SUPPORTING INFORMATION:

Cellular Uptake and Intracellular Trafficking of Poly(*N*-(2-Hydroxypropyl) Methacrylamide)

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Equation 1 and 2 were used for the determination of Mander's coefficients M1 and M2 for Ch1 (GFP, EE or L) and for Ch2 (Rhodamine, ^{19}F-PHPMA-Rhodamine), respectively.[1]

$$M_1 = \frac{\sum_i GFP_{i,coloc}}{\sum GFP_i} \quad (1)$$

$$M_2 = \frac{\sum_i Rho_{i,coloc}}{\sum Rho_i} \quad (2)$$

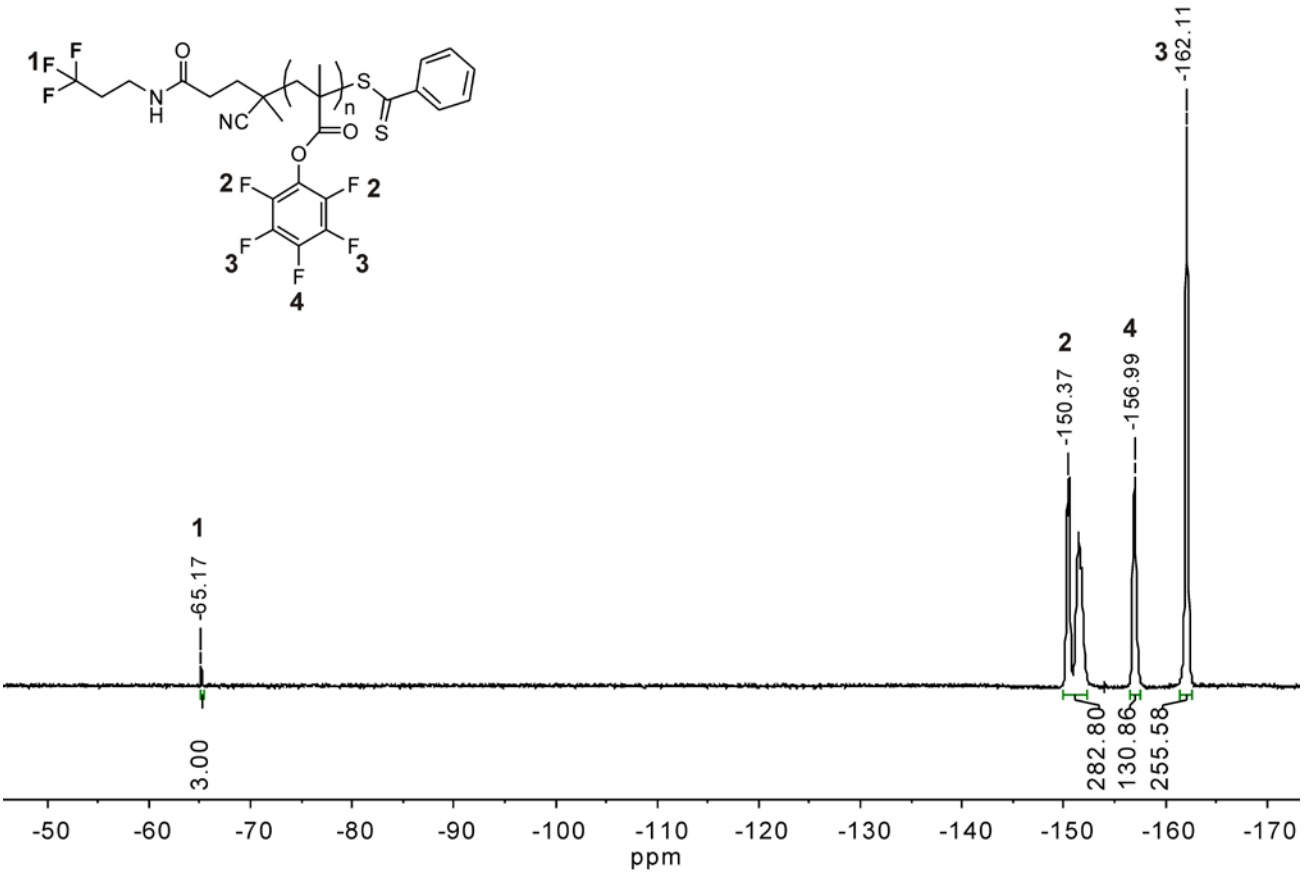


Figure S1. ^{19}F-NMR spectrum of ^{19}F-PPFMA in $CDCl_3$.

