

## SUPPLEMENTARY MATERIAL

Comparative study of tumor targeting and biodistribution of pH (Low) Insertion Peptides (pHLIP<sup>®</sup> peptides) conjugated with different fluorescent dyes

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**Table S1.** Mean surface fluorescence obtained from the organs and tissue at different time points after single i.v. administration of the fluorescent conjugates. Values for the control represent baseline autofluorescence signal from animals with no injection of fluorescent conjugates. The number of animals for each time point and each conjugate is indicated by *n*.

<b>AF546-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT <i>n</i>=6</b>	<b>Var3 <i>n</i>=6</b>	<b>Var3-C <i>n</i>=3</b>	<b>Var7 <i>n</i>=6</b>	<b>Control</b>
<b>Muscle</b>	<b>2 hrs</b>	1057.0 ± 137.8	963.4 ± 120.8	281.6 ± 23.3	1150.2 ± 126.6	156.3
	<b>4 hrs</b>	1212.0 ± 189.4	1117.9 ± 167.3	283.8 ± 52.6	756.9 ± 34.9	
	<b>24 hrs</b>	249.4 ± 23.2	297.7 ± 28.6	209.5 ± 18.6	191.2 ± 8.34	
	<b>48 hrs</b>	193.6 ± 18.0	201.0 ± 13.3		179.4 ± 16.1	
<b>Tumor</b>	<b>2 hrs</b>	3856.7 ± 1058.5	4664.5 ± 720.4	834.6 ± 86.6	3267.1 ± 690.0	170.2
	<b>4 hrs</b>	5716.8 ± 1284.8	5809.9 ± 880.4	847.3 ± 162.2	3514.1 ± 622.9	
	<b>24 hrs</b>	1287 ± 290.4	2772.9 ± 600.3	1168.5 ± 299.8	810.4 ± 196.2	
	<b>48 hrs</b>	999.5 ± 129.8	1229.6 ± 281.9		516.7 ± 128.9	
<b>Liver</b>	<b>2 hrs</b>	1671.7 ± 148.7	1670.3 ± 409.5	380.3 ± 39.2	805.8 ± 112.4	144.2
	<b>4 hrs</b>	1984.0 ± 27.9	1448.7 ± 317.7	288.4 ± 11.8	623.6 ± 77.2	
	<b>24 hrs</b>	502.5 ± 85.6	303.4 ± 64.4	229.5 ± 17.6	217.0 ± 21.8	
	<b>48 hrs</b>	357.2 ± 24.6	254.9 ± 37.2		193 ± 20.6	
<b>Kidney</b>	<b>2 hrs</b>	1235.5 ± 182.2	880.3 ± 51.2	326.8 ± 83.1	1346.8 ± 145.8	156.4
	<b>4 hrs</b>	1099.2 ± 254.3	1148.4 ± 326.7	327.7 ± 41.3	1045.2 ± 144.4	
	<b>24 hrs</b>	544.8 ± 85.9	1288.7 ± 253.3	291.9 ± 17.9	821.3 ± 122.5	
	<b>48 hrs</b>	485.4 ± 126.5	918.5 ± 225.9		690.5 ± 259.6	
<b>AF647-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT <i>n</i>=3</b>	<b>Var3 <i>n</i>=3</b>	<b>Var7 <i>n</i>=3</b>	<b>Control</b>	
<b>Muscle</b>	<b>2 hrs</b>	2617.5 ± 616.0	4940.6 ± 527.6	1818.8 ± 200.0	980.7	
	<b>4 hrs</b>	2093.2 ± 111.4	3467.6 ± 839.4	1569.0 ± 275.9		
	<b>24 hrs</b>	932.8 ± 49.0	1054.8 ± 121.0	1016.0 ± 171.7		
<b>Tumor</b>	<b>2 hrs</b>	7498.5 ± 1480.5	14565.3 ± 1577.3	6556.0 ± 1013.2	1125.5	
	<b>4 hrs</b>	6798.8 ± 221.9	12099.6 ± 255.7	4781.5 ± 675.1		
	<b>24 hrs</b>	2480.1 ± 290.3	3948.6 ± 2212.7	2832.5 ± 588.2		
<b>Liver</b>	<b>2 hrs</b>	5311.2 ± 97.9	9832.4 ± 622.3	2598.1 ± 335.6	525.6	

