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Colon carcinoma cured by a tissue adhering TLR7/8 agonist-polymer conjugate

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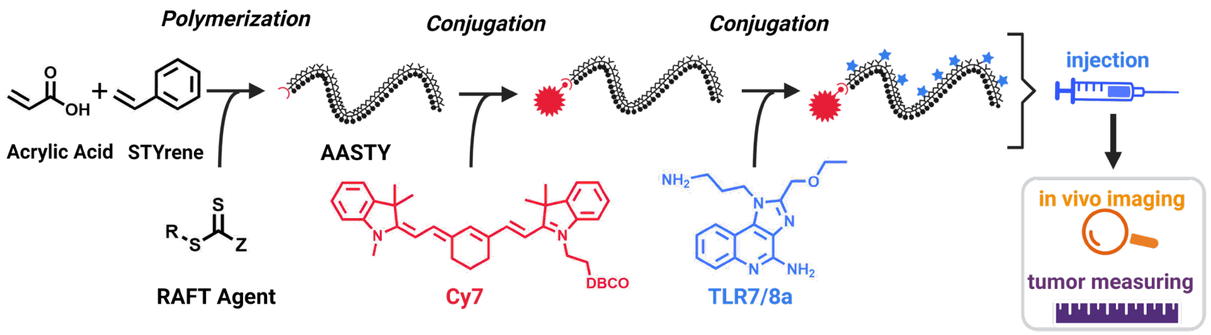
Introduction

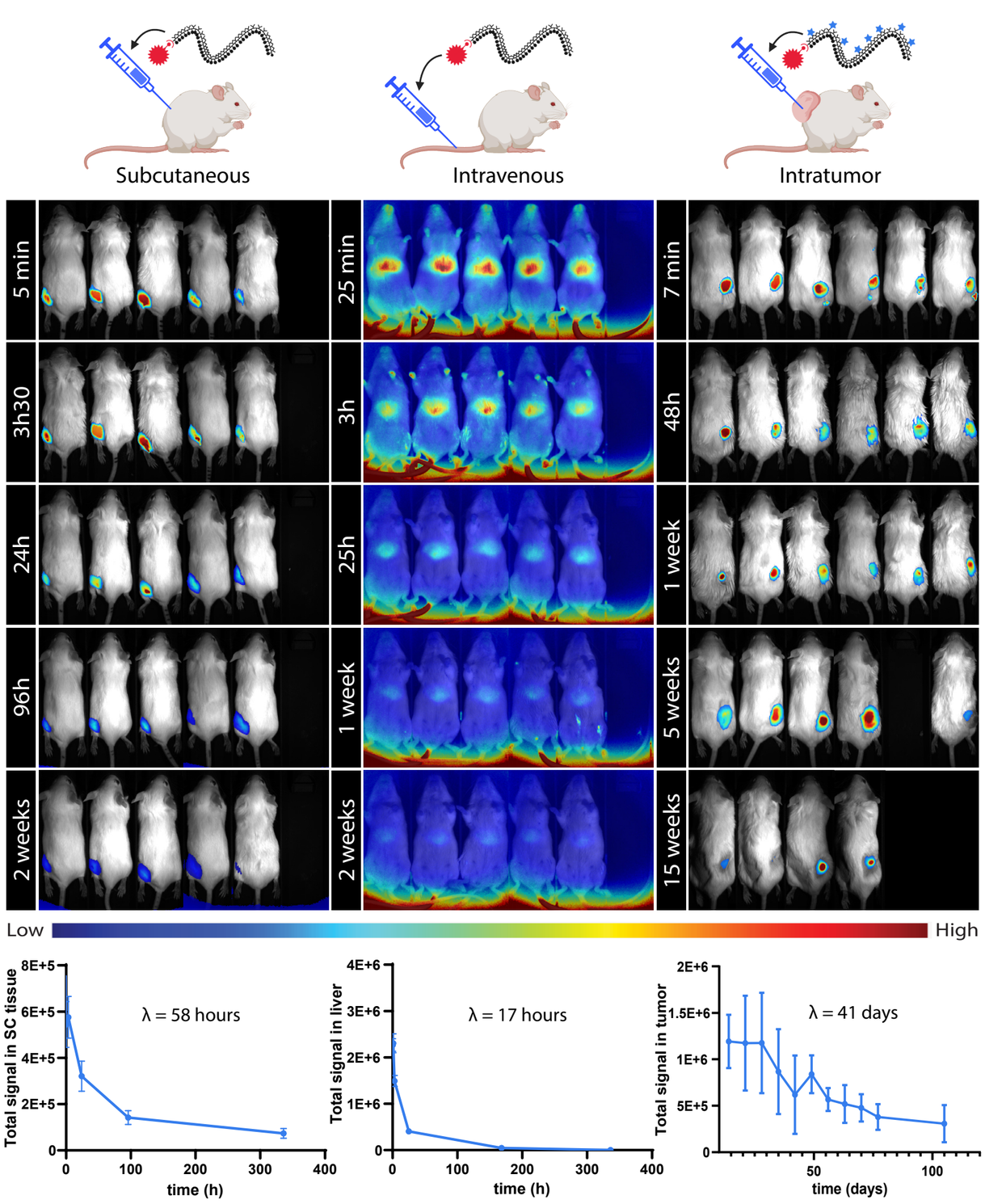
TLR 7/8 agonists hold great potential to augment cancer immunotherapy. Yet their clinical translation is limited by their severe systemic side effects. We exploited the exceptional properties of poly(acrylic acid-co-styrene), **AASTY**, for local exposure of **CT26** murine tumors to a TLR7/8a agonist.

