APPROVAL OF USE OF SUSTAINED RELEASE FORMULATIONS OF BUPRENORPHINE HCL IN CURRENTLY APPROVED PROTOCOLS

PURPOSE:
This document provides recommendations on the replacement of buprenorphine HCL with sustained release formulations of buprenorphine. This guidance has been prepared under the direction of the JHU Attending Veterinarian, Dr. R. J. Adams, and approved by the JHU Animal Care and Use Committee. Any currently approved protocol that includes the provision of buprenorphine HCL for analgesia may substitute extended-release buprenorphine according to the guidelines below without first submitting an amendment for approval by the ACUC. An email must be sent to ACUC@jhmi.edu giving the protocol number and stating that use of extended release buprenorphine is being added to the protocol. The Principal Investigator must either send the email or be cc’d on it. New or 3rd-year renewal protocols should include use of the extended release buprenorphine as an option if buprenorphine is to be included as an analgesic.

BACKGROUND:
Buprenorphine SR and SR Lab (ZooPharm, Fort Collins, CO) and Animalgesics for Mice and Rats (Animalgesic Labs, Millersville, MD) are new formulations that provide a longer duration of analgesia (potentially up to 72 hours) following administration of a single dose. The availability of these products creates the opportunity for refinement of current analgesia protocols.

RECOMMENDATIONS:
Each dose of extended-release buprenorphine may be substitute for 48 hours of previously approved use of buprenorphine HCL. For example, in a protocol previously approved for 5 days of post-operative buprenorphine given every 8-12 hours, 3 doses of extended release buprenorphine would be required at 0, 48, and 96 hours.

Buprenorphine SR and SR Lab (ZooPharm; http://zoo.pharm.com/zoo.pharm.html)
Two concentrations are available: 1 mg/ml for small animals such as rodents (SR Lab) and 3 mg/ml for larger animals (SR).

<table>
<thead>
<tr>
<th>Species</th>
<th>Recommended Dose</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse</td>
<td>1.0 mg/kg SC, q48 h</td>
<td>Carbone et al. 2011, Clark et al., 2014</td>
</tr>
<tr>
<td>Rat</td>
<td>1.2 mg/kg SC, q48 h</td>
<td>Foley et al. 2011, Chum et al. 2014</td>
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<tr>
<td>Macaque</td>
<td>0.2 mg/kg SC, q48 h</td>
<td>Nunamaker et al. 2013</td>
</tr>
<tr>
<td>Pig</td>
<td>0.12 mg/kg SC, q48 h</td>
<td>Hanks et al. 2014</td>
</tr>
<tr>
<td>Cat</td>
<td>0.12 mg/kg SC, q48 h</td>
<td>Cattabagan et al. 2011</td>
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</table>

Animalgesics for Mice and Rats (Animalgesic Labs; http://animalgesiclabs.com)

<table>
<thead>
<tr>
<th>Species</th>
<th>Recommended Dose</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse</td>
<td>3.25 mg/kg SC, q48 h</td>
<td>animalgesiclab.com/product-information</td>
</tr>
<tr>
<td>Rat</td>
<td>0.65 mg/kg SC, q48 h</td>
<td>animalgesiclab.com/product-information</td>
</tr>
</tbody>
</table>

REFERENCES (additional information is available on each company’s website provided above):


Approved by the Animal Care and Use Committee 9/14/14
Instructions for ordering Buprenorphine SR and SR Lab (Zoopharm): http://wildpharm.com/zoopharm-home.html

This preparation is supplied through a compounding pharmacy. The following documentation is required for ordering:

- Current DEA certificate of registration
- State of Maryland controlled dangerous substance license
- DEA Form 222
- Power of Attorney form filled out by DEA registration holder and signed by Attending Veterinarian, Dr. Robert Adams (sample form and blank form found on following pages)

*Purchase must be by credit card only (no PO’s)

Instructions for ordering Animalgesics for Mice and Rats (Animalgesic Labs): http://animalgesiclabs.com

The following documentation is required for ordering:

- Current DEA certificate of registration
- State of Maryland controlled dangerous substance license

*Can be purchased through approved JHU vendors (e.g., Henry Schein)
Power of Attorney for DEA Order Forms

Name of DEA registration holder ____________________________ (Name of Registrant)
Address of DEA registration holder ____________________________ (Address of Registrant)
DEA registration number for person named above __________________ (DEA Registration No.)

I, Name of DEA registration holder ____________________________ (name of person granting power), the undersigned, who is authorized to sign the current application for registration of the above-named registrant under the Controlled Substances Act or Controlled Substances Import and Export Act, have made, constituted, and appointed, and by these presents, do make, constitute, and appoint Dr. Robert J. Adams __________________ (name of attorney-in-fact), my true and lawful attorney for me in my name, place, and stead, to execute applications for books of official order forms and to sign such order forms in requisition for controlled substances, in accordance with section 308 of the Controlled Substances Act (21 U.S.C. 828) and part 1305 of Title 21 of the Code of Federal Regulations. I hereby ratify and confirm all that said attorney shall lawfully do or cause to be done by virtue hereof.

Signature of DEA registration holder ____________________________ (Signature of person granting power)

I, Dr. Robert J. Adams __________________ (name of attorney-in-fact), hereby affirm that I am the person named herein as attorney-in-fact and that the signature affixed hereto is my signature.

Signature of Dr. Robert J. Adams ____________________________ (Signature of attorney-in-fact)

Witnesses:

1. ____________________________

2. ____________________________

Signed and dated on the _____ day of ______, 20____ at ______ .
Power of Attorney for DEA Order Forms

_________________________  (Name of Registrant)

_________________________  (Address of Registrant)

_________________________  (DEA Registration No.)

I, ___________________________________________ (name of person granting power), the undersigned, who is authorized to sign the current application for registration of the above-named registrant under the Controlled Substances Act or Controlled Substances Import and Export Act, have made, constituted, and appointed, and by these presents, do make, constitute, and appoint ___________________________________________ (name of attorney-in-fact), my true and lawful attorney for me in my name, place, and stead, to execute applications for books of official order forms and to sign such order forms in requisition for controlled substances, in accordance with section 308 of the Controlled Substances Act (21 U.S.C. 828) and part 1305 of Title 21 of the Code of Federal Regulations. I hereby ratify and confirm all that said attorney shall lawfully do or cause to be done by virtue hereof.

(Signature of person granting power)

I, ___________________________________________ (name of attorney-in-fact), hereby affirm that I am the person named herein as attorney-in-fact and that the signature affixed hereto is my signature.

(Signature of attorney-in-fact)

Witnesses:

1. ___________________________________________

2. ___________________________________________

Signed and dated on the ______ day of ______, 20____ at __________.