Animal Worker Protection Program
For Research Personnel
AWPP is part of the UTSA – IACUC Animal User Training Requirements

Completion of all IACUC required training is necessary for:
- Addition to approved research protocol
- Gain access to LARC animal facilities
- Safely handle/manipulate research animals
- Contact IACUC office for complete list of training requirements iacuc@utsa.edu
Each new animal user must complete the AWPP and OHP Enrollment / Risk Assessment prior to scheduling and participating in LARC “hands-on” training.

NOTE: The AWPP does not fulfill requirement for enrollment into the OHP.
Occupational Health Program (OHP)

- Enrollment **mandatory** for all animal users
- Provides Professional medical **risk assessment** to:
  - Assess **risks based** on **type of exposure** & health status **prior** to having contact with the following in a research environment:
    - **Animals and/or**
    - **Animal byproducts or being around them**
  - Provide guidance promoting healthy work environment & opportunity to **discuss health concerns and strategies to reduce your risks**

Information – contact OHP: utsaohp@utsa.edu

AWPP for Research Personnel
Animal Worker Protection Program (AWPP)

Let’s get started.....
Animal Research Environment – presents unique safety considerations

Animal related hazards
- Allergens
- Animal waste
- Zoonosis

Research related hazards
- Chemicals & lasers
- Biohazardous materials
- LARC Facility hazards – steam, equipment movement, cleaning chemicals, etc...

Awareness of your research/lab environment is key to safety

AWPP for Research Personnel
**Individuals Risk Category**

*Based on type, frequency of direct/indirect contact with live animal, tissues or waste*

<table>
<thead>
<tr>
<th>Cat</th>
<th>Contact</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No direct/infrequent entry</td>
<td>Vendors, Visitors, visiting scholars, trainees</td>
</tr>
<tr>
<td>B</td>
<td>Regular indirect</td>
<td>Facilities, IACUC member, EHSRM, Police, Custodial</td>
</tr>
<tr>
<td>C</td>
<td>Frequent direct</td>
<td>LARC, Research Staff, Facilities working with HVAC</td>
</tr>
</tbody>
</table>

AWPP for Research Personnel
This presentation is designed to promote a safe work environment by:

- Educating you on the health risks associated with research animals and their environment

Discuss practices to minimize risks to you and research data

Animal Worker Protection Program (AWPP) for all personnel in contact with animals in a research environment in compliance with NIH requirements

AWPP for Research Personnel
Animals (Animal Allergens & Waste)

Sharps/Needles

Bites/Scratches

Latex Allergies

Zoonosis

Protocol Related Hazards

AWPP Health Risk Topics

AWPP for Research Personnel
AWPP Health Risk Topics

Animal Allergens

AWPP for Research Personnel
Allergies are by far the most important occupational health issue

- Prevalence of allergic symptoms in regularly exposed personnel ranges from **10% to 30%**
- Estimated **5 – 10%** of laboratory animal workers will develop occupation-related asthma
Present in LARC animal facilities:

- Dander, fur
- Soiled bedding
- Urine

Exposure:

- Inhalation
- Skin contact (surfaces)
- Eyes (touching eyes, splashes)

You may be already sensitive if you...

- Have hay fever/allergies
- Smoke

Contact OHP if you have allergy problems/questions before entering animal facilities
## Major Allergens

<table>
<thead>
<tr>
<th>Animal</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td></td>
</tr>
<tr>
<td>Guinea Pigs</td>
<td></td>
</tr>
<tr>
<td>Rabbits</td>
<td></td>
</tr>
<tr>
<td>Mice</td>
<td></td>
</tr>
<tr>
<td>Rats</td>
<td></td>
</tr>
</tbody>
</table>

**Sources:** Urine, dander, fur, saliva, feces, serum, feathers, etc.

**Animal Relative Risk**

- **LOW**
- **HIGH**
<table>
<thead>
<tr>
<th>Disorder</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>URTICARIA</td>
<td>Redness, itchy skin, welts, hives</td>
</tr>
<tr>
<td>ALLERGIC CONJUNCTIVITIS</td>
<td>Sneezing, itchiness, clear nasal drainage, nasal congestion</td>
</tr>
<tr>
<td>ALLERGIC RHINITIS</td>
<td>Sneezing, itchiness, clear nasal drainage, nasal congestion</td>
</tr>
<tr>
<td>ASTHMA</td>
<td>Cough, wheezing, chest tightness, shortness of breath</td>
</tr>
<tr>
<td>ANAPHYLAXIS</td>
<td>Itching, hives, throat tightness, dizziness, fainting, nausea, vomiting, diarrhea, cardiopulmonary arrest</td>
</tr>
</tbody>
</table>

