

## Determining animal numbers for teaching protocols

### General comments

- While reduction of animal numbers (one of the 3 Rs) is encouraged and reuse is one means of decreasing numbers, too much use can result in welfare issues. All RUSVM animals are given rest periods from participating in teaching activities with the period determined based on the invasiveness (mental or physical) on the animal.
- It is better to use fewer animals and have fewer reuses than requested within a teaching protocol period (3 years) than to deviate from an approved protocol and use more or reuse more.
- Clearly describing how the number of animals needed and how reuse was determined will assist in the protocol review process.
- Reuse can be defined many ways. The IACUC policy on reuse can assist. Make sure that how reuse within a protocol is clearly defined.
- Always consult with Animal Resources regarding animal availability and feasibility in meeting your teaching requirements, especially in case of reuse. Given that most animals at RUSVM are used in many teaching activities, Animal Resources must carefully monitor rest periods. Therefore, your animal numbers and reuse might be influenced by these other uses. Therefore, it is best to consult with Animal Resources prior to submitting a protocol to IACUC.

### Hypothetical examples for animal number calculations

#### Example 1. Kennel dogs in a physical examination

- Assumptions about the lab & students
  - Each student will conduct a physical examination
  - Students are divided into groups of 20
  - There are 2 groups of students per day
  - Week 1: 2 groups Monday, 2 on Tuesday (80 students)
  - Week 2: 2 groups Monday, 2 on Tuesday (80 students)
  - Week 3: 1 group Monday (20 students)
  - There are 180 students per semester
- Assumptions about dogs
  - There are 30 dogs in the kennel
  - No dog stays on campus for more than 6 semesters (2 years)
  - 6 new dogs arrive on campus each semester and 6 leave the program
- A dog “use”
  - 1 dog in a single lab session for 1 hour and examined by 4 students = 1 use.
  - 1 “use” results in a 24 h rest period
- Number of dogs needed and number of uses
  - Calculating per group: 20 students, 4 per dog = 5 dogs
  - Per day/week: since dogs can only be used once in a day and then must have a 24+ h rest, different dogs will be used on Monday and Tuesday. Hence 5 different dogs for each group = 5 dogs x 4 groups = 20 dogs each used once.
  - If the same dogs are used all 3 weeks, total is 20 dogs with a maximum of 3 uses

- However, some dogs might not work well, so best to add 2 dogs in case 2 have to be removed: 22 dogs with a maximum of 3 uses: this is semester 1 of the 9 semester protocol.
- Total dogs semesters 2-9: add 6 dogs per semester:  $6 \times 8 = 48$
- **Total protocol dogs:  $22 + 48 = 70$**
- Total uses: if one dog's stay on campus (6 semesters) overlaps with the protocol, that dog could be used 3 times per semester = 3 uses per semester \* 6 semesters = 18 uses.
- **Maximum reuses: 18**

#### Example 2. Kennel dog in optho exam

- Assumptions about the lab & students
  - Each student will conduct an optho exam
  - Students are divided into groups of 30 with one group per day
  - Week 1: 1 group Monday, 1 on Tuesday (60 students)
  - Week 2: 1 group Monday, 1 on Tuesday (60 students)
  - Week 3: 1 group Monday, 1 on Tuesday (60 students)
  - There are 180 students per semester
- Assumptions about dogs
  - There are 30 dogs in the kennel
  - No dog stays on campus for more than 6 semesters (2 years)
  - 6 new dogs arrive on campus each semester and 6 leave the program
- A dog "use"
  - 1 dog in a single lab session for 1 hour and examined by 2 students = 1 use.
  - 1 "use" results in a 24 h rest period
- Number of dogs needed and number of uses
  - Calculating per group: 30 students, 2 per dog = 15 dogs
  - Per week: since dogs cannot be used 2 days in a row, different dogs will be used on Monday and Tuesday. Hence 30 dogs will be used each week, once.
  - Since the kennel only has 30 dogs, every dog will have to be used every week: 3 uses per dog
  - Semester 1 of the protocol is 30 dogs; 3 uses per dog
  - Total dogs semesters 2-9: add 6 dogs per semester:  $6 \text{ dogs} \times 8 \text{ semesters} = 48$
  - **Total protocol dogs:  $30 + 48 = 78$**
  - Total uses: if one dog's stay on campus (6 semesters) overlaps with the protocol, that dog could be used 3 times per semester = 3 uses per semester \* 6 semesters = 18 uses.
  - **Maximum reuses: 18**