	<b>4 hrs</b>	5137.2 ± 1330.5	7615.7 ± 1028.3	1921.6 ± 351.0		
	<b>24 hrs</b>	1680.4 ± 490.3	1327.4 ± 298.0	1091.4 ± 175.4		
<b>Kidney</b>	<b>2 hrs</b>	8516.0 ± 1611.7	16126.9 ± 2787.4	10112.8 ± 391.6	552.6	
	<b>4 hrs</b>	9135.8 ± 1167.8	14325.3 ± 1332.3	10696.1 ± 1726.5		
	<b>24 hrs</b>	3778.7 ± 550.7	6081.2 ± 2036.8	8461.9 ± 4773.8		
<b>AF750-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT n=3</b>	<b>Var3 n=3</b>	<b>Var7 n=3</b>	<b>Control</b>	
<b>Muscle</b>	<b>2 hrs</b>	889.8 ± 87.2	1002.6 ± 30.7	749.4 ± 21.4	127.3	
	<b>4 hrs</b>	700.2 ± 117.8	836.3 ± 123.7	401.0 ± 40.8		
	<b>24 hrs</b>	275.5 ± 10.1	228.0 ± 24.5	169.0 ± 10.8		
	<b>48 hrs</b>	168.7 ± 7.3	150.4 ± 4.2	144.8 ± 0.3		
<b>Tumor</b>	<b>2 hrs</b>	2847.7 ± 40.1	3800.4 ± 226.1	2301.2 ± 172.6	135.4	
	<b>4 hrs</b>	2897.5 ± 610.4	3542.2 ± 431.8	1256.4 ± 110.8		
	<b>24 hrs</b>	1118.9 ± 76.5	650.9 ± 88.8	260.7 ± 10.3		
	<b>48 hrs</b>	414.6 ± 23.7	236.8 ± 15.7	180.8 ± 16.9		
<b>Liver</b>	<b>2 hrs</b>	3577.2 ± 375.5	4618.6 ± 183.6	1722.5 ± 350.7	140.3	
	<b>4 hrs</b>	3776.3 ± 1111.3	2401.4 ± 344.5	1087.8 ± 13.4		
	<b>24 hrs</b>	1370.9 ± 104.7	553.2 ± 46.8	342.7 ± 19.3		
	<b>48 hrs</b>	363.1 ± 36.6	286.9 ± 11.6	226.8 ± 21.7		
<b>Kidney</b>	<b>2 hrs</b>	7413.1 ± 881.7	9417.1 ± 862.6	7146.2 ± 419.3	143.5	
	<b>4 hrs</b>	7664.2 ± 1328.6	7891.6 ± 984.4	7131.0 ± 552.1		
	<b>24 hrs</b>	2459.8 ± 164.2	1869.1 ± 197.4	1836.9 ± 236.7		
	<b>48 hrs</b>	491.2 ± 50.3	487.5 ± 74.6	429.2 ± 16.6		
<b>AF750-pHLIP-Mutants</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>Var3M n=3</b>	<b>Var7M n=3</b>	<b>Control</b>		
<b>Muscle</b>	<b>2 hrs</b>	886.2 ± 197.3	628.3 ± 24.2	146.9		
	<b>4 hrs</b>	774.2 ± 255.2	430.1 ± 47.1			
<b>Tumor</b>	<b>2 hrs</b>	3444.6 ± 311.3	2451.8 ± 162.1	144.1		
	<b>4 hrs</b>	3355.9 ± 796.2	1562.9 ± 240.4			
<b>Liver</b>	<b>2 hrs</b>	3954.1 ± 46.2	1389.4 ± 129.5	144.2		
	<b>4 hrs</b>	2313.2 ± 373.7	902.0 ± 79.4			
<b>Kidney</b>	<b>2 hrs</b>	9114.2 ± 529.2	9691.2 ± 176.0	146.5		
	<b>4 hrs</b>	8615.9 ± 657.4	8275.0 ± 499.0			
<b>Cy5.5-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT n=3</b>	<b>Var3 n=3</b>	<b>Var3-C n=3</b>	<b>Var7 n=3</b>	<b>Control</b>
<b>Muscle</b>	<b>2 hrs</b>	634.1 ± 83.7	918.8 ± 162.6	1035.1 ± 63.4	638.0 ± 86.3	276.1
	<b>4 hrs</b>	652.3 ± 88.4	660.5 ± 36.6	719.4 ± 113.4	467.3 ± 63.0	

