Supporting Methods

Detection of β-Galactosidase Activity in Whole Mounts of Mouse Intestinal Tracts

Intestinal tracts were removed, flushed with Dulbecco's PBS, slit lengthwise, and laid out on bibulous paper. The tissue and paper were pinned to a layer of paraffin wax in a 25 x 150 mm polystyrene Petri dish, which had been extensively scratched before the melted paraffin was poured in and allowed to cool at room temperature. The tissue was fixed at 4°C for 1 h in 4% paraformaldehyde (20 g of paraformaldehyde/100 ml PBS, frozen in 20-ml aliquots, one of which was thawed for each experiment and added to 80 ml of PBS), then washed twice at room temperature for 30 min in rinse buffer [0.4 ml of 1 M $MgCl_2$/2.0 ml of 1% sodium deoxycholate/2.0 ml of 2% Nonidet P-40 Substitute (Fluka)/196 ml of 0.1 M sodium phosphate buffer (115 ml of 0.1 M sodium phosphate, monobasic/385 ml of 0.1 M sodium phosphate, dibasic)]. The tissue was stained with 50 ml of freshly made staining solution [1.2 ml of X-Gal, 40 mg/ml in DMF/0.106 g of potassium ferrocyanide/0.082 g of potassium ferricyanide/48.8 ml of rinse buffer] for several hours or overnight at 37°C. Finally, the tissue was fixed in 10% formalin at room temperature for at least 12 h, then washed and stored in 70% ethanol.