

Supplementary Information

In Vivo Biocompatibility of ZIF-8 for Slow Release via Intranasal Administration

Sneha Kumari,^{1} Thomas S. Howlett,¹ Rynne N. Ehrman,¹ Shailendra Koirala,¹ Orikeda Trashi,¹ Ikeda Trashi,¹ Yalini H. Wijesundara,¹ Jeremiah J. Gassensmith^{1,2*}*

Figure S1

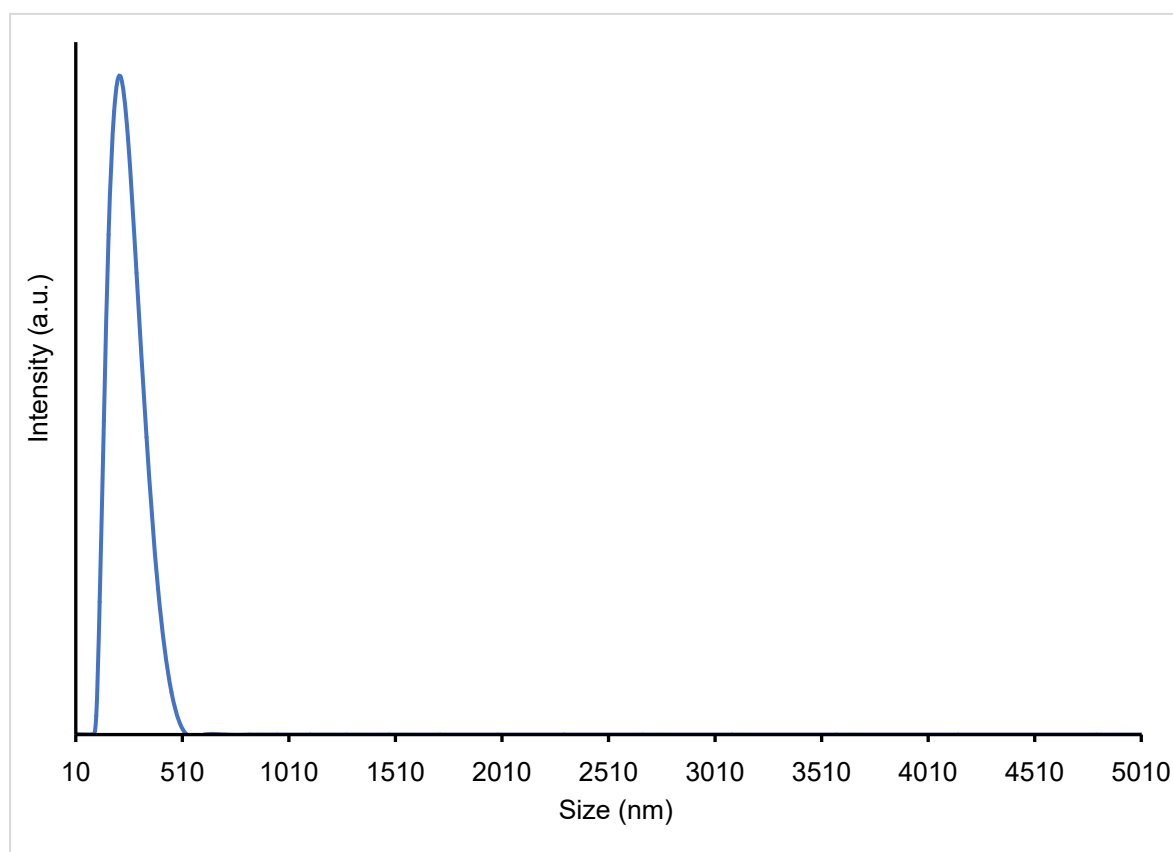


Fig S1: Size characterization of liposomes (Lip) through dynamic light scattering (Average: 218.7 nm, PDI: 0.142)

