

Video Article

# JoVE 9th Issue

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## Abstract

## Protocol

This issue of JoVE covers a range of topics in the life sciences, which include complex transplantation procedures, developmental biology techniques, and advanced approaches in biomedical engineering. The Bluestone Laboratory (Diabetes Center, University of California, San Francisco) demonstrates a procedure for [transplanting pancreatic islets](#) into the kidney capsule of naturally occurring diabetic (NOD) mice. This transplantation model is used to evaluate tolerance induction therapies for the treatment of diabetes, and the transplantation procedure itself is a continuation of the [islet isolation procedure](#) previously published in the 7th issue of JoVE. Also in this issue, master micro-surgeon Fengchun Liu (Department of Surgery, UCSF) demonstrates the procedure for doing [orthotopic lung transplantation in rats](#) – a transplantation model useful to study transplanted lung dysfunction and rejection, which can lead to fibroproliferative disorders.

In the field of developmental neuroscience, the Millen Laboratory (University of Chicago) demonstrates [in ovo electroporation](#), which they use to over express or silence genes in the spinal cord of developing chick embryos. Dr. Millen also discusses the molecular basis of [pattern formation in the cerebellum](#) and gives insight into how analysis of spontaneous mouse models with cerebellar deformations can implicate new genes critical for cerebellar development.

Also in this issue, Noo Li Jeon (Department of Biomedical Engineering) University of California, Irvine comments on the development and [use of BioMEMS](#) in the life sciences, and his laboratory demonstrates a simple and [inexpensive method](#) for reversible bonding PDMS-fabricated devices to glass substrates without using plasma treatment. Christine Beeton (Chandy Lab, University of California, Irvine) illustrates the procedure for generating [T cell growth factor](#) from mouse splenocytes, which can be used to maintain the viability of T cell lines.

Finally basic protocols in this issue focus on the demonstration of popular biotechnology kits such as the [procedure for isolating CD4+ lymphocytes](#) using the MACS column from Miltenyi Biotec and [extracting RNA](#) from mouse neuroprecursor cells.