Albumin-decorated extracellular vesicles (EVs) demonstrate extended circulation time *in vivo* and exert lymph node-tumour dual targeting

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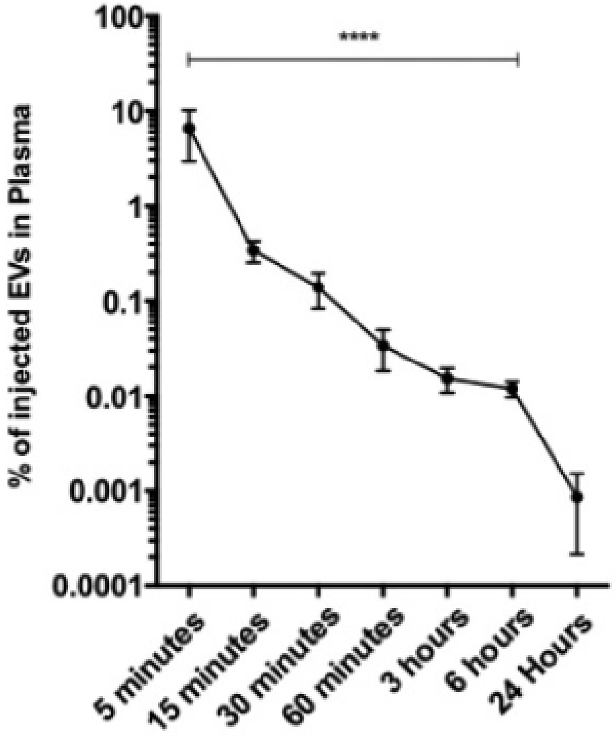
Extension of circulating half-life using albumin

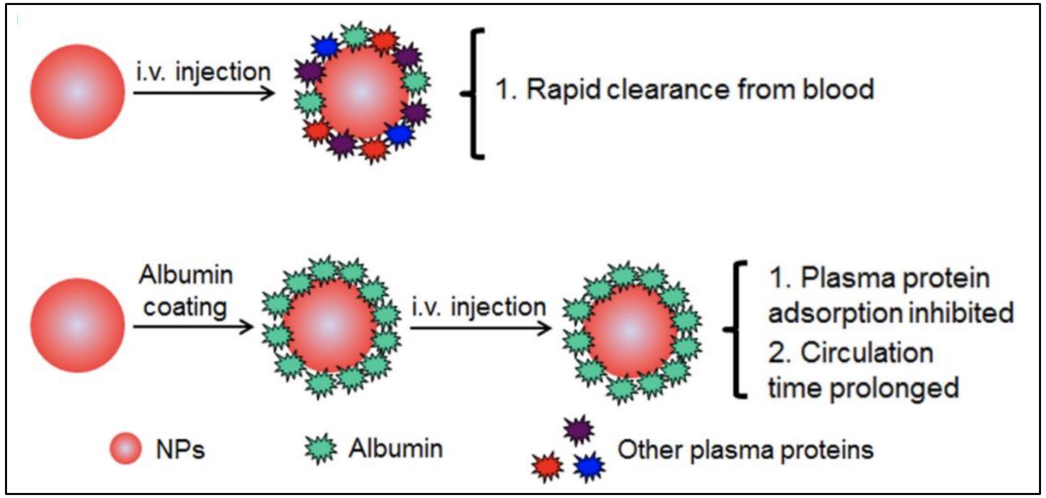
Examples using nanoparticles and protein fusions



