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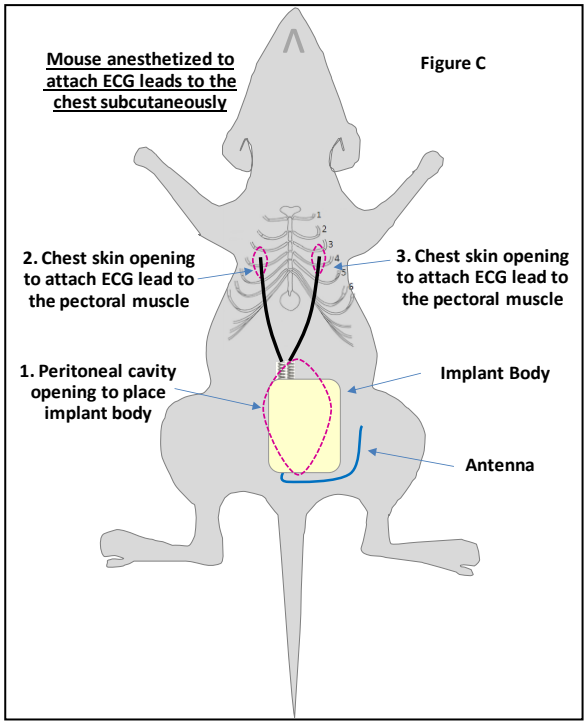
Sample IACUC protocol to implant MouseMonitor Telemetry radio-telemetry ECG, Temperature-Activity monitor in a mouse

MouseMonitor Telemetry radio-telemetry device (1.9 cc, 2.7g) is implanted in the peritoneal cavity of the mouse for the purpose of monitoring ECG, Heart rate, Temperature, and Activity. The peritoneal cavity is the most commonly used site of implantation in animals of small body size such as mice. All the wires are insulated and enclosed in biocompatible silastic tubing (0.64mm outer diameter). The implant body is made of PEEK which is a biocompatible material. The sites where the wires/leads/tubes emanate from the implant body are sealed with biocompatible silicone.

For all survival procedures sterile gloves and instruments are used. Sterile, bland ophthalmic ointment is placed on the eyes of the mouse, following the onset of a surgical plane of anesthesia to prevent corneal drying. Thirty minutes prior to anesthesia, Slow Release (SR) Buprenorphine (1 mg/kg) is administered to the mouse for pain relief.

The mouse is anesthetized using 2% isoflurane in 100% O_2 and sedation confirmed with a toe pinch. The anesthetized mouse is placed on the MouseMonitor S, a heated surgical platform to monitor ECG and maintain body temperature during the surgical procedure. The anesthesia is maintained at 1.5-2% isoflurane by intra-tracheal intubation and ventilation throughout the procedure. The surgical field is prepared by shaving and removing hair, cleansing the skin with surgical soap followed by wiping with 70% ethanol, repeated 3 times. After preparation of the surgical field the skin is wiped with 10% betadine.



Intraperitoneal Implantation: A midline incision is made in the skin of the abdomen and a second incision is made into the peritoneal cavity using blunt scissors. The implant is then placed in the abdominal cavity with the ECG leads and the antenna positioned to the right of middle as shown (see 1. in Figure C). The leads are brought out of the abdominal cavity and tunneled towards the right and left shoulder between the skin and the chest for attachment to chest muscles. The peritoneal cavity is closed using a 6.0 Prolene suture with a continuous suture pattern.

Placement of the leads in the chest: A small

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incision is made in the skin on the right side as shown to allow visualization of one of lead tips and pectoral muscles (see 2. in Figure C). The tip of this lead is placed under the pectoral muscle and sutured in place with an 8.0 suture. The incised skin is closed with a 6.0 suture. Similarly, a small incision is made in the skin on the left side as shown to allow visualization of one of lead tips and pectoral muscles (see 2. in Figure C). The tip of this lead is placed under the pectoral muscle and sutured in place with an 8.0 suture. The incised skin is closed with a 6.0 suture.

Post-surgical recovery: While the mice wake up in a few minutes after the surgery, longer times are needed to recover and to heal. Two-to-three days is standard recovery period. However, the mice can be monitored to observe ECG, HR, body temperature and activity starting immediately after surgery. The above procedure takes about 30-45 minutes depending on the surgical experience. Post-operative care involves placing Carprofen tablets or gel based food with Carprofen along with water on the floor of the cage for easy access to the mouse until healed. Once healed, the mouse can be housed with other mice.

This protocol is an example that represents the research goals of a particular researcher and the institutional requirements of a particular IACUC. We realize that your research goals and IACUC requirements may be different and welcome the opportunity to help you draft a protocol that meets your particular needs. Please contact us at sales@indusinstruments.com and we will put you in touch with our Senior Scientist who can help you write or modify your protocol to meet your needs.