

Supplementary Materials

1 Supplementary Figures and tables

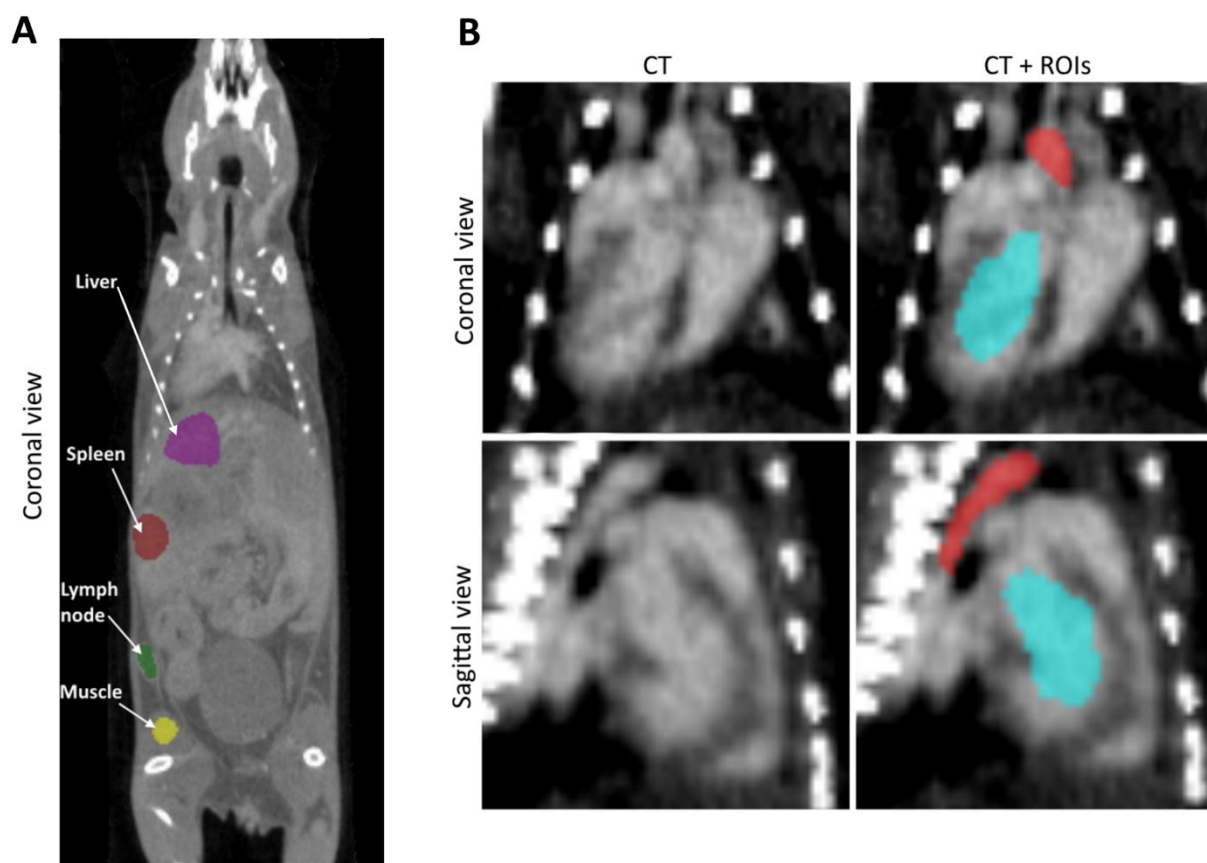


Figure S1. Representative examples of regions of interest (ROIs) drawn on their corresponding organ. **(A)** ROIs drawn on liver (purple), spleen (red), lymph node (green) and muscle (yellow). **(B)** ROIs drawn on aorta arch (red) and left ventricle (blue).

