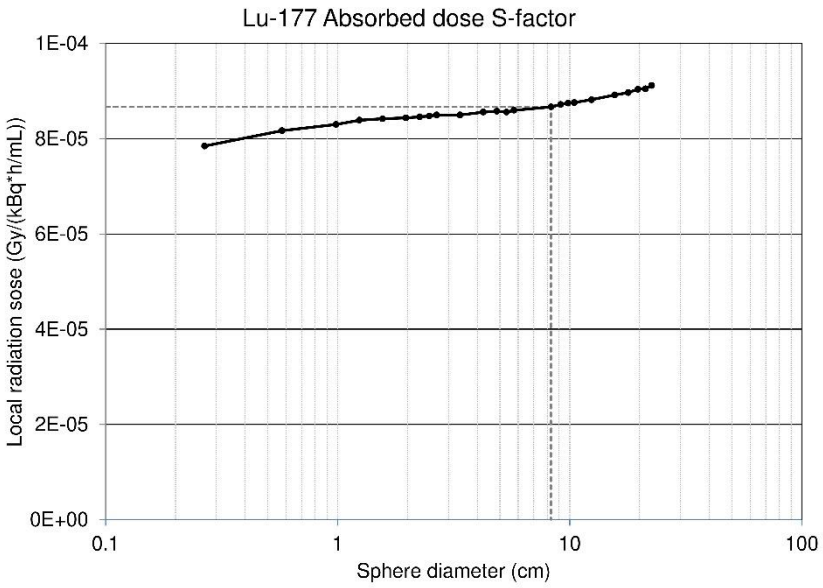


Supplemental Figure 1 - Time-integrated Activity Concentration (kBq*h/ml) to Radiation Absorbed Dose (Gy) S-factors as a function of object diameter for ^{177}Lu according to OLINDA sphere model. For regions with masses between 0.5g and 5,000g the dose factor is within ±5% of 8.67E-5 Gy/(kBq*h/mL)

Image Time (hours)	Submandibular	Tumor	Parotid	Spleen	Kidney	Liver
5	62.1	157.9	59.4	39.6	42.5	46.4
6	62.0	149.0	59.8	45.4	45.5	51.2
7	62.3	142.7	60.5	51.4	48.6	56.0
8	62.7	138.2	61.2	57.6	51.5	60.6
9	63.4	134.7	62.1	63.6	54.4	65.0
10	64.1	132.2	62.9	69.4	57.1	69.1
11	64.8	130.2	63.9	74.8	59.7	72.8
12	65.7	128.8	64.8	79.7	62.1	76.2
13	66.5	127.7	65.8	84.2	64.4	79.2
14	67.4	126.9	66.7	88.1	66.4	82.0
15	68.3	126.4	67.7	91.6	68.4	84.5
16	69.1	126.0	68.7	94.7	70.2	86.7
17	70.1	125.8	69.7	97.4	71.9	88.7
18	71.0	125.7	70.7	99.8	73.5	90.6
19	71.9	125.7	71.7	101.9	75.1	92.3
20	72.9	125.8	72.7	103.8	76.6	93.8
21	73.9	126.0	73.7	105.6	78.0	95.3
22	74.9	126.3	74.8	107.3	79.5	96.8
23	75.9	126.6	75.8	108.8	80.9	98.1
24	76.9	126.9	76.9	110.3	82.2	99.5
25	77.9	127.3	78.0	111.8	83.6	100.8
26	79.0	127.7	79.1	113.2	85.0	102.0
27	80.1	128.1	80.2	114.6	86.4	103.3
28	81.2	128.6	81.4	115.9	87.8	104.5
29	82.3	129.0	82.5	117.3	89.2	105.8
30	83.4	129.5	83.7	118.6	90.6	107.0
31	84.6	130.0	84.9	120.0	92.0	108.3
32	85.7	130.5	86.1	121.4	93.4	109.5
33	86.9	131.1	87.3	122.7	94.9	110.8
34	88.1	131.6	88.6	124.1	96.3	112.1
35	89.3	132.2	89.8	125.5	97.8	113.3
36	90.6	132.7	91.1	126.9	99.3	114.6
37	91.9	133.3	92.4	128.3	100.9	115.9
38	93.1	133.9	93.7	129.8	102.4	117.3
39	94.4	134.4	95.1	131.3	104.0	118.6
40	95.8	135.0	96.4	132.7	105.6	120.0
41	97.1	135.6	97.8	134.2	107.2	121.3
42	98.5	136.2	99.2	135.8	108.9	122.7
43	99.9	136.8	100.7	137.3	110.5	124.2
44	101.3	137.4	102.1	138.9	112.3	125.6
45	102.7	138.1	103.6	140.5	114.0	127.0
46	104.2	138.7	105.1	142.1	115.7	128.5
47	105.7	139.3	106.6	143.7	117.5	130.0
48	107.2	139.9	108.2	145.4	119.3	131.5
49	108.7	140.6	109.7	147.0	121.2	133.0
50	110.3	141.2	111.3	148.7	123.1	134.6
