

Perfusion of adult worms from mice

Author: Fred Lewis, PhD

Introduction

One of the more common procedures in a schistosome life cycle laboratory is the collection of adult worms from the definitive mammalian host. In a bisexual worm infection in the mouse, adult *S. mansoni* typically reside in the mesenteric veins, from which they can be harvested by perfusion of the portal venous system.

Equipment

Peristaltic perfusion pump (e.g., Masterflex Console Drive/Cole-Palmer Inst. Co.)
Silicone tubing (e.g., Masterflex 96420-14) fitted with a 20-gauge needle
Foot-pedal for peristaltic pump (e.g., Treadlite II/Linemaster Switch Corp.)

Materials and Reagents

S. mansoni-infected mice
An IACUC-approved euthanasia solution containing heparin sodium salt
Perfusion fluid (0.85% sodium chloride + 0.75% sodium citrate)
Sharp dissecting scissors

Procedure

- Euthanize the mouse with a euthanasia solution containing heparin
- Dissect the mouse so that its abdominal and thoracic cavities are opened.
- Carefully sever the ribs near the spinal column of the (mouse's) left half of the thoracic cavity.
- Make a small slit in the hepatic portal vein, then insert the 20 gauge needle into the descending aorta.
- Pump perfusion fluid through the needle, and collect the perfusate in a container.
(We use 7" x 11" x 3" plastic pans)

Comments

We highly recommend using a foot-pedal to operate the peristaltic pump. This greatly facilitates the perfusion process by leaving both hands free to perform the procedure. Perfusing out every adult worm without taking additional steps is difficult, since some worms may still be trapped in the mesenteries, and others may have been swept into the liver. One may see worms trapped in the liver by removing the liver after perfusion and compressing it between two glass plates. If every worm must be accounted for, one must examine the mesenteries using a dissecting microscope.

For further technical information, contact André Miller at amiller@afbr-bri.com

References

Duvall, R.H. and DeWitt, W.B. 1967. An improved perfusion technique for recovering adult schistosomes from laboratory animals. The American Journal of Tropical Medicine and Hygiene 16: 483-486.

Tucker, M. S., Karunaratne, L. B., Lewis, F. A., Frietas, T. C., and Liang, Y-S. 2013. Schistosomiasis, in *Current Protocols in Immunology* 19.1.1-19.1.57, John Wiley and Sons, Inc., (R. Coico, Ed). Published online November 2013 in Wiley Online Library (wileyonlinelibrary.com). doi: 10.1002/0471142735.im1901s103.