



Co-evolution Circos Plot of Northern Hemisphere HA Sequences. A graphical view showing the co-evolution between amino acid positions in HA sequences. The outermost circle displays the amino acid residue number along with the reference sequence. The multicolored boxes display the highest conserved MSA positions in red with the less conserved MSA positions in blue. Proximity Mutual Information (MI) is presented as a histogram in the third circle from the edge, and cumulative MI is similarly represented in the fourth circle. Lines in the center link pairs of amino acid positions with MI > 6.5, with the red lines indicating the top 5% with black lines being the other 95%.