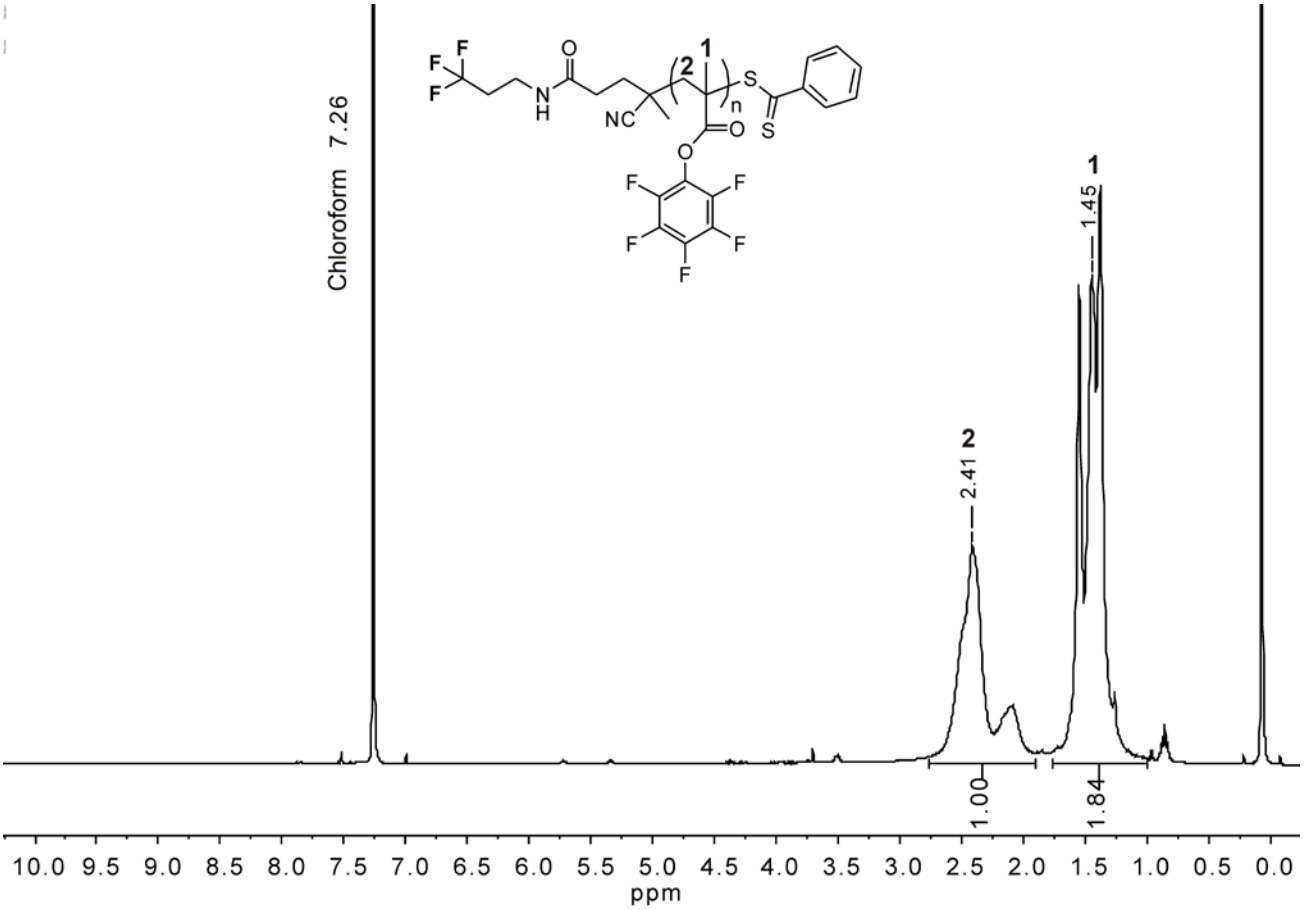


Figure S2. ^{1}H-NMR spectrum of ^{19}F-PPFMA in $CDCl_3$.

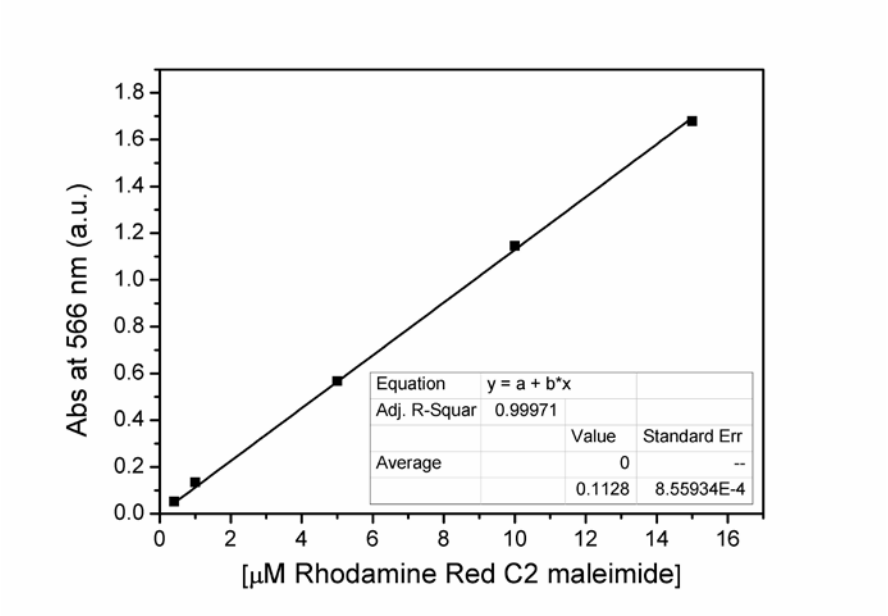


Figure S3. Calibration curve of Rhodamine Red C2 maleimide (ε: 0.112890 mM^{-1} cm^{-1}; Solvent DMSO, λ = 566 nm).

Figure S4. ^{1}H-NMR spectrum of ^{19}F-PHPMA in CD_3OD.

Figure S5. Scatter plots determined by flow cytometry of untreated cells (negative control), untreated cells stained only with Annexin V-Alexa Fluor 647 and only with DAPI, as well as cells treated with Staurosporine (positive control). These scatter plots were used to define the different cell populations.

