nonhuman contributions to World War I was made by *Lampyrus noctiluca*, more commonly known as the European glowworm, which emits light through bioluminescence. ...”

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5. A pigeon flew 150 miles to deliver news of D-Day's success during World War II.



The use of homing pigeons as military messengers dates back to the ancient Greeks and Persians, but it wasn't until the late 19th and early 20th centuries that birds were used in large-scale intelligence efforts. During both World Wars, the United States and United Kingdom assembled special pigeon service units comprised of tens of thousands of birds. So important were pigeons to the British war effort during World War I that the army issued orders aimed at protecting them; intentionally killing or hurting a homing pigeon could land offenders in prison for six months. More than 16,000 homing pigeons were parachuted into Europe during World War II, including Gustav (formally known as bird NPS.42.31066), who flew more than 150 miles back to England on D-Day to deliver the first official word of the Normandy landings.

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6. Elephants' alleged fear of pigs inspired an ancient military tactic.



Elephants regularly participated in military campaigns in ancient times, most famously during the Carthaginian general Hannibal's legendary trek over the Alps in 218 B.C. According to Greek and Roman chroniclers, the giant creatures had one fatal flaw that enemy armies exploited as a countermeasure: The sound of a squealing pig could give even the largest trained elephant a debilitating fright. Pliny the Elder, Aelian and others describe battles in which pigs were lit on fire or swung from the walls of besieged cities, produce piercing cries that scattered advancing elephants.

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7. Dolphins and sea lions work undercover—and underwater—for the U.S. Navy.



Operating in secret until the 1990s, the U.S. Navy Marine Mammal Program has been recruiting and training sea creatures for more than 40 years. Early on, various species were considered for the initiative, including killer whales and seals, but bottlenose dolphins and California sea lions quickly emerged as the star pupils. Endowed with superior underwater senses and immune to the bends, the smart swimmers have served in Vietnam, in the Persian Gulf and at naval bases on the home front. Dolphins discover and mark sea mines, which they're too lightweight to trigger, with their incredible echolocation skills. Sea lions dive hundreds of feet below the surface to investigate and recover lost or suspicious objects. And both animals are taught to guard harbors and ships by detecting unauthorized intruders such as enemy divers.

History.com Staff

“the U.S. Navy Program... has been recruiting and training sea creatures for more than 40 years. Endowed with superior underwater senses and immune to the bends, the smart swimmers have served in Vietnam, in the Persian Gulf and at naval bases on the home front”

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WHO'S NUTZ? Institutional News and Updates...



Dept. of HHS, CDC

This year has been busy so far for the laboratory animal program at the Centers for Disease Con-

trol and Prevention. Our animal care staff members are working hard to achieve their lab animal certifications. I would like to congratulate Jeremy Reese on his ALAT and Stephanie Weaver, the training coordinator, on her CPIA and CMAR. We have several folks studying now for ALAT, LAT, LATg, CMAR and CPIA certifications!

I would also like to an-

nounce our two new veterinary residents that will be starting this July, Drs. Nicole Lukovsky from Tuskegee College of Veterinary Medicine and Cynthia Cary from the Atlantic College of Veterinary Medicine (Prince Edward Island, Canada). We look forward to having these new residents join our family!

However, it is with a heavy heart that we say

goodbye to our IACUC Administrator, Stephanie Gumbis. She has accepted a new position in CDC's Office of Antimicrobial Resistance and her absence from our office will surely be felt. Congratulations and good luck, Stephanie!

Kristin Mayfield - Quality Assurance Officer Animal Care and Use Program Office



Hello SEAALAS!

Georgia State University has been very busy and growing, it seems with every month. We'd like to welcome Kalah Byrd and Joi Scott as Lab Animal Technicians. We'd like to congratulate David James who returned as a temporary worker and was promoted back to being a full-time Lab

Animal Technicians as well! Good luck to Ancilla Titus-Scotland, Evan Hutto, Nikki Chotas, and Jared Holloway who prepare to take the next level of certification exams!

We are also finishing construction on a new ABSL3 facility as well as expanding our ABSL2 suite. We have completed our interviews for a new Clinical Laboratory Animal Veterinarian, who will start July 1. More to follow on our candidate, once he or she has been chosen. That's it for now.

Matthew Davis, BS, RLATg Associate to the Director Georgia State University Animal Resources



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WHO'S NUTZ? Institutional News and Updates...cont'd.



