**Table S3: Summary of the fitted equilibrium dissociation constants (Kd).**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Protein** | **Cation** | **Kd (mM) a** | **Error b** | **Avg. Kd (mM) c** |
| **MRS258-333** | Mg2+ | 0.17 | ±0.07 | 0.14 ± 0.03 |
| 0.16 | ±0.07 |
| 0.08 | ±0.03 |
| Ca2+ | 1.54 | ±1.39 | 1.01 ± 0.26 |
| 0.71 | ±0.45 |
| 0.79 | ±0.71 |
| Co2+ | 1.13 | ±0.33 | 0.68 ± 0.30 |
| 0.11 | ±0.75 |
| 1.82 | ±1.82 |
| **MRS2-D216A/D220A** | Mg2+ | 0.47 | ±0.36 | 0.98 ± 0.25 |
| 1.33 | ±0.36 |
| 1.12 | ±0.40 |
| Ca2+ | 1.39 | ±1.27 | 0.74 ± 0.49 |
| 0.67 | ±0.32 |
| 0.81 | ±0.59 |
| Co2+ | 0.99 | ±0.26 | 1.37 ± 0.51 |
| 2.40 | ±1.03 |
| 0.73 | ±0.21 |

a Data are extracted from fits to a one-site binding model that accounts for protein concentration.

b Errors (±) are fitted errors from the one-site binding model fit.

c Errors (±) are SEM from the n=3 Kd values reported, determined using three protein preparations.