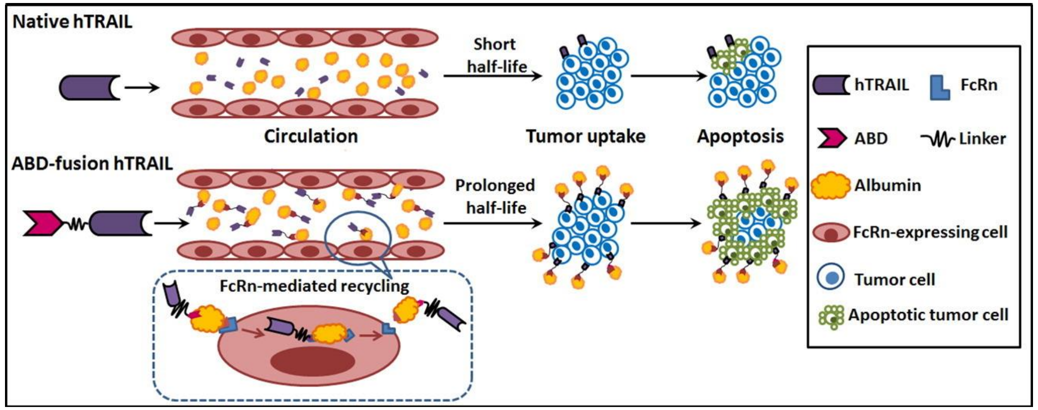
Gupta, D et al. J Extracell Vesicles, 2020

We and others found that EVs are rapidly taken up by tissues and cleared from circulation after injection, potentially limiting the ability to get to distant tissues.

Advantages of albumin binding for nanoparticles and proteins



An-FF, et al. Theranostics, 2017

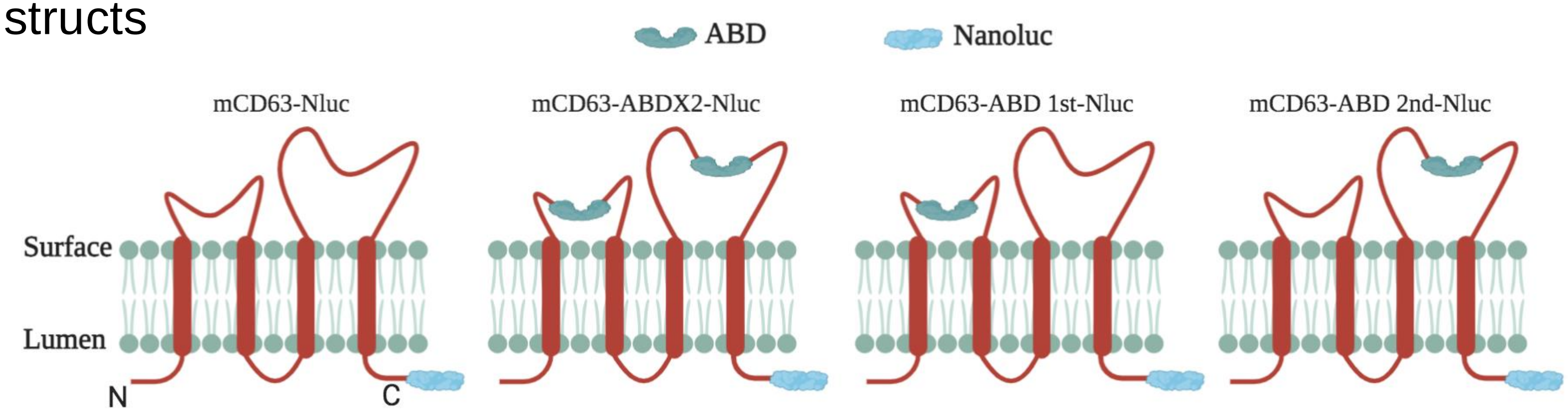


Li Rui, et al. J Control Release, 2016

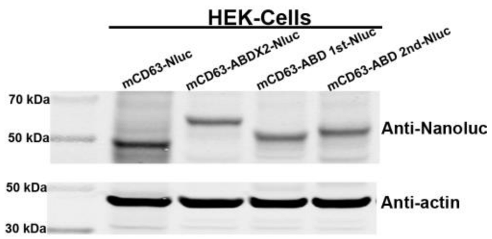
Engineering albumin binding domains (ABD) into EVs

