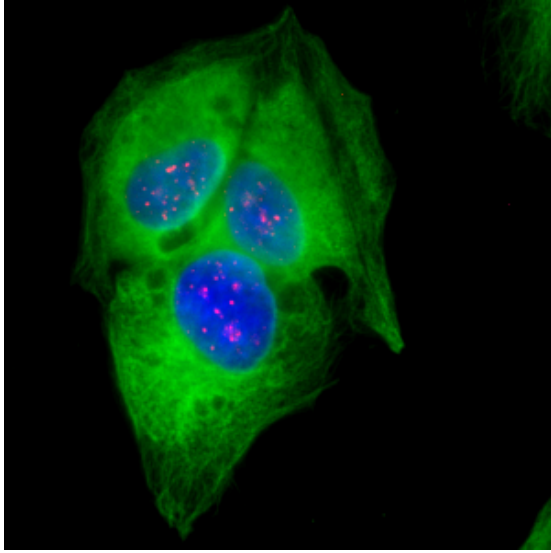
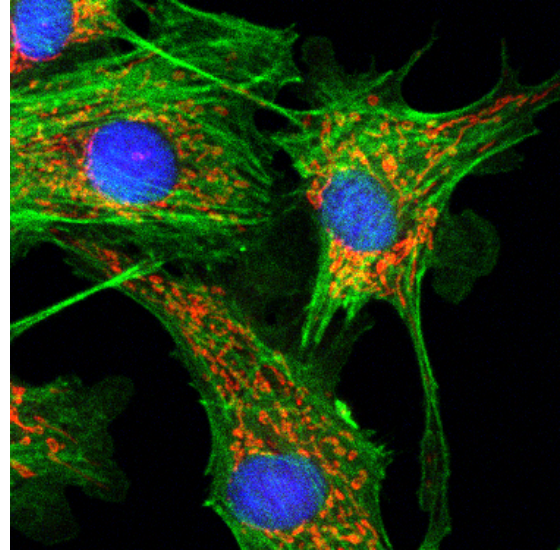


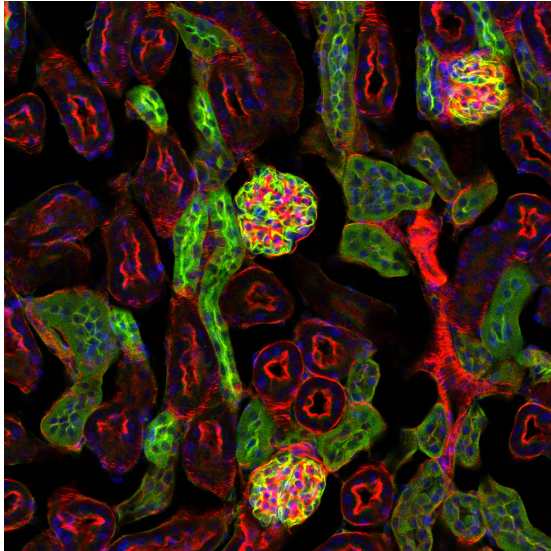
A



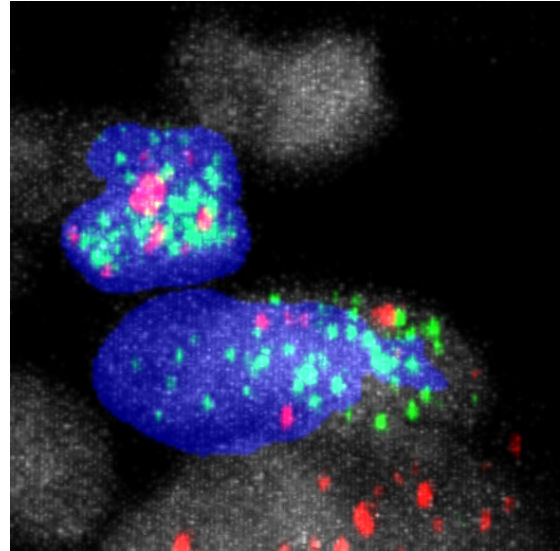
B



C



D



Supplementary Figure 1. Example of biological application of image analysis. (A) Counting of PML NB shells (red) in cell nuclei (blue) is referred to as a “2D counting” task. The cytoplasmic staining is shown in green. (B) Segmentation of organelles, such as mitochondria (red), identified as children objects, and their correct assignment to the parent cell cytoplasm (green) as an example of “2D segmentation” and “parent-child relation”. (C) Characterization of structure with WGA and phalloidin staining (green and red) and number of cells with DAPI (blue) in kidney tissue glomeruli is a “3D cell counting” or “3D object segmentation” image analysis task. (D) Localization of positive-sense (green) and of negative-sense (red) RNA aggregates within infected cells (blue) or non-infected nuclei (gray) during viral translation or replication in influenza infected human cells, by applying “3D object segmentation” and “parent-child relation” algorithms.