**Overview**

Post-operative pain is as uncomfortable for animals as it is for their owners. Every year, over 40 million surgeries are performed on dogs and cats. As a result, many pet owners administer pain killers once or more daily to ensure their pet is comfortable while recovering from a surgical procedure. Requiring pet owners to administer pain medications is inconvenient and could enable substance abuse. A slow release injectable lasting 5-7 days has been developed to solve these problems. This post-operative formulation is designed to be given by the veterinarian immediately after surgery and provide pain relief through the recovery stage for most minor surgeries.

**Advantages**

- Off-patent, FDA approved drug and polymers could speed regulatory approval
- Steady release of drug for up to seven days
- Injectable form helps prevent misuse by drug abusers

**Description**

Existing options for extended treatment of pain include diffusion wound catheters, daily administration of pain killers, or topically-applied Recuvyra which requires pet owners to isolate the animal from children to prevent unintentional contact with the medication. These options are cumbersome or inconvenient for both the animal and its owner. Buprenorphine is a well-known off-patent FDA-approved drug used to treat moderate to severe pain. Currently, it is used in animals for light to moderate pain but requires frequent injection to remain effective over long time periods. A prolonged-release injectable delivery system for buprenorphine has been developed that consists of off-patent PLA/PLGA polymers mixed with drug. Studies in rats showed a near-linear release of buprenorphine over 7 days. The delivery platform can be adjusted for longer or shorter release.

**Status**

- Subject of US non-provisional application (20160008286)
- Near-linear release demonstrated over 7 day period in rats

**Licensing Opportunities**

- This technology is available for exclusive or non-exclusive licensing
- Joint development opportunities include funded research or a joint venture

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**Reference: Post Operative Pain**

**Invention**

**Inventors**

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**Extended release nanoparticles.** (A) Scanning electron micrograph of buprenorphine nanoparticles. (B) Release of buprenorphine in rats over time. Intramuscular injection shows a near-to-linear release profile, releasing at levels close to control daily injections through day 7.