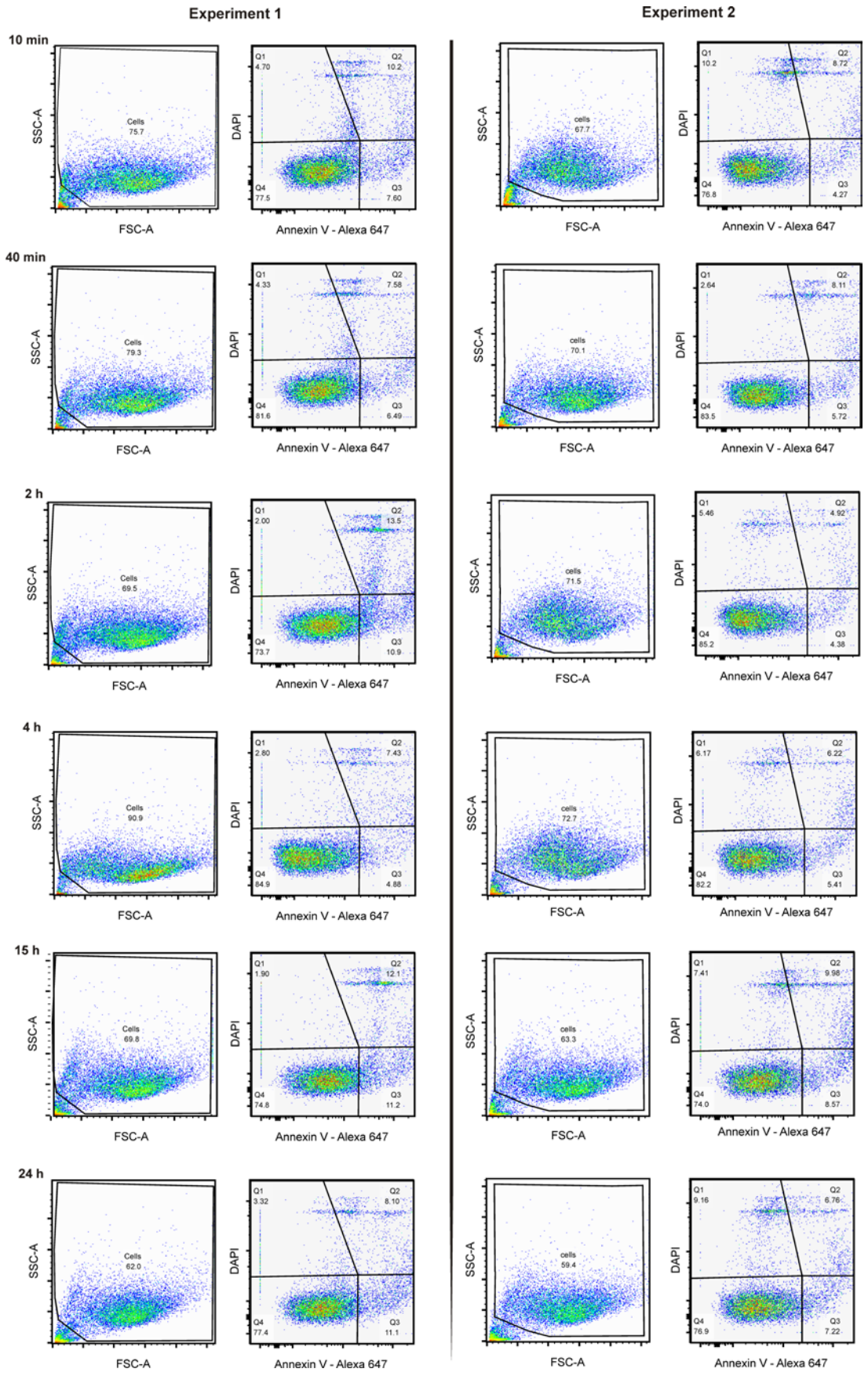


Figure S6. Scatter plots from 2 independent experiments after incubation of cells with 0.6 mg/mL ^{19}F-PHPMA-Rhodamine for different times as determined by flow cytometry using Annexin V-Alexa Fluor

647/DAPI assay. Q2,3,4 represent the geometric mean fluorescence determined for the three different cell populations (live cells, early apoptotic cells and late apoptotic/necrotic cells).

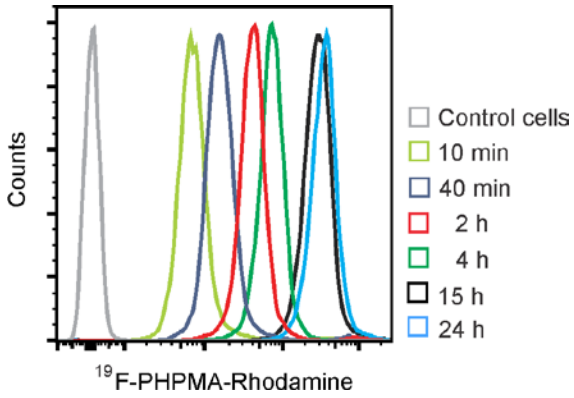


Figure S7. Flow cytometry histogram of Hela cells upon incubation with ^{19}F-PHPMA-Rhodamine at different incubation times (10 min, 40 min, 2 h, 4 h, 15 h, 24 h) as determined by flow cytometry.