University of Georgia

Animal Resources at the University of Georgia kicks off a new year by surviving the snow days. As snow covered everything, shutting down businesses left and right, many of our technicians risked the weather to provide utmost quality care for our animals. We really appreciate those technicians who put in those extra hours cover-

ing for the rest of our team who could not make it in. This did bring into prospect how well our team works together in events like this, and the importance of early planning. We are slowly working towards a sounder emergency plan for events like this and others in the future through table top exercises.

UGA also had a high attendance to SEAALAS this year despite the snow. We wish to congratulate Dr. Leanne Alworth for winning the BioServ Animal Welfare Award, Todd McDaniel for winning the Linda Hazel Memorial Award, and Nichole Snell for winning Technician of the Year. A lot of our techni-

cians were also recognized for achieving ALAT certification. Again we congratulate Chelsea Elliot, Chris Lozo, Lauren Lipcsei, and Jake Peacock for passing their exams. It is exciting to see such interest in our program and continuing education in the Lab Animal field.

There have been some other changes to our staff. We wish to welcome Heather Dowell to our team! She is now working as a full time member at our Vet Med facility. We also wish to congratulate two of our members, Brigid Burns and Lauren Fiechtl on making it into Vet School. Their hard work and dedication has paid off.

We wish them the very best of luck for this next year.

A special thanks to all who have contributed news for this edition of the newsletter!

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WHO'S NUTZ? Institutional News and Updates...cont'd.



Medical University of South Carolina

The Medical University of South Carolina, Department of Comparative Medicine and the Charleston Ralph H. Johnson VA Medical Center team up to bring you the latest news from Charleston, South Carolina.

DLAR have welcomed more new faces. We would like to introduce them to you.

Welcome back to Erica Hussey. Erica is currently working as a Veterinary Technician covering all of the animal facilities at MUSC from rodents to large animals primarily on weekends and holidays.

Rivakah Bradsky is a Clinical Veterinarian that graduated from St. George's University and the University of Missouri. She has been working as a consultant through Charles River for the past five years.

She has worked quite extensively with NHPs, and she also does some wildlife and zoo consulting. Rivakah is originally from another "southern" state as in South Dakota, and has lived in many other states in the country as well as abroad. Rivakah has lived in low country of South Carolina for the past seven years, and she stated that she is very excited to be at MUSC and to be working with a great team!

We would like to say farewell to Dr. Paula Ezell and we wish her the best of luck in future endeavors.

We would also like to thank Darlyn Owens and Jannetta Smith for their dedication to the Department of Comparative Medicine over the years and wish them best of luck in the future and we all hope that they enjoy their retirement!

Our campus is busy, busy, busy right now! We are all working hard in preparing our facilities for our AAALAC, International Site visit in March.

AALAS Certification News:

There were several Animal Caretakers that passed the ALAT Certification, and they are; Patricia White, Danielle Lynch, Gene Thompson, and Loni Carter. Congrats to Joe Hying on passing the LAT certification! Hopefully we will have more good news to report on this front next time as we have several technicians that are scheduled to take a certification level soon. Keep studying guys!

The following Technicians have been awarded Tech of the Month for a job well done:

October 2013: **Danielle Lynch**
 November 2013: **Chao Sun**
 December 2013: **Carlos Herrera**
 January 2014: **Elijah Graham**
 February 2014: **Brian Brown**
 Keep up the excellent work guys!!

Chao Sun was awarded the Division of Laboratory Animal Resources Technician of the Year Award for 2013 at our annual Christmas Party. This is an award that is

given to an animal caretaker that has gone above and beyond the call of duty throughout the year.

DLAR is very proud of all of the people that were chosen as award winners from SEAALAS for 2013 from MUSC. We all have a wonderful time at the conference and awards banquet.

Submitted by: Deidre Wright, LATG

"Tech of the Month for a job well done:
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TECH-Uniques...

Recommended Techniques for handling lab mice to reduce anxiety....Study published in Nature Methods

Improving handling techniques for laboratory mice helps reduce stress and anxiety, according to a study published today in the journal Nature Methods. The techniques identified in the study should lead to further improvements in the welfare of the mice.

Improving welfare conditions is a key element of the 'refinement' of laboratory procedures, one of the '3Rs' that aims to replace, reduce and refine the use of animals in experiments.