	24hrs	466.5 ± 54.2	424.2 ± 30.8	411.3 ± 4.4	356.7 ± 16.5	
<b>Tumor</b>	2 hrs	2094.8 ± 497.0	3343.2 ± 1526.1	3627.7 ± 441.5	1900.3 ± 293.5	316.9
	4hrs	2882.6 ± 660.6	2798.5 ± 395.2	3482.0 ± 502.7	2076.3 ± 531.5	
	24hrs	2419.5 ± 226.1	2312.5 ± 556.1	2371.9 ± 186.9	1390.8 ± 141.9	
<b>Liver</b>	2 hrs	4209.2 ± 603.7	8118.0 ± 901.8	7828.1 ± 1161.2	5706.9 ± 719.4	259.5
	4hrs	3587.1 ± 127.3	5589.0 ± 129.6	5916.4 ± 843.6	4177.2 ± 278.0	
	24hrs	2666.9 ± 229.0	1513.1 ± 248.1	1844.5 ± 437.3	1180.8 ± 197.8	
<b>Kidney</b>	2 hrs	2024.9 ± 349.3	2641.0 ± 249.2	2926.5 ± 223.8	2729.3 ± 137.4	263.9
	4hrs	1576.9 ± 253.7	1998.0 ± 485.3	2322.7 ± 335.8	2416.3 ± 588.9	
	24hrs	947.9 ± 198.0	1135.4 ± 193.9	1116.7 ± 28.6	1335.8 ± 174.5	
<b>IR680-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT n=3</b>	<b>Var3 n=3</b>	<b>Var7 n=3</b>		<b>Control</b>
<b>Muscle</b>	2 hrs	523.3 ± 32.9	619.2 ± 50.7	463.5 ± 73.9		324.1
	4 hrs	551.6 ± 80.0	659.5 ± 56.9	401.0 ± 44.6		
	24 hrs	353.6 ± 37.5	401.9 ± 53.1	363.4 ± 23.2		
<b>Tumor</b>	2 hrs	931.9 ± 18.8	1370.8 ± 158.3	718.9 ± 83.5		333.1
	4 hrs	906.3 ± 66.0	1462.7 ± 114.7	597.8 ± 69.8		
	24 hrs	426.7 ± 5.5	645.5 ± 185.8	719.7 ± 34.1		
<b>Liver</b>	2 hrs	917.9 ± 144.1	1119.3 ± 97.7	569.2 ± 33.3		270.3
	4 hrs	626.3 ± 52.6	1020.2 ± 150.4	427.7 ± 47.2		
	24 hrs	305.8 ± 35.3	389.4 ± 53.3	291.5 ± 33.0		
<b>Kidney</b>	2 hrs	1053.0 ± 171.0	821.8 ± 30.6	1081.4 ± 76.1		241.7
	4 hrs	758.6 ± 137.3	830.5 ± 52.5	682.6 ± 107.8		
	24 hrs	353.6 ± 37.5	352.4 ± 89.0	311.6 ± 34.1		
<b>IR800-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT n=3</b>	<b>Var3 n=3</b>	<b>Var7 n=3</b>		<b>Control</b>
<b>Muscle</b>	2 hrs	630.6 ± 53.2	736.4 ± 116.0	542.9 ± 43.0		127.3
	4 hrs	612.6 ± 25.1	747.9 ± 10.5	359.1 ± 27.7		
	24 hrs	255.6 ± 19.7	231.6 ± 21.1	185.1 ± 14.6		
<b>Tumor</b>	2 hrs	1684.9 ± 292.6	2289.3 ± 146.0	1858.2 ± 271.3		135.4
	4 hrs	1996.4 ± 581.3	3129.0 ± 176.4	1585.9 ± 165.8		
	24 hrs	737.5 ± 241.1	1349.9 ± 267.3	554.9 ± 156.6		
<b>Liver</b>	2 hrs	3133.4 ± 179.7	3849.9 ± 164.7	2337.0 ± 107.9		140.3
	4 hrs	2969.8 ± 512.7	3238.8 ± 127.2	1964.7 ± 129.2		
	24 hrs	1863.4 ± 201.1	1089.6 ± 165.0	972.4 ± 149.9		
<b>Kidney</b>	2 hrs	4529.1 ± 547.1	5908.6 ± 128.3	3885.1 ± 420.8		143.5
	4 hrs	4015.6 ± 861.0	6235.9 ± 470.1	3238.1 ± 345.6		
	24 hrs	2998.4 ± 314.5	3863.7 ± 478.2	3696.5 ± 114.7		
<b>Dy680-pHLIPs</b>						
<b>Organs</b>	<b>Time post-injection</b>	<b>WT n=3</b>	<b>Var3 n=3</b>	<b>Var7 n=3</b>		<b>Control</b>