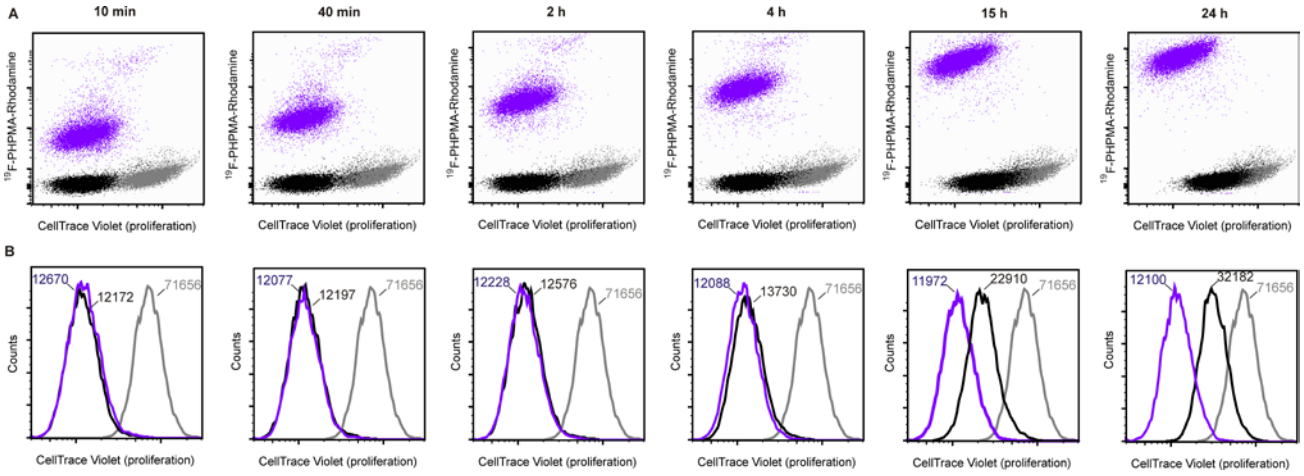
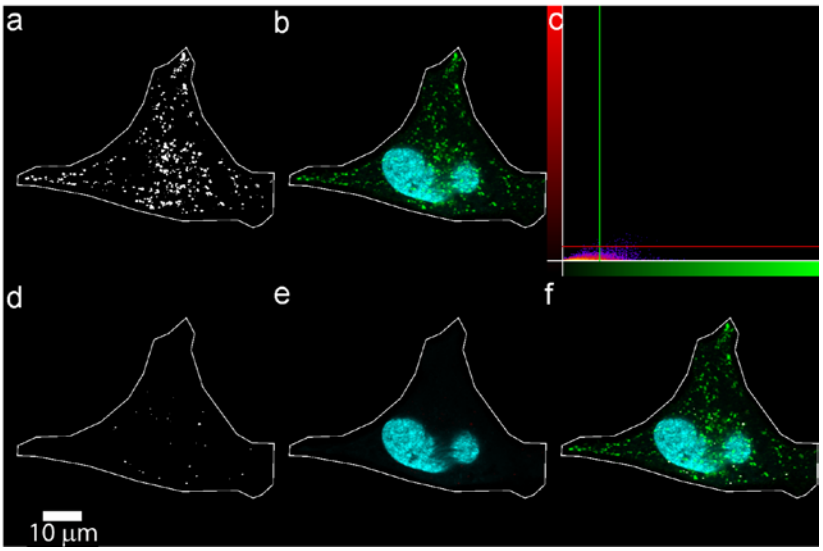
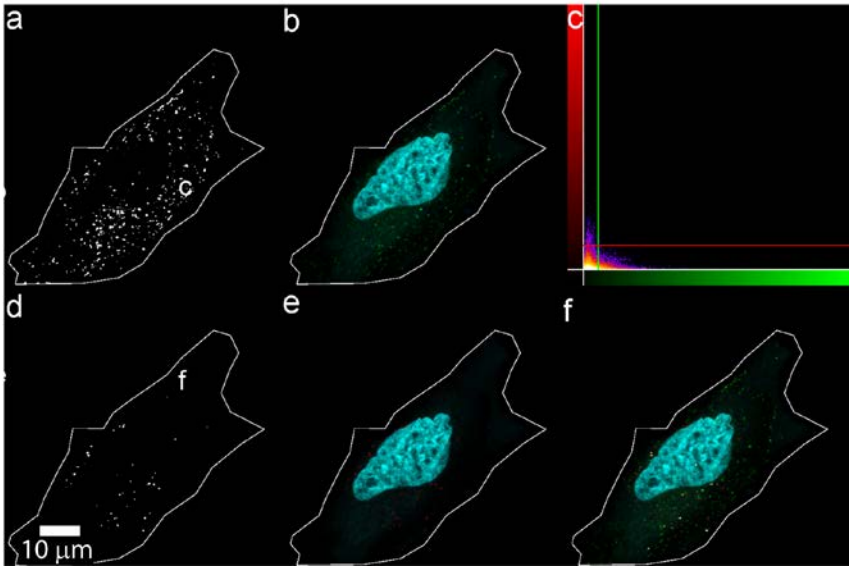


Figure S8. Shift of CellTrace Violet cell fluorescence from the initial (Seeding time, in grey) and the final (End time, in violet) cell fluorescence deriving from cell division during the time frame of the experiment as determined by flow cytometry. Results are represented as both (A) scatter dot plots, which highlight the enhanced ^{19}F-PHPMA-Rhodamine accumulation in cells over time and as (B) histogram plots, which also report the geometric mean fluorescence values.

