

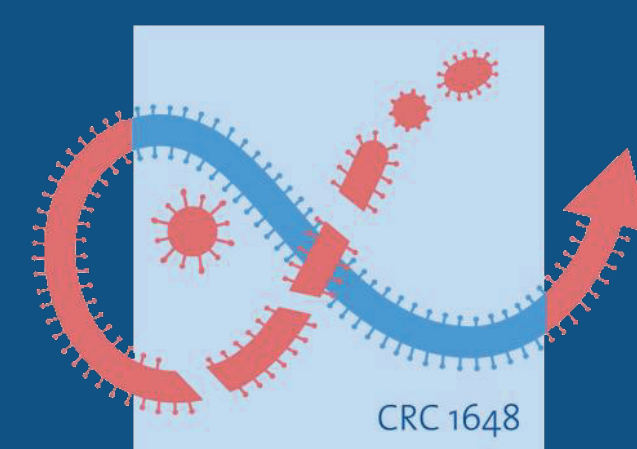
Live-Cell Imaging of Nucleic Acids via Clickable TriPPPro Nucleotide Reporters

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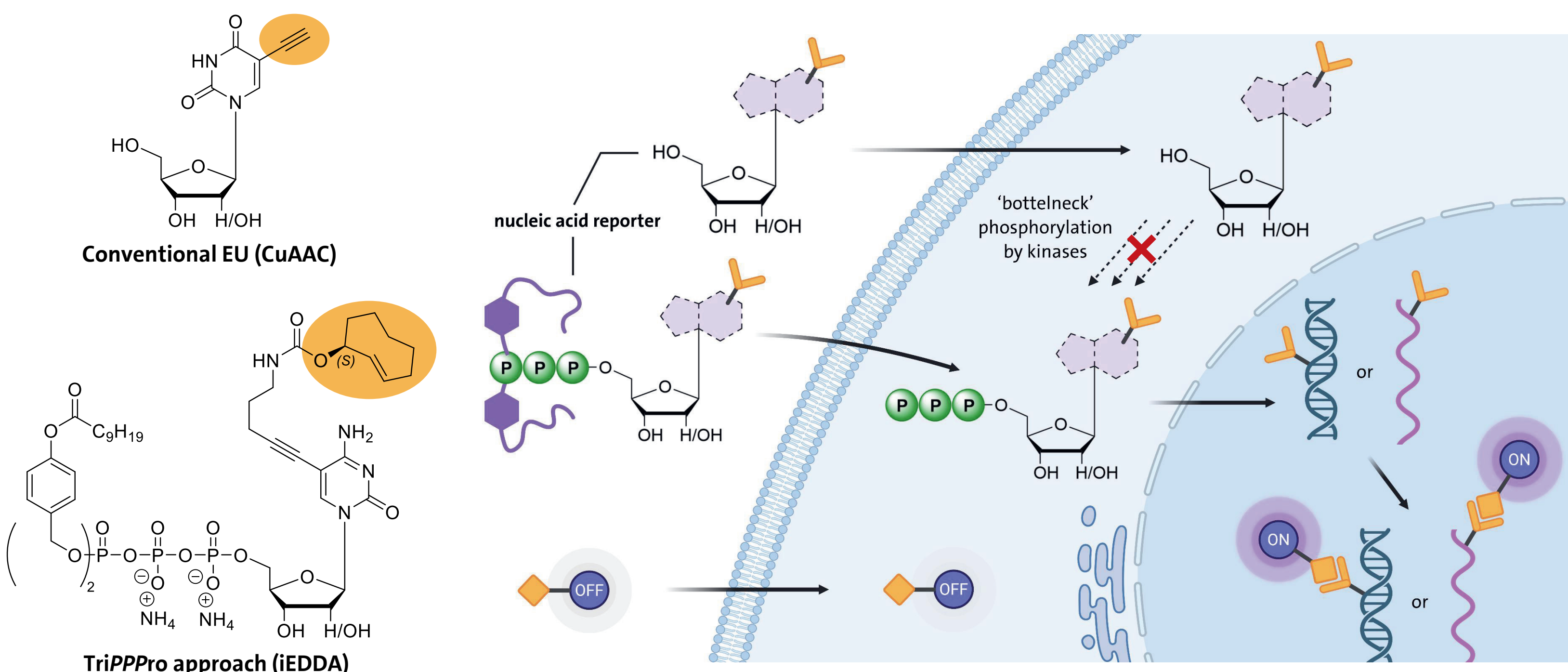
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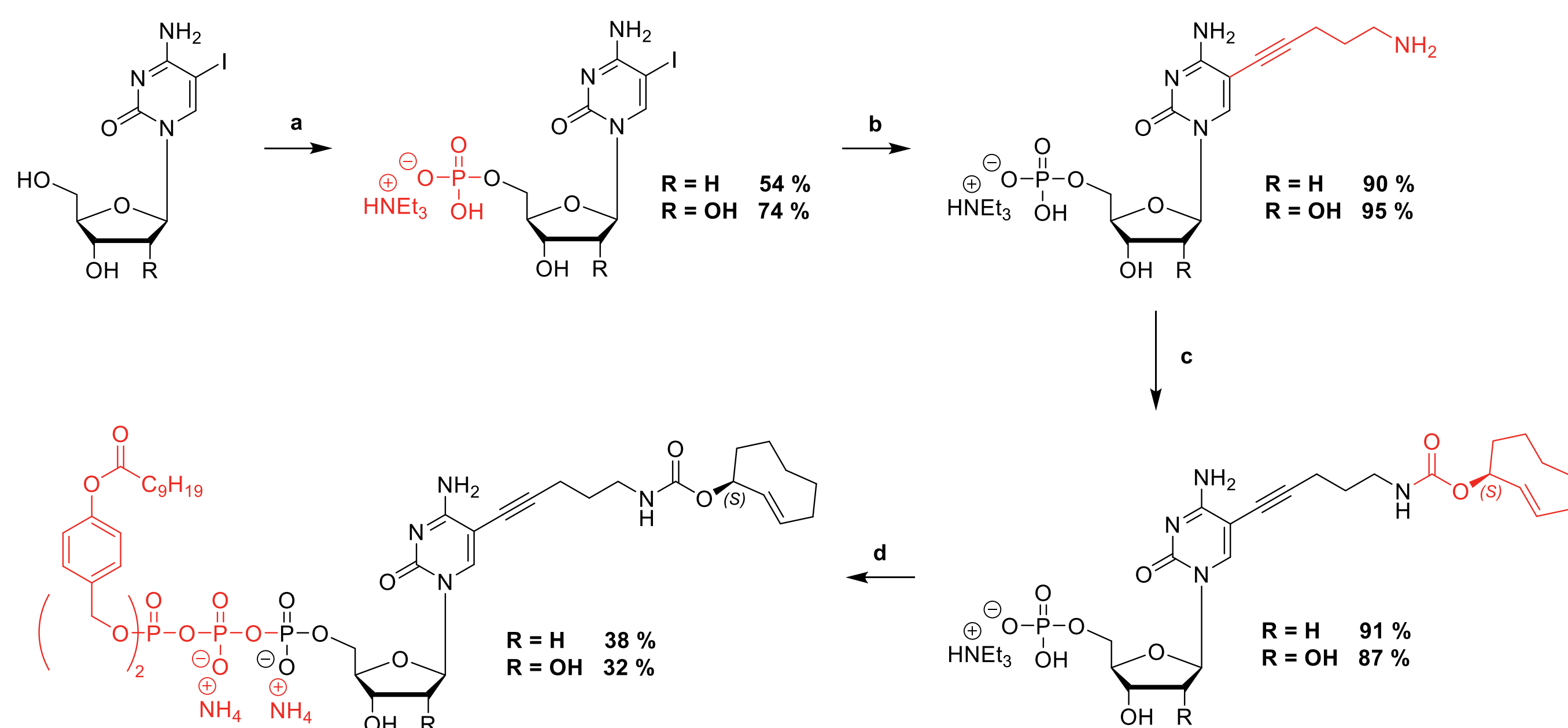


