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Hydrodynamics-based gene transduction

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Daniel Tenen

dtenen@bidmc.harvard.edu*Corresponding Author*

Hideyo Hirai

Pu Zhang

Tajhal Dayaram

Christopher Hetherington

Shin-ichi Mizuno

Jiro Imanishi

Koichi Akashi

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Introduction

This highly efficient *in vivo* gene transduction technique for laboratory mice was performed basically as described previously (*Gene Therapy*. 1999 Jul; **6(7)**:1258-1266). Hepatocytes are most effectively transduced by tail vein injection of a large volume of DNA solution in a short time. Practice with the injection technique is necessary!!!

Reagents

Reagents:

Sterile phosphate buffered saline (PBS), room temperature.

Expression vector plasmid DNA.

Equipment

3ml syringe.

27-gauge needle.

Heatlamp (Technilab Instruments, Pequannock, NJ).

Mouse holder, if necessary (Mouse Tail Illuminator, Braintree Scientific Inc., MA).

Procedure

1. Dilute the plasmid DNA with sterile PBS right before injection. The final concentration of the DNA should be calculated from the total amount of DNA/mouse.
2. Take 2 ml of the solution into a 3 ml syringe and put a 27-gauge needle to the syringe. Avoid any air bubbles in the syringe.
3. Warm up a mouse using a Heatlamp for 1-2 minutes.
4. Fix the mouse in a Mouse Tail Illuminator.
5. Inject the DNA solution from the tail vein in 5-7 seconds and put the mouse back into the cage. Mice may become less active transiently, but recover within 10 minutes.

References

Liu F, Song Y and Liu D. *Gene Therapy*. 1999 Jul; **6(7)**:1258-1266

C/EBPbeta is required for 'emergency' granulopoiesis

by Hirai, H. et al.

Nature Immunology (18 April, 2006)