**PROTOCOL FOR ANIMAL USE AND CARE**

Handwritten forms are not accepted

**CRPRC**

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Contact</th>
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<tbody>
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<td>Last Name:</td>
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<td>Dept.:</td>
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<td>Phone:</td>
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<td>Fax:</td>
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**Species** (common names): Rhesus macaque  
**Number:** 300  
**Source:** CRPRC

**Project Title:** Shedding Frequency of B Virus During Breeding Season

**Overnight housing location:** CRPRC  
**Day use only:**

Animals will be maintained by:  
[X] Vivarium  
[ ] Investigator  
(If investigator maintained, attach husbandry SOP’s.)

**Procedures:** Provide a one or two sentence layman's description of the procedures employed on the animals in this project. This information will help the animal care staff understand any conditions they may encounter while caring for your animals.

Genital and oral swabs will be obtained from animals to determine the shedding frequency of herpes B virus. Samples will be collected one time from each animal during regularly scheduled corral round-ups.

**Special Husbandry Requirements:** Describe any special requirements your animals have with respect to food, water, temperature, humidity, light cycles, caging type, bedding, or any other conditions of husbandry.

Outdoor housed animals will be used. No special husbandry requirements are necessary.

**Other instructions for animal care staff:** (check applicable entries)

<table>
<thead>
<tr>
<th>Sick Animals</th>
<th>Dead Animals</th>
<th>Pest Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>[X] Call Investigator</td>
<td>[X] Call Investigator</td>
<td>[ ] Call Investigator</td>
</tr>
<tr>
<td>[X] Clinician to treat</td>
<td>[X] Save for Investigator</td>
<td>[X] OK to use pesticides</td>
</tr>
<tr>
<td>[ ] Terminate</td>
<td>[ ] Bag for disposal</td>
<td>[ ] No Pesticides in animal area</td>
</tr>
<tr>
<td>[ ] Necropsy</td>
<td>[X] Necropsy</td>
<td></td>
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</table>

**Hazardous Materials (only if in the animal room):**

<table>
<thead>
<tr>
<th>Infectious Agents?</th>
<th>Agent(s):</th>
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<tr>
<td>[ ] Yes [X] No</td>
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<tr>
<th>Radiosotopes?</th>
<th>Agent(s):</th>
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<tr>
<td>[ ] Yes [X] No</td>
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<tr>
<th>Chemical Carcinogens?</th>
<th>Agent(s):</th>
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<tr>
<td>[ ] Yes [X] No</td>
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<table>
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<tr>
<th>Toxic Chemicals?</th>
<th>Agent(s):</th>
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<tr>
<td>[ ] Yes [X] No</td>
<td></td>
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</table>

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Is the project already funded? [ ] Yes [X] No
Previously approved? [ ] Yes [X] No

Proposed Funding Source: NIH
Previous protocol number: [ ] Yes [X] No

What Veterinarian or veterinary clinic will provide care for your animals? (check one)

[X] Lab Animal Health Clinic (2-0514) [ ] California Primate Research Center (2-0447)
[ ] VMTH Large Animal Field Service (2-0292) [ ] Another Veterinarian

If you checked “Another Veterinarian”, please provide:

Veterinarian: ____________________________  Address: ____________________________
Day phone: ____________________________  Email: ____________________________
Emergency phone: ____________________________  Email: ____________________________

If your veterinarian is not affiliated with one of the three service units listed above, please contact the campus veterinarian, 2-2357 (email pctillman@ucdavis.edu) for current information about training and record keeping requirements.

Summary of Procedures:

a) Briefly describe the overall intent of the study. Include in your description a statement of your hypothesis, the objectives and significance of the study. Your target audience is a faculty member from a discipline unrelated to yours. Do not use jargon.

Intent: Previous studies have suggested that B virus is reactivated in seropositive animals during breeding season. The intent of this study is to screen a large number of animals during breeding season to evaluate shedding frequency in oral and genital fluid samples.

Hypothesis: Stresses associated with breeding season activate latent B virus in seropositive animals.

Objectives: (1) Collect genital and oral swabs from animals during breeding season. (2) Quantify shedding frequency by virus isolation on susceptible cells. (3) Quantify genomic copy number of B virus DNA in oral and genital swabs.