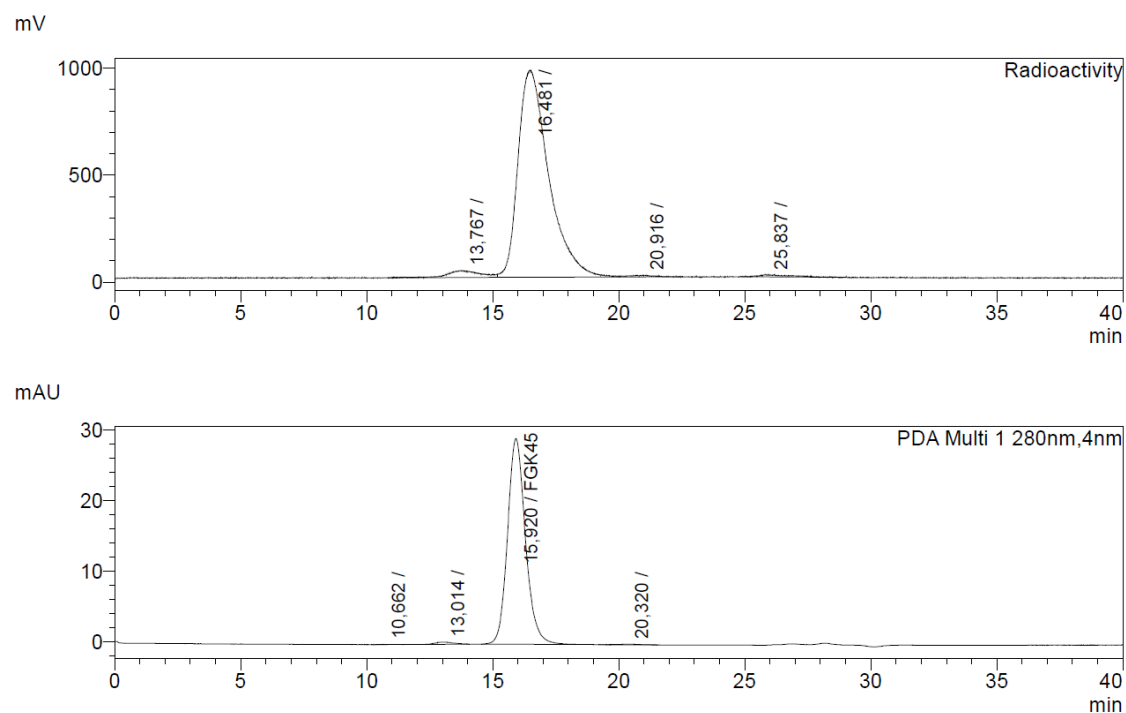


Figure S2. SE-HPLC chromatogram of formulated product [^{89}Zr]Zr-anti-CD40mAb for injection into WT animals. Concentration of anti-CD40 mAb is 0.69 mg/mL. Top panel: radioactivity, bottom panel: UV at 280 nm.

