In this chapter we describe the technical aspects of orthotopic composite external ear allotransplantation under low dose immunosuppressive monotherapy in a rat model. We demonstrate that it is feasible to elevate and transplant this composite allograft in rats as a flap based on the common carotid artery. A tapered dose of cyclosporine A from 16 to 2 mg/kg allows indefinite maintenance of the allograft and survival across a fully mismatched major histocompatibility complex barrier. This model is reliable and reproducible and has the potential to be used for future immunologic studies to investigate strategies in preventing rejection or to induce transplantation tolerance. One disadvantage of this model is the small dimension of the allograft which makes the clinical monitoring difficult and does not provide sufficient tissue for multiple sequential biopsies.