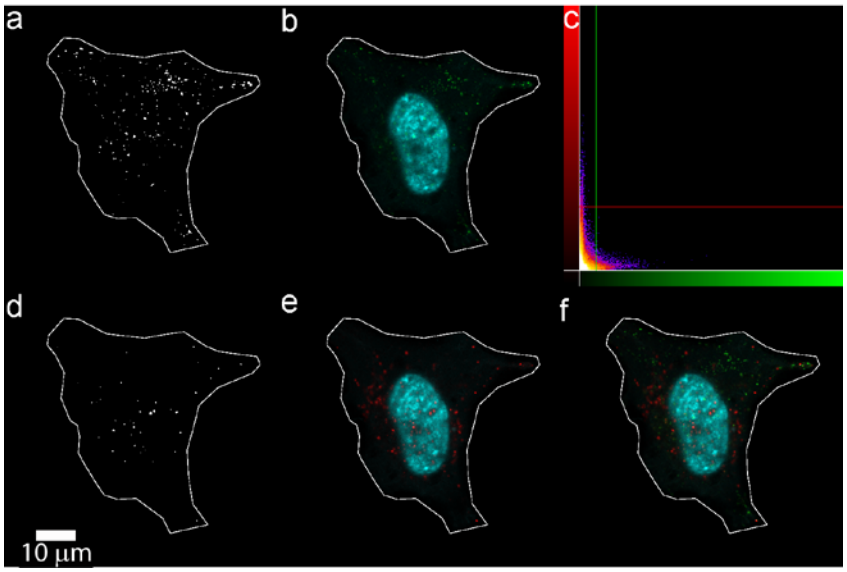
10 min



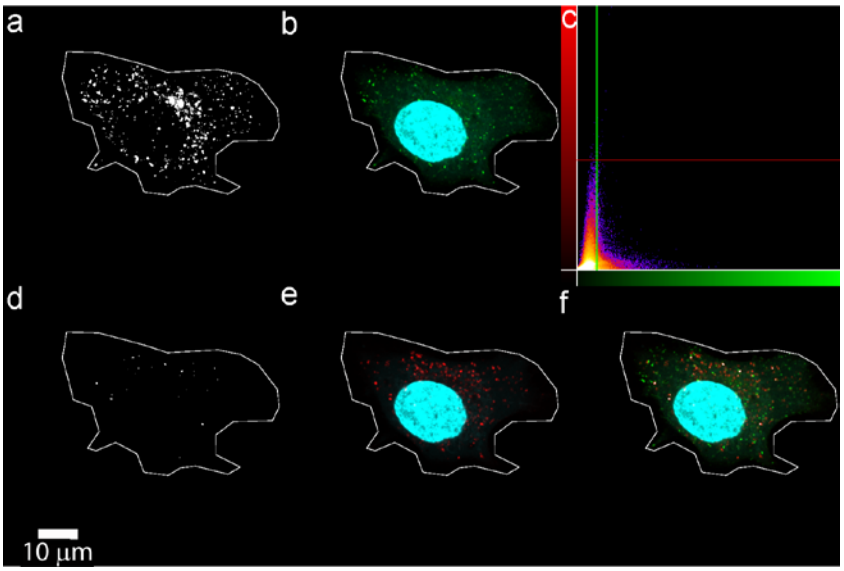
40 min



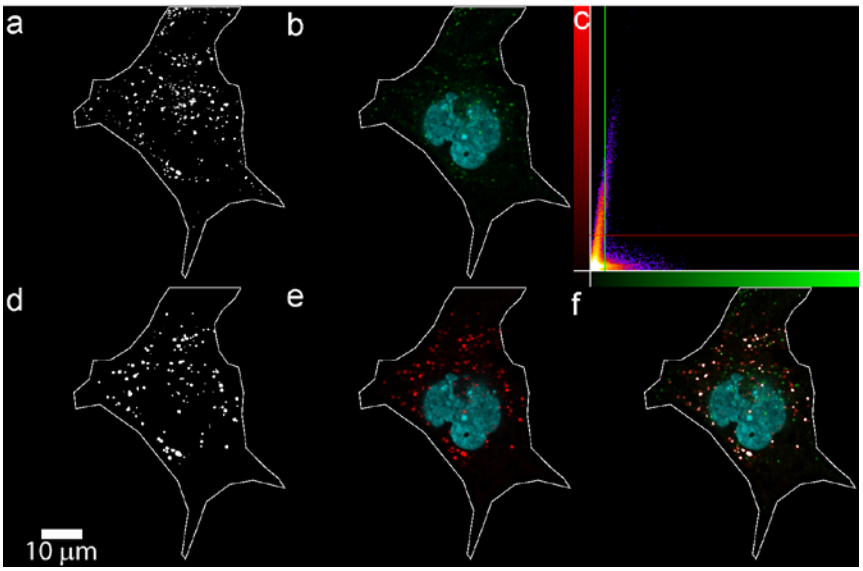
2 h



4 h



15 h



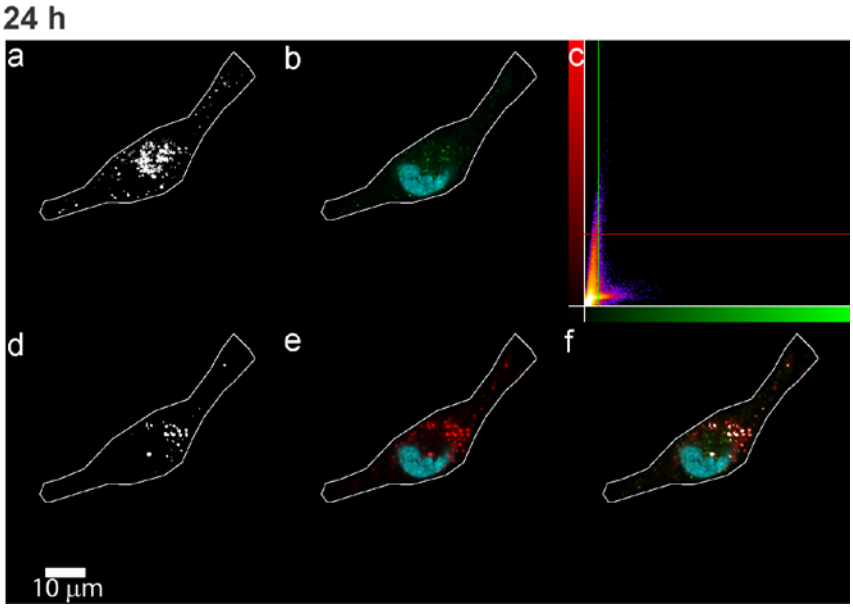
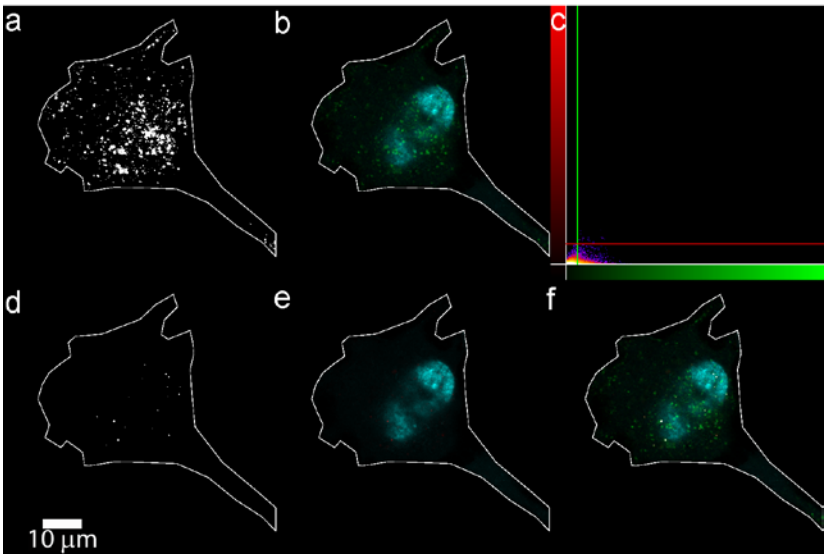
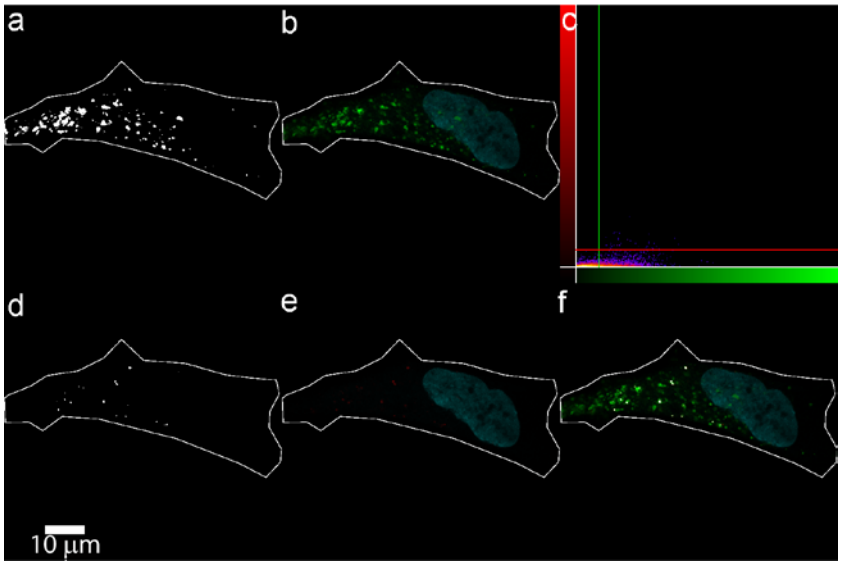