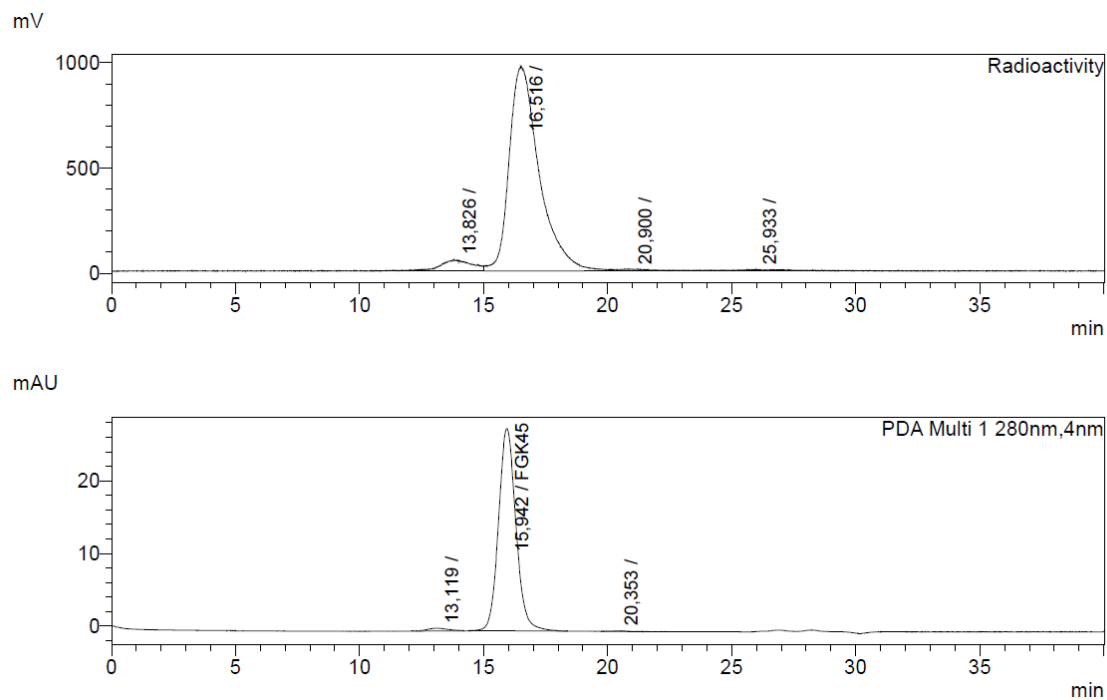


Figure S3. SE-HPLC chromatogram of formulated product $[^{89}\text{Zr}]\text{Zr-anti-CD40mAb}$ for injection into for ApoE^{-/-} animals. Concentration of anti-CD40 mAb is 0.69 mg/mL. Top panel: radioactivity, bottom panel: UV at 280 nm.

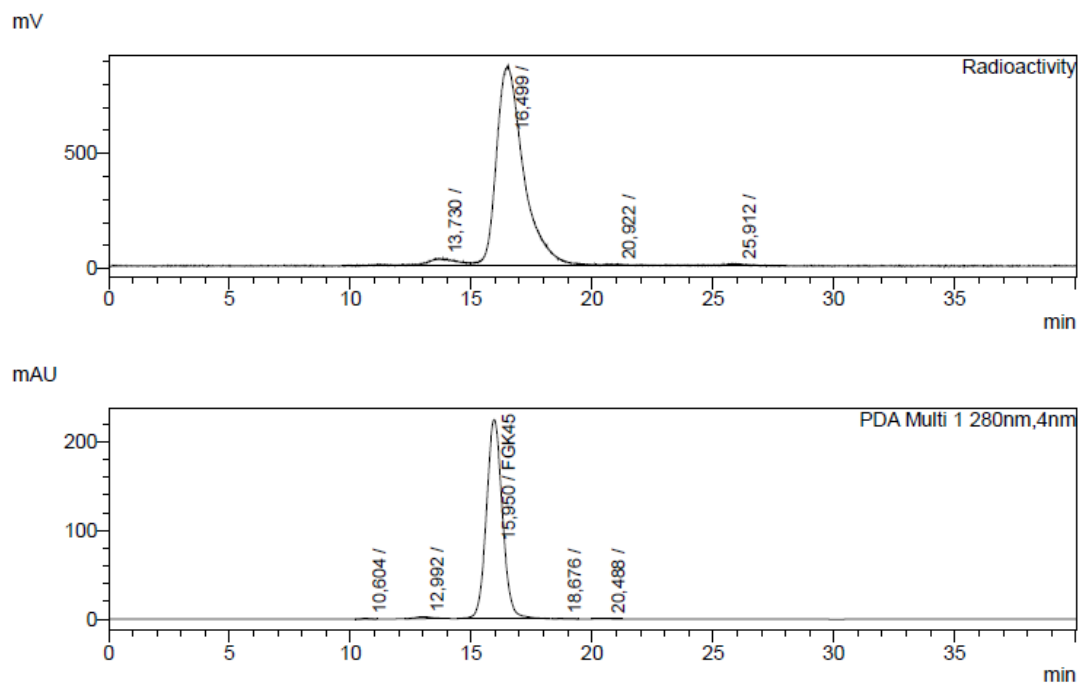


Figure S4. SE-HPLC chromatogram of formulated product $[^{89}\text{Zr}]\text{Zr-anti-CD40mAb}$ + cold antibody for injection into for ApoE^{-/-} animals “High dose”. Concentration of anti-CD40 mAb is 4.95 mg/mL. Top panel: radioactivity, bottom panel: UV at 280 nm.

Table S1: PET imaging quantifications of [⁸⁹Zr]Zr-anti-CD40 mAb at day 3 p.i. in WT and ApoE^{-/-} mice.

	WT ([⁸⁹ Zr]Zr- anti-CD40 100 µg)	ApoE ^{-/-} ([⁸⁹ Zr]Zr -anti-CD40 100 µg)	ApoE ^{-/-} ([⁸⁹ Zr]Zr - anti-CD40 1000 µg)
<i>Liver</i>	9.96 ± 1.24	10.34 ± 1.81	10.19 ± 1.00
<i>Spleen</i>	18.39 ± 2.13	15.14 ± 1.66	9.96 ± 1.03
<i>Lymph nodes</i>	7.80 ± 1.42	7.39 ± 1.03	3.81 ± 0.67
<i>Muscle</i>	0.65 ± 0.18	0.62 ± 0.29	0.95 ± 0.27
<i>Aorta</i>	4.74 ± 1.48	3.70 ± 0.50	6.73 ± 0.65
<i>Blood</i>	4.18 ± 1.58	2.75 ± 0.40	6.70 ± 1.35
<i>Aorta/ blood ratio</i>	1.16 ± 0.08	1.37 ± 0.03	1.08 ± 0.07

Data is presented in percentage injected dose/gram tissue (%ID/g). Average ± SD.