Currently, the standard procedure for handling mice is to pick up the mouse by its tail. However, scientists have not been aware that this can cause anxiety and stress to the mouse as mice appear to have an innate aversion to tail handling. Professor Jane Hurst and Rebecca West from the University of Liverpool have identified two other handling methods that significantly reduce anxiety and stress.

To assess anxiety-related behaviour in anticipation

of handling, the researchers observed behaviour such as whether the mouse would voluntarily approach and interact with the handler immediately before and after daily handling, as well as urination and defecation during handling and a standard test of anxiety.

The first method involved bringing a clear acrylic tunnel towards the mouse. The mouse would voluntarily walk into the tunnel, allowing it to be lifted without direct contact.

The second method was for the handler to cup the mouse in his or her hands and allow it to walk freely over the open gloved hands. As unfamiliar mice tend to jump immediately away, Professor Hurst recommends closing the hands loosely around the mouse on the first time until it becomes accustomed to the experience.

The researchers also found that restraining a mouse by its tail did not

cause undue stress or anxiety if the mouse had first been picked up using one of the above methods. When the mouse needed to be restrained more securely by the scruff of the neck, this did not reverse the taming effects of being handled on the open hands or using a tunnel.

"Animal welfare standards in UK laboratories are extremely high, but even so, it is very important that we always look for ways to improve conditions for the animals," says Professor Hurst. "The routine handling of laboratory animals is essential, so it is important that we do all we can to reduce any stress and anxiety. Using methods that minimize anxiety also reduces confounding factors and improves the responses during experiments, leading to more robust scientific outcomes."

The research was funded by the BBSRC, NC3Rs and the Wellcome Trust. Dr Vicky Robinson, Chief Executive of the NC3Rs,

comments: "This study shows that even the simple act of handling a mouse can cause it anxiety and stress, which in turn can affect experimental results. All researchers using mice are going to have to ask themselves whether picking the animal up by its tail is now the right thing to do." <http://www.nc3rs.org.uk/news.asp?id=1404>

"Improving handling techniques for laboratory mice helps reduce stress and anxiety, according to a study published today in the journal Nature Methods"



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LEGALi-Tease...Equal Opportunity for Mice?

Policy: NIH to balance sex in cell and animal studies

Janine A. Clayton & Francis S. Collins

More than two decades ago, the US National Institutes of Health (NIH) established the Office of Research on Women's Health (ORWH). At that time, the Congressional Caucus for Women's Issues, women's health advocacy groups and NIH scientists and leaders agreed that excluding women from clinical research was bad for women and bad for science. In 1993, the NIH Revitalization Act required the inclusion of women in NIH-funded clinical research.

Today, just over half of NIH-funded clinical-research participants are women. We know much more about the role of sex and gender in medicine, such as that low-dose aspirin has different preventive effects in women and men, and that drugs such as zolpidem, used to treat insomnia, require different dosing in women and men.

There has not been a corresponding revolution in experimental design and analyses in cell and animal research — despite multiple calls to action¹.

Publications often continue to neglect sex-based considerations and analyses in preclinical studies^{2, 3}. Reviewers, for the most part, are not attuned to this failure. The over-reliance on male animals and cells in preclinical research obscures key sex differences that could guide clinical studies. And it might be harmful: women experience higher rates of adverse drug reactions than men do⁴. Furthermore, inadequate inclusion of female cells and animals in experiments and inadequate analysis of data by sex may well contribute to the troubling rise of irreproducibility in preclinical biomedical research, which the NIH is now actively working to address^{5, 6}.

The NIH plans to address the issue of sex and gender inclusion across biomedical research multidimensionally — through programme oversight, review and policy, as well as through collaboration with stakeholders including publishers. This move is essential, potentially very powerful and need not be difficult or costly.

Better with both

Certain rigorous studies evaluating the effects of sex differences have been effective in bridging the divide between animal and human work. One example concerns multiple sclerosis (MS). Women are more susceptible to MS than men are, but develop less-severe forms of the disease. The



most widely accepted MS animal model — rodent experimental autoimmune encephalomyelitis (EAE) — has revealed⁷ that sex differences in MS are related to both reproductive and non-reproductive factors. Findings⁸ that oestrogen therapy provided benefits in rodent EAE supported use of an oestrogenic ligand as a candidate neuroprotective

agent for MS that is now being studied.

