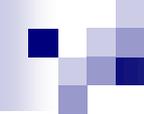


# Allergy in Personnel with Laboratory Animal Contact

**Horatiu V. Vinerean DVM, DACLAM**  
**Director, Laboratory Animal Research**  
**Attending Veterinarian**



# Significance

- Allergy incidence - some estimate that as many as 15% of a human population is allergic to some animal species.
- About 33% of animal handlers have allergic symptoms, and approximately 10% have symptoms of animal-induced asthma [Chan-Yeung and Malo 1994].

# Allergic Reactions to Laboratory Animal Allergens

<b>Disorder</b>	<b>Symptoms</b>	<b>Clinical Signs</b>
Contact Urticaria	Redness, itchiness of skin, welts, hives	Raised, circumscribed erythematous lesions
Allergic Conjunctivitis	Sneezing, itchiness, clear nasal drainage, nasal congestion	Conjunctival vascular engorgement, clear discharge (usually bilateral)
Allergic Rhinitis	Sneezing, itchiness, clear nasal drainage, nasal congestion	Pale or edematous nasal mucosa, clear rhinorrhea
Asthma	Cough, wheezing, chest tightness, shortness of breath	Decreased breath sounds, prolonged expiratory phase or wheezing, airway hyperresponsiveness
Anaphylaxis	Itching, hives, throat tightness, dizziness, fainting, nausea, vomiting, diarrhea	Flushing, urticaria, angioedema stridor, hypotension

# Risk of Developing Allergy

<b>Risk Group</b>	<b>History</b>	<b>Risk</b>	<b>Comments</b>
Normal	No evidence of allergic disease	~10%	Minimal risk even upon repeated exposure
Atopic	Pre-existing allergic disease	Up to 73%	Risk increases with repeated exposure
Asymptomatic	IgE antibodies to allergenic proteins	Up to 100%	Risk of developing symptoms increases with repeated exposure
Symptomatic	Clinical symptoms on exposure to allergenic proteins	100%	33% with chest symptoms; 10% may develop occupational asthma; minimal exposure may lead to permanent impairment

# Major Allergens

Species	Allergen	Source	Relative Risk
Rats	<i>Rat n 1A, Rat n 1B</i>	Urine	+++++
Mice	<i>Mus m1</i>	Urine	++++
Guinea Pigs	-	Urine, dander, fur saliva	++
Gerbils	-	-	+
Rabbits	Ory c1, Ory c2	Fur, saliva, urine	+++
Cats	<i>Fel d1</i>	Sebaceous glands, saliva	+++
Dogs	<i>Can f1</i>	Saliva, hair, skin	++
Sheep	-	Lanolin?	+
Pigs	-	Urine	+
Birds	Protein	Feces, serum	+
NHP	-	Dander	+

# Minimizing Risk = Minimizing Exposure

- Rodent urinary proteins are generally aerosolized on fine bedding particles. Any activity that disturbs the animal bedding increases exposure.
- Anything that minimizes the aerosolization of bedding particles minimizes the potential exposure.
- Inhalation is one of the most common ways for allergens to enter the body.
- After a period of time (often several months, but occasionally many years), workers may inhale sufficient quantities of allergens to become sensitized and they will develop symptoms when exposed again, even to tiny amounts of the allergen.

# Prevention

- Those who work with animals should be aware of the signs and symptoms of animal allergies.
- If you work with animals, and if feel you may suffer from allergy to the animals you work with, you should report to your direct supervisor.
- If you're a supervisor, you should be aware of the possibility of allergy in your workers, and you should be aware of factors in the workplace that can increase or decrease the exposure of your workers to animal allergens.

# Procedures to Reduce Exposure

- The most effective way to control and prevent allergies is to minimize exposure to the allergens. If you work in an animal facility, or if you work with animals in a laboratory setting, the following practices may help reduce your exposure to animal allergens:
  - Don't wear your street clothes when working with animals. Wear dedicated, protective clothing.
  - Wash your hands frequently. Avoid touching your hands to your face while working in the vivarium.
  - Keep cages and your work area clean.
  - Reduce your skin contact with animals by wearing gloves, face mask, hairnet and long-sleeved lab coats.

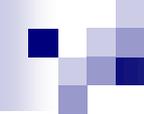
# Procedures to Reduce Exposure

- Minimize transportation of animals outside of the animal rooms.
- If animals must be removed from the animal rooms, minimize potential exposure of personnel by using
  - Cage with a filter-top
  - Cage or container without bedding
  - New cage with fresh bedding
  - Transport cages

# Prevention- Engineering Solutions

At FIU we take a proactive approach regarding the issue of allergy in animal users. Here are some of the preventive measures taken:

- In the animal-housing areas we provide 100% outside air supply with no recirculation at a room rate of ~15 air changes per hour and 30-70% RH. This dilutes the concentration of allergens in the room air and reduces the bedding particle aerosolization.
- Conventional animal holding areas are maintained on negative pressure reported to the corridors.
- We use only ventilated animal cage racks with filter-top lids.



# Prevention- Engineering Solutions

- We keep cages and animal areas clean (weekly rodent cage change frequency).
- We take particular care to control exposure during cleaning by use of PPE equipment and ventilated dump station.
- We provide the Animal facility personnel with scrubs.

# If Allergy Develops...

- Consultation with your Physician could be necessary for an accurate diagnosis.
- Exposure reduction and avoidance measures will be undertaken which may include:
  - Minimizing exposure.
  - Respiratory protective equipment.
  - Modification of animal husbandry procedures.
- Medications will often be prescribed by your Physician to reduce clinical symptoms.
- Ongoing reassessment of pulmonary function and allergic responsiveness may be necessary.