Metabolic 2-Step Labeling in Living Cells

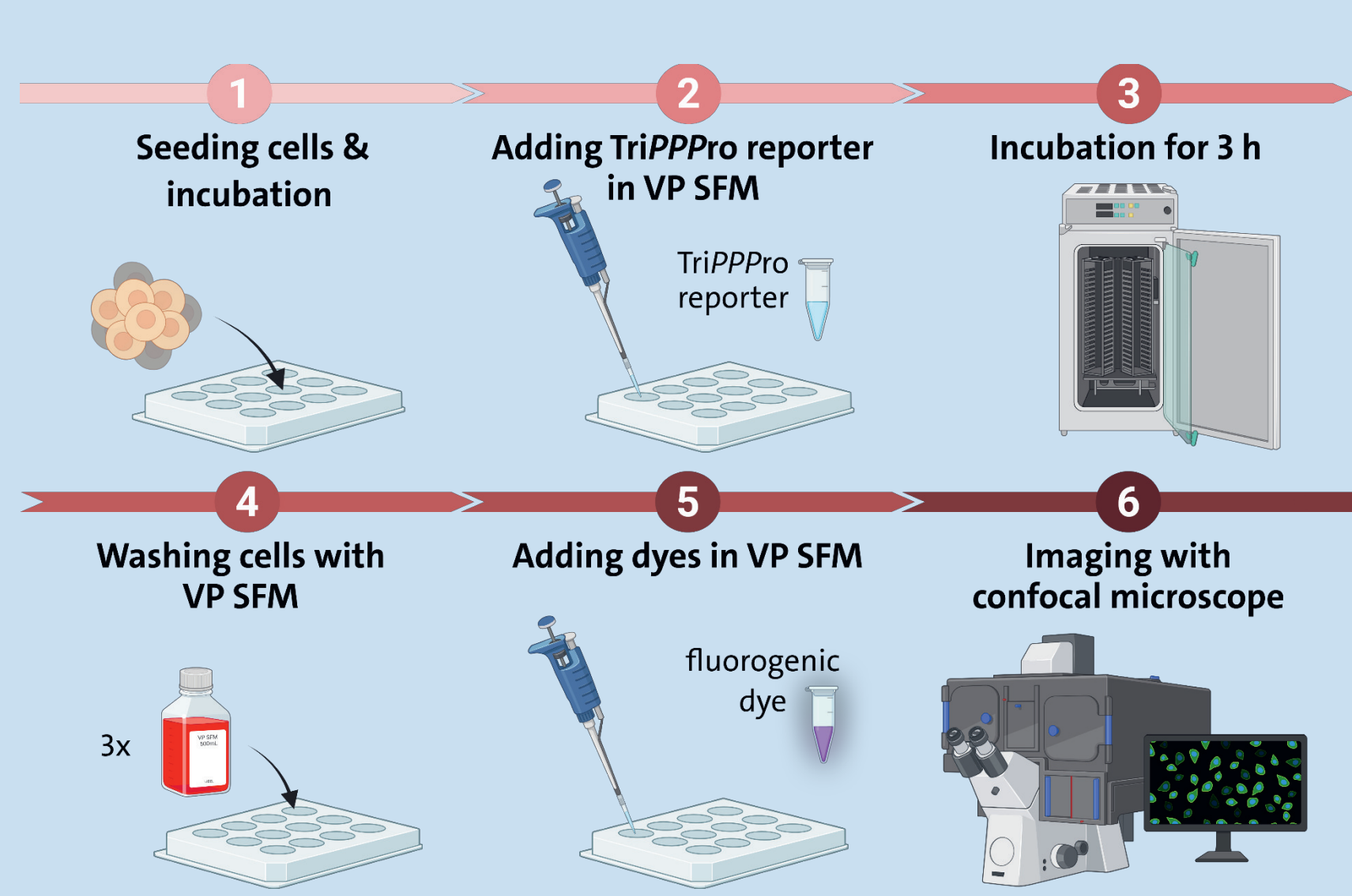


Highly modular, low toxicity SPIEDAC based triphosphate pronucleotide (TriPPPro) approach outperforms conventional CuAAC based labeling regarding labeling efficiency, being compatible with living cells.

