

9.221.0	Approved by:	Institutional Animal Care and Use Committee	Date:3/21/2013
Revision Date:3/21/2013		Review Date:3/21/2013	
Effective Date:3/21/2013		Page 1 of 1	

TITLE	:	Metabolic Chamber Testing for Rodents
SCOPE	:	This AAP is applicable to all research personnel involved in the care and maintenance of laboratory mice and rats in metabolic studies by the Comprehensive Metabolic Core (CMC).
PURPOSE	:	To describe procedures, care, and housing of rodents while performing metabolic rate measurements by the CMC.
RELATED DOCUMENTS	:	9.107.1 POLICY Animal Enrichment and Social Housing Program 1.10X.X FORM Daily Activity Sheet- Special Environmental Chambers 2.101.2 SOP Health Observations and Reporting

1. Background:

Approved Animal Procedures (AAPs) have been approved by the IACUC. If you use an AAP in your protocol, you agree to follow it exactly with no modifications.

Each AAP specifies **where** (highlighted yellow) and **how** (highlighted green) it should be cited in your Approved Animal Study Protocol.

- In Section A.2. **Category C**, check the box for "Observation Only".
- In Section B.3. **state**, "Metabolic Chamber Testing will be done according to AAP # 9.221.0".
- In Section D.2. **List Ward 15-124**, check the box for >24 hours, and indicate "Metabolic Chamber Testing by the Comprehensive Metabolic Core Staff".
- In Section D.4.b. **check the box for "Exceptions"** and state "Metabolic Chamber Testing requires individual housing of rodents".
- In Section M.10. **(caging)** check the "yes" box and state "Metabolic Chamber Testing will be done according to AAP # 9.221.0".

2. Metabolic Chamber Testing

The Principle Investigator (PI) or their designee will submit an online Transfer request to the Center for Comparative Medicine (CCM). Upon approval, animals will be relocated, by the requesting PI or the Comprehensive Metabolic Core (CMC) staff, from their standard housing to the Comprehensive Metabolic Core facility in Ward 15-124. Unless otherwise stated and approved in the ASP, animals will have *ad libitum* access to food and water (see Policy 9.112.0).

Because opening the chambers can wake the animals and alter the temperature, affecting metabolic rate, CMC staff will be responsible for monitoring all animals at least daily for appearance, activity, and availability of food and water (as described in SOP 2.101.2) while they are housed in the Core. This monitoring, as well as animal husbandry and sanitation of the chambers, will be documented by CMC staff using FORM 9.221.0 Daily Activity Sheet- Special Environmental Chambers. These records will be submitted to IACUC by CMC monthly.

Energy expenditure will be assessed via indirect calorimetry by using TSE Automated Phenotyping System (TSE system). Mice will be singly housed in their home cages in an enclosed environmental chamber (part of the TSE system) with controlled temperature and light/dark cycles. After a three day period of acclimation to the metabolic chamber, data collection will begin. Measurements of CO₂ production and O₂ consumption will occur using the attached gas analyzer to assess energy expenditure. In addition, physical activity in three dimensions will be monitored via infrared beam breaks through frames mounted on the perimeter of the metabolic cages. Enrichment items will not be provided because 1) nesting materials provide insulation and affect metabolic rate; and 2) enrichment objects may obstruct the infrared light beams used to measure activity. At the end of the study, the animals will be euthanized as described and approved in the ASP by CMC staff and/or laboratory personnel.