Significance: infection of humans with B virus is invariably fatal in the absence of lifelong antiviral therapies. Accordingly, it is critical to fully understand the natural history of B virus in macaque populations, particularly the factors associated with stress. This protocol is designed to provide a better assessment of shedding frequency during breeding season and to test two techniques for assessing shedding that entail less occupational risk to investigators.

b) Procedures employed in this project:

Please check the appropriate boxes if any of these procedures will be employed in your project:

[ ] Monoclonal Antibody Production **  [ ] Food or water restriction  [ ] Special diets; food or water treatment.
[ ] Polyclonal Antibody Production **  [ ] Non-recovery surgical procedures  [ ] Induced illness, intoxication, or disease
[ ] LD 50 or ID50 studies.  [ ] Survival surgical procedures  [ ] Death as an endpoint (see h below)
[X] catheters, blood collection, intubation  [ ] Multiple survival surgery  [ ] Trapping, banding or marking wild animals
[ ] Prolonged restraint. (8 hrs+)
[X] Fasting prior to a procedure.  [ ] Behavioral modification.
[ ] Aversive conditioning.

** If this protocol only describes antibody production, you may use the attached antibody production page in lieu of completing section c below.
c) **Describe the use of animals in your project in detail**, with special reference to any of procedures checked above. Include any physical, chemical or biological agents that may be administered. List each study group, and describe all the specific procedures that will be performed on each animal in each study group. Use terminology that will be understood by individuals outside your field of expertise. *(Note: This cell will expand to whatever length you require. You may make this section as long as you wish, but try to be concise. Some projects may require one or two pages.)*

The rate of shedding of B virus in a cohort of seropositive animals has been reported to be very low (<2% at any time). It has also been reported that shedding increases during breeding season. However, there has been an extreme paucity of data to justify these conclusions. Animals (≥ 3 years old) from up to 6 corrals will have genital and oral swabs taken one time per animal during the normally scheduled corral round-ups.

Oral swabs will be obtained by running a Dacron swab (Fisher, Pittsburgh, PA) inside the lower lip, into the buccal pouch, and along the gumline. Genital swabs will be obtained by swabbing either the vaginal mucosa or inserting the swab into the prepuce of male animals. Swabs will be obtained when the animals are sedated for the normal check-up. Animals will not be sedated more than they normally would be for routine colony management. Swabs will be placed into tubes containing tissue culture media for processing.

d) **Study Groups and Numbers:** Define, in the form of a table, the numbers of animals to be used in each experimental group described above. The table may be presented on a separate page as an attachment to this protocol if you prefer. The Normal format should be three columns: Study Group, Procedure, Number of animals. The number of rows should follow from the number of study groups; **you may add as many rows as you require.** The chart must fully account for the number of animals you intend to use under this protocol. Assign each group to an invasiveness category according to the chart below.

<table>
<thead>
<tr>
<th>Group</th>
<th>Procedures / Drugs</th>
<th>Number of Animals</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corral animals</td>
<td>Genital and saliva swabs</td>
<td>300</td>
<td>1</td>
</tr>
</tbody>
</table>

**Categories of invasiveness**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1        | Little or no discomfort or stress  
**Examples:** domestic flocks or herds being maintained in simulated or actual commercial production management systems; the short-term and skillful restraint of animals for purposes of observation or physical examination; blood sampling; injection of material in amounts that will not cause adverse reactions by the following routes: intravenous, subcutaneous, intramuscular, intraperitoneal, or oral. |
| 2        | Minor stress or pain of short duration  
**Examples:** cannulation or catheterization of blood vessels or body cavities under anesthesia; minor surgical procedures under anesthesia, such as biopsies or laparoscopy; short periods of restraint beyond that required for simple observation or examination, but consistent with minimal distress |
| 3        | Moderate to severe distress  
**Examples:** major surgical procedures conducted under general anesthesia, with subsequent recovery; prolonged (several hours or more) periods of physical restraint; induction of behavioral stresses such as maternal deprivation |
| 4        | Severe pain near, at or above the pain tolerance threshold  
**Examples:** exposure to noxious stimuli or agents whose effects are unknown; exposure to drugs, chemicals, or infectious agents at levels that markedly impair physiological systems and which cause death, severe pain, or extreme distress; Surgical experiments which have a high degree of invasiveness. |

Further descriptions of these categories are included in the instructions following this document.
e) **Rationale for species and numbers:** How did you determine that the species choice was appropriate and the number of animals in the groups above was the minimum number necessary to achieve sound scientific results?

B virus is endemic in macaques and represents a serious occupational risk for anyone working with them. The frequency of B virus shedding has been reported to be less than 2%, although there is no certainty that this is the actual rate. If the frequency is on the order of 1-2%, only 3-6 animals are predicted to be virus-positive. Accordingly, 300 animals is need to adequately assure that animals that are shedding are detected.

f) **Surgery:** If the project involves survival surgery, where will the surgery be conducted?

