Supplementary Table 2

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| **Reaction #** | **Description** | **kon** | **koff (s-1)** | **KD (µM)** | **Reference** |
| 1 | Actin dimerization | 1.16 x 107 | 5.88 x 104 | 5.07 x 103 | This Study |
| 2 | Actin trimerization | 1.16 x 107 | 9.81 x 103 | 846 | This Study |
| 3 | Actin tetramerization | 1.16 x 107 | 96.9 | 8.36 | This Study |
| 4 | Actin dimer nucleation | 1.13 x 10-4 |  |  | This Study |
| 5 | Actin trimer nucleation | 1.41 x 10-3 |  |  | This Study |
| 6 | Actin tetramer nucleation | 5.86 x 10-2 |  |  | This Study |
| 7 | Barbed end elongation | 1.16 x 107 | 1.4 | 0.12 | Pollard 1986 |
| 8 | Arp2/3 binds actin filament | 150 | 0.001 | 6.67 | Beltzner 2007 |
| 9 | Dip1 binds Arp2/3 | 1 x 106 | 9.9 | 9.9 | This Study |
| 10 | Actin monomer binds Dip1-Arp2/3 nucleus | 1.16 x 107 | 95200\* | 8.21 x 103 | This Study |
| 11 | Dip-bound Arp2/3 nucleation | 1.8\* |  |  | This Study |