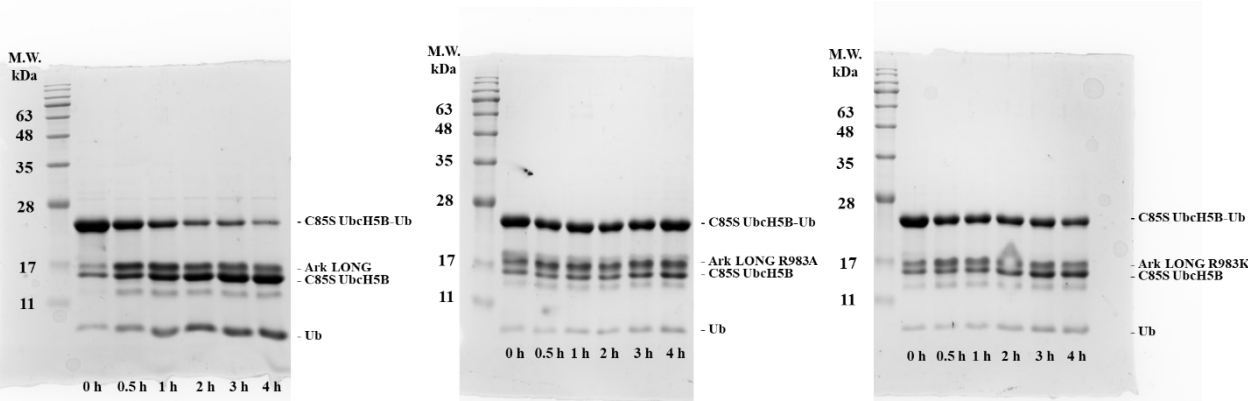
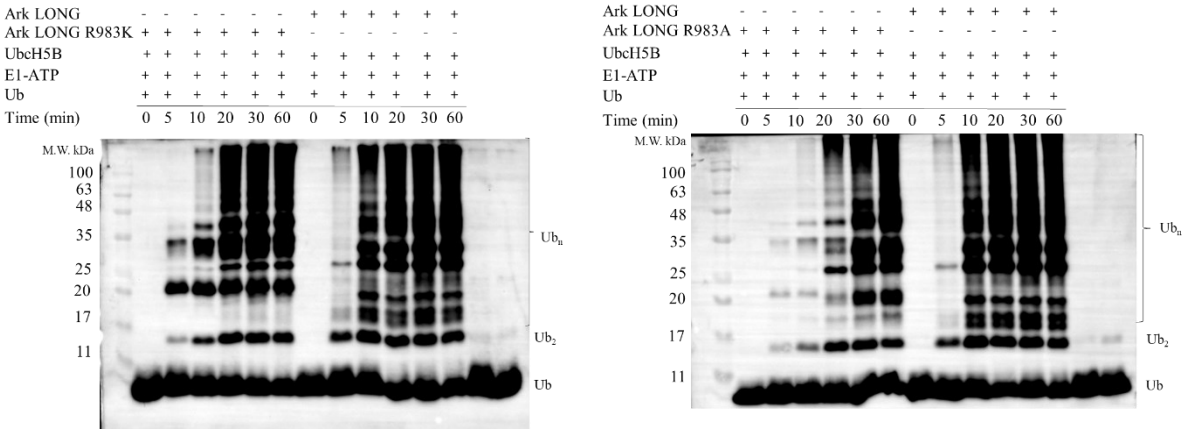


**Figure S9.** Oxyester hydrolysis assays showing the disappearance of C85S UbcH5B-Ub (left) and C85S S22R UbcH5B-Ub (right) in the presence of AKD LONG, over time.



**Figure S10.** Oxyester hydrolysis assays showing the disappearance of C85S UbcH5B-Ub in the presence of Ark LONG, Ark LONG R983A and Ark LONG R983K respectively, over time.



**Figure S11.** In vitro ubiquitination assays of Ark LONG R983K (left) and Ark LONG R983A (right) in comparison to wt Ark LONG.