Seek immediate medical care!
Rodent allergens are present in highest quantities on bedding particles

- **Disturbing bedding increases exposure**

The following solutions and practices will minimize aerosolization of bedding particles to reduce your exposure.
Engineering Solutions
Minimize your allergen exposure

Animal holding rooms have:
- Min of 10 – 15 air changes/hr
- Cage changing stations

Animal Housing - Individually ventilated cage (IVC) rack systems:
- 60-70 air changes/hr inside cages
- HEPA filtered exhaust - minimizes allergen exposure
Engineering Solutions
Minimize your allergen exposure

Manipulation of animals **always** conducted within either **and** wearing appropriate PPE:

Biosafety Cabinet (BSC)

Animal Transfer Station (ATS)

BSC/ATS Training is provided in the LARC Facility Orientation
Personal Protective Equipment (PPE)

Wear PPE according to signage posted in LARC facilities

Type based on required level of protection for individual and or animal

PPE located in LARC hallway cabinets & animal rooms

Location and instruction for PPE will be provided during LARC Facility Orientation
Reduce Inhalation Exposure

Masks/respirators offer protection from inhaling allergens

Type based on individual need or required level of protection

Respirators require annual fit testing by OHP

Animal Allergens

Discuss your options with OHP!
Reduce Exposure...

Movement of Animals between LARC Facilities and Laboratories

Animal Allergens
Reduce Exposure...Movement of Animals

Cages must have **lid** & **cover** when leaving facility.
Reduce Exposure...Movement of Animals

Minimize the transportation and movement of animals outside facility to reduce exposure

- Must cover animal cages when moving/transporting between facilities and labs
- Cage cover should be non-see-through plastic (bag)
Reduce Exposure...Movement of Animals

Must use *freight elevator only* to move animals between floors:

- Reduces exposure of animal allergens to non-animal research personnel

**IMPORTANT!**

- To avoid suffocation/overheating: *Do not leave animals covered >10 minutes*

Reminder! Animals must be covered during transport
Reduce Exposure...Movement of Animals

Movement of animals via stairwells or passenger elevators is prohibited.

Passenger elevator may be used only in instances the freight elevator not available/under repair – must follow procedures to minimize movement/exposure when in utilizing passenger elevator.

Animal Allergens
If Allergy Develops...

- Consult a physician
- Pulmonary function test may be performed
- Changes in procedures/practices may include:
  - Minimizing exposure time
  - Additional PPE
  - Respiratory protective equipment
- Medications
- Ongoing reassessment may be needed

Animal Allergens
Latex Allergies
Latex Allergy

Latex gloves are **tan** or **yellowish** in color

- Allergy manifested as:
  - Skin rashes, hives, nasal, eye or sinus symptoms
  - Asthma
  - Acute anaphylactic shock (rare)

Contact OHP: utsaohp@utsa.edu or Ext: 5304 for more information

Non-latex - nitrile gloves are utilized in LARC facilities.
AWPP Health Risk Topics

Sharps
Sharps – What are They?

- Ex: Needles, razor/scalpel blades, lancets, broken glassware, glass and hard plastic pipettes and pipette tips
- Disposed in sharps container
- Should be considered a potential bio-hazard even if you are not working with infectious agents

More Information? Contact UTSA Hazardous Waste Management for specific procedures
AWPP Health Risk Topics

ZOONOSIS
Zoonotic Diseases

Diseases transmitted between **animals** and **humans**

Illustration of animals and people interacting.
Zoonotic Diseases

Rodents (examples)

- Lymphocytic Choriomeningitis (LCM)
- Hantavirus
- Rat-Bite Fever (*Streptobacillus moniliformis*)
- Leptospirosis
- Salmonellosis
- Campylobacteriosis
- Dermatomycosis (Ringworm)
Zoonotic Diseases

Non-Human Primates (examples)

- Monkey B-Virus
- Tuberculosis
- Hepatitis virus group
- Shigellosis
- Salmonellosis
- Campylobacteriosis
- Dermatomycosis (Ringworm)

