

Supplementary Movie 1 | Video demonstration of the use of napari plugin, including image pre-processing, model training and prediction.

Supplementary Data 1 | Quantitative performance comparison of different methods on internal datasets. The IDs are consistent with those in Fig. 2a. The mean, standard deviation (std), median paired difference (MD) (vs. FluoResFM), and 95% confidence interval (CI) of MD are presented. SR, super-resolution; DCV, deconvolution; DN, denoising.

Supplementary Data 2 | Quantitative performance comparison of different methods on external datasets. The IDs are consistent with those in Fig. 3a. The mean, standard deviation (std), median paired difference (MD) (vs. FluoResFM), and 95% confidence interval (CI) of MD are presented. SR, super-resolution; DCV, deconvolution; DN, denoising.

Supplementary Data 3 | Detailed information of the internal datasets, external datasets, and datasets used for fine-tuning and segmentation performance evaluation. IN: IDs of all the internal datasets (302 datasets in total); IN (Fig. 2a): IDs of internal datasets shown in Fig. 2a; EX: IDs of external unseen datasets (51 datasets in total), consistent with the IDs shown in Fig. 3a; FT: IDs of datasets used for fine-tuning (12 datasets in total); SEG: IDs of datasets used for segmentation performance evaluation (72 datasets in total), consistent with the IDs shown in Fig. 7c. RAW, input low-quality image; GT, ground truth image; n, number of images.

Supplementary Data 4 | Information for constructing text prompts of each dataset. This includes details on the restoration task type, sample type, structure type, fluorescence indicator, and the input and target imaging conditions (microscope type and its associated imaging parameters).