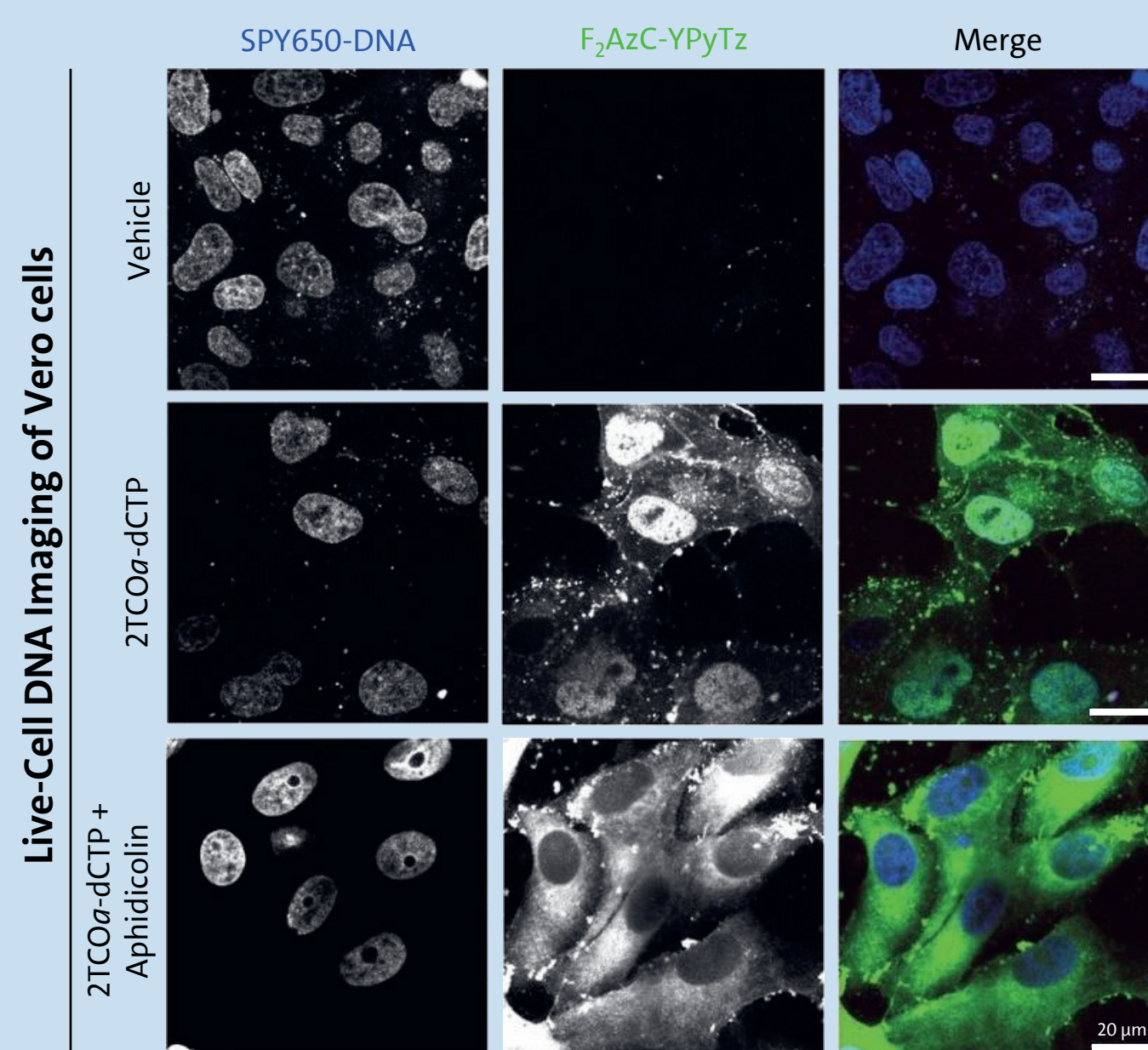
Synthesis of the TriPPPro Reporter



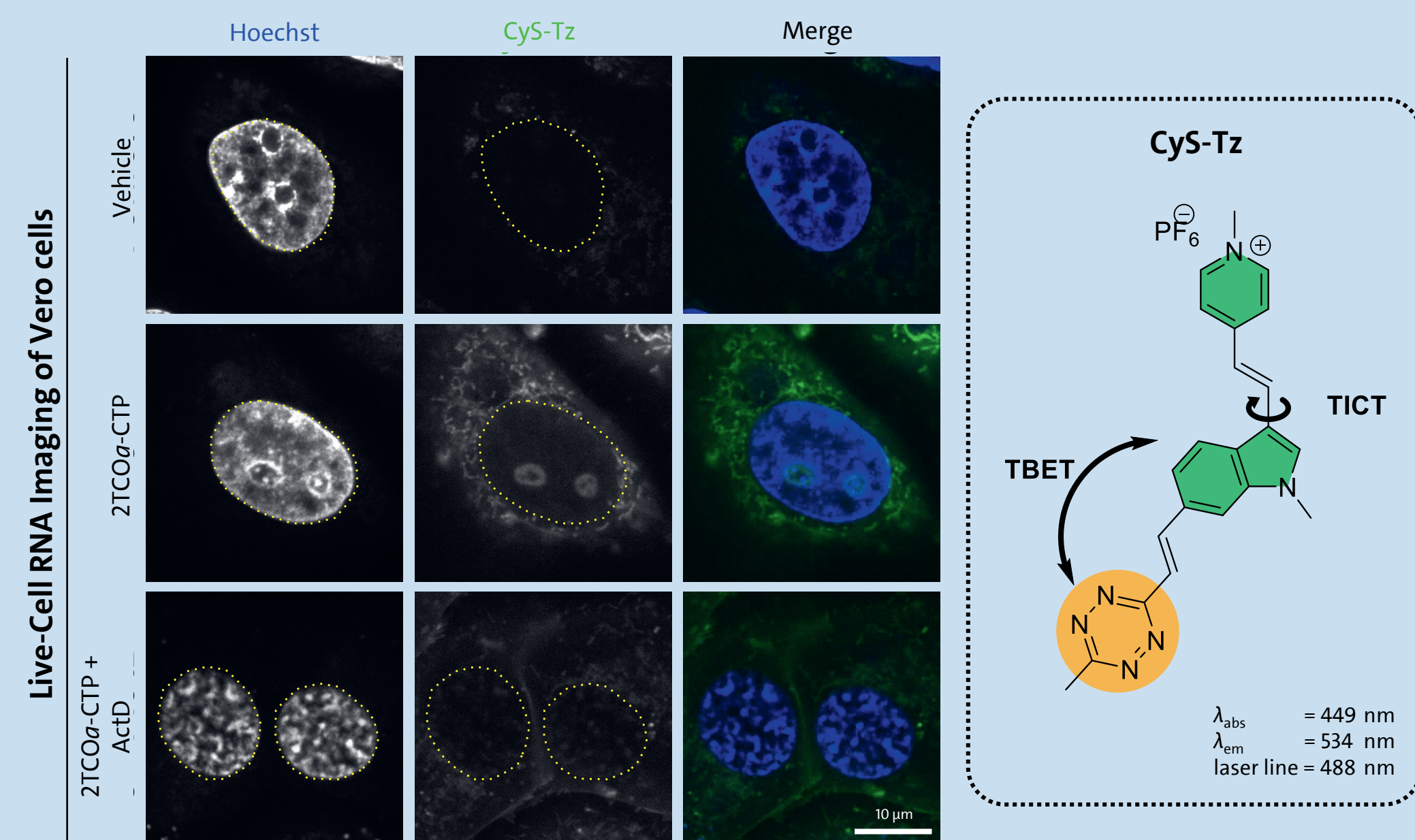
Live-Cell Imaging of Cellular DNA and RNA



Workflow for wash-free labeling of nucleic acids in cells.