Currently *no primate work is done at UTSA*, however, some research staff do participate in offsite or field primate research. For more information on your risks contact **OHP**.
Zoonotic Diseases

Aquatic species (examples)
- Mycobacterium
- Salmonella
- Aeromonas spp.
- Cestodes
- Protozoa

Research work with aquatic species does occur at UTSA and offsite (field study). When working with these species whether on campus or in field it requires special considerations handling and/or housing. For more information contact LARC & OHP.
Zoonotic Diseases

Wild species (examples)

- Rabies
- Salmonella
- Coccidiodomycosis
- Lyme Disease
- Rickettsia rickettsia
- Dengue Fever
- Malaria
- Hantavirus

Currently UTSA research staff participate in offsite or field research within domestic and international wildlife areas. The dynamic nature of field environments may present risks due to your research activities as well as from the physical, political, social, cultural, or economic environment of the location you are working.

Much of the risk can be greatly reduced through careful planning, awareness of potential hazards, and exercising good judgement. It is important to discuss these issues with your PI, wildlife agencies, officials for the area and UTSA OHP.
Routes of Zoonotic Transmission

- Ingestion – ex. Salmonella, Toxoplasmosis
- Penetration of mucous membranes or through broken skin – ex. Brucellosis, Rat Bite Fever, Cat Scratch Fever, Rabies, Herpes B Virus
- Penetration through intact skin – ex. Ringworm
- Inhalation – ex. Tuberculosis, Q-fever
Prevention

**DO NOT:**

- Eat, drink, smoke, apply cosmetics or insert contact lenses in the animal facility or animal areas
- Wear open-toed shoes in the animal facility
- Recap used needles
- Pipette by mouth
Prevention

**DO:**

- Wear gloves
- Wear scrub suits or lab coats over street clothes
- Use proper animal handling and restraint
- Use proper protective and containment equipment and devices
- Wash hands after handling animals, even after wearing gloves
Prevention

Wear PPE according to signage posted in LARC facilities

Zoonosis
Bitten, Scratched or Injured while working with animals?

Potential for receiving a bite or scratch is an ever-present hazard with lab animals.

**Prevention** depends on proper training of personnel in animal behavior, handling and restraint.

What to do....

- Secure your animal
- Skin breaks - *clean wound thoroughly*
  - Wash with antibacterial soap (X3)
- Seek immediate medical attention at closest Emergency Dept. if following symptoms appear:
  - Swelling of wound area, face, mouth or tongue
  - Burning and/or ascending pain
  - Difficulty breathing
  - Dizziness, hives or rash
- Contact Supervisor Immediately
  .......even if injury is minor
- More information - Contact OHP

First Aid Kits located in LARC facilities

Animal Related Injuries
AWPP Health Risk Topics

PROTOCOL RELATED HAZARDS
Protocol-related hazards are defined as those specifically associated with either routine operational or experiment-specific protocols. For example, studies involving the use of an infectious agent.

UTSA safety committees; Institutional Biosafety Committee, Radiation Safety Committee and Chemical Safety Committee perform review of the description of protocol-related hazards prior to start of the experiments to identify best practices and work with the labs to create procedures to work safely with these hazards by ensuring proper facilities, equipment, training and awareness to the staff involved in the study.

**IMPORTANT: Prior to starting work - read and understand** the protocol related procedures and hazards before starting the experiment.
Protocol Related Hazards

- Infectious Disease
- Ionizing Radiation
- Recombinant DNA
- Carcinogens
- Waste Anesthetic Gases
- Lasers
- Other Toxic Chemicals
Infectious Diseases

- Viruses
- Mycoplasma
- Bacterial
- Prions
- Fungal
Infectious Diseases

- Protocol related
- Containment dictated by agent type
- Special training for containment & use
- Federal regulations apply
- Most are BSL2 and BSL3 containment
- BSL3 access & training through: Laboratory Safety Division and Compliance

