Supplementary Material

Laboratory x-ray cryo microscopy for 3D cell imaging.

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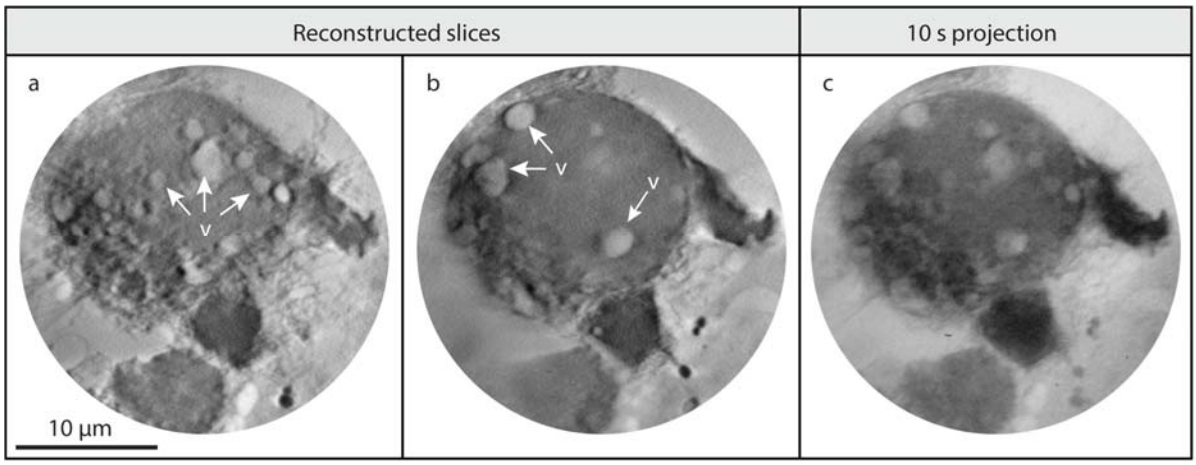

Figure S1. 3D tomographic reconstruction of NK cell interaction with HEK293T cell. This figure shows a similar interaction as in Fig. 5 but later in the killing process with vacuole formation. (**a-b)** Two slices from the reconstructed 3D volume of two NK cells interacting with a starved HEK293T cell. Vacuoles (v) are marked in the images. The full volume stack is provided in Supplementary material. **(c)** One of the 2D 10-second projections used for the tomography, for comparison. Scale bar 10 µm.

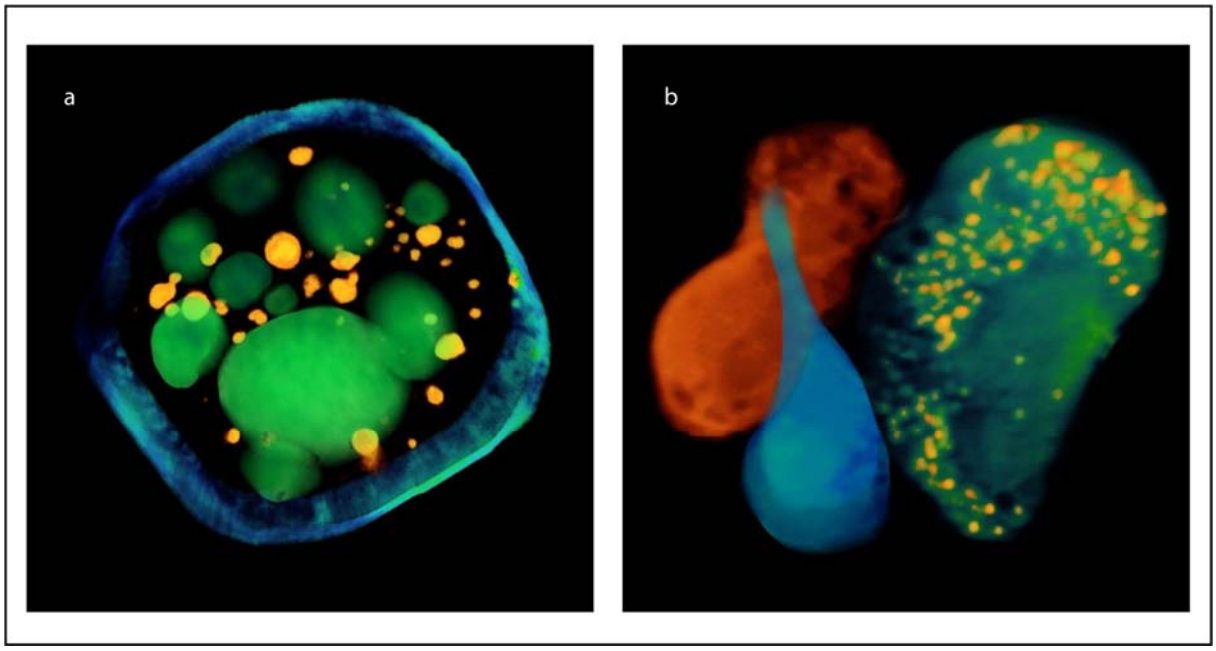

Figure S2. Volume segmentations. (a-b) The figure shows preliminary segmentations of the reconstructed volumes presented in Fig. 3 (Video S3) and Fig. 5 (Video S4). **(a)** depicts a segmentation of a starving HEK 293T cell showing carbon-dense vesicles (orange) vacuoles (green) and cell membrane (blue). **(b)** shows two NK cells (blue, orange) that are in close contact with a starved HEK293T cell containing carbon-dense vesicles (orange).

Video S3. Full 3D x-ray volume stack of Fig. 3, a starving HEK 293T cell. Each voxel corresponds to 35 nm cubed in the sample plane.

Video S4. Full 3D x-ray volume stack of Fig. 5, NK cell interaction with starving HEK 293T cell. Each voxel corresponds to 35 nm cubed in the sample plane.

Video S5. Full 3D x-ray volume stack of Fig. S1 NK cell interaction with HEK293T cell. Each voxel corresponds to 35 nm cubed in the sample plane.