Moreover, differences between the sexes in both the animal model and human MS have now been correlated with genetic factors. For example, some Y-chromosome genes (in male mice) seem to have a protective effect against the disease, and some X-chromosome genes (in female mice, with potentially double the dosage) have a disease-causing effect. Earlier this year, a study⁹ demonstrated that mice with XY chromosomes in the central nervous system had greater neurodegeneration than did those with XX chromosomes. The findings have important implications for other sex-skewed neurological conditions, including Parkinson's disease, schizophrenia and stroke. Finally, inherited effects have been linked to imprinting of genes on sex and non-sex chromosomes (autosomes). Maternal parent-of-origin effects have been associated with MS risk¹⁰.

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LEGALi-Tease...Equal Opportunity for Animals?

Policy: NIH to balance sex in cell and animal studies

Janine A. Clayton & Francis S. Collins

Substance abuse is also affected by sex. One target for intervention has been stress systems that mediate craving. Female rats exhibit a greater response to stress by the neurotransmitter norepinephrine than do male rats. A promising study¹¹ published this year provides the first evidence, in humans, of temporary attenuation of cocaine and alcohol craving, anxiety and negative emotion after stress in females — but not males — using guanfacine, which dampens the body's nervous-system response to stress.

Typically, reasons for male focus in animal-model selection centre on concerns about confounding contributions from the oestrous cycle. But for most applications, female mice tested throughout their hormone cycles display no more variability than males do, as confirmed in a meta-analysis¹².

Convention is another probable reason for reliance on the male-only models that have been typical in many research

areas for decades. Lack of understanding about the potential magnitude of the effect of sex on the outcome being measured is likely to perpetuate this blind spot. use of an oestrogenic ligand as a candidate neuroprotective agent for MS that is now being studied.

Moreover, differences between the sexes in both the animal model and human MS have now been correlated with genetic factors. For example, some Y-chromosome genes (in male mice) seem to have a protective effect against the disease, and some X-chromosome genes (in female mice, with potentially double the dosage) have a disease-causing effect. Earlier this year, a study⁹ demonstrated that mice with XY chromosomes in the central nervous system had greater neurodegeneration than did those with XX chromosomes. The findings have important implications for other sex-skewed neurological conditions, including Parkinson's disease, schizophrenia and stroke. Finally, inherited effects have been linked to imprinting of genes on sex

and non-sex chromosomes (autosomes). Maternal parent-of-origin effects have been associated with MS risk¹⁰.

The sex of cell lines studied in vitro is also too often ignored. Female and male cells respond differently to chemical and microbial stressors. These intrinsic differences are hormone-independent but also exhibit further variation on differentiation and exposure to sex hormones. It is well known that many neurological conditions are sexually dimorphic, and cell-culture studies have demonstrated that male (XY) and female (XX) neurons respond differently to various stimuli. Male neurons are more sensitive to stress from reactive oxygen species and excitatory neurotransmitters; female neurons are more sensitive to some stimuli that prompt the programmed cell death known as apoptosis¹³. Data support distinct cell-death signalling in female and male neurons with potential applications in treatments for stroke, brain injury and other conditions.

There are several approaches to rigorous pre-

clinical research with a focus on sex and gender¹⁴. One, the four-core-genotypes model, can identify and distinguish between the effects of genes and the effects of hormones. The four genotypes in this model are XX gonadal males or females, and XY gonadal males or females. Using this model has, for instance, demonstrated influence of the sex-chromosome complement as a cause of sex differences in obesity and metabolism. On a high-fat diet, mice with two X chromosomes gained more weight than XY mice did, regardless of gonadal sex, and also developed a fatty liver and elevated lipid and insulin levels. These differences are attributable to X-chromosome dosage rather than to Y-chromosome effects¹⁵.

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Policy: NIH to balance sex in cell and animal studies

Janine A. Clayton & Francis S. Collins

Various organizations have taken steps to increase awareness and address unconscious bias about the importance of sex and gender in biomedical research. Several journals now require authors to specify sex and gender-related information. This includes stating the sex of animals used (or in the case of primary cells or cultures, the sex of the animal from which cells are derived) and that of human participants in published studies.