Expression of the engineered constructs in HEK cells and their secreted EVs

Design of the constructs



A



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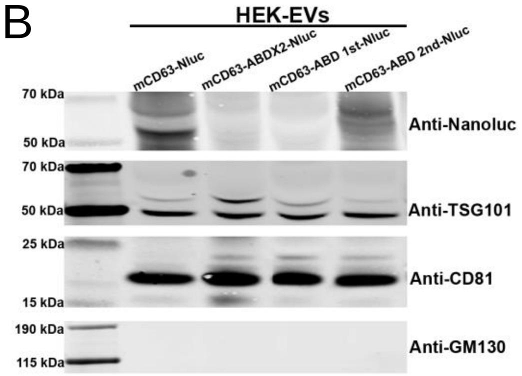
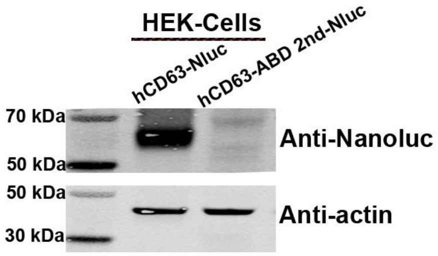


C



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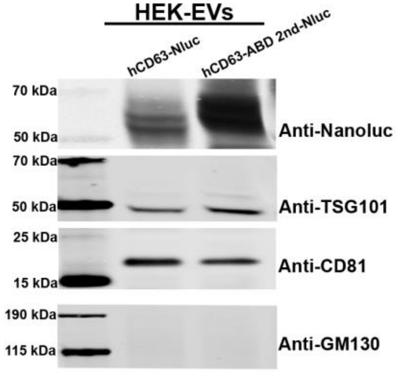
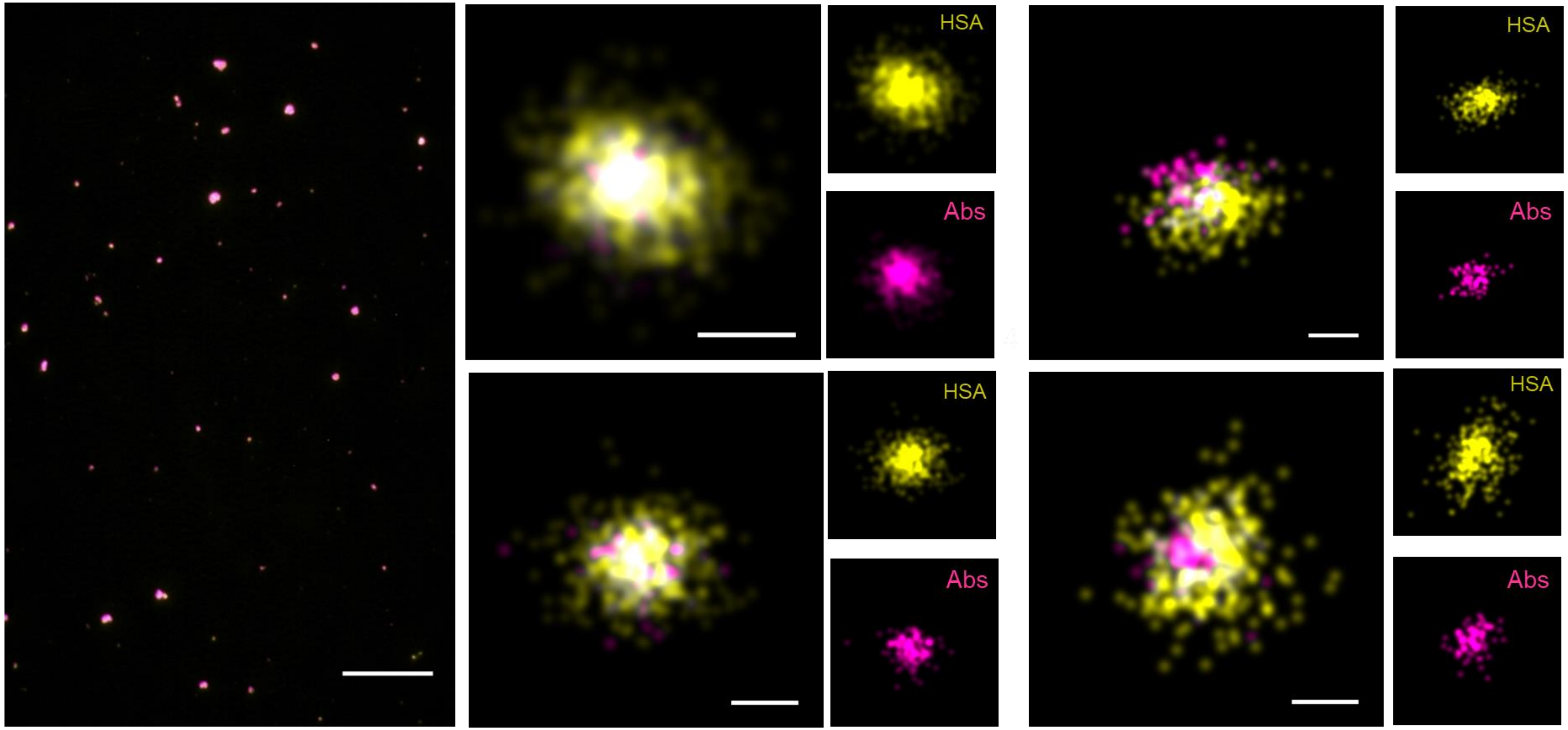