The following slides define BSL/ABSL levels

Protocol Related Hazards
### ABSL1

**Animal Biosafety Levels**

<table>
<thead>
<tr>
<th>Agent Type</th>
<th>Practices</th>
<th>Safety Equipment (Primary Barrier)</th>
<th>Facilities (Secondary Barrier)</th>
</tr>
</thead>
</table>
| Work in animals involving **well-characterized agents** that are **not known to cause disease in immunocompetent adult humans**, and present **minimal potential hazard** to personnel and the environment. | Standard animal care and management practices, including appropriate medical surveillance programs | As required for care of each species (Example: per LARC PPE signs) | Standard animal facility  
- Non-recirculation of exhaust air  
- Directional air flow recommended |

**Infectious Diseases**

**Protocol Related Hazards**
## Infectious Diseases
### Animal Biosafety Levels

<table>
<thead>
<tr>
<th>ABSL2</th>
<th>Agent Type</th>
<th>Practices</th>
<th>Safety Equipment (Primary Barrier)</th>
<th>Facilities (Secondary Barrier)</th>
</tr>
</thead>
</table>
|       | Work involving laboratory animals infected with agents associated with human disease and pose moderate hazards to personnel and the environment. | - Limited access  
- Personnel must have specific training in BSL2 animal facility procedures, handling of infected animals and manipulation of infected agents.  
- Biohazard warning signs  
- Decontamination of all infectious wastes and of animal cages prior to washing | Procedures involving the manipulation of infectious materials, or where aerosols or splashes may be created, should be conducted in BSCs or by use of other physical containment equipment. | - Separate facility with negative airflow  
- Autoclave available  
- Handwashing sink available in the animal/and or exit/entry room |

**Examples:**  
Chlamydia spp., Francisella tularensis, Pseudomonas aeruginosa
### Infectious Diseases

#### Animal Biosafety Levels

<table>
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<tr>
<th>Agent Type</th>
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<th>Facilities (Secondary Barrier)</th>
</tr>
</thead>
</table>
| Indigenous or exotic agents with potential for aerosol transmission; disease may have serious or lethal consequences | ABSL-2 practices plus:  
- Restricted access  
- Users must go through FBI background check  
- Cages decontaminated/autoclaved before bedding removed  
- Disinfectant foot bath as needed  
- Special training for access and manipulation of agents.  
- Participate in annual training | ABSL-2 equipment plus:  
- Containment equipment for housing animals and cage dumping activities  
- Class II biosafety cabinets for manipulative procedures that may create infectious aerosols.  
- PPE: mandatory at all times - appropriate respiratory protection (PAPRs & Tyvek suits)  
- Hands free wash sinks | ABSL-2 facility plus:  
- Physical separation from access corridors  
- Self-closing, double door access  
- Sealed penetrators  
- Autoclave within facility |

**Examples:**
- Coccidioides spp.,
- Y. pestis, SARS-CoV2, Avian influenza,
- Francisella tularensis

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**Protocol Related Hazards**

AWPP
Agents with potential to cause genetic/cellular changes

- **Carcinogen** - a substance that can cause cancer
- **Mutagen** - a substance that can cause chromosomal damage
- **Teratogen** - a substance that can produce birth defects
Ionizing Radiation

- **X-rays**
  - Pregnant women especially should avoid x-ray exposure

- **Radioisotopes**
  - Risk depends on isotope, chemical form & dose
  - Use appropriate shielding, maximize distance and minimize time of exposure

Maximum permissible dose = 500 mrem / 9 mos
(1/10 non-pregnant exposure limit)

Questions? Training? Contact Lab Safety
Recombinant DNA (rDNA)

- Recombinant DNA technology is an extremely important research tool in biology. Involves using enzymes and various laboratory techniques to manipulate and isolate DNA segments of interest. This method can be used to combine (or splice) DNA from different species or to create genes with new functions. Resulting copies are often referred to as recombinant DNA. Typically involves propagating the recombinant DNA in a bacterial or yeast cell, whose cellular machinery copies the engineered DNA along with its own. Recombinant DNA technology has been successfully applied to make important proteins used in the treatment of human diseases, such as insulin and growth hormone.

- Safety issues in recombinant DNA technology include: “Gene pollution” of the environment resulting in “superweeds,” antibiotic-resistant microbes. Health effects of foods from GMOs. Allergenicity/adverse immune reactions/effectiveness of pharmaceutical compounds produced using rDNA technology.

