

**Evaluation of a  
Disposable Caging  
System as a Breeding and  
Husbandry Solution**

# An overview of traditional rodent housing

- Existing animal facility overview
- Vivarium support area/mechanical condition and upgrades
- Timelines and financial commitments associated with a renovation
- Management and health status of the animal colony
- Breeding and management of the transgenic and knock out mouse colony
- Conventional and disposable animal housing side by side evaluation
- Assessment of the environmental impact associated with conventional and disposable systems
- Conclusions

# Existing animal facility overview

- Total square footage, approximately 15000 ft
- Standard animal rooms 8
- Procedure rooms 5
- Storage areas 2

# Vivarium support area/mechanical condition and upgrades

- Cage wash rooms, both clean and dirty side  
located in the area of main animal facility traffic
- Storage consist of two midsize rooms and the  
receiving area
- Cage washroom is equipped with, tunnel washer,  
rack washer and two autoclaves
- Steam supply by boiler (gas and diesel)
- Automatic watering system

# **Timelines and financial commitments associated with a renovation**

- Estimated 40 days for demolition and removal of the existing equipment
- Approximately 90 days for installation of new equipment
- Staggering dollar amount
- An additional cost to replace the Fulton boiler

# Management and health status of the animal colony

- Daily average animal census, 4-5 thousand mice
- Approximately 8 transgenic and knockout lines
- Health status, a need for rederivation
- Husbandry practices, autoclaved cages, bedding and irradiated food, all changed weekly
- Enrichment devices, Shepherds Shack and Nestlet

# Breeding and management of the transgenic and knockout mouse colony

- Main mouse lines, FAH/Rag2Gamma, NOD/Scid, Shiverer, Rag2Gamma and Shiverer/Rag2Gamma
- Challenges with the frequency and number of offspring
- Conventional breeding methods

# Conventional and disposable animal housing side by side evaluation

- The evaluation was initiated in September 2007 and concluded in March of 2008.
- Mouse line selected for the evaluation, NOD/Scid, Rag2Gamma, Shiwerer and FAH/Rag2Gamma



# Breeding Results, September 2007-

## March 2008

<b>NOD/Scid</b>	<b># breeding pairs</b>	<b>pregnant (#)</b>	<b>Good Mothers (#)</b>
Traditional	42	74 % (31 out of 42)	33 % (14 out of 42)
Disposal caging	9	89 % (8 out of 9)	89 % (8 out of 9)

<b>Rag2Gamma</b>	<b># breeding pairs</b>	<b>pregnant (#)</b>	<b>Good Mothers (#)</b>
Traditional	40	70 % (30 out of 40)	50 % (20 out of 40)
Disposal caging	10	90 % (9 out of 10)	90 % (9 out of 10)

# Breeding Results, June-October 2008

<b>Shiverer</b>	<b># breeding pairs</b>	<b>pregnant (#)</b>	<b>Good Mothers (#)</b>
Traditional	40-before 06/08	50 % (20 out of 40)	33 % (12 out of 40)
Disposal caging	10	80 % (8 out of 10)	80 % (8 out of 10)

<b>FAH/Rag2Gamma</b>	<b># breeding pairs</b>	<b>pregnant (#)</b>	<b>Good Mothers (#)</b>
Traditional	40-before 06/08	60 % (25 out of 40)	50 % (20 out of 40)
Disposal caging	10	90 % (9 out of 10)	90 % (9 out of 10)

# Advantages

- The animal cages are somewhat larger than the conventional ones, they provide excellent visibility throughout the cage.
- Cages are no longer flooded with water from the automated watering system
- It appears that room temperature is much closer to the temperature in the disposable cage than the conventional cage

# **Assessment of the environmental impact associated with conventional and disposable systems**

- an automated watering system-approximately two gallons of water into the drain for every gallon use
- significant reduction of steam and water in support of the sanitation/sterilization equipment
- significant reduction of the use of diesel and gas
- the Innovive disposable cages are recyclable
- Time spent in the cage washroom was redirected to animal health

# Conclusions

- In our case, the Innovive disposable animal housing system was found to be a valid alternative to the conventional animal housing units. The entire animal colony was transitioned from conventional to Innovive cages within three weeks and without any downtime. We have estimated that the financial commitment, required up front for renovation and upgrades of the old sanitation equipment should secure funds to maintain supply of disposable cages for approximately 10 years. The amount of time spent by our support staff in the cage washer room was redirected toward animal health. Also, it was estimated that after implementation of the disposable cages, the water usage in the vivarium was reduced by approximately 65%. Furthermore, after a number of years of limited success with breeding of our most difficult knockout mice we are able to plan and expand our animal colony as needed and when needed. We are confident that these disposable cages were one of the biggest contributors to this success. We, the vivarium staff and researchers enjoy very low noise and vibration level of the Innovive units. Also, we suspect that our animals appreciate this low level of noise and vibration is well.