Methods

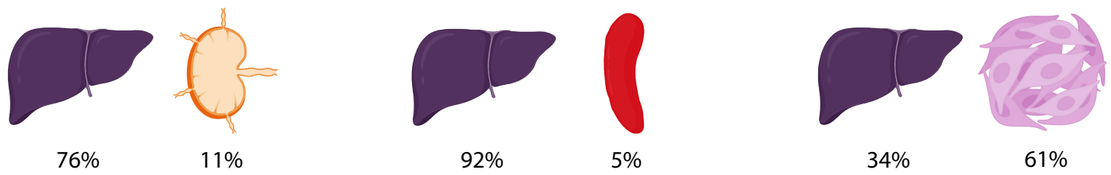


Biodistribution study results

After injection, AASTY adheres to tissues for **weeks to months.**

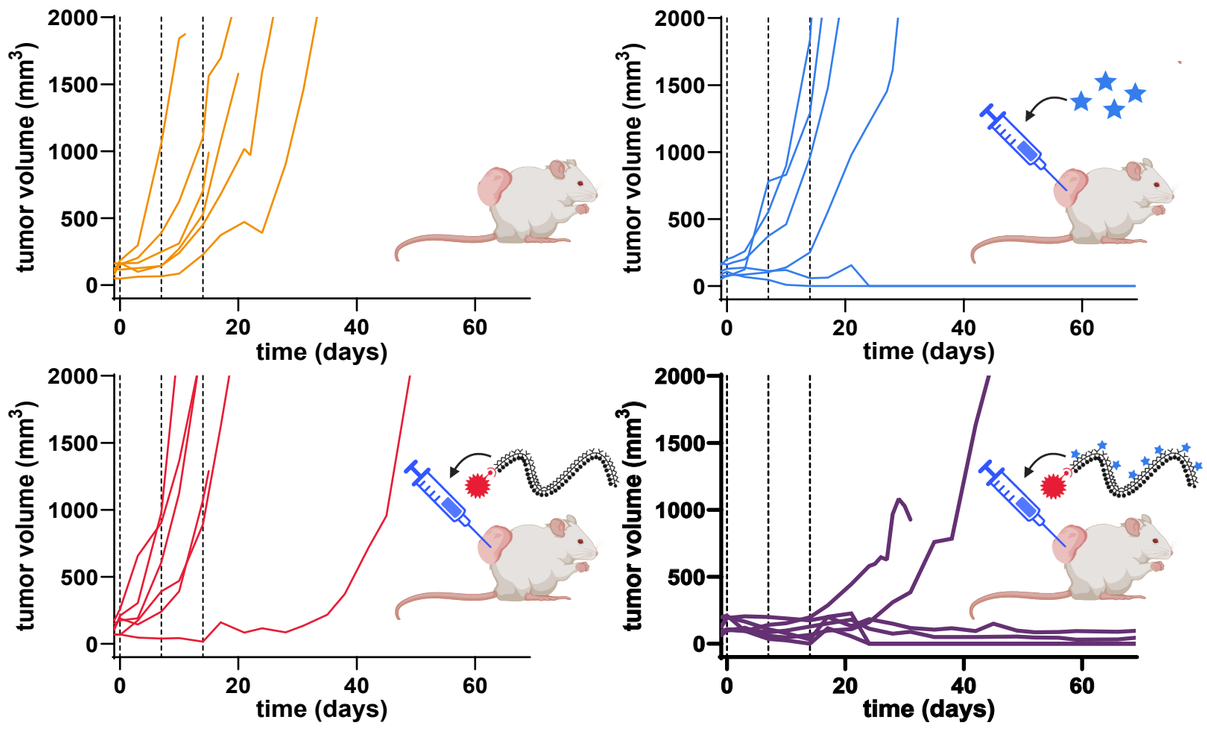


Clearance mainly driven by the **liver** and **lymphatic system** (autopsy).

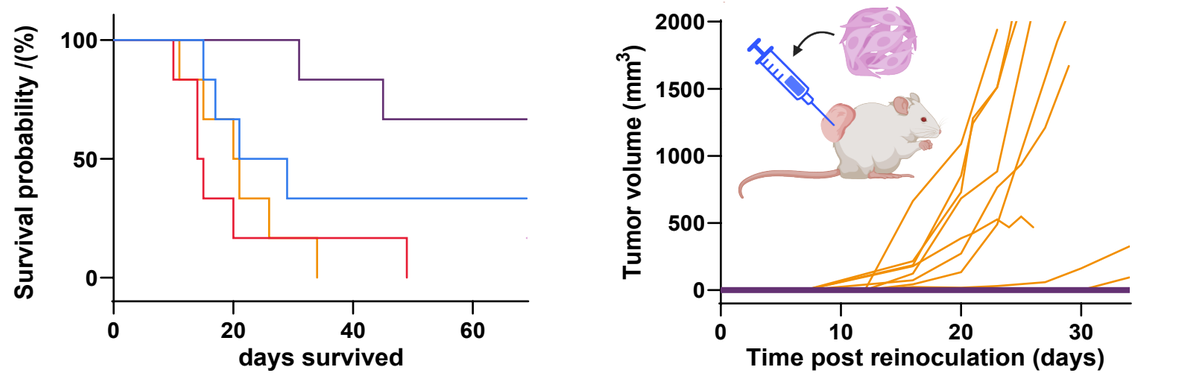


Cancer study results

Injections of AASTY-TLR7/8 agonist conjugate **prevents all tumor growth** for 20 days.

