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## A minimally invasive method for modeling heart disease

Small animal models of heart disease are commonly used in a wide variety of research. However, generating such models often requires highly invasive techniques, such as thoracic surgeries, that can damage important structures and increase the risk of mortality. Allard Wagenaar and colleagues developed a minimally invasive procedure for generating myocardial infarctions in rats using microembolization. Using fluoroscopy and ECG recordings, the authors describe a novel catheterization method that enabled them to generate accurately targeted micro-infarcts in rats without damaging the pericardial sac and with low mortality rates. Adopting this new technique should allow future studies to combine small animal models of myocardial infarcts with application of proangiogenic agents that require intact cardiac structures.

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## Effects of extended-release buprenorphine on Fischer 344 rats

Establishing a pain management program for animals used in research is a critical component of experimental design and IACUC protocols. Analgesics are commonly used to control pain but the side effects of these drugs need to be considered before they are applied. Extended-release buprenorphine has been established as a safe analgesic in mice, but its effects in rats have been controversial. Alan Cowan *et al.* used a targeted animal safety trial on Fischer 344 rats to test the safety of post-surgically administered extended-release buprenorphine. Using weight loss, signs of nausea and tissue histopathology, the authors found very little evidence of adverse effects associated with extended-release buprenorphine and conclude that opiate analgesic therapy is a viable postoperative treatment for rats.

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## Anesthesia changes the blood profiles of guinea pigs

Blood analysis provides a useful and minimally invasive diagnostic tool for monitoring disease progression and is a viable alternative to behavior-based measurements, but phlebotomy in guinea pigs typically requires anesthesia. Wendy Williams and colleagues collected blood samples under three consecutive conditions: when guinea pigs were unanesthetized, anesthetized with isoflurane and anesthetized with a ketamine and xylazine mixture. They found significant changes in hematological and plasma biochemical profiles when guinea pigs were anesthetized compared to when they were unanesthetized, with the largest changes alongside the ketamine and xylazine mixture. Therefore, when using blood profiling for diagnoses or prognoses, researchers should consider the effects of their chosen anesthetics.

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