

Supplementary Materials

Table S1. RNA sequencing data expressed as normalised tags per million (nTPM) for the five different [⁸⁹Zr]Zr-mAbs and four different tissues obtained from the Human Protein Atlas [Uhlen et al., 2010].

⁸⁹ Zr-Immuno-PET Tracer	Target	Spleen	Bone Marrow	Kidneys	Brain
[⁸⁹ Zr]Zr-BI 754111	LAG-3	23.6	1.5	1.0	0.2–0.7
[⁸⁹ Zr]Zr-durvalumab	PD-L1	10.2	1.9	2.6	0.6–1.9
[⁸⁹ Zr]Zr-nivolumab	PD-1	7.0	0.9	0.7	0.0–0.4
[⁸⁹ Zr]Zr-pembrolizumab	PD-1	7.0	0.9	0.7	0.0–0.4
[⁸⁹ Zr]Zr-ipilimumab	CTLA-4	3.9	6.1	0.6	0.4–1.3

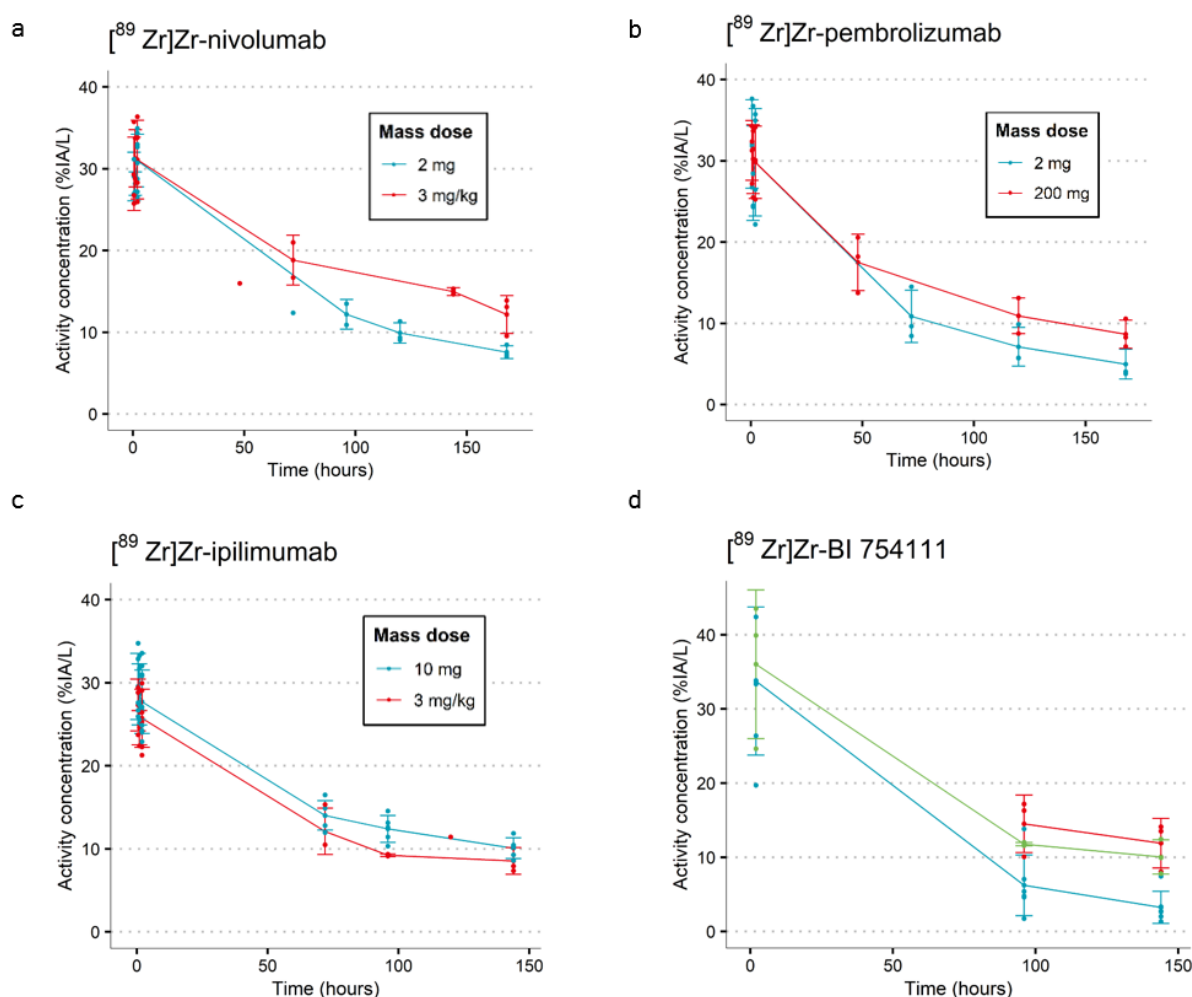


Figure S1. Plasma activity concentrations over time for two or three doses of [⁸⁹Zr]Zr-nivolumab (a), [⁸⁹Zr]Zr-pembrolizumab (b), [⁸⁹Zr]Zr-ipilimumab (c) and [⁸⁹Zr]Zr-BI 754111 (d). For time points with 2 or more observations a mean %IA/L with SD is shown. Every dot represents one observation.