Table S2: PET imaging quantifications of [⁸⁹Zr]Zr-anti-CD40 mAb at day 7 p.i. in WT and ApoE^{-/-} mice.

	WT ([⁸⁹ Zr]Zr - anti-CD40 100 µg)	ApoE ^{-/-} ([⁸⁹ Zr]Zr -anti-CD40 100 µg)	ApoE ^{-/-} ([⁸⁹ Zr]Zr - anti-CD40 1000 µg)
<i>Liver</i>	8.67 ± 0.68	6.64 ± 1.43	7.89 ± 1.27
<i>Spleen</i>	14.02 ± 2.03	10.41 ± 1.38	6.56 ± 1.06
<i>Lymph nodes</i>	4.94 ± 1.36	3.88 ± 0.97	3.36 ± 0.83
<i>Muscle</i>	0.20 ± 0.07	0.10 ± 0.03	0.25 ± 0.06
<i>Aorta</i>	0.89 ± 0.20	0.71 ± 0.13	1.41 ± 0.56
<i>Blood</i>	0.48 ± 0.24	0.21 ± 0.02	0.74 ± 0.40
<i>Aorta/ blood ratio</i>	1.72 ± 0.30	3.34 ± 0.62	2.05 ± 0.47

Data is presented in percentage injected dose/gram tissue (%ID/g). Average ± SD.

Table S3: Ex vivo biodistribution of [⁸⁹Zr]Zr-anti-CD40 mAb at day 7 p.i. in WT and ApoE^{-/-} mice.

	WT ([⁸⁹ Zr]Zr - anti-CD40 100 µg)	ApoE ^{-/-} ([⁸⁹ Zr]Zr -anti-CD40 100 µg)	ApoE ^{-/-} ([⁸⁹ Zr]Zr - anti-CD40 1000 µg)
<i>Blood</i>	0.43 ± 0.39	0.15 ± 0.04	0.92 ± 0.38
<i>Heart</i>	0.52 ± 0.14	0.21 ± 0.03	0.49 ± 0.11
<i>Liver</i>	10.63 ± 0.96	8.17 ± 2.17	8.67 ± 1.93
<i>Spleen</i>	23.89 ± 4.75	15.39 ± 3.26	9.92 ± 1.51
<i>Kidney</i>	3.07 ± 0.23	2.08 ± 0.37	2.63 ± 0.96
<i>Muscle</i>	0.15 ± 0.04	0.08 ± 0.01	0.26 ± 0.09
<i>Femur</i>	2.10 ± 0.40	1.34 ± 0.39	1.72 ± 0.16
<i>Lymph nodes</i>	12.23 ± 4.08	7.62 ± 2.51	5.66 ± 1.43
<i>Thymus</i>	4.33 ± 0.86	3.77 ± 0.91	4.44 ± 1.11

Data is presented in percentage injected dose/gram tissue (%ID/g). Average ± SD.

Table S4: Blood kinetics of [^{89}Zr]Zr-anti-CD40 mAb at day 1, 2, 3 and 7 p.i. in WT and ApoE $^{-/-}$ mice.

<i>Post injection</i>	WT ([^{89}Zr]Zr - anti-CD40 100 μg)	ApoE$^{-/-}$ ([^{89}Zr]Zr - anti-CD40 100 μg)	ApoE$^{-/-}$ ([^{89}Zr]Zr - anti-CD40 1000 μg)
<i>Day 1</i>	13.47 $\pm$ 1.45	14.09 $\pm$ 1.52	17.43 $\pm$ 2.12
<i>Day 2</i>	7.78 $\pm$ 1.20	8.02 $\pm$ 1.68	12.99 $\pm$ 1.42
<i>Day 3</i>	4.90 $\pm$ 1.62	3.90 $\pm$ 0.95	7.99 $\pm$ 1.88
<i>Day 7</i>	0.43 $\pm$ 0.39	0.15 $\pm$ 0.04	0.92 $\pm$ 0.38

Data is presented in percentage injected dose/gram tissue (%ID/g). Average $\pm$ SD.