Supplementary Methods

The $Z_{res}$ [Little and Chen(2009)Little and Chen] and $Z_{ixj}$ statistics were very similar; the plot in Figure 1B shows a slope of 0.9998, an intercept of 0.0005 and an $r^2$ value of 0.9998. However, since the $Z_{ixj}$ statistic is a multiplicative $Z$ score, it greatly expands the extreme tail of the distribution and is not easily interpretable. Thus, we chose to use $\sqrt{Z_{ixj}}$ since this value maintains the same order of scores without unduly over-representing the difference between covarying and non-covarying pairs. We refer to the $\sqrt{Z_{ixj}}$ as the $Z_{px}$ score.
Figure 1: MIp and ZRes are essentially the same statistic. Panel A shows a plot of MIp vs. the residual of a linear regression between MI_{ij} and \( \overline{MI_i} \times \overline{MI_j} \) [Little and Chen (2009) Little and Chen]. Panel B shows a plot of Z_{ixj} vs. Zres. The data were calculated using the repaired lactate dehydrogenase alignment. These statistics were very similar. In A, \( r^2 = 0.9994975 \) with a slope and intercept of: 1.000 and 6.185e-05. In B, \( r^2 = 0.9998498 \) with a slope and intercept of 0.9998193, 0.0005206.

References