NIH steps

The NIH is now developing policies that require applicants to report their plans for the balance of male and female cells and animals in preclinical studies in all future applications, unless sex-specific inclusion is unwarranted, based on rigorously defined exceptions. These policies will be rolled out in phases beginning in October 2014, with parallel changes in review activities and requirements. Because our goal is to transform how science is done, the first step will be the development and delivery of

training modules and detailed policy informed by ongoing data analysis. As part of its initiative to enhance rigour, the NIH plans to disseminate training on experimental design for NIH staff, trainees and grantees. Evaluation of sex differences will be included in these modules.

In 2013, the ORWH, which oversees the NIH-wide research agenda related to sex and gender influences, launched a programme that provides funding supplements to existing grants to add sub-



jects, tissues or cells of the sex opposite to that used in the original grant, or to increase the power of a study to analyse for a sex or gender difference by adding more subjects of either sex to a sample that already includes both

males and females. Although this strategy enables the NIH to capitalize on the value of current research investments, we expect that such a mechanism will no longer be needed once policies on sex influences are implemented for preclinical research.

The ORWH will continue to work with the US Food and Drug Administration to co-fund the Specialized Centers of Research on Sex Differences programme, which supports interdisciplinary collaborations on sex and gender influences in health, and bridges basic- and clinical-research approaches. This programme also facilitates training in sex and gender considerations in experimental design and analysis. The ORWH will leverage lessons learned from these centres.

Reviewers of grant applications must also be brought to the table, because they provide the first insights into taxpayer-funded research. The NIH review process will be modified in phases, and coordinated with requirements for applicants. Reviewers will be enjoined to evaluate applicants' re-

search plans to include, compare and contrast experimental findings in male and female animals and cells.

Furthermore, the NIH will monitor compliance of sex and gender inclusion in preclinical research funded by the agency through data-mining techniques that are currently being developed and implemented. Importantly, because the NIH cannot directly control the publication of sex and gender analyses performed in NIH-funded research, we will continue to partner with publishers to promote the publication of such research results. In requiring sex and gender inclusion plans in preclinical research, the NIH will ensure that the health of the United States is being served by supporting science that meets the highest standards of rigour.

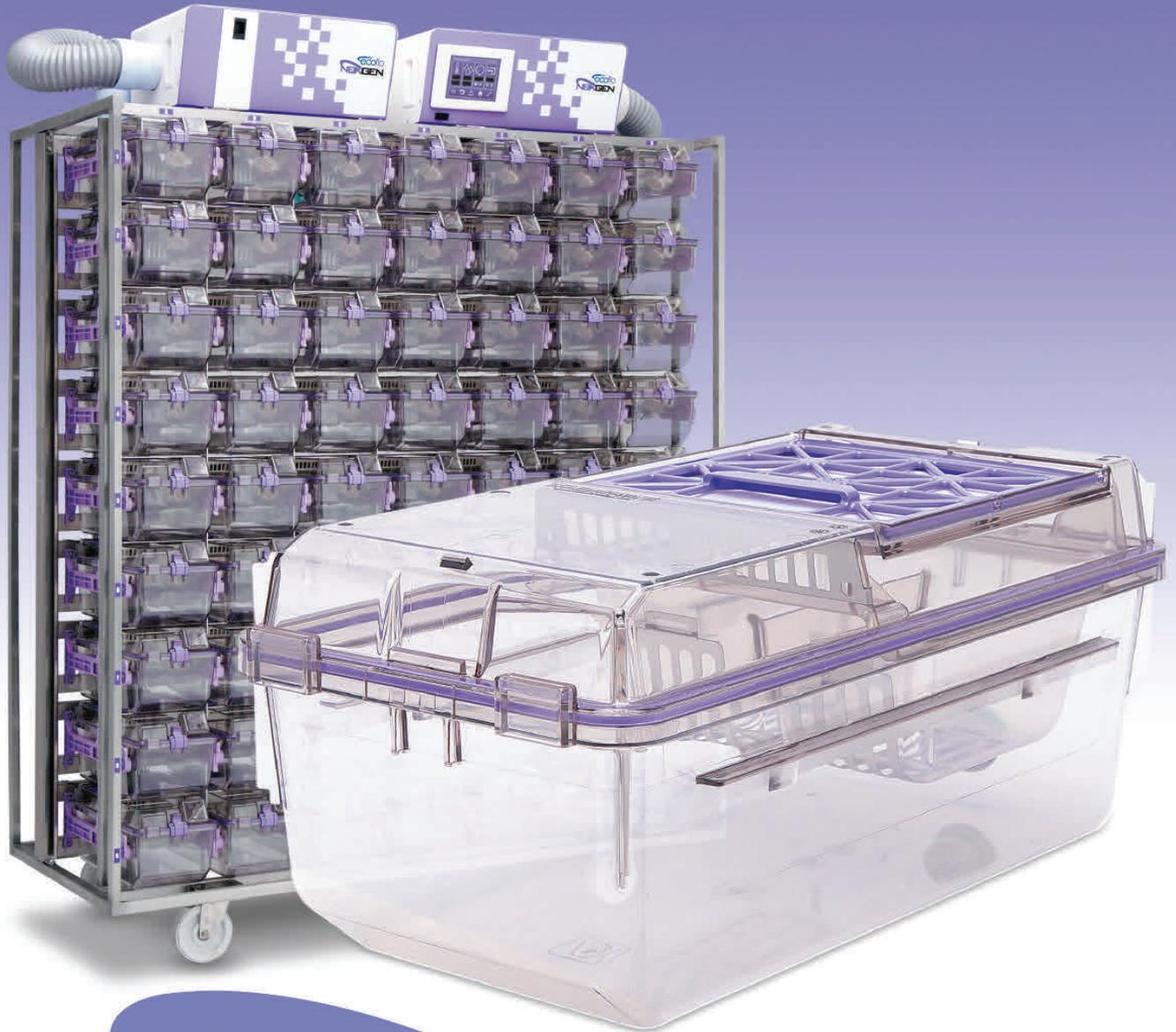
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Guidelines for Preventing Animal Allergies in Laboratory and Vivarium Personnel...