Building: 
Room: 

Who will be the surgeon?

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**Anesthetics, Analgesics, Tranquilizers, Neuromuscular blocking agents:**

Post procedural analgesics should be given whenever there is possibility of pain or discomfort that is more than slight or momentary. If postoperative analgesics are not to be given, justify the practice under part (i) below.

Provide the following information about any of these drugs that you intend to use in this project.

<table>
<thead>
<tr>
<th>Species</th>
<th>Drug</th>
<th>Dose (mg/kg)</th>
<th>Route</th>
<th>When and how often will it be given?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhesus macaque</td>
<td>Ketamine</td>
<td>10 mg/kg</td>
<td>IM</td>
<td>As needed for anesthesia, no more than once per day, according to CRPRC SOP’s. Animals will be sedated during normal colony management procedures.</td>
</tr>
</tbody>
</table>

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**Neuromuscular blocking agents** can conceal inadequate anesthesia and therefore require special justification.

If you are using a neuromuscular blocking agent, please complete the following:

Why do you need to use a neuromuscular blocking agent?

What physiologic parameters are monitored during the procedure to assess adequacy of anesthesia?

Under what circumstances will incremental doses of anesthetics-analgesics be administered?

---

**Adverse effects:**

Describe any potential adverse effects of the experiment on the animals (such as pain, discomfort; reduced growth, fever, anemia, neurological deficits; behavioral abnormalities or other clinical symptoms of acute or chronic distress or nutritional deficiency)

None.

How will the signs listed above be ameliorated or alleviated? If signs are not to be alleviated or ameliorated by means of post-operative analgesics or other means, explain why this is necessary.

Signs of pain or discomfort will be treated according to CRPRC veterinary staff. Animals will be euthanized when necessary to spare the animal pain and discomfort.

*Note: if any unanticipated adverse effects not described above do occur during the course of the study, a complete description of those effects and the steps taken to mitigate them must be submitted to the committee as an amendment to this protocol.*

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Is death an endpoint in your experimental procedure?  [ ] Yes  [X] No

(Note: "Death as an endpoint" refers to acute toxicity testing, assessment of virulence of pathogens, neutralization tests for toxins, and other studies in which animals are not euthanized, but die as a direct result of the experimental manipulation. If death is an endpoint, explain why it is not possible to euthanize the animals at an earlier point in the study. If you can euthanize the animals at an earlier point, describe the clinical signs which will dictate that an animal will be euthanized.

j) Literature search for alternatives and unnecessary duplication:

This section is specifically required by Federal law. You are required to conduct a literature search to determine that either 1) there are no alternative methodologies by which to conduct this study, or 2) there are alternative methodologies, but these are not appropriate for your particular study. "Alternative methodologies" refers to reduction, replacement, and refinement (the three R's) of animal use, not just animal replacement. You must also show that the study is not unnecessarily duplicative of other studies.

What was the date on which you conducted this search?  

12/05/01

List the databases searched or other sources consulted (there should be more than one). Include the years covered by the search.

<table>
<thead>
<tr>
<th>Database Name</th>
<th>Years Covered</th>
<th>Keywords / Search Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed</td>
<td>1964-2001</td>
<td>B virus</td>
</tr>
<tr>
<td>Internet</td>
<td></td>
<td>B virus</td>
</tr>
<tr>
<td>Centers for Disease Control (CDC.gov)</td>
<td></td>
<td>B virus</td>
</tr>
</tbody>
</table>

What were your findings with respect to alternative methodologies?

There are no alternative methodologies.

Has this study been previously conducted?  

[ ] Yes  [X] No

If the study has been conducted previously, explain why it is scientifically necessary to replicate the experiment.

k) Disposition of animals: At what point in the study, if any, will the animals be euthanized?

No animals will be euthanized.

l) Methods of euthanasia: Even if your study does not involve killing the animals, you should show a method that you would use in the event of unanticipated injury or illness. If anesthetic overdose is the method, show the agent, dose, and route.

<table>
<thead>
<tr>
<th>Species</th>
<th>Method</th>
<th>Drug</th>
<th>Dose (mg/kg)</th>
<th>route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhesus Macaque</td>
<td>Per CRPRC guidelines by CRPRC staff</td>
<td>Pentobarbital</td>
<td>60 mg/kg</td>
<td>IV</td>
</tr>
</tbody>
</table>

m) Surplus animals: What will you do with any animals not euthanized at the conclusion of the project?