51	111.8	141.9	113.0	150.5	125.0	136.1
52	113.4	142.5	114.6	152.2	126.9	137.7
53	115.1	143.2	116.3	154.0	128.9	139.4
54	116.7	143.8	118.0	155.8	130.9	141.0
55	118.4	144.5	119.7	157.6	132.9	142.7
56	120.1	145.1	121.5	159.5	135.0	144.3
57	121.8	145.8	123.3	161.4	137.1	146.0
58	123.6	146.5	125.1	163.3	139.2	147.8
59	125.4	147.2	126.9	165.2	141.4	149.5

60	127.2	147.9	128.8	167.2	143.6	151.3
61	129.1	148.5	130.7	169.2	145.9	153.1
62	130.9	149.2	132.6	171.2	148.2	154.9
63	132.8	149.9	134.6	173.3	150.5	156.8
64	134.8	150.6	136.6	175.3	152.9	158.7
65	136.7	151.3	138.7	177.5	155.3	160.6
66	138.7	152.1	140.7	179.6	157.7	162.5
67	140.8	152.8	142.8	181.8	160.2	164.5
68	142.8	153.5	145.0	184.0	162.7	166.5
69	144.9	154.2	147.2	186.2	165.3	168.5
70	147.1	154.9	149.4	188.5	167.9	170.5
71	149.2	155.7	151.6	190.8	170.5	172.6
72	151.4	156.4	153.9	193.2	173.2	174.7
73	153.7	157.2	156.2	195.6	176.0	176.8
74	156.0	157.9	158.6	198.0	178.8	179.0
75	158.3	158.7	161.0	200.4	181.6	181.2
76	160.6	159.4	163.5	202.9	184.5	183.4
77	163.0	160.2	165.9	205.5	187.4	185.7
78	165.4	160.9	168.5	208.0	190.4	188.0
79	167.9	161.7	171.1	210.6	193.4	190.3
80	170.4	162.5	173.7	213.3	196.5	192.6
81	172.9	163.3	176.3	216.0	199.7	195.0
82	175.5	164.1	179.1	218.7	202.9	197.4
83	178.2	164.9	181.8	221.5	206.1	199.9
84	180.8	165.7	184.6	224.3	209.4	202.4
85	183.6	166.5	187.5	227.1	212.8	204.9
86	186.3	167.3	190.4	230.0	216.2	207.5
87	189.1	168.1	193.3	233.0	219.7	210.1
88	192.0	168.9	196.4	236.0	223.2	212.7
89	194.9	169.7	199.4	239.0	226.8	215.4
90	197.8	170.5	202.5	242.1	230.4	218.1
91	200.8	171.4	205.7	245.2	234.2	220.9
92	203.9	172.2	208.9	248.4	237.9	223.7
93	207.0	173.1	212.2	251.6	241.8	226.5
94	210.1	173.9	215.6	254.9	245.7	229.4
95	213.3	174.8	219.0	258.2	249.7	232.3
96	216.6	175.6	222.4	261.6	253.7	235.2
97	219.9	176.5	226.0	265.0	257.8	238.2
98	223.3	177.4	229.5	268.5	262.0	241.3
99	226.7	178.3	233.2	272.0	266.3	244.4
100	230.2	179.1	236.9	275.6	270.6	247.5
101	233.7	180.0	240.7	279.2	275.0	250.7
102	237.3	180.9	244.6	283.0	279.5	253.9