ABD-engineered EVs bind to albumin *in vitro*

Co-localization of EV stained with labeled albumin and tetraspanin antibodies

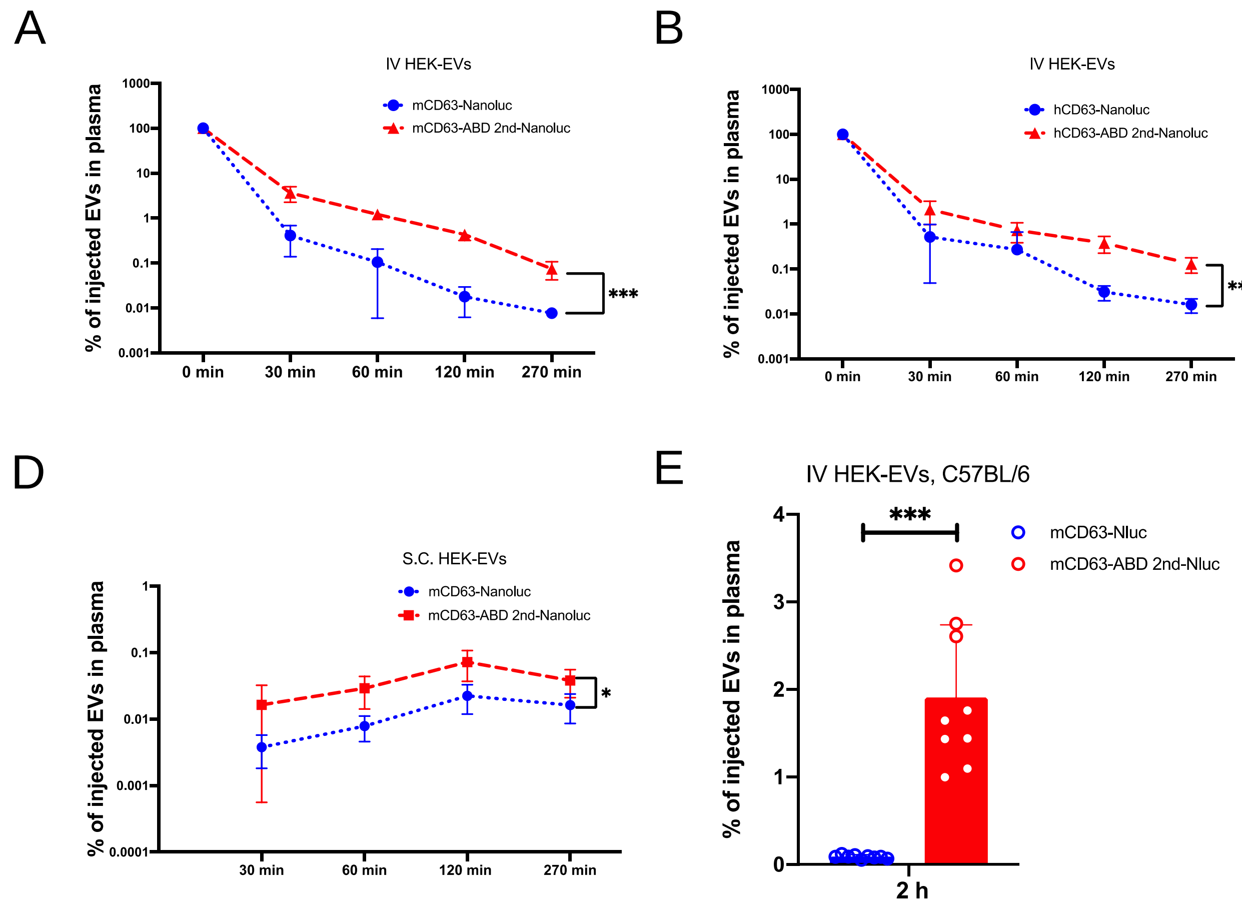
dSTORM mCD63-ABD 2nd-Nluc



HSA: HSA-AF488. Abs: CD9/CD63/CD81-AF647

ABD-engineered EVs extend circulation time *in vivo*

