

**File name: Supplementary Movie 1**

**Description:** Time-lapse video of U2OS cells expressing EGFP-SRSF2. Cells were imaged with HT-2H. All refractive index images are adjusted to 1.337-1.37.

**File name: Supplementary Movie 2**

**Description:** Time-lapse video of U2OS cells expressing G3BP1-EGFP treated with 500  $\mu$ M sodium arsenite. Cells were imaged with HT-2H. All refractive index images are adjusted to 1.337-1.37.