<b>Muscle</b>	<b>2 hrs</b>	754.9 ± 106.3	465.4 ± 103.5	345.6 ± 4.7	172.3
	<b>4 hrs</b>	694.3 ± 50.6	533.2 ± 18.3	305.5 ± 16.4	
	<b>24 hrs</b>	203.6 ± 4.8	274.6 ± 15.8	178.9 ± 9.2	
<b>Tumor</b>	<b>2 hrs</b>	2326.0 ± 183.6	1998.2 ± 394.4	1029.3 ± 100.8	219.0
	<b>4 hrs</b>	2246.3 ± 627.8	2243.3 ± 103.9	847.4 ± 73.5	
	<b>24 hrs</b>	511.7 ± 129.3	897.0 ± 314.3	241.1 ± 7.8	
<b>Liver</b>	<b>2 hrs</b>	1600.0 ± 60.7	1243.7 ± 218.2	495.5 ± 77.8	210.9
	<b>4 hrs</b>	1284.6 ± 142.6	984.2 ± 47.5	431.2 ± 65.6	
	<b>24 hrs</b>	331.8 ± 46.2	373.0 ± 49.8	207.5 ± 20.6	
<b>Kidney</b>	<b>2 hrs</b>	1886.5 ± 227.5	1066.6 ± 119.8	1242.9 ± 119.1	160.2
	<b>4 hrs</b>	1728.6 ± 45.4	1088.9 ± 73.8	1004.5 ± 250.7	
	<b>24 hrs</b>	327.9 ± 29.1	375.4 ± 39.5	229.8 ± 22.6	
<b>DyP680-pHLIPs</b>					
<b>Organs</b>	<b>Time post-injection</b>	<b>WT n=3</b>	<b>Var3 n=3</b>	<b>Var7 n=3</b>	<b>Control</b>
<b>Muscle</b>	<b>2 hrs</b>	829.6 ± 165.3	828.6 ± 389.7	416.5 ± 22.7	172.3
	<b>4 hrs</b>	735.1 ± 137.6	808.5 ± 14.8	367.0 ± 58.5	
	<b>24 hrs</b>	478.9 ± 24.9	406.4 ± 27.0	291.1 ± 22.2	
<b>Tumor</b>	<b>2 hrs</b>	3832.7 ± 769	2883.7 ± 567.7	936.2 ± 132.2	219.0
	<b>4 hrs</b>	3679.4 ± 225.9	3104.6 ± 162.4	1008.8 ± 166.8	
	<b>24 hrs</b>	2716.2 ± 512.0	2239.8 ± 459.6	644.9 ± 60.6	
<b>Liver</b>	<b>2 hrs</b>	1968.9 ± 354.6	1614.4 ± 152	488.2 ± 38.9	210.9
	<b>4 hrs</b>	1726.6 ± 343.2	1517.9 ± 26.1	405.6 ± 71.1	
	<b>24 hrs</b>	1290.2 ± 82.3	650.6 ± 131.0	314.1 ± 27.1	
<b>Kidney</b>	<b>2 hrs</b>	6047.7 ± 619.5	6584.5 ± 640.1	5262.3 ± 562.0	160.2
	<b>4 hrs</b>	4757.6 ± 360.8	4896.5 ± 656.5	5459.7 ± 928.5	
	<b>24 hrs</b>	5010.1 ± 364.3	5269.3 ± 923.6	4576.4 ± 489.9	

