



The University of Michigan Transgenic Animal Model Core

Sally A. Camper, Ph.D.
Linda C. Samuelson, Ph.D.
Thomas L. Saunders, Ph.D.

2560 MSRB II, Box 0674
1150 W. Medical Center Drive
Ann Arbor, MI 48109-0674
TEL: (734) 647-2910
FAX: (734) 936-2622
tsaunders@umich.edu
<http://www.med.umich.edu>

Rat Pronuclear Microinjection Training Syllabus

Purpose:

To provide all knowledge and hands-on experience necessary to perform pronuclear injection of fertilized rat eggs and to produce transgenic rat. Trainees are invited to provide a transgene.

Overview:

Training is divided into three phases:

1. Discussion and lab on superovulation, preparation of pseudopregnant females, egg collection and transfer to pseudopregnant female rats.
2. Discussion and lab experience in microinjection of rat embryos and transfer to pseudopregnant female rats.
3. Follow-up on pregnancies and genotyping

Preparation:

1. Trainees will read and be familiar with the following articles:
Filipiak WE, Saunders TL. Advances in transgenic rat production. 2006. *Transgenic Res.* 15:673-86.
Charreau B, Tesson L, Soullillou JP, Pourcel C, Anegon I. 1996. Transgenesis in rats: technical aspects and models. *Transgenic Res.* 5:223-34.
2. Practice in the fabrication of glass instruments used in transgenic rat production.
3. Practice in the use of mouth pipettor and transfer pipets used to move rat eggs.

Schedule:

- | | |
|-------|---|
| Day 1 | 8:00- 5:00 fabrication of glass micro-instruments. |
| Day 1 | 8:00 - 5:00 collect eggs and transfer eggs to recipients |
| Day 2 | 8:00 - 5:00 workstation orientation, collect and microinject eggs |
| Day 3 | 8:00 - 5:00 collect eggs, microinject, and transfer injected eggs to recipients |
| Day 4 | 8:00 - 5:00 collect eggs, microinject, and transfer injected eggs to recipients |
| Day 5 | 8:00 - 5:00 collect eggs, microinject, and transfer injected eggs to recipients |

In order to derive the maximum benefit from this training, trainees should plan to spend at least a full day (8 hours) in the Transgenic Core on the scheduled days.

Follow-up:

Egg transfer surgeries from will be evaluated in terms of the number of pregnancies and implantations that occur. Trainees will prepare tail DNA from any rats born from their microinjected eggs and determine if they are transgenic. Transgenic founders will be transferred to the trainee, at his/her request. This information will provide the means to evaluate the effectiveness of the training.

Discussion Papers

Charreau B., Tesson L, Soulillou JP, Pourcel C, Anegon I. 1996. Transgenic rats: Technical aspects and models. *Transgenic Res* 5:223–234.

Filipiak WE, Saunders TL. 2006. Advances in transgenic rat production. *Transgenic Res.* 15:673-86.

Tesson L, Cozzi J, Me´noret S, Re´my S, Usal C, Fraichard, A, Anegon I. 2005. Transgenic modifications of the rat genome. *Transgenic Res* 14:531–546.