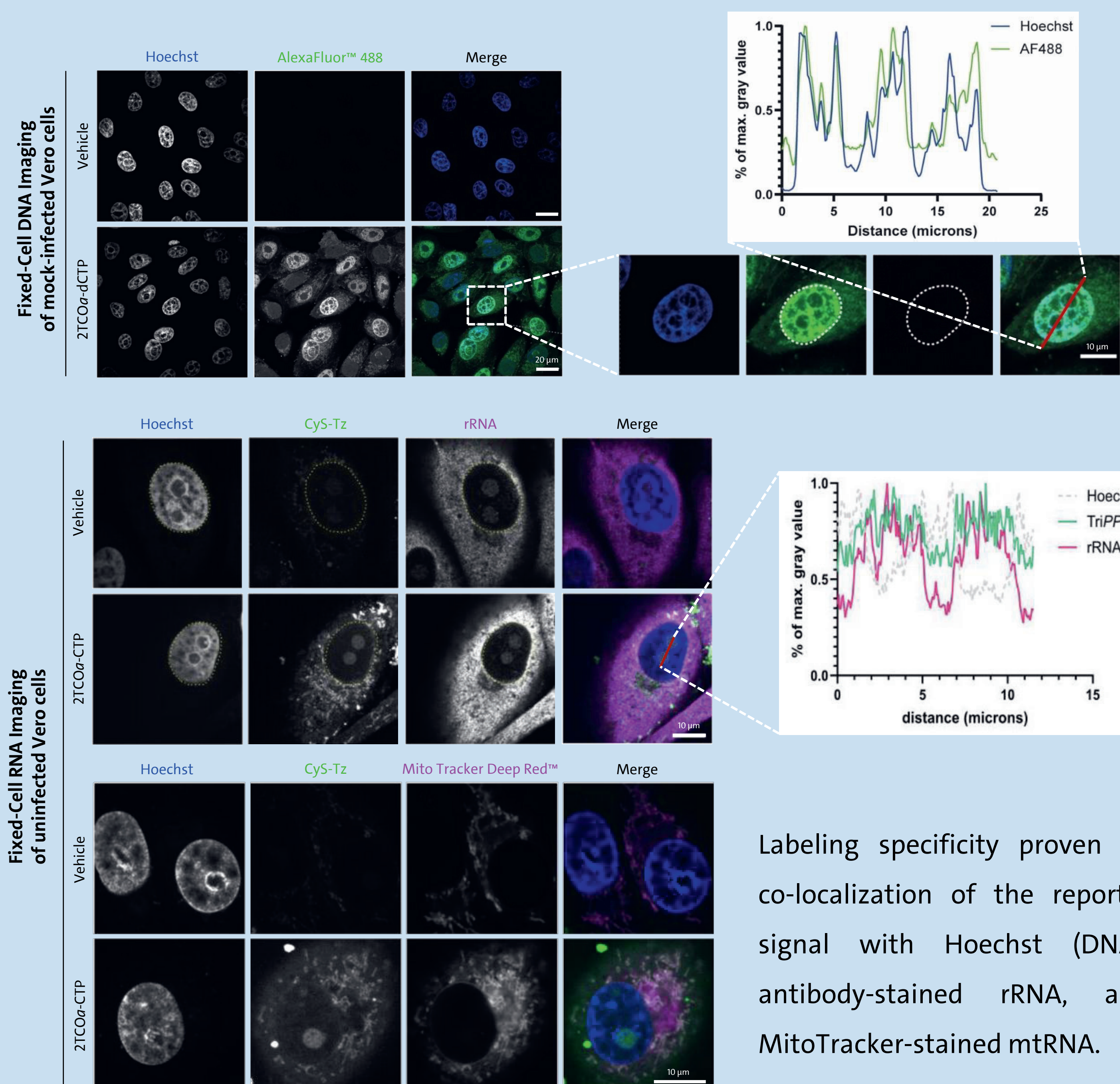


Fluorogenic coumarin-tetrazine conjugate allows visualization of genomic DNA in Vero cells.

