## Supplementary Information: Evaluation of polarizable biomembrane simulations against experiments

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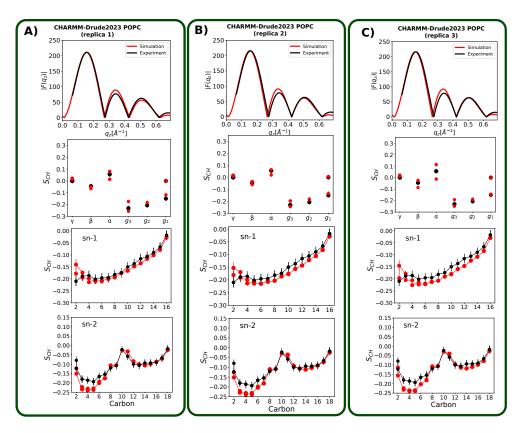


Figure S1: Comparison of different replicas from CHARMM-Drude2023 simulations against experimental X-ray scattering form factors and C-H bond order parameters from the NMR-lipids databank.

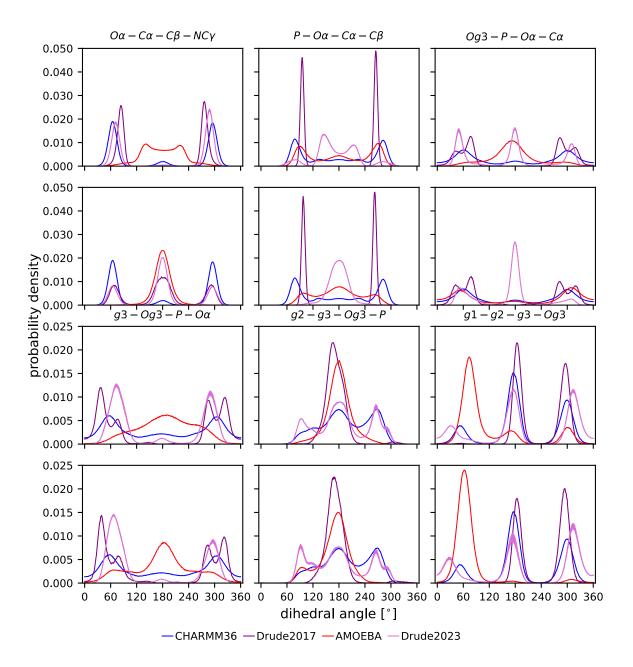


Figure S2: The distributions of the torsion angles for the head group atoms. For each torsion angle, the upper and lower rows contain the DOPC (AMOEBA) - POPC (Drude/Drude2023) and POPE lipids, respectively.