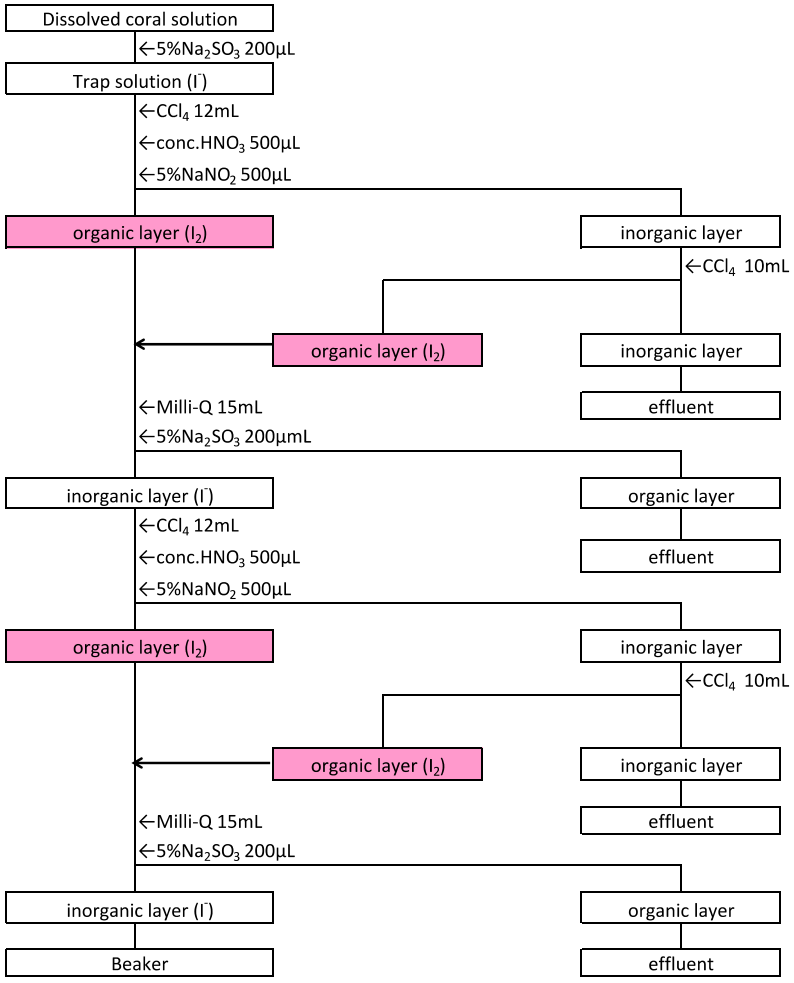

Figure S1. Schematic diagram of iodine solvent extraction. Na_2SO_3 and $NaNO_2$ / HNO_3 are used to transform iodine to its I^- and I_2 forms, respectively. Iodine then moves between the aqueous and organic layers as I^- and I_2, respectively.

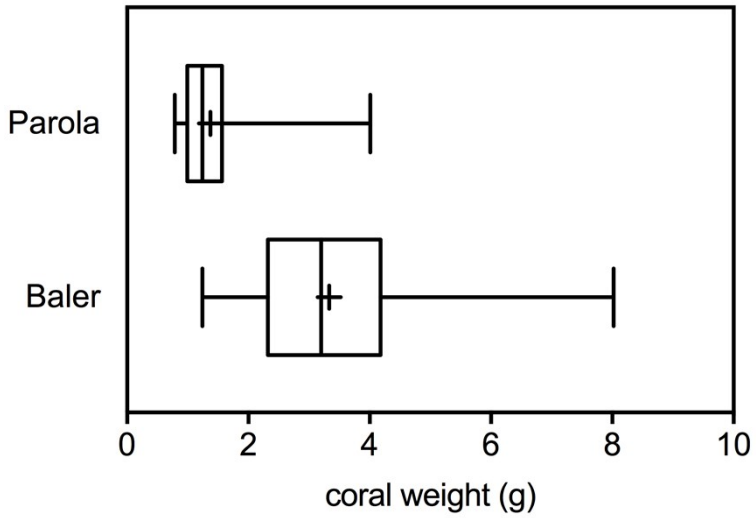

Figure S2. Coral sample weights (in grams) used in this study. n = 47 and 46 for Parola and Baler, respectively. The box represents the interquartile range (IQR) or 25%-75% percentile of the data population (which in this case is 0.9-1.5 g and 2.3-4.0 g for Baler and Parola, respectively); line inside the IQR represents the median (1.1 g for Parola and 3.1 g for Baler); cross marks represent the mean (1.4 g for Parola and 3.3 g for Baler); whiskers represent 1.5 x IQR to the left and right of the IQR; and points outside of the whiskers are outliers.