The purpose of these guidelines is to provide guidance for reducing the risk of exposure to animal allergens from handling laboratory animals. These guidelines apply to all university staff and students handling laboratory research animals.

Guidelines:

Animal-related allergy is one of the most important health hazards encountered by laboratory animal employees. Those individuals who work with animals are at risk of becoming sensitized to allergens such as animal dander, scales, fur, body wastes, and saliva. Animal allergies can manifest as allergic rhinitis (runny nose and sneezing); allergic

conjunctivitis (irritation and tearing of the eyes); asthma (shortness of breath, chest tightness, wheezing); or as dermatitis (a skin reaction).

These respiratory symptoms can be persistent and severe; and can lead to permanent disability or require a career change.

Inhalation is one of the most common ways for allergens to enter the body. Workers, over a period of time, may inhale sufficient quantities of allergens to become sensitized. Following sensitization, workers manifest symptoms when exposed again. The longer the exposure continues; the most likely the illness will persist, even after all contact with animals has stopped.

Exposure to animal allergens can occur during regular husbandry duties as well as during the course of research and may include activities such as feeding, cage cleaning, administering agents, sacrificing, sur-

gering, and collecting body fluids.

Sources of exposure to allergens can vary according to animal species, but rabbits and rodents are some of the most common laboratory animals involved in the development of occupational asthma.

To reduce exposure to animal allergens, which in turn reduces your risk of developing allergen sensitivity, the following steps should be taken:

Perform animal manipulations within ventilated hoods or biosafety cabinets whenever possible.

Avoid wearing street clothes while working with animals. Wear dedicated, protective clothing.

Leave work clothes at the workplace to avoid potential exposure problems for family members. Never bring soiled protective equipment home for laundering.

Wash your hands frequently and avoid touch-

ing your face while working with animals or while working in Vivarium spaces.

Keep cages and animal areas clean.

Reduce the number of soiled cages present in the laboratory. Store in a fume hood, if possible, until they are returned to the Vivarium.

Reduce skin contact with animal products such as dander, serum, and urine by using gloves, lab coats or gowns.

Return soiled gowns to the Vivarium frequently for cleaning to prevent exposure through re-use of gowns. Launder lab coats frequently.

“Preventing Asthma in Animal Handlers”. The entire alert is available on-line. <http://www.cdc.gov/niosh/animalrt.html>



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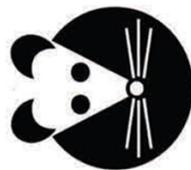
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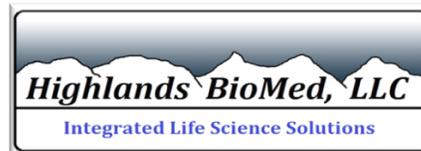
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