**Supplementary File 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Protein Construct** | **# Replicates** | **# Molecules** | **Event #** | **Ave Formation Rate (s-1)** | **SEM (s-1)** |
| Buffer | 3 replicates | 778 | 15 | 6.4x10-5 | 1.0x10-5 |
| wt XLF | 3 replicates | 691 | 267 | 1.7x10-3 | 3.4x10-4 |
| XLF1-245+KBM | 4 replicates | 1076 | 13 | 4.6x10-5 | 1.3x10-5 |
| H10-XLF  Flag-Avi XLF | 2 replicates | 306 | 132 | 3.1x10-3 | 1.9x10-4 |
| H10-XLFΔTailΔKBM  Flag-Avi-XLF | 5 replicates | 1391 | 222 | 6.2x10-4 | 1.2x10-4 |
| H10-XLFΔTailΔKBM | 5 replicates | 998 | 16 | 8.6x10-5 | 3.9x10-5 |