All animals will remain in the outdoor corrals.
n) Project Roster: Please provide the names of all the individuals who will work with animals on this project. This page will not be made available to the public. Give either the University Employee ID # or a valid UC Davis email address so that we can document training and occupational health compliance for regulatory agencies. Include all investigators, student employees, post-doctoral researchers, staff research associates, post-graduate researchers and laboratory assistants who will actually work with the animals. You don’t need to include the staff of the vivarium in which your animals will be housed.

The principal investigator is responsible for keeping this roster current. If any staff is added or subtracted from this project, you must amend the protocol by sending the campus veterinarian a memo describing any changes.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Middle Name</th>
<th>UC ID Number or SSN</th>
<th>Email Address</th>
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Occupational Health Program:
Supervisors must enroll their employees in the campus Occupational Health Program if the workers are at increased risk of illness or injury (such as allergy, physical injury, or infectious disease) because of their work. Enroll workers by having them complete an "Animal Contact History Form", available from Employee Health Services (phone 752-2330). For further information, visit our web site at http://clueless.ucdavis.edu/health/ or read the UC Davis Policy & Procedure Manual 290-25.

Training:
Supervisors are responsible for insuring that their employees are adequate trained, both in the specifics of their job and in the requirements of the Federal Animal Welfare Act. EH&S offers free, basic wet labs in laboratory animal handling and techniques, and lecture format classes in the requirements of the Animal Welfare Act. To schedule a class for your unit, contact EH&S at 2-2364. Autotutorials are also available on the world wide web at http://clueless.ucdavis.edu/.
Assurances for the Humane Care and Use of Vertebrate Animals:

Principal Investigator’s Statement:

I have read and agree to abide by the UC Davis Policy and Procedure Manual section 290-30 (Animal Use and Care). This project will be conducted in accordance with the ILAR Guide for the Care and Use of Laboratory Animals, and the UC Davis Animal Welfare Assurance on file with the US Public Health Service. (These documents are available from the Campus Veterinarian and at http://ehs.ucdavis.edu/). I will abide by all Federal, state and local laws and regulations dealing with the use of animals in research.

I will advise the Animal Use and Care Administrative Advisory Committee in writing of any significant changes in the procedures or personnel involved in this project.

__________________________  ____________________________  ____________________________
Principal Investigator                        Rank / Title                        Date

__________________________  ____________________________
CRPRC Director                        Date

Committee Use Only Below

** Conditions necessary for Committee Approval:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Final Disposition of this protocol:

__________ Approved

__________ Not Approved

__________ Withdrawn by Investigator

Date of Action: _____ / _____ / _____

I verify that the Institutional Animal Care and Use Committee of the University of California, Davis, acted on this protocol as shown above.

__________________________  ____________________________
Campus Veterinarian                        Date
RhCMV is a member of the herpesvirus family of viruses and is a ubiquitous infectious agents in colony-reared macaques.

This agent / material is hazardous for:

[ ] Humans only  [ ] Animals only  [ ] Humans and Animals

For which Animal Species?

The agent can be spread by:

[ ] Blood  [ ] Saliva/nasal droplets  [ ] Does not leave animal
[ ] Other:

Describe any human health risk associated with this agent:

The precautions checked below apply to this experiment:

[ ] The researcher or his/her technicians are responsible for the feeding and care of these animals.
[ ] The following items must be assumed to be contaminated with hazardous material and must be handled only by the researcher or his/her technicians.
[ ] Cage  [ ] Stall  [ ] Water Bottle  [ ] Animal Carcasses
[ ] Bedding  [ ] Other:

[ ] Cages must be autoclaved before cleaning.
[ ] Label cages and remove label after decontamination.
[ ] Animal carcasses must be labeled and disposed of as follows:
[ ] Incineration  [ ] Biohazardous Waste Container
[ ] Bag and Autoclave  [ ] EH&S will pick-up (2-1493).

[ ] All contaminated waste (soiled bedding or other animal waste) must be properly labeled and disposed of as follows:
[ ] Incineration  [X] Biohazardous Waste Container
[ ] Bag and Autoclave  [ ] EH&S will pick-up (2-1493).
Personal Protective Equipment Required:

- Lab Coat/Coveralls
- Disposable Gloves
- NIOSH Certified Dust Mask
- Eye Protection/Face Shield
- Fitted Respirator
- Other:

Type: ____________________________
Describe: __________________________

- Personal protective equipment must be removed before leaving the room.
- Personal protective equipment must be discarded or decontaminated at the end of the project.
- Hands, arms, and face must be thoroughly washed upon leaving the room.
- Full shower, including washing of hair, must be taken upon leaving the room.

Decontaminate Room (Inform ARS area supervisor when cage and/or room can be returned to general use).

Provide any other information needed to safely work in this room:

________________________