

# BLF22 Surgical Protocol

## Local Cerebral Perfusion Measurement in Rabbits

### APPLICATION BASICS

Site:	Cerebral cortex
Species:	Rabbit, New Zealand white
Weight:	2.5 - 3 kg
Duration:	Acute: surgery & experiment < 4 hours
<b>PROBE TYPE:</b>	<b>N: 11 gauge needle</b>

### APPLICATION

To study the effects of drugs on cerebral cortical perfusion.

### SURGICAL APPROACH

1. Sedate the rabbit with diazepam (5mg/kg IM).
2. Induce anesthesia using ketamine (45 mg/kg IM). Insert catheters in both femoral veins and maintain anesthesia by continuous ketamine infusion (1.1 mg/min/kg IV) over the course of the surgery and experiment. Prevent hypothermia by maintaining rectal temperature at 39° with a servo-controlled heating pad.
3. Paralyze the rabbit with pancuronium (0.1 mg/kg IV).
4. Perform a tracheostomy and adjust ventilation to maintain arterial CO<sub>2</sub> tension at 35 - 40 mmHg. To keep the head motionless during the experiment, use a head holder which inserts into the mouth, tightening against the upper palate and the nose.
5. Make a midline scalp incision. Strip the periosteum and perform a craniotomy (1 cm x 0.5 cm) rostral to coronal suture over the left frontoparietal cortex. Take care to leave the dura intact.
6. Using dental acrylic, construct a well around the craniotomy site with catheters embedded caudal (for saline inflow) and rostral (for a temperature probe). Pump warmed saline over the craniotomy site so that the temperature over the brain remains at 39 - 40° C. Drain the saline out of the well with wicking.
7. Using a micromanipulator, clamp the Probe over the craniotomy site. Lower the probe so that the tip just touches the dura. Avoid area directly over large blood vessels and visually position the Laser Doppler Probe away from pial vessels.

### ACKNOWLEDGEMENT

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### TYPE N (ABLPHN11)



Diameter: 3 mm  
Length: 40 mm

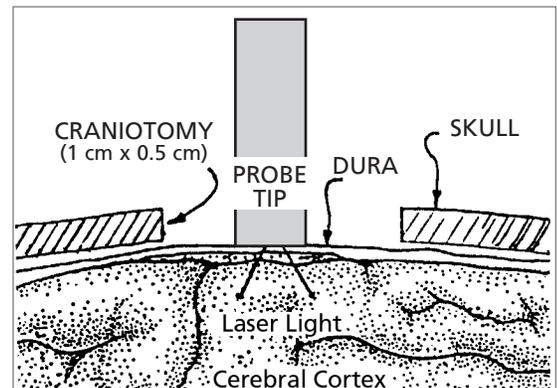


Fig. 1: Rabbit frontoparietal cortex perfusion. Probe is clamped in position 1 - 2 mm above the dura, taking care to avoid pial vessels.

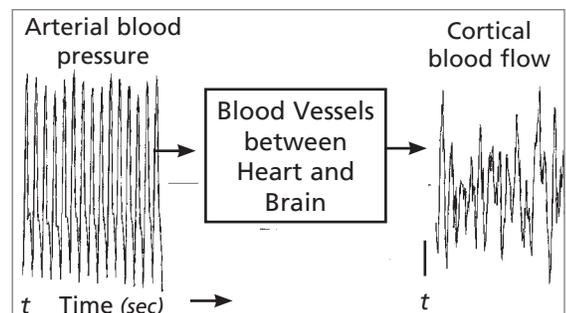


Fig. 2: Simultaneous display of analog output voltages for arterial blood pressure & cortical blood flow.

### REFERENCE

Curran-Everett D et al, "Hypoxia, Hypercapnia and Hypertension: Their Effects on Pulsatile Cerebral Blood Flow," J Appl Physiol 1995; 79: 870-878.