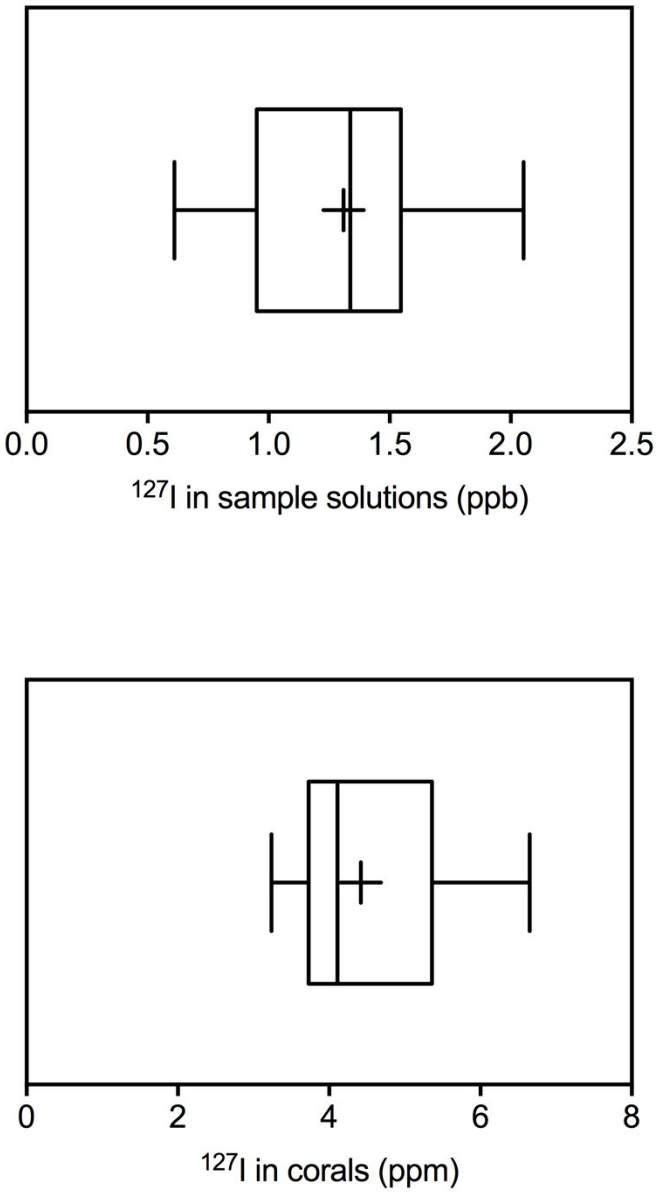

Figure S3. ^{127}I concentrations of (a) analyzed (diluted 286x; in ppb) sample solutions and (b) corresponding concentration in corals (in ppm). n = 93. The box represents the interquartile range (IQR) or 25%-75% percentile of the data population (which in this case is 0.9-1.5 ppb and 3.7-5.3 ppm for a and b, respectively); line inside the IQR represents the median (1.3 ppb for a and 4.1 ppm for b); cross marks represent the mean (1.3 ppb for a and 4.4 ppm for b); and whiskers represent 1.5 x IQR to the left and right of the IQR.

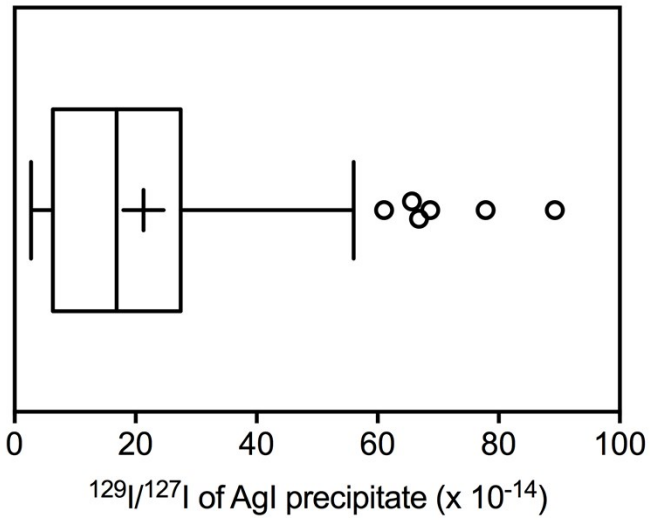

Figure S4. $^{129}I/^{127}I$ ratios of AgI precipitate (sample + carrier) in x 10^{-14}. n = 93. The box represents the interquartile range (IQR) or 25%-75% percentile of the data population (which in this case is 6.5-26.0); line inside the IQR represents the median (16.9); cross marks represent the mean (21.3); whiskers represent 1.5 x IQR to the left and right of the IQR; and points outside of the whiskers are outliers.