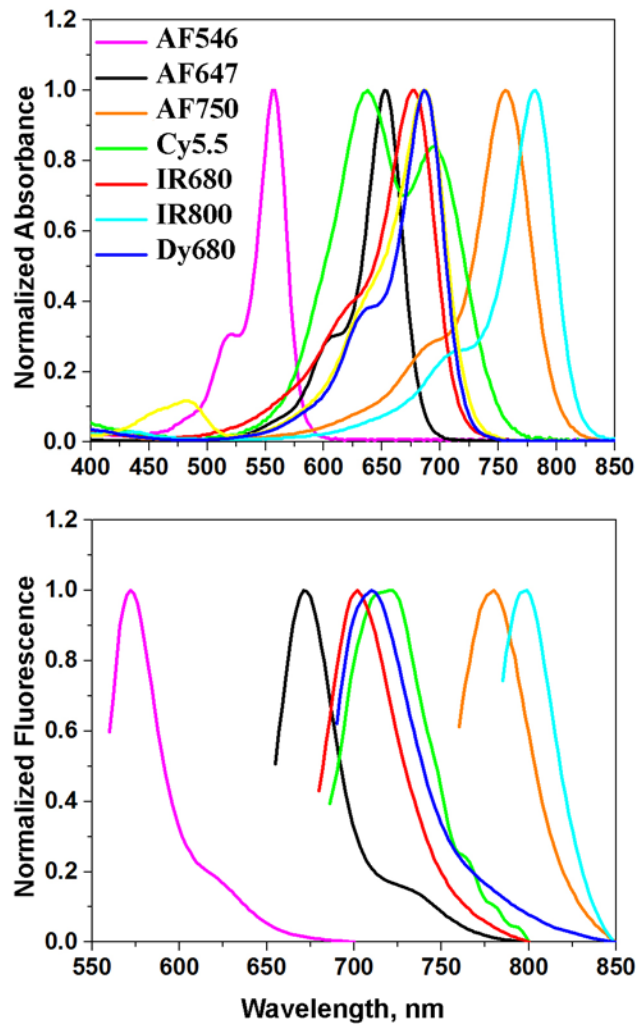
**Table S2.** Tumor/muscle, tumor/kidney and tumor/liver ratio values.

Ratios	Time post-injection	WT	Var3	Var7
<b>AF546-pHLIPs</b>				
Tumor/Muscle	2 hrs	3.62 ± 0.77	4.86 ± 0.75	2.89 ± 0.76
	4 hrs	4.68 ± 0.57	5.29 ± 1.27	4.62 ± 0.67
	24 hrs	5.22 ± 1.47	9.32 ± 1.45	4.23 ± 1.00
Tumor/Kidney	2 hrs	3.13 ± 0.84	5.30 ± 0.83	2.40 ± 0.26
	4 hrs	5.39 ± 1.70	5.23 ± 1.18	3.36 ± 0.36
	24 hrs	2.45 ± 0.80	2.21 ± 0.52	1.03 ± 0.38
Tumor/Liver	2 hrs	2.31 ± 0.60	2.83 ± 0.36	4.09 ± 0.80
	4 hrs	2.88 ± 0.62	4.09 ± 0.98	5.60 ± 0.36
	24 hrs	2.67 ± 1.03	9.57 ± 3.14	3.76 ± 1.02
<b>AF647-pHLIPs</b>				
Tumor/Muscle	2 hrs	2.88 ± 0.21	2.95 ± 0.26	3.60 ± 0.23
	4 hrs	3.25 ± 0.12	3.61 ± 0.81	3.09 ± 0.58
	24 hrs	2.67 ± 0.44	3.62 ± 1.66	2.81 ± 0.63
Tumor/Kidney	2 hrs	0.68 ± 0.55	0.93 ± 0.26	0.65 ± 0.10
	4 hrs	0.75 ± 0.12	0.85 ± 0.09	0.45 ± 0.05
	24 hrs	0.66 ± 0.04	0.62 ± 0.16	0.38 ± 0.14
Tumor/Liver	2 hrs	1.42 ± 0.30	1.48 ± 0.09	2.52 ± 0.07
	4 hrs	1.34 ± 0.41	1.61 ± 0.27	2.51 ± 0.25
	24 hrs	1.53 ± 0.28	2.82 ± 1.04	2.64 ± 0.70
<b>AF750-pHLIPs</b>				
Tumor/Muscle	2 hrs	3.22 ± 0.18	3.80 ± 0.18	3.08 ± 0.18
	4 hrs	4.16 ± 0.29	4.33 ± 0.59	3.14 ± 0.11
	24 hrs	4.06 ± 0.10	2.88 ± 0.30	1.54 ± 0.03
Tumor/Kidney	2 hrs	0.39 ± 0.03	0.41 ± 0.03	0.32 ± 0.02
	4 hrs	0.39 ± 0.04	0.45 ± 0.02	0.18 ± 0.01
	24 hrs	0.46 ± 0.03	0.35 ± 0.04	0.14 ± 0.01
Tumor/Liver	2 hrs	0.80 ± 0.05	0.82 ± 0.03	1.36 ± 0.12
	4 hrs	0.80 ± 0.08	1.48 ± 0.05	1.15 ± 0.05
	24 hrs	0.82 ± 0.07	1.17 ± 0.04	0.76 ± 0.04
<b>Cy5.5-pHLIPs</b>				
Tumor/Muscle	2 hrs	3.28 ± 0.23	3.54 ± 0.57	3.02 ± 0.37
	4 hrs	4.50 ± 0.71	4.23 ± 0.25	4.39 ± 0.32
	24 hrs	5.27 ± 0.63	5.41 ± 0.53	3.91 ± 0.30
Tumor/Kidney	2 hrs	1.04 ± 0.09	1.26 ± 0.31	0.70 ± 0.07
	4 hrs	1.83 ± 0.19	1.42 ± 0.08	0.88 ± 0.15
	24 hrs	2.60 ± 0.20	2.11 ± 0.47	1.06 ± 0.13
Tumor/Liver	2 hrs	0.50 ± 0.04	0.41 ± 0.09	0.34 ± 0.05
	4 hrs	0.80 ± 0.11	0.50 ± 0.03	0.49 ± 0.06
	24 hrs	0.91 ± 0.07	1.52 ± 0.10	1.20 ± 0.14
<b>IR680-pHLIPs</b>				