Figure S2

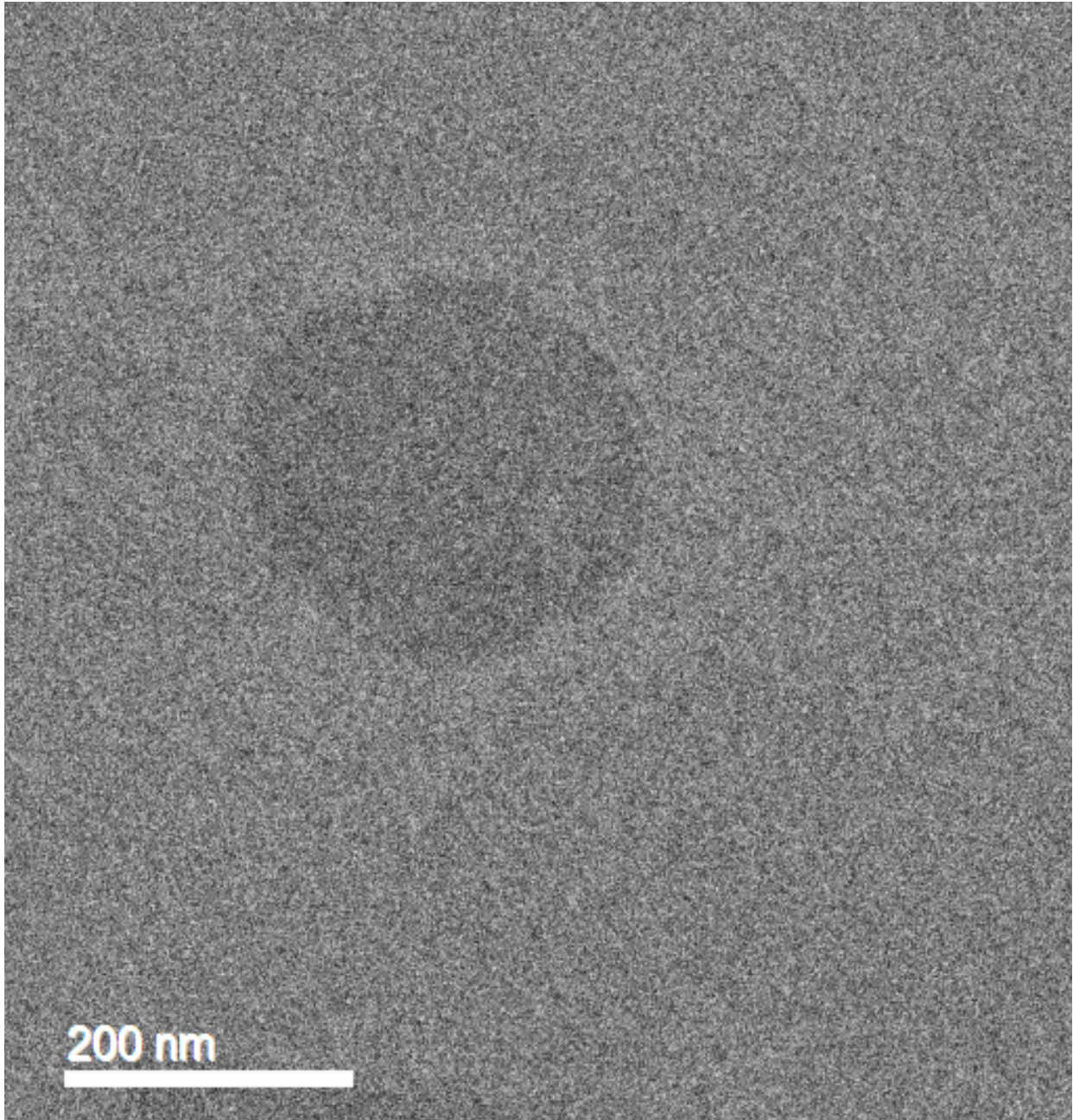


Fig S2: Transmission electron micrograph of Lip

Figure S3

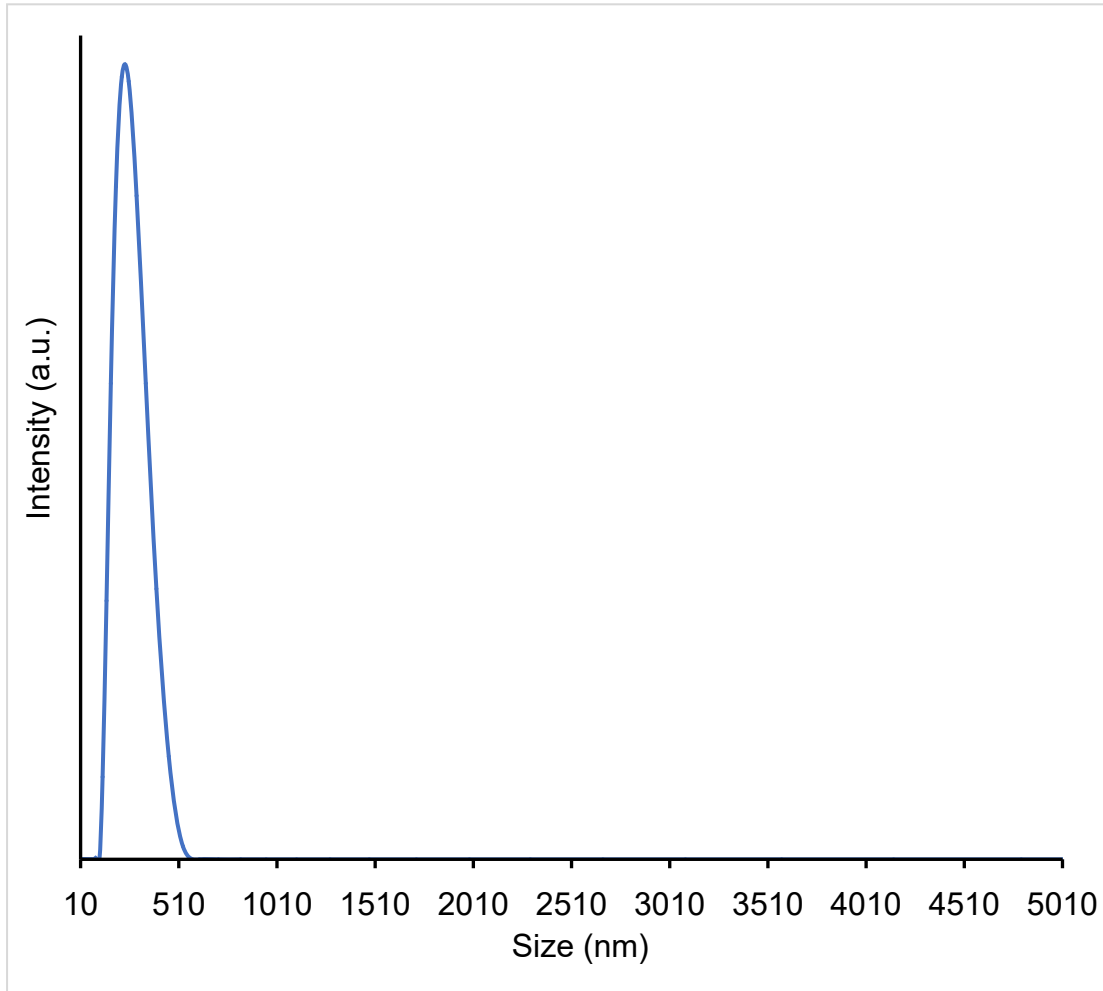


Fig S3: Size characterization of dye-filled liposomes (Lip(Cy7)) through dynamic light scattering (Average: 249.9 nm, PDI: 0.098)

