



**Figure 1. Cryo-EM analysis of bacterial RNAP bound to substrate.** (A) Image of sample in vitrified collected on a Thermo Fisher Titan Krios with a Gatan K2 Summit DED camera. (B)  $\sim 3.8$  Å cryo-EM density of RNAP calculated using data collected on the U-M Titan Krios. (C) Euler distribution plot of particles present in the 3D structure show that we have found the conditions required to overcome preferred orientation.