Demonstration in mice using ABD-engineered HEK-derived EVs

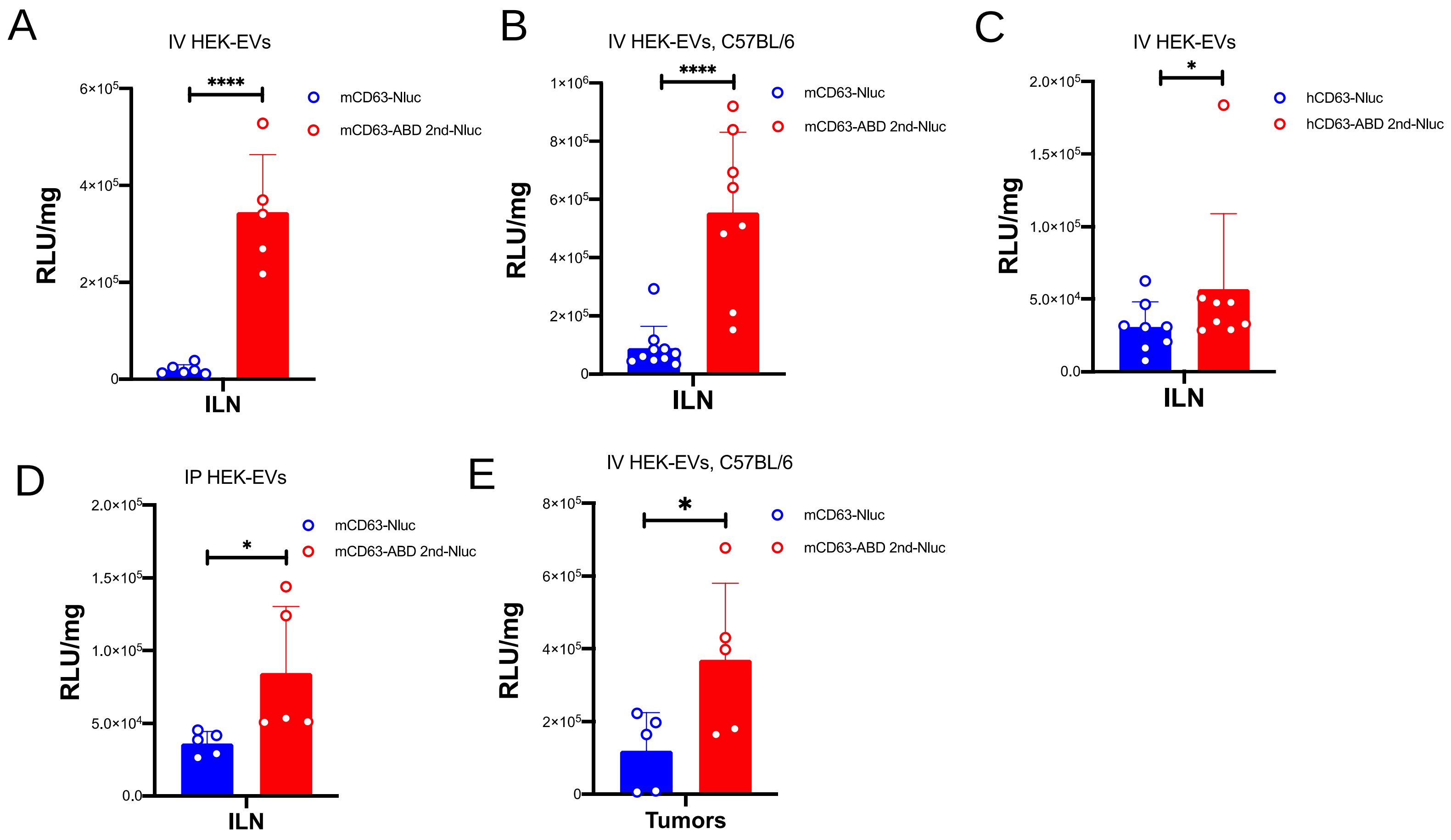


If not indicated in the graphs, the mice used were NMRI mice.

Uptake of ABD-engineered EVs in lymph nodes & tumors

Karolinska Institutet

Increased accumulation in lymph nodes and tumours relative to non-ABD binding EVs