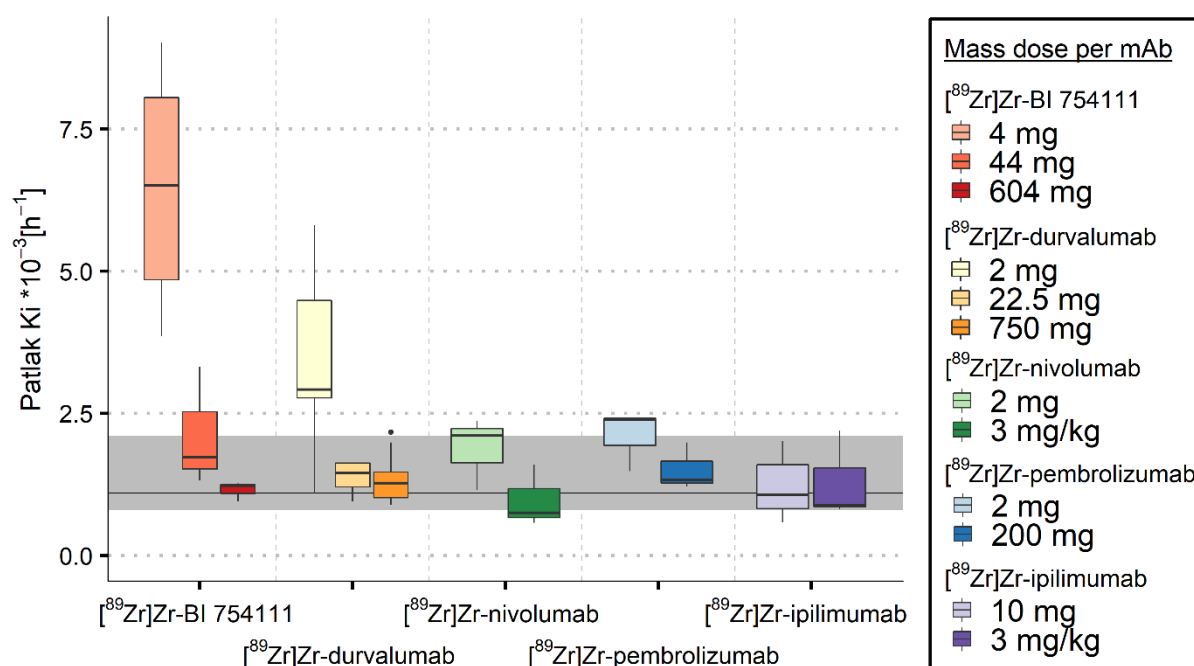


Figure S2. Irreversible uptake in liver quantified with K_i values as a function of mass dose for the five $[^{89}\text{Zr}]\text{Zr-mAbs}$ investigated. Ns-baseline K_i median values and interquartile range for liver are indicated by the black line and grey area, respectively. K_i values decreased with increasing mass dose for all $[^{89}\text{Zr}]\text{Zr-mAbs}$, except for $[^{89}\text{Zr}]\text{Zr-ipilimumab}$. K_i values were comparable to ns-baseline values for all mass doses, except for the low mass doses of $[^{89}\text{Zr}]\text{Zr-BI 754111}$ and $[^{89}\text{Zr}]\text{Zr-durvalumab}$.