103	241.0	181.8	248.5	286.7	284.1	257.2
104	244.7	182.7	252.5	290.5	288.7	260.5
105	248.5	183.7	256.6	294.4	293.5	263.8
106	252.4	184.6	260.7	298.4	298.3	267.3
107	256.3	185.5	265.0	302.4	303.1	270.7
108	260.3	186.4	269.3	306.4	308.1	274.2
109	264.3	187.4	273.7	310.6	313.2	277.8
110	268.4	188.3	278.1	314.7	318.3	281.4
111	272.6	189.3	282.7	319.0	323.6	285.1
112	276.9	190.2	287.3	323.3	328.9	288.8
113	281.2	191.2	292.0	327.7	334.3	292.6
114	285.6	192.2	296.8	332.2	339.9	296.4
115	290.1	193.1	301.7	336.7	345.5	300.3

116	294.7	194.1	306.7	341.4	351.2	304.3
117	299.3	195.1	311.8	346.0	357.0	308.3
118	304.1	196.1	317.0	350.8	362.9	312.4
119	308.9	197.1	322.3	355.6	368.9	316.5
120	313.8	198.1	327.7	360.5	375.1	320.7
121	318.7	199.1	333.2	365.5	381.3	324.9
122	323.8	200.2	338.8	370.6	387.7	329.2
123	328.9	201.2	344.5	375.7	394.1	333.6
124	334.2	202.2	350.3	381.0	400.7	338.1
125	339.5	203.3	356.2	386.3	407.4	342.6
126	344.9	204.3	362.3	391.7	414.2	347.1
127	350.4	205.4	368.4	397.2	421.1	351.8
128	356.0	206.4	374.7	402.8	428.2	356.5
129	361.8	207.5	381.1	408.4	435.3	361.3
130	367.6	208.6	387.7	414.2	442.7	366.1
131	373.5	209.7	394.3	420.1	450.1	371.0
132	379.5	210.8	401.1	426.0	457.7	376.0
133	385.6	211.9	408.1	432.0	465.4	381.1
134	391.8	213.0	415.1	438.2	473.2	386.3
135	398.2	214.1	422.3	444.4	481.2	391.5
136	404.6	215.2	429.7	450.8	489.3	396.8
137	411.2	216.4	437.2	457.2	497.6	402.2
138	417.9	217.5	444.8	463.8	506.0	407.6
139	424.7	218.7	452.7	470.4	514.6	413.2
140	431.6	219.8	460.6	477.2	523.3	418.8
141	438.6	221.0	468.8	484.1	532.2	424.5
142	445.8	222.1	477.0	491.1	541.2	430.3
143	453.1	223.3	485.5	498.2	550.4	436.2
144	460.5	224.5	494.1	505.4	559.8	442.2
145	468.1	225.7	503.0	512.7	569.3	448.2
146	475.8	226.9	512.0	520.2	579.0	454.4
147	483.6	228.1	521.1	527.8	588.9	460.6
148	491.6	229.3	530.5	535.5	598.9	467.0
149	499.7	230.6	540.1	543.3	609.2	473.4

Supplemental Table 1 -Time-integrated activity factors to convert single time point activity concentration (Bq/ml) into estimated decays per unit volume (Bq*h/mL)