<b>Tumor/Muscle</b>	<b>2 hrs</b>	1.79 ± 0.14	2.21 ± 0.08	1.57 ± 0.23
	<b>4 hrs</b>	1.67 ± 0.26	2.22 ± 0.12	1.50 ± 0.21
	<b>24 hrs</b>	1.22 ± 0.12	1.58 ± 0.28	1.16 ± 0.13
<b>Tumor/Kidney</b>	<b>2 hrs</b>	0.90 ± 0.16	1.67 ± 0.24	0.66 ± 0.06
	<b>4 hrs</b>	1.21 ± 0.17	1.76 ± 0.12	0.89 ± 0.12
	<b>24 hrs</b>	1.37 ± 0.12	1.82 ± 0.23	1.36 ± 0.25
<b>Tumor/Liver</b>	<b>2 hrs</b>	1.03 ± 0.19	1.23 ± 0.11	1.26 ± 0.10
	<b>4 hrs</b>	1.46 ± 0.18	1.45 ± 0.34	1.40 ± 0.20
	<b>24 hrs</b>	1.40 ± 0.16	1.64 ± 0.32	1.45 ± 0.12
<b>IR800-pHLIPs</b>				
<b>Tumor/Muscle</b>	<b>2 hrs</b>	2.70 ± 0.66	3.15 ± 0.37	3.46 ± 0.72
	<b>4 hrs</b>	3.24 ± 0.82	4.18 ± 0.18	4.45 ± 0.80
	<b>24 hrs</b>	2.88 ± 0.92	5.79 ± 0.67	2.97 ± 0.61
<b>Tumor/Kidney</b>	<b>2 hrs</b>	0.38 ± 0.09	0.39 ± 0.02	0.48 ± 0.02
	<b>4 hrs</b>	0.50 ± 0.10	0.50 ± 0.02	0.49 ± 0.02
	<b>24 hrs</b>	0.24 ± 0.06	0.35 ± 0.05	0.15 ± 0.04
<b>Tumor/Liver</b>	<b>2 hrs</b>	0.54 ± 0.07	0.59 ± 0.04	0.80 ± 0.11
	<b>4 hrs</b>	0.67 ± 0.15	0.97 ± 0.08	0.80 ± 0.08
	<b>24 hrs</b>	0.39 ± 0.12	1.23 ± 0.12	0.56 ± 0.07
<b>Dy680-pHLIPs</b>				
<b>Tumor/Muscle</b>	<b>2 hrs</b>	3.11 ± 0.29	4.32 ± 0.53	2.98 ± 0.33
	<b>4 hrs</b>	3.28 ± 1.09	4.21 ± 0.33	2.77 ± 0.10
	<b>24 hrs</b>	2.51 ± 0.61	3.25 ± 1.02	1.35 ± 0.03
<b>Tumor/Kidney</b>	<b>2 hrs</b>	1.24 ± 0.29	1.86 ± 0.20	0.83 ± 0.02
	<b>4 hrs</b>	1.30 ± 0.39	2.06 ± 0.06	0.87 ± 0.18
	<b>24 hrs</b>	1.58 ± 0.48	2.40 ± 0.90	1.05 ± 0.07
<b>Tumor/Liver</b>	<b>2 hrs</b>	1.45 ± 0.09	1.60 ± 0.10	2.09 ± 0.15
	<b>4 hrs</b>	1.77 ± 0.56	2.29 ± 0.21	1.99 ± 0.25
	<b>24 hrs</b>	1.53 ± 0.19	2.38 ± 0.64	1.17 ± 0.08
<b>DyP680-pHLIPs</b>				
<b>Tumor/Muscle</b>	<b>2 hrs</b>	4.62 ± 0.19	3.86 ± 1.22	2.24 ± 0.23
	<b>4 hrs</b>	5.15 ± 1.14	3.84 ± 0.13	2.78 ± 0.59
	<b>24 hrs</b>	5.65 ± 0.81	5.48 ± 0.84	2.21 ± 0.04
<b>Tumor/Kidney</b>	<b>2 hrs</b>	0.64 ± 0.15	0.44 ± 0.09	0.18 ± 0.02
	<b>4 hrs</b>	0.78 ± 0.09	0.64 ± 0.11	0.19 ± 0.01
	<b>24 hrs</b>	0.55 ± 0.12	0.42 ± 0.03	0.14 ± 0.02
<b>Tumor/Liver</b>	<b>2 hrs</b>	1.94 ± 0.14	1.78 ± 0.23	1.92 ± 0.27
	<b>4 hrs</b>	2.17 ± 0.31	2.05 ± 0.12	2.49 ± 0.03
	<b>24 hrs</b>	2.11 ± 0.40	3.44 ± 0.02	2.06 ± 0.19