Questions? Contact Lab Safety

Safe handling and use follows procedures outlined in protocol, UTSA Biosafety plans, and lab SOPs

Regulated by NIH. These guidelines are the official guide to all rDNA and sDNA work done at UTSA. Use at UTSA requires IBC & IRB approval
Chemicals

Examples:
- Formaldehyde
- Sevoflurane
- Isoflurane
- Acetone
- Ethanol
- MS-222
- Urethane
- Other solvents
- Phenols
- Biological reagents
- Etc.
Chemicals Hazards
- Potentially carcinogenic, toxic, etc.
- Readily absorbed through skin

Exposure Controls/PPE
- Containers – appropriate hazard labeling identifying content, hazards and handling protection
- Use downdraft table or a chemical fume hood, whenever possible
- Wear appropriate gloves, lab coat and safety glasses
- Wash your hands thoroughly after handling
- Follow safety procedures on labelling and Lab Safety training

Examples: Warning/Hazard information labels
Isoflurane

- Stable, non-explosive inhalation anesthetic
- Potential adverse health effects from long-term exposure to low concentration of waste gases
- Caution if pregnant, especially 1st trimester
**Isoflurane**

**Exposure Control/PPE**

- Use in chemical fume hood and/or with gas scavenging equipment
- Wear appropriate gloves, safety goggles and lab coat
- Avoid inhalation
- Do not get in eyes, on skin or clothing
- Wash thoroughly after handling
- Read and follow: [IACP 020 – Isoflurane Waste Anesthetic Gas](#)

**Protocol Related Hazards**

**Scavenging Cannisters**

Use care when refilling vaporizer
Isoflurane

Pregnant? Or Plan to Be...?

Relative risk of isoflurane exposure to fetus during pregnancy
- 0-3 mo: period of greatest vulnerability
- 3-9 mo: growth retardation, premature birth

Important to discuss these risks with your physician

Questions? Contact Lab Safety & OHP for more information
Lasers have many research uses and applications. Observe laser safety signs and warning labels in LARC facilities and research areas.

- Direct or indirect exposure to lasers can lead to irreparable damage to eye – causing permanent partial or complete loss of vision.
- Pay attention to signs indicating lasers in use.
- **DO NOT** enter area/room where “LASER IN USE” sign posted.
- Requires specific shielding and wear protective eyeware. Follow laser safety procedures.

IMPORTANT: Prior to starting work - read and understand the protocol related techniques, hazards and safe handling in regard to the agents.

Infectious Diseases & Recombinant DNA
IBC - irb@utsa.edu

Radioisotopes
R&LSC – RLSC@utsa.edu

Carcinogens & Other Toxic Chemicals
Lab Safety – LabSafety@utsa.edu
ADDITIONAL SAFETY TOPICS
Pay attention to building alarms – you are to follow **UTSA** policy when emergency alarm sounds and **exit building promptly**

Working with an animal when alarm sounds?
- Cease work, **secure animal in cage** and return to room/rack if possible
- Turn off any equipment
- Leave facility and exit building
Security:

When working in LARC Facilities:

**DO NOT:**

- Prop perimeter doors open
- Bring *unauthorized individuals* without LARC approval
- Share personal UTSA ID and PIN
- Allow tailgating
  - *Each person MUST use their UTSA ID card and PIN*

Questions? Contact LARC X6692 or larc@utsa.edu
Final Thoughts...

- **Follow** SOP’s, procedures and signage within LARC facilities and labs
- **Wear** appropriate PPE
- **Understand** risks based on your animal exposure, health status and work environment
- **Know** the study related risks as identified in the animal care and use protocol
REMINIDER!!!

WASH HANDS

Following each activity & before exiting LARC facilities
Questions??.... Contact Information

LARC or call x-6692
LAB SAFETY or call x-5250
IACUC or call x-7733
OHP or call x-5304
HAZARDOUS WASTE MANAGEMENT
or call x - 5808
Complete and submit:
AWPP Acknowledgment Form to:

LARC main office: larc@utsa.edu
Fax: x- 6087

AWPP Acknowledgment Form and OHP clearance must be completed to schedule/participate in the LARC provided – IACUC required hands on training
Final Reminder...

Before beginning any animal work, you must complete....

ALL IACUC required training as listed/instructed by the IACUC office.

AND

Listed on approved protocol(s)

Questions on training requirements?

Contact IACUC office: iacuc@utsa.edu
Finally, Thank You!!!

The LARC appreciates the hard work and dedication each of you puts into research. LARC is proud to be part of the “Research Team!”