**Table S5 Parameters were extracted from SC (Fig. 6) and EC (Fig. S5) FRET histograms fitted with three Gaussian distribution fitting.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variants | pH | Low FRET | | Medium FRET | | High FRET | |
| Mean ±Width | Population (%) | Mean ±Width | Population (%) | Mean ±Width | Population (%) |
| SC | 7 | 0.00 ± 0.09 | 20 | 0.24 ± 0.23 | 20 | 0.62 ± 0.21 | 60 |
| 5 | 0.04 ± 0.11 | 40 | 0.23 ± 0.21 | 40 | 0.59 ± 0.37 | 20 |
| EC | 7 | 0.00 ± 0.10 | 60 | 0.17 ± 0.17 | 30 | 0.56 ± 0.51 | 10 |
| 5 | 0.01 ± 0.09 | 68 | 0.13 ± 0.13 | 24 | 0.49 ± 0.41 | 8 |