Figure S4

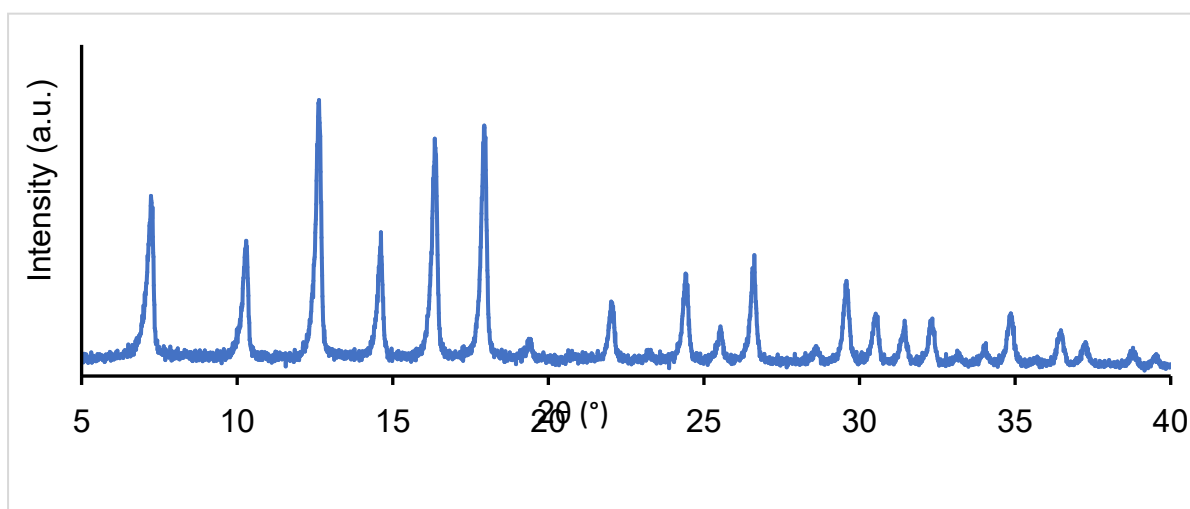


Figure S4: PXRD pattern of Lip(Cy7)@Z

Figure S5

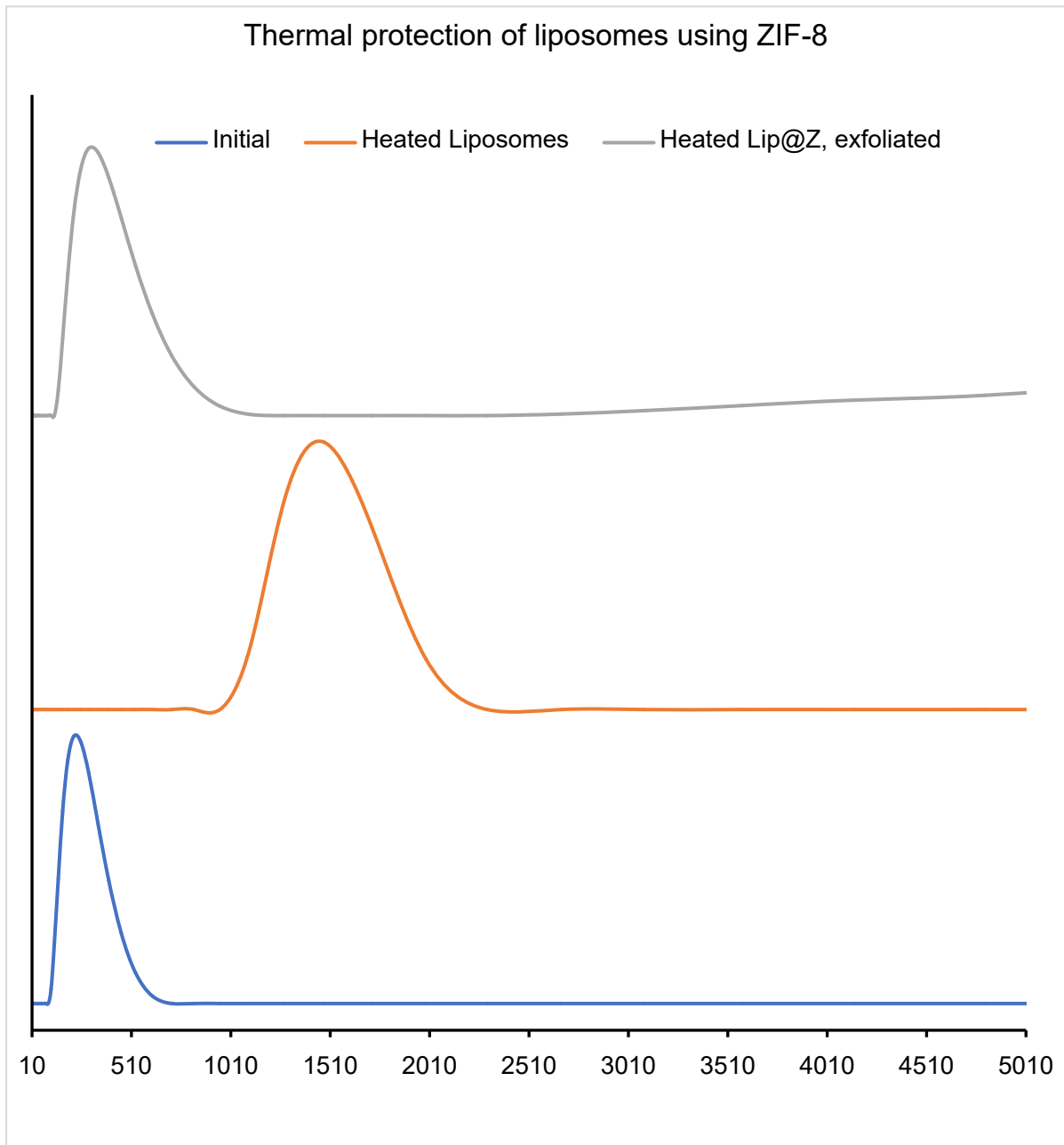


Fig S5: DLS of liposomes before heating (blue), after heating (orange), and after encapsulation in ZIF, heating, and subsequent exfoliation (grey)

Figure S6

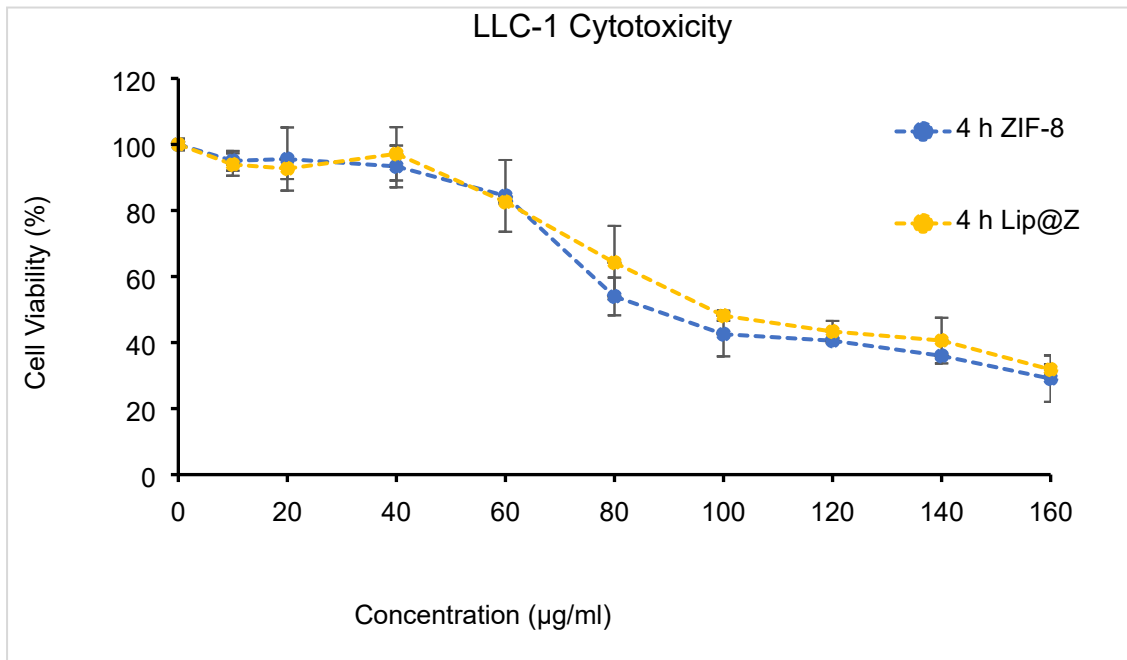


Fig S6: Cytotoxicity studies of ZIF-8 and Lip@Z on LLC-1 model.