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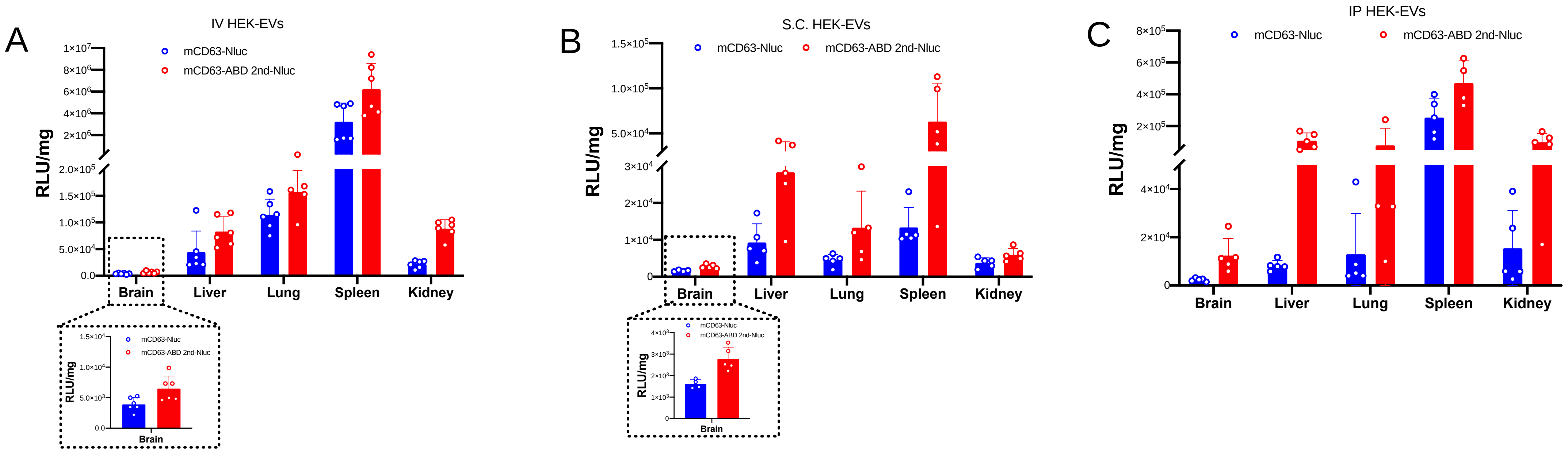
ABD-engineered EVs Extracellular vesicles (EVs)

Increased accumulation in most tissues



If not indicated in the graphs,
the mice used were NMRI mice.

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