**Supplemental Material** 



**Supplemental Figure 1: New data treatment strategy** a) XIP distributions in populations are sometimes represented as histograms. These representations require the binning of XIP data, and often include data whose skewing direction is arbitrarily assigned due to lack of phase information. To improve upon this method, we b) fold the XIP data in order to avoid arbitrary directionality, and c) represent the data as a cumulative distribution function to avoid binning the data into arbitrary categories.