Figure S7

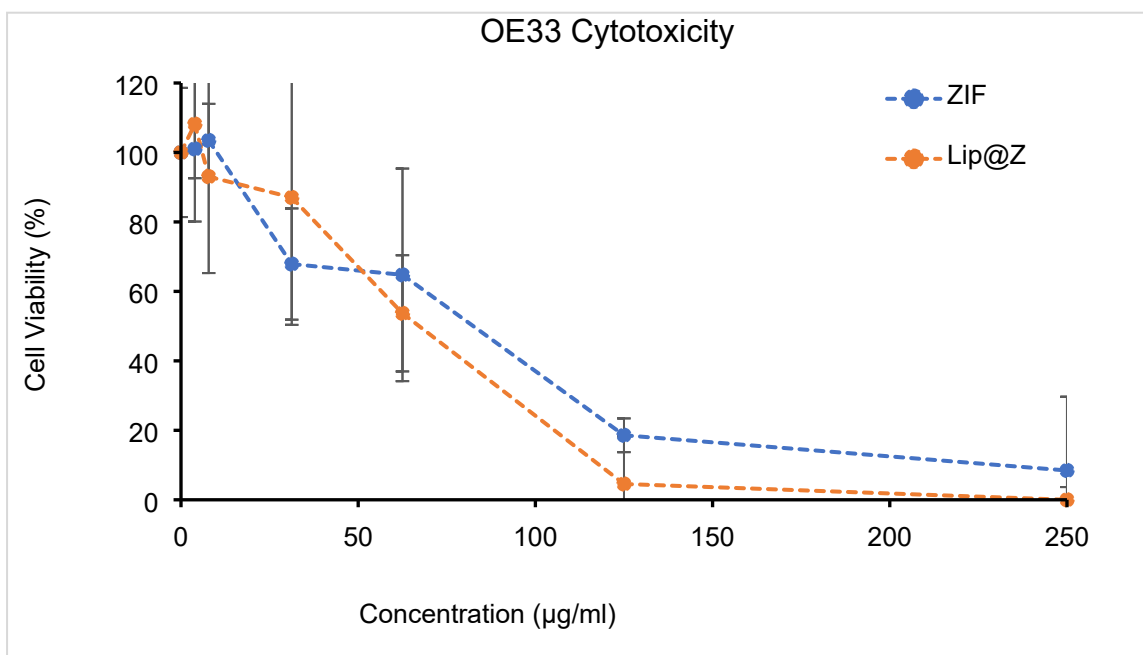


Fig S7: Cytotoxicity studies of ZIF-8 and Lip@Z on OE33 model.

Figure S8

Organ	Saline group	ZIF-8 group
Liver	429.6902 ± 68.41106	406.3947 ± 197.4786
Spleen	27.22669 ± 3.758105	17.48564 ± 3.534271
Kidneys	95.28645 ± 3.433586	73.00676 ± 20.24546
Lungs	33.89019 ± 1.768844	34.98579 ± 7.776183

Fig S8: Concentration of zinc in the liver, spleen, kidneys, and lungs in parts per billion for both the saline and ZIF-8 groups. N = 3 for each group.

