Surgery is the mainstay of therapy for canine and human solid cancers. Alarming evidence suggests that the process of surgery may exacerbate metastasis and accelerate the kinetics of cancer progression. Understanding the mechanisms by which cancer progression is accelerated as a result of surgery may provide pharmacologic interventions. This review discusses surgery-induced cancer progression. It focuses on immunomodulatory properties of anesthesia and opioids and evidence that studies evaluating the role of opioids in tumor progression are indicated. It concludes by discussing why companion animals with spontaneously arising cancer are an ideal model for clinical trials to investigate this phenomenon.
treatments. This article discusses the currently recognized components of the pain pathways that are modified by acupuncture. It introduces the role of fibroblasts and fascia in mechanotransduction and discusses the ways in which this provides a link between the acupuncture needle and the nervous system and is a conduit for extracellular fluid movement, lymphatics, and the immune system.

**Locoregional Anesthesia of the Head**

Ana C. Castejón-González and Alexander M. Reiter

Locoregional (local and regional) anesthesia is used routinely during surgical procedures of the head. The goal of this article is to provide a practical guide for the clinician to safely perform different techniques in dogs and cats and to minimize the risk of complications associated with locoregional anesthesia.

**Locoregional Anesthesia of the Thoracic Limbs and Thorax in Small Animals**

Diego A. Portela, Marta Romano, and Pablo E. Otero

The incorporation of nerve stimulation and ultrasound guidance to veterinary regional anesthesia allows accurate performance of techniques to block the thoracic limb and the thorax. When performed correctly, regional anesthesia can either constitute an alternative to the use of opioids and other systemic analgesics, or have a significant opioid-sparing effect. This article provides an overview of some techniques described using objective methods of nerve location, which can be used to provide perioperative locoregional anesthesia and analgesia to the thoracic limb and thorax. The approaches described may be used to decrease the perioperative use of opioids in small animals.

**Locoregional Anesthesia for Hind Limbs**

Luis Campoy

The field of locoregional anesthesia is showing good and promising results for intraoperative and postoperative analgesia, reducing opioid requirements and improving early postoperative recovery. Peripheral nerve blocks are being reinvigorated as a viable option to decrease the administration of opioids and some of the consequences of their use and yet provide high-quality analgesia. In this article, techniques to block the pelvic limb are discussed.

**Epidural and Spinal Anesthesia**

Manuel Martin-Flores

Epidural and spinal anesthesia with a combination of local anesthetics and opioids (when available) is a commonly used technique in veterinary medicine and a safe one when practiced under strict guidelines. It is a valuable tool in the analgesic armamentarium and can greatly extend the ability to provide analgesia and reduce postoperative opioid requirements. As with all regional anesthetic techniques, clinical experience should be gained in order to practice it efficiently, and care should be taken to minimize the risks and complications associated with its use.
Local Anesthetics: Pharmacology and Special Preparations
Michele Barletta and Rachel Reed

Local anesthetics are the only class of drugs that can block transduction and transmission of nociception. Physical properties, mechanism of action, and pharmacokinetics of this class of drugs are reviewed in this article. The clinical use, such intravenous administration of lidocaine, and local and systemic toxic effects are covered. A review of current studies published in the human and veterinary literature on lidocaine patches (Lidoderm) and liposomal bupivacaine (Experal and Nocita) are discussed.

Adjuvant Analgesics in Acute Pain Management
Hélène L.M. Ruel and Paulo V. Steagall

Adjuvant analgesics (ie, gabapentin, tramadol, and ketamine) are commonly used in small animal practice. Most of these drugs are prescribed for outpatients, when pain is refractory to classic analgesics (ie, local anesthetics, opioids, and nonsteroidal antiinflammatory drugs [NSAIDs]), or when contraindications exist to the administration of other analgesics, including NSAIDs. This article reviews the mechanisms of action, clinical use, potential adverse effects, and current evidence of adjuvant analgesics in the treatment of acute pain in companion animals. These drugs should be considered as alternatives aimed at reducing or replacing opioids.

Rehabilitation Therapy in Perioperative Pain Management
Molly J. Flaherty

Physical agent modalities can be effective in the perioperative period for controlling pain and inflammation. This article presents research-based evidence to support the use of these modalities in pain management and to reduce the use of pain medications, including opioids. The mechanism of action, applications, contraindications, and adverse effects of cryotherapy, pulsed electromagnetic field therapy, transcutaneous electrical nerve stimulation, and laser therapy are reviewed. Incorporation of 1 or more of these therapies in anesthesia pain management protocols can improve outcomes and reduce potential drug side effects.