Figure S9. Co-localization studies of ^{19}F-PHPMA-Rhodamine (magenta) with GFP-EE (green) for 10 min, 40 min, 2 h, 4 h, 15 h and 24 h ^{19}F-PHPMA-Rhodamine incubation (0.6 mg/mL) for one single experiment. Representative observations show the threshold images (a and d), corresponding to endosomal vesicles (b, in green) and polymer (e, in red), represented together with the DAPI channel (b, e and f, in Cyan). The merged channels with the "co-localized" pixel (f) as well as the fluorogram (c) are also reported. The contours of the manually drawn ROIs are shown as a white line.

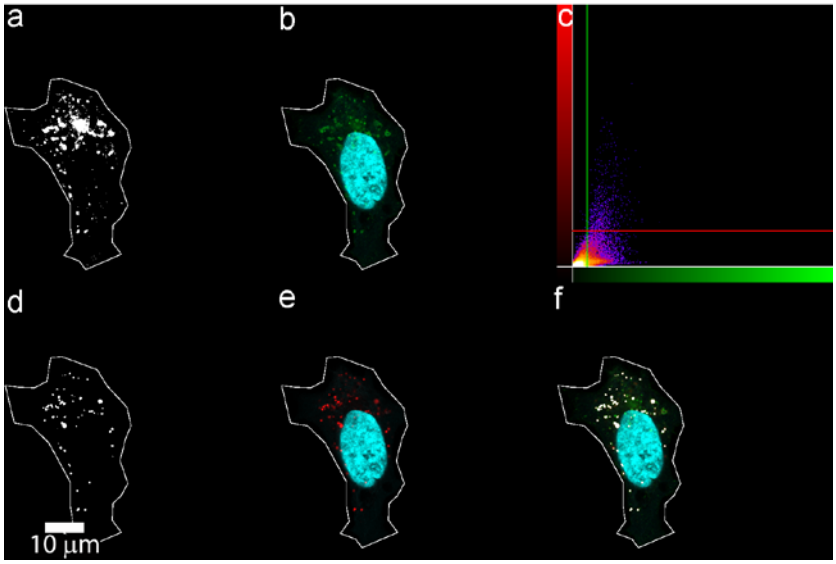
10 min



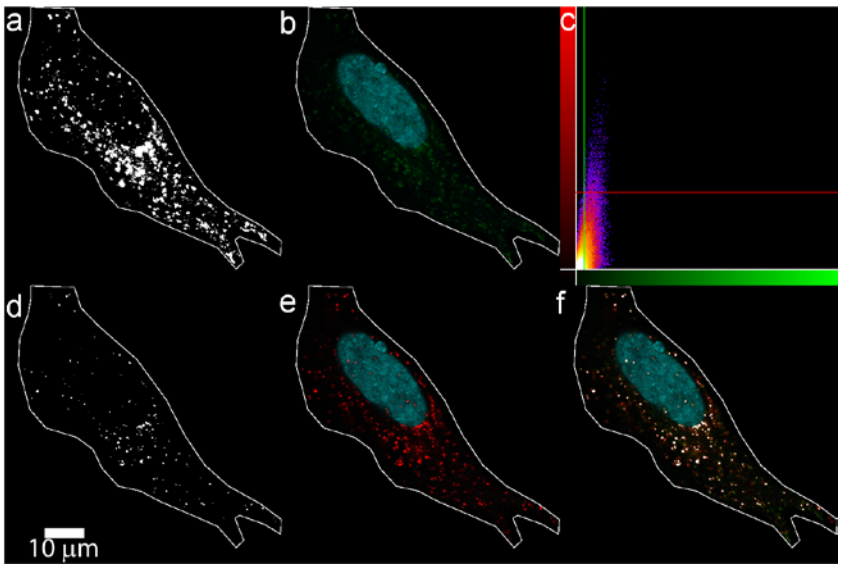
40 min



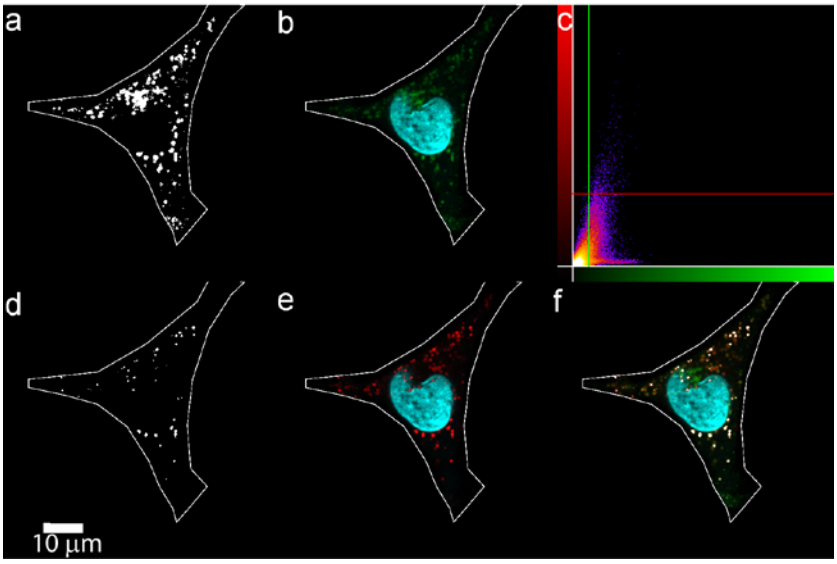
2 h



4 h



15 h



