

## Description of Additional Supplementary Files

**Supplementary Data 1 - Positions, read counts and densities of molecules at all RING1B peaks.**

**Supplementary Movie 1 – Example 67 Hz SPT video for RING1B-HaloTag.**

An example movie to illustrate typical data obtained from a 67 Hz video of RING1B-HaloTag. The movie is cropped to show a specific region containing cells, and shortened to half the length of a typical movie (2000 frames, 30 s). The time after acquisition was initiated is shown on each frame. Scale bar = 5  $\mu\text{m}$ .

**Supplementary Movie 2 – Example 67 Hz SPT video for H2B-HaloTag.**

An example movie to illustrate typical data obtained from a 67 Hz video of H2B-HaloTag. The movie is cropped to show a specific region containing cells, and shortened to half the length of a typical movie (2000 frames, 30 s). The time after acquisition was initiated is shown on each frame. Scale bar = 5  $\mu\text{m}$ .

**Supplementary Movie 3 – Example 67 Hz SPT video for HaloTag-3xNLS.**

An example movie to illustrate typical data obtained from a 67 Hz video of HaloTag-3xNLS. The movie is cropped to show a specific region containing cells, and shortened to half the length of a typical movie (2000 frames, 30 s). The time after acquisition was initiated is shown on each frame. Scale bar = 5  $\mu\text{m}$ .

**Supplementary Movie 4 – Example 2 Hz SPT video for RING1B-HaloTag.**

An example movie to illustrate typical data obtained from a 2 Hz video of RING1B-HaloTag. The movie is cropped to show a specific region containing cells. The time after acquisition was initiated is shown on each frame. Scale bar = 5  $\mu\text{m}$ .

**Supplementary Movie 5 – Example 0.033 Hz SPT video for RING1B-HaloTag.**

An example movie to illustrate typical data obtained from a 0.033 Hz video of RING1B-HaloTag. The movie is cropped to show a specific region containing cells. The time after acquisition was initiated is shown on each frame. Scale bar = 5  $\mu\text{m}$ .