**Supplementary Material**

Detailed purification protocol for His-tag proteins

All procedures were performed at 4°C. The cell pellet was resuspended in lysis buffer (20mM Tris-HCl, pH 8.0, 20% (w/v) sucrose) using 2 mL of buffer per gram of cell pellet. For lysis of cells, lysozyme (Amresco; Final concentration 1 mg/mL), benzonase nuclease (Sigma; 5 µL for 1 L of cell culture), EDTA-free Pierce™ protease inhibitor tablets, (Thermo Fisher Scientific; 1 tablet for 50 mL lysate), PMSF (Calbiochem; Final concentration 1mM in 100% ethanol) were added to the lysate and allowed to stir for 30 minutes. Next, deoxycholate (Acros Organics; final 0.5%) and Trition X-100 (Acros Organics; final 0.1%) was added drop wise to the lysate and further stirred for 40 minutes. If the cell lysate was still viscous, sonication was performed. NaCl (final 600mM) and imidazole (final 30mM) were added to the lysate for initial conditions of the nickel column purification. 100 µL aliquot of whole cell lysate was collected for SDS-PAGE analysis. The cell lysate was then subjected to centrifugation at 37,000 x g for 30 minutes. The supernatant was transferred to a fresh beaker, a 100 µL aliquot of Cleared Cell Lysate (CCL) collected for SDS-PAGE analysis, and the remainder applied directly to the nickel column.

The nickel column was pre-equilibrated with binding buffer (20mM sodium phosphate, pH 7.4, 600mM NaCl, and 30mM imidazole). Proteins eluted in the Flow-Through (FT) of the column are collected for SDS-PAGE analysis. Following loading, the column was washed with 60 Column Volumes (CVs) of binding buffer, 50 CVs of binding buffer with 0.2% N-P40 (USB®), and finally with 40 CVs of binding buffer. Each wash was collected for SDS-PAGE analysis. Next, the target his-tag protein was eluted with a linear imidazole gradient (30-500mM) for 20 CVs (100 mL). 1mL fractions were collected and analyzed on SDS-PAGE gels to assess the homogeneity of the target protein. If a satisfactory degree of homogeneity was achieved, fractions with the target proteins were pooled and dialyzed against 1-liter of buffer (20mM Tris-HCl, pH 8.0, 1mM ETDA, and 500mM NaCl) to remove phosphate and imidazole. This was followed by dialysis against 1L storage buffer (20mM Tris-HCl, pH 8.0, 1mM ETDA, 100mM NaCl, 1mM DTT, and 50% glycerol). Dialysis at each step was carried out for at least 4 hours. The final pool of protein was clarified by centrifugation at 10,000 x g for 10 minutes to remove aggregated protein and stored at -80°C in small aliquots. The concentration of the protein was determined measuring absorbance at 280nm.