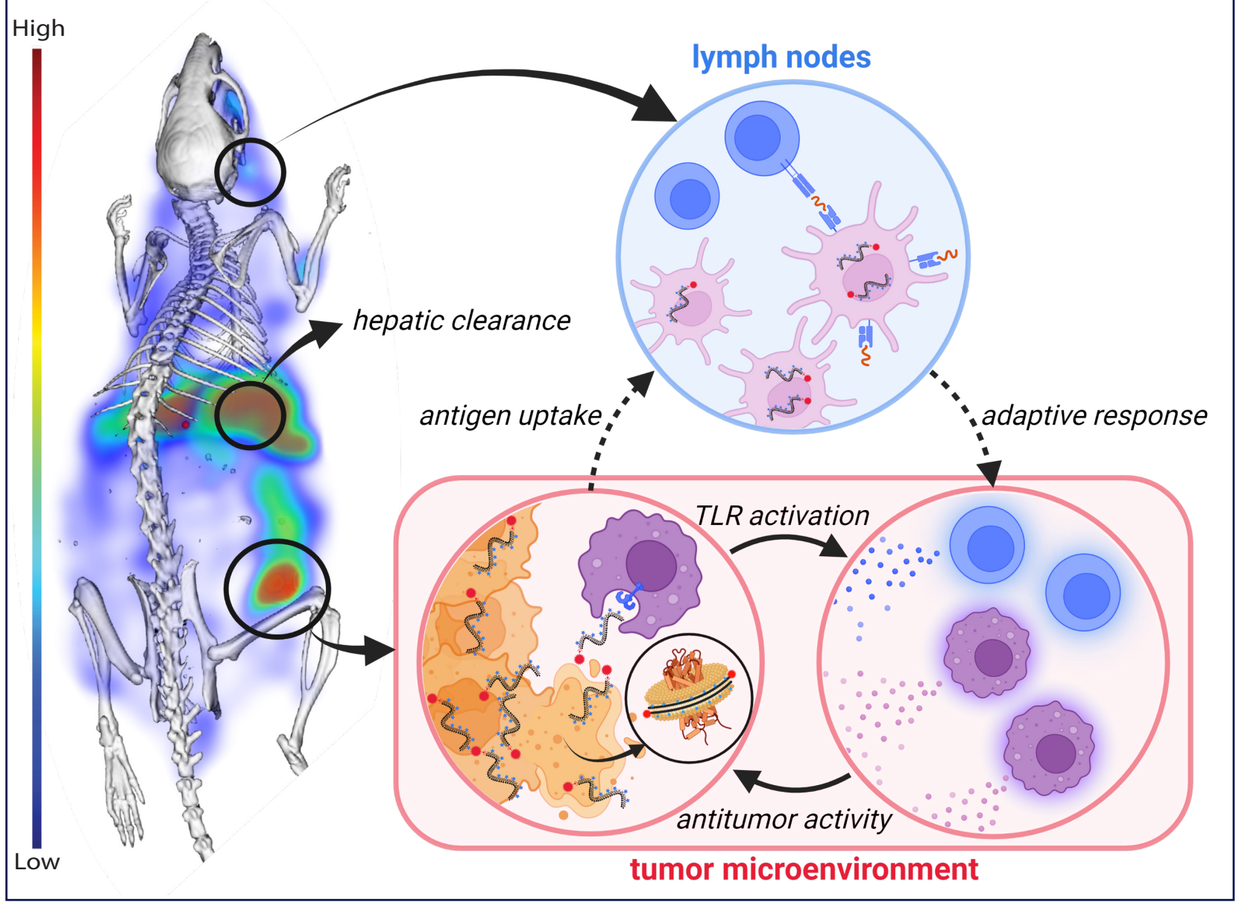


66% of these mice get **cured** and acquire **immune memory** against CT26 tumors.



Tomography results and interpretation

AASTY-TLR7/8a spreads through the **lymphatic network**. A combined **innate and adaptive** immune response is involved but the specific actors are unidentified yet.



Conclusion

AASTY offers great opportunities for in vivo **tissue staining** and **sustained local drug delivery**. Conjugated to a TLR7/8 agonist, it circumvents its systemic side effects and becomes a **curative monotherapy** against a murine colon carcinoma model.

References:

Cancer Immunotherapy through Tissue Adhering Polymers, Neil J. Borthwick, Caitlin L. Maikawa, Sven Weller, Thomas L. Andresen, Anders E. Hansen, Anton A.A. Autzen. bioRxiv 2023.03.23.533909; doi: https://doi.org/10.1101/2023.03.23.533909

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