

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Depolymerization of unoxidized F-actin upon monomers wash off. Bar=10 μ m.

Movie speed: 3 frames/s

File Name: Supplementary Movie 2

Description: Depolymerization of Mox-F-actin upon monomers wash off. Bar=10 μ m. Movie

speed: 3 frames/s

File Name: Supplementary Movie 3

Description: Binding of M44-O in the hydrophobic cleft of Mox-F-actin Class-1. Panel is rotated along X axis for 40 degrees up and down, showing the three dimensional relationships of M44-O side chain in respect to its binding pocket in the hydrophobic cleft of Mox-actin Class-1.

File Name: Supplementary Movie 4

Description: Binding of M44-O in the hydrophobic cleft of Mox-F-actin Class-2. Panel is rotated along X axis for 40 degrees up and down, showing the three dimensional relationships of M44-O side chain in respect to its binding pocket in the hydrophobic cleft of Mox-actin Class-2. Movie 5.

File Name: Supplementary Movie 5

Description: Binding of unoxidized M44 in the hydrophobic cleft of F-actin. Panel is rotated along X axis for 40 degrees up and down, showing the three dimensional relationships of M44 side chain in respect to its binding pocket in the hydrophobic cleft of F-actin (PDB#: 5JLF).