**Table S3.** Contrast Index (CI) calculated for 2 and 4 hours time points.

Time post-injection	WT	Var3	Var7
<b>AF546-pHLIPs</b>			
2 hrs	4.06 ± 0.88	5.60 ± 0.92	3.18 ± 0.90
4 hrs	5.22 ± 0.61	6.01 ± 1.55	5.54 ± 0.81
<b>AF647-pHLIPs</b>			
2 hrs	4.03 ± 0.58	3.41 ± 0.35	2.61 ± 0.07
4 hrs	5.12 ± 0.39	4.72 ± 1.39	7.18 ± 3.70
<b>AF750-pHLIPs</b>			
2 hrs	3.59 ± 0.40	4.19 ± 0.37	3.49 ± 0.39
4 hrs	4.88 ± 0.92	4.95 ± 1.28	4.13 ± 0.39
<b>Cy5.5-pHLIPs</b>			
2 hrs	4.96 ± 0.56	4.55 ± 1.19	4.58 ± 1.47
4 hrs	7.16 ± 2.54	6.44 ± 0.63	9.27 ± 0.37
<b>IR680-pHLIPs</b>			
2 hrs	1.79 ± 0.14	2.21 ± 0.08	1.57 ± 0.23
4 hrs	1.67 ± 0.26	2.22 ± 0.12	1.50 ± 0.21
<b>IR800-pHLIPs</b>			
2 hrs	3.13 ± 0.87	3.61 ± 0.55	4.21 ± 1.00
4 hrs	3.80 ± 0.10	4.82 ± 0.21	6.37 ± 1.46
<b>Dy680-pHLIPs</b>			
2 hrs	3.67 ± 0.48	6.27 ± 1.13	4.69 ± 0.71
4 hrs	3.97 ± 1.50	5.63 ± 0.56	4.72 ± 0.07
<b>DyP680-pHLIPs</b>			
2 hrs	5.55 ± 0.40	4.99 ± 2.44	2.92 ± 0.36
4 hrs	6.43 ± 1.50	4.53 ± 0.15	4.25 ± 1.40



**Figure S1.** Absorption and fluorescence spectra of fluorescent-conjugates measured in PBS.