

## **SI Guide**

The enclosed SI pdf contains Supplementary Table S1, Supplementary Table S2, and Supplementary Figures and Legends S1-S13.

The supplemental information herein provides additional details about the cloning primers and sequences, crystallographic data statistics, and structural analysis for the ACP-LpxD complexes. Also shown are detailed sequence comparisons with orthologs and biochemical evidence for *acyl*-ACP hydrolysis and the role of ACP in the LpxD reaction mechanism.