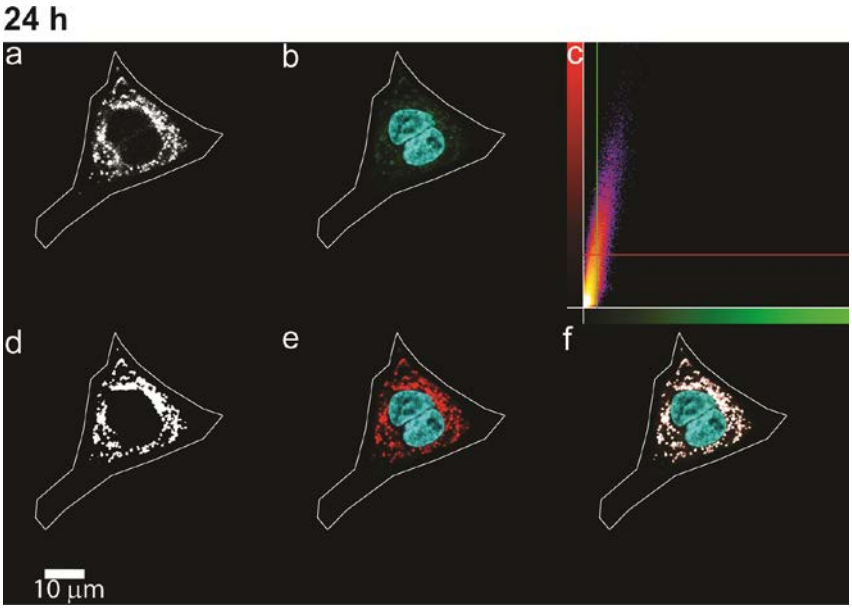


Figure S10. Co-localization studies of ^{19}F-PHPMA-Rhodamine (magenta) with GFP-L (green) for 10 min, 40 min, 2 h, 4 h and 15 h ^{19}F-PHPMA-Rhodamine incubation (0.6 mg/mL) for one single experiment. Representative observations show the threshold images (a and d), corresponding to lysosomal vesicles (b, in green) and polymer (e, in red), represented together with the DAPI channel (b, e and f, in Cyan). The merged channels with the "co-localized" pixel (f) as well as the fluorogram (c) are also reported. The contours of the manually drawn ROIs are shown as a white line.

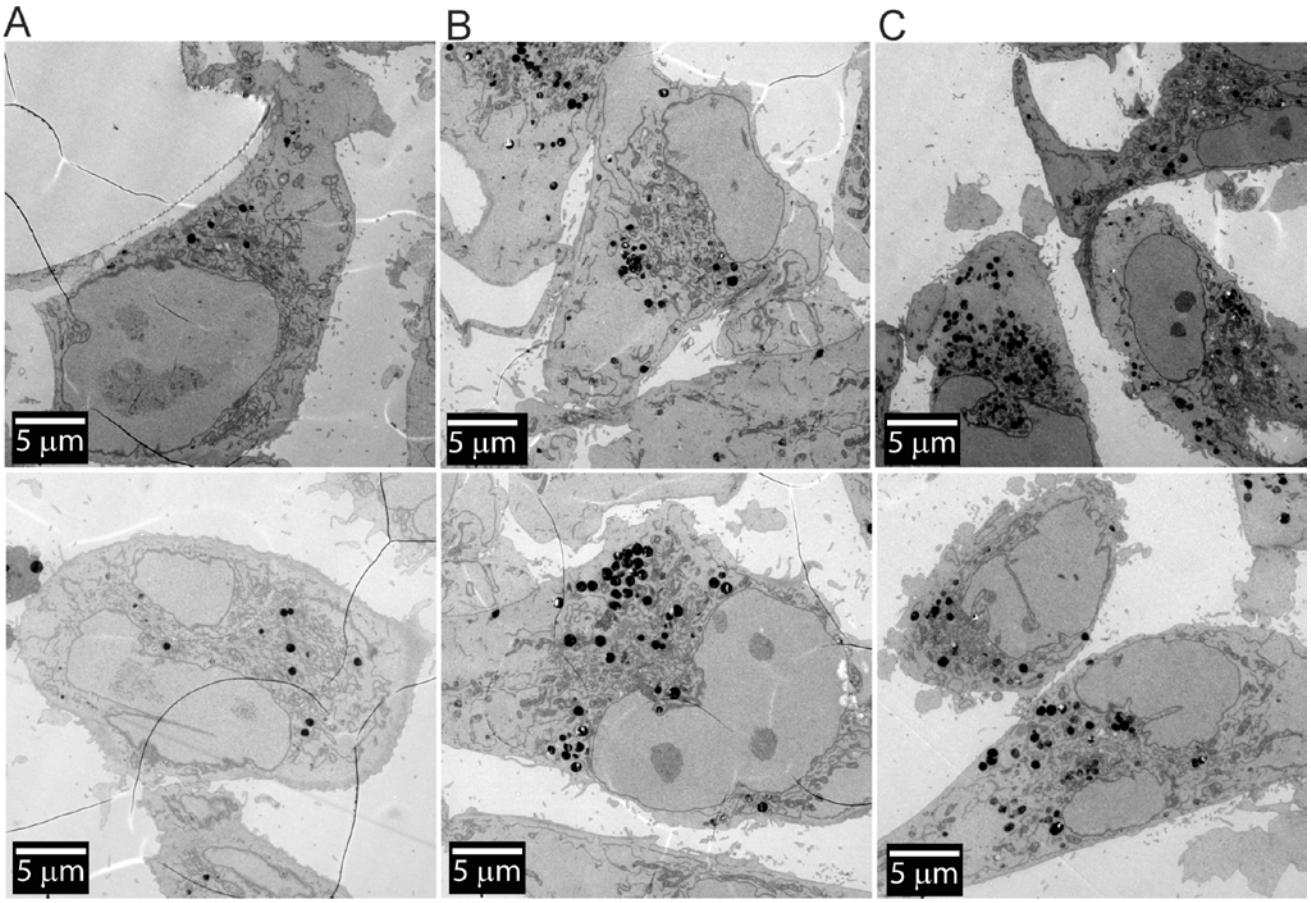


Figure S11. TEM images of (A) control cells, as well as cells incubated for (B) 4 h and (C) 15 h with ^{19}F-PHPMA-Rhodamine.

