Microarray analysis methods. Microarray experiments were performed using protocols from J. DeRisi (http://www.microarrays.org/). Total RNA was treated with RNase-free DNase (Roche, Indianapolis, IN) for 30 min. at 37˚C. Reactions were extracted twice with phenol:chloroform:isoamyl alcohol (25:24:1), ethanol precipitated, and resuspended in H_20. 10 µg of total RNA was incubated at 70˚C for 10 min. with 1 µg of Oligo-dT primer (Invitrogen, Carlsbad, CA) in 15.5 µl total volume followed by a 10 minute incubation on ice. Reverse transcription in the presence of 5-(3-aminoallyl)-2'-deoxyuridine 5'-triphosphate (aa-dUTP) was carried out at 42˚C for two hours in reverse transcription reaction mix (1X Superscript II buffer (Invitrogen, Indianapolis, IN), 0.5 mM dATP, 0.5 mM dGTP, 0.5 mM dCTP, 0.4 mM aa-dUTP, 0.1 mM dTTP, 0.1 M DTT, 2 µl of Superscript II (Invitrogen, Indianapolis, IN)). Remaining RNA was hydrolyzed by the addition of sodium hydroxide to 0.2 M and EDTA to 0.1 M and incubated for 15 min. at 65˚C. Reactions were neutralized by adding Tris-HCl pH 7.4 to 0.33 M. Buffer was exchanged with H_20 using a Microcon 30 concentrator (Millipore, Bedford, MA) and the eluate was dried in a SpeedVac. Samples were coupled with Cy3 or Cy5 mono-reactive dye (Amersham Biosciences, Piscataway, NJ) for 1 hour at 23˚C in 9 µl 0.05 M sodium bicarbonate pH 9.0 and quenched with 4.5 µl 4 M hydroxylamine for 15 min. Cy3 and Cy5-labeled samples were mixed and unincorporated dye was removed with the QIAquick PCR Purification Kit (Qiagen, Valencia, CA). The eluate was dried in a SpeedVac. Labeled probe was resuspended in 20 - 30 µl hybridization buffer (1:20 10 mg/ml sheared salmon sperm DNA (Ambion Inc., Austin, TX): DIG Easy Hyb (Roche, Indianapolis, IN)), filtered through a 0.45 µm Ultrafree-MC filter unit (Millipore, Bedford, MA), heated at 65˚C for 2 min., applied to the microarray under a LifterSlip

(Erie Scientific, Portsmouth, NH) and incubated at 37˚C for 12 - 16 hours. Arrays were washed in wash solution I (0.6 X SSC, 0.03% SDS) and wash solution II (0.06 X SSC), dried by centrifugation and visualized on a ScanArray 5000 microarray scanner (Packard Biosci, Meriden, CT). Scanned images were quantitated with QuantArray software (Packard Biosci, Meriden, CT) normalizing each signal for total fluorescence.