Figure S9

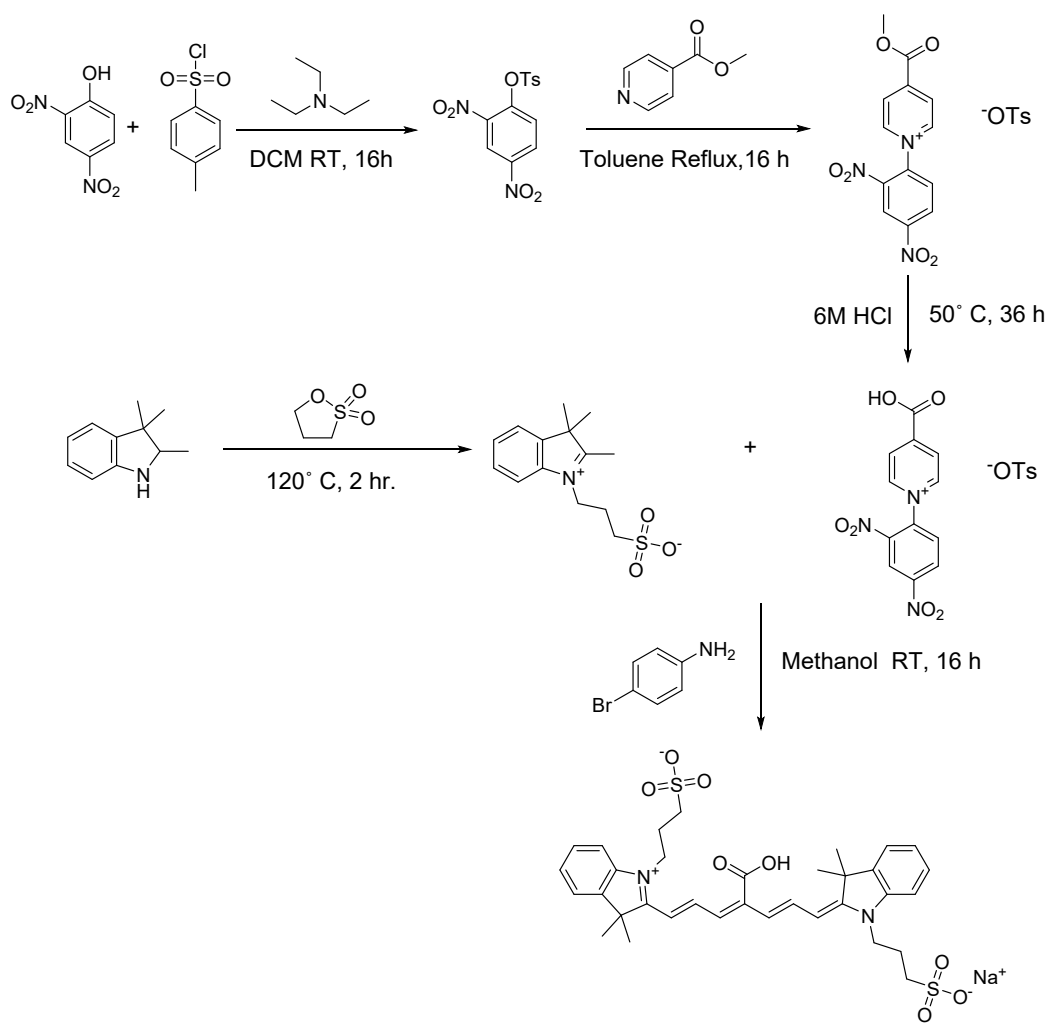


Fig S9: Scheme for synthesis of Cy7 synthesis

Figure S10

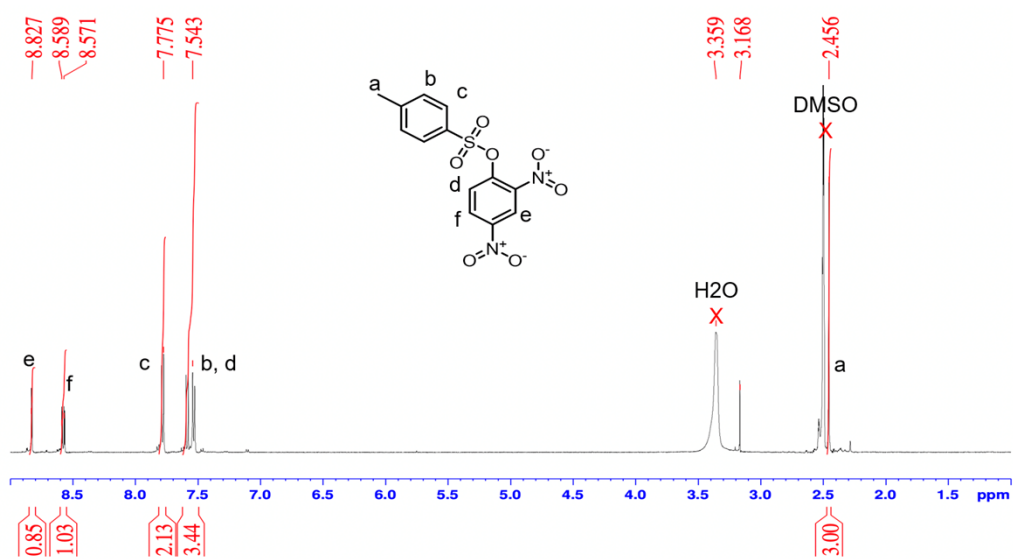


Fig S10: ¹H NMR of 2,4-Dinitrophenyl p-toluenesulfonate

Figure S11

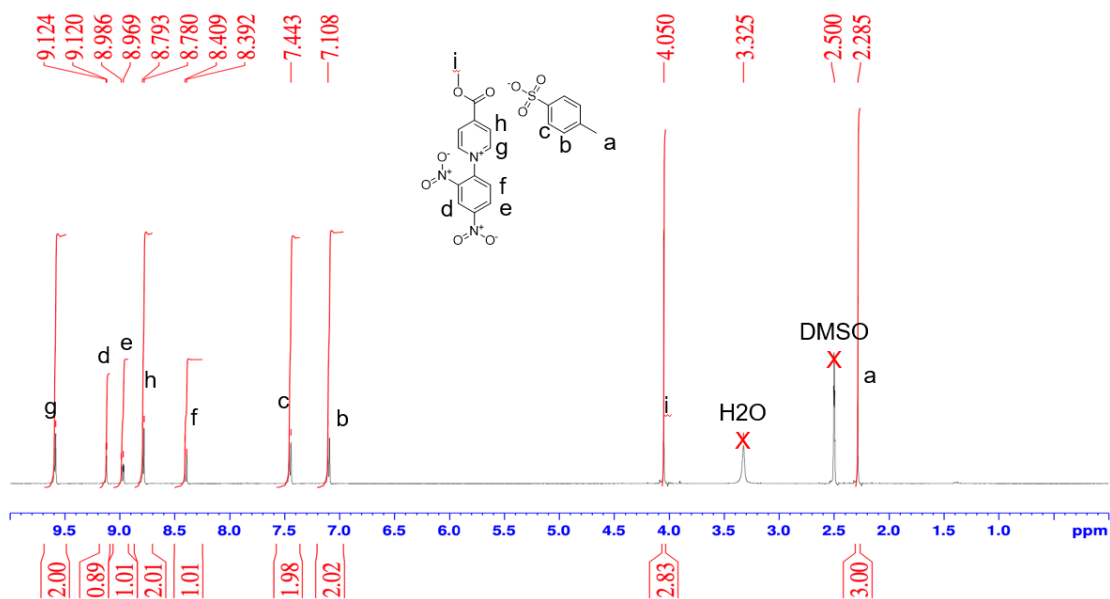


Fig S11: ¹H NMR of 1-(2,4-dinitrophenyl)-4-(methoxycarbonyl)pyridin-1-ium p-toluenesulfonate