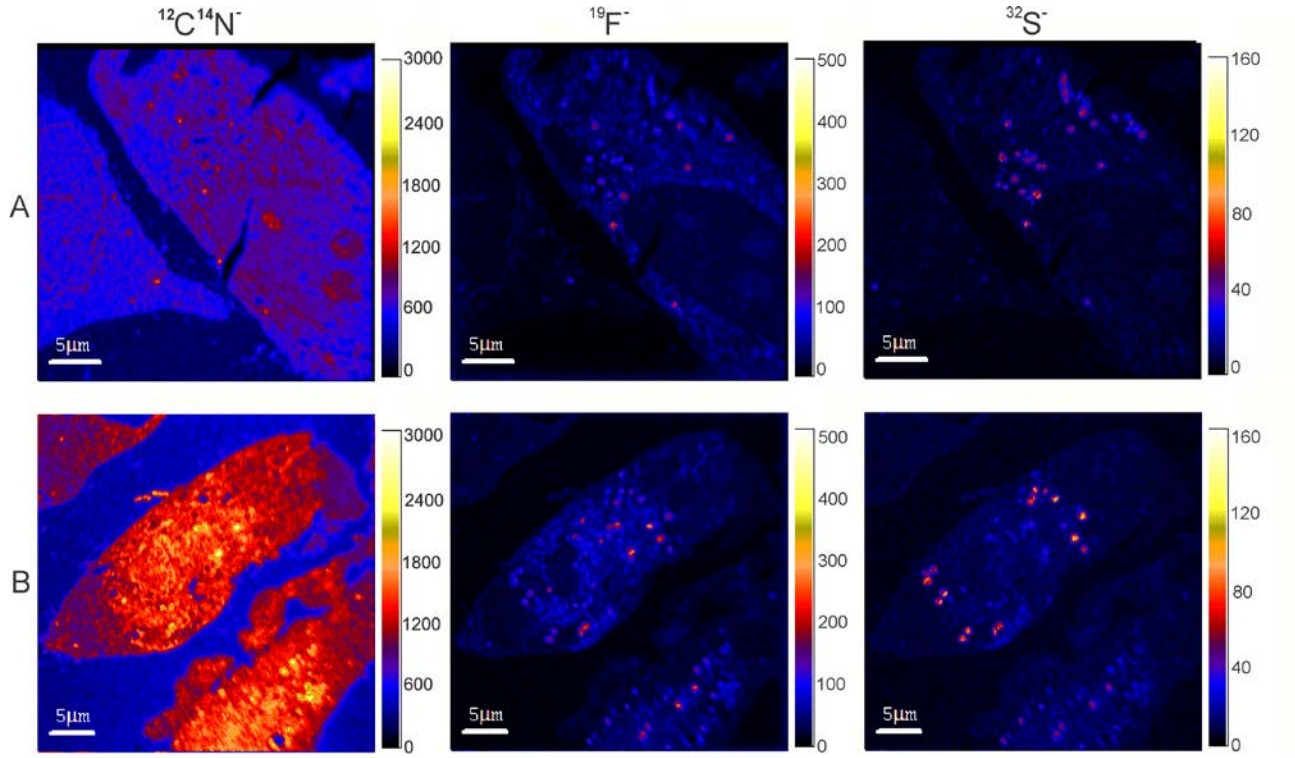


Figure S12. Secondary ion maps of $^{14}N^{12}C^-$, $^{19}F^-$ and $^{32}S^-$ in Hela cells treated with 0.6 mg/mL ^{19}F-PHPMA-Rhodamine for (A) 4 hours and (B) 15 hours.

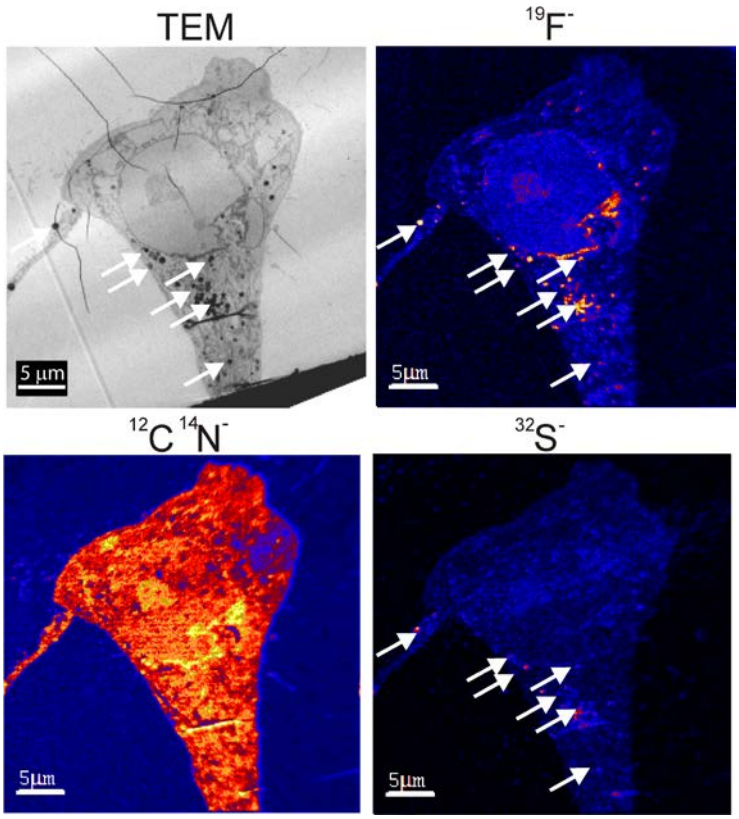


Figure S13. TEM image and the corresponding ^{19}F, ^{32}S and $^{12}C^{14}N$ secondary ion maps obtained after 15 h incubation of Hela cells with 0.6 mg/mL ^{19}F-PHPMA-Rhodamine. White arrows indicated some of the observed correlations between cell vesicles, $^{19}F^-$ and $^{32}S^-$ signals, as an example.

REFERENCES

1. Manders, E. M. M.; Verbeek, F. J.; Aten, J. A., Measurement of Colocalization of Objects in Dual-Color Confocal Images. *Journal of Microscopy-Oxford* **1993,** 169, 375-382.