

Description of Additional Supplementary Files

File name: Supplementary Data 1

Description: Primers used in this study.

File name: Supplementary Data 2

Description: The raw data, mzML files, and mFQL files of the shotgun lipidomic and small-molecule analysis.

File name: Supplementary Data 3

Description: The topology files, initial structure files, simulation parameter control files, and result data files of molecular dynamics trajectories.

File name: Supplementary Movie 1

Description: The lipids binding pathway within *MtEfpA*.

File name: Supplementary Movie 2

Description: Conformational transition of *MtEfpA* between inward-open and outward-open conformation.