Figure S12

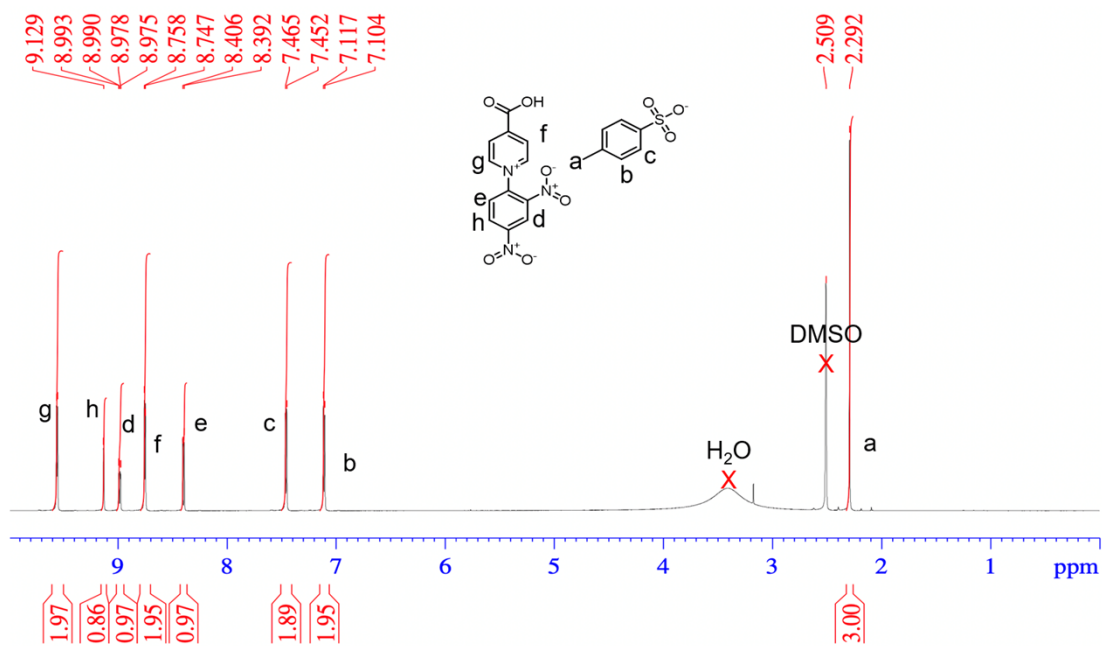


Fig S12: ¹H NMR of 4-carboxy-1-(2,4-dinitrophenyl)pyridin-1-ium p-toluenesulfonate

