

Description of Additional Supplementary Files

File Name: **Supplementary Video 1**

Description: the light-sheet region translates along its width direction, corresponding to the Y-axis, while simultaneously being scanned in the axial or Z-axis, relative to the detection objective. As a result of this translation, the light-sheet region that must be cropped also shifts along the Y-axis. This dynamic adjustment ensures precise alignment and proper imaging throughout the scanning process.