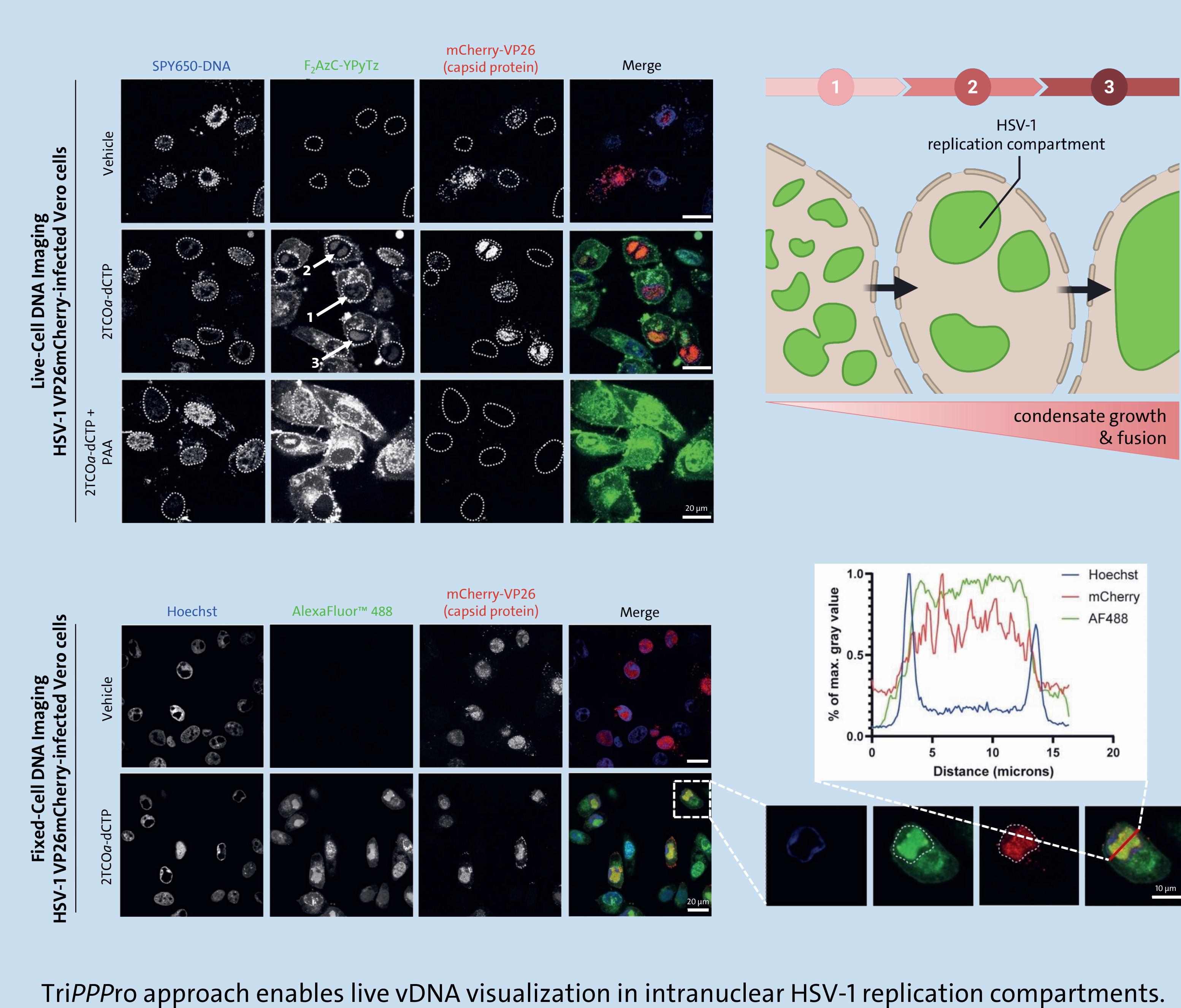


Charged, double-fluorogenic cyanine-styryl-tetrazine conjugate enables labeling of cellular RNA.

Validation of the Labeling Concept



Labeling of HSV-1 Infected Vero Cells



Conclusion

- Robust, modular, low toxicity approach for live-cell labeling of DNA and RNA
- Successful transfer to virus-infected system
- Compartment permeability as key factor for fluorescent probes

Project-Relevant Own Work

[1] V. T. Sterrenberg, D. Stalling, *et al.*, *Angew. Chem., Int. Ed.* **2023**, 62, e202308271.

[2] J. I. H. Knaack, E. List, D. Stalling, *et al.*, *Angew. Chem., Int. Ed.* **2026**, 65, e16613.

Acknowledgment