Figure S13

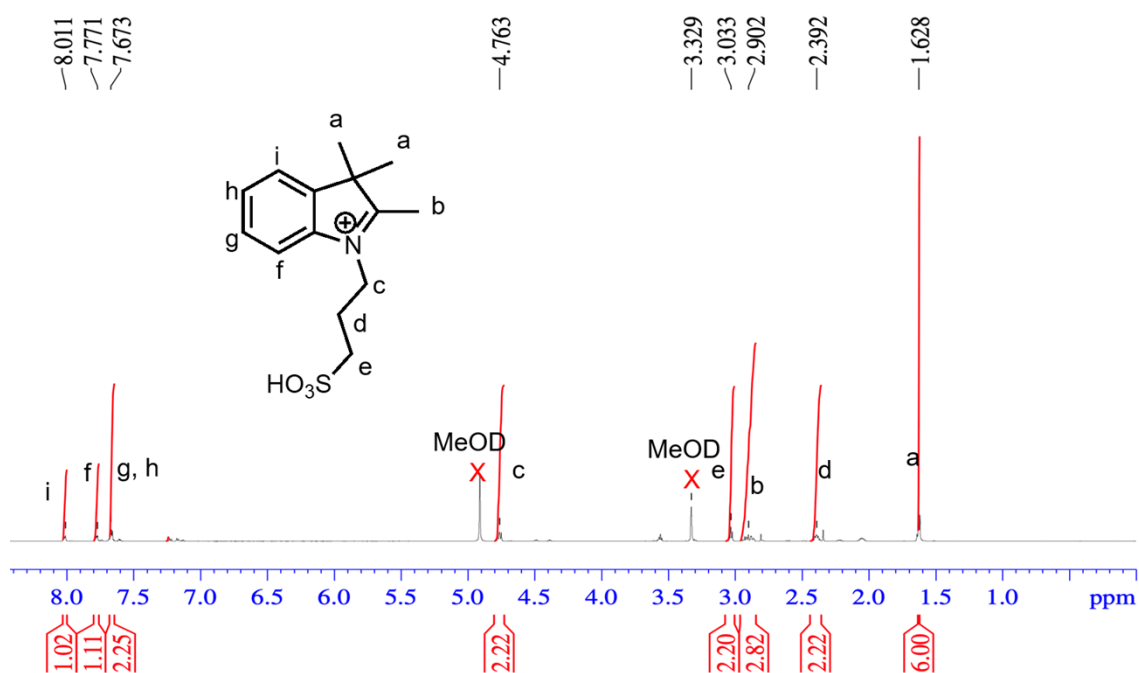


Fig S13: ¹H NMR of 3-(2,3,3-trimethyl-3H-indol-1-ium-1-yl)propane-1-sulfonate

Figure S14

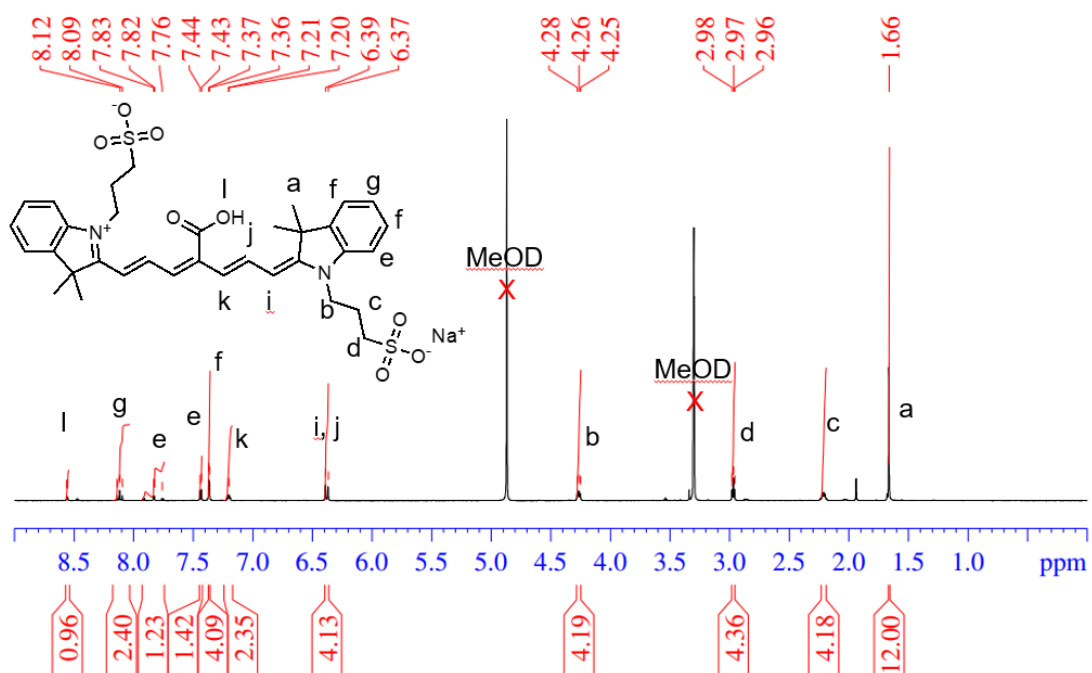


Fig S14: ¹H NMR of sodium 3-(2-((1E,3Z,5E)-4-carboxy-7-((E)-3,3-dimethyl-1-(3-sulfonatopropyl)indolin-2-ylidene)hepta-1,3,5-trien-1-yl)-3,3-dimethyl-3H-indol-1-ium-1-yl)propane-1-sulfonate

Figure S15

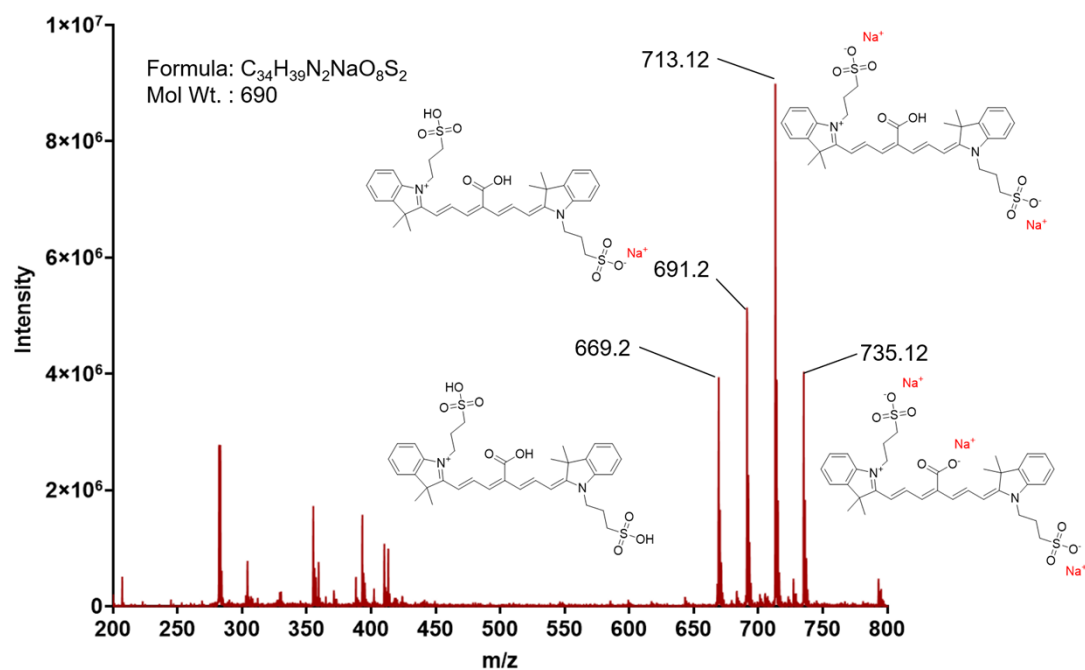


Fig S15: ESI-MS of sodium 3-(2-((1E,3Z,5E)-4-carboxy-7-((E)-3,3-dimethyl-1-(3-sulfonatopropyl)indolin-2-ylidene)hepta-1,3,5-trien-1-yl)-3,3-dimethyl-3H-indol-1-ium-1-yl)propane-1-sulfonate