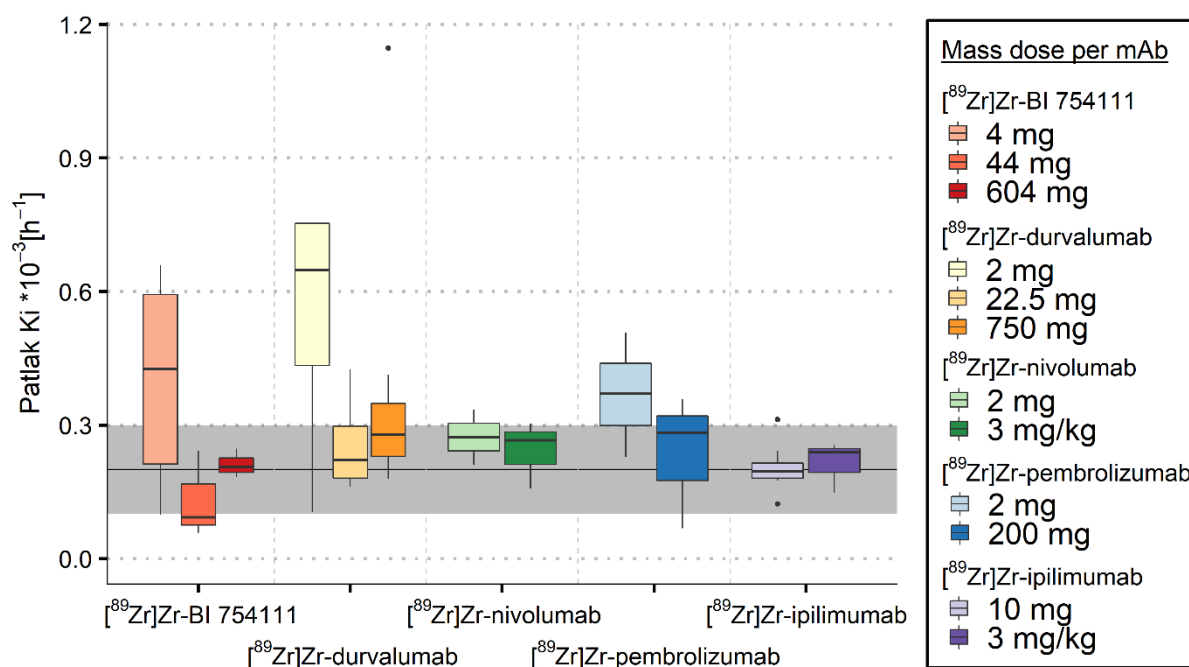


Figure S3. Irreversible uptake in lungs quantified with K_i values as a function of mass dose for the five $[^{89}\text{Zr}]\text{Zr-mAbs}$ investigated. Median ns-baseline K_i values and interquartile range for lungs are indicated by the black line and grey area, respectively. K_i values decreased with increasing mass dose for three of five $[^{89}\text{Zr}]\text{Zr-mAbs}$. K_i values were comparable to ns-baseline values for all mass doses, except for the low mass doses of $[^{89}\text{Zr}]\text{Zr-BI 754111}$, $[^{89}\text{Zr}]\text{Zr-durvalumab}$ and $[^{89}\text{Zr}]\text{Zr-pembrolizumab}$.