Image Time (hours)	Submandibular	Tumor	Parotid	Spleen	Kidney	Liver
5	5.39E-06	1.37E-05	5.15E-06	3.44E-06	3.69E-06	4.03E-06
6	5.38E-06	1.29E-05	5.19E-06	3.94E-06	3.95E-06	4.44E-06
7	5.40E-06	1.24E-05	5.24E-06	4.46E-06	4.21E-06	4.86E-06
8	5.44E-06	1.20E-05	5.31E-06	4.99E-06	4.47E-06	5.26E-06
9	5.49E-06	1.17E-05	5.38E-06	5.52E-06	4.72E-06	5.64E-06
10	5.55E-06	1.15E-05	5.46E-06	6.02E-06	4.95E-06	5.99E-06
11	5.62E-06	1.13E-05	5.54E-06	6.48E-06	5.18E-06	6.31E-06
12	5.69E-06	1.12E-05	5.62E-06	6.91E-06	5.39E-06	6.61E-06
13	5.77E-06	1.11E-05	5.70E-06	7.30E-06	5.58E-06	6.87E-06
14	5.84E-06	1.10E-05	5.78E-06	7.64E-06	5.76E-06	7.11E-06
15	5.92E-06	1.10E-05	5.87E-06	7.94E-06	5.93E-06	7.32E-06
16	6.00E-06	1.09E-05	5.95E-06	8.21E-06	6.09E-06	7.52E-06
17	6.07E-06	1.09E-05	6.04E-06	8.44E-06	6.23E-06	7.69E-06
18	6.16E-06	1.09E-05	6.13E-06	8.65E-06	6.37E-06	7.85E-06
19	6.24E-06	1.09E-05	6.22E-06	8.83E-06	6.51E-06	8.00E-06
20	6.32E-06	1.09E-05	6.30E-06	9.00E-06	6.64E-06	8.14E-06
21	6.40E-06	1.09E-05	6.39E-06	9.16E-06	6.77E-06	8.27E-06
22	6.49E-06	1.09E-05	6.48E-06	9.30E-06	6.89E-06	8.39E-06
23	6.58E-06	1.10E-05	6.58E-06	9.44E-06	7.01E-06	8.51E-06
24	6.67E-06	1.10E-05	6.67E-06	9.57E-06	7.13E-06	8.62E-06
25	6.76E-06	1.10E-05	6.76E-06	9.69E-06	7.25E-06	8.74E-06
26	6.85E-06	1.11E-05	6.86E-06	9.81E-06	7.37E-06	8.85E-06
27	6.94E-06	1.11E-05	6.96E-06	9.93E-06	7.49E-06	8.95E-06
28	7.04E-06	1.11E-05	7.06E-06	1.01E-05	7.61E-06	9.06E-06
29	7.13E-06	1.12E-05	7.16E-06	1.02E-05	7.73E-06	9.17E-06
30	7.23E-06	1.12E-05	7.26E-06	1.03E-05	7.85E-06	9.28E-06
31	7.33E-06	1.13E-05	7.36E-06	1.04E-05	7.97E-06	9.39E-06
32	7.43E-06	1.13E-05	7.46E-06	1.05E-05	8.10E-06	9.50E-06
33	7.54E-06	1.14E-05	7.57E-06	1.06E-05	8.22E-06	9.60E-06
34	7.64E-06	1.14E-05	7.68E-06	1.08E-05	8.35E-06	9.71E-06
35	7.75E-06	1.15E-05	7.79E-06	1.09E-05	8.48E-06	9.83E-06
36	7.85E-06	1.15E-05	7.90E-06	1.10E-05	8.61E-06	9.94E-06
37	7.96E-06	1.16E-05	8.01E-06	1.11E-05	8.74E-06	1.01E-05
38	8.08E-06	1.16E-05	8.13E-06	1.13E-05	8.88E-06	1.02E-05
39	8.19E-06	1.17E-05	8.24E-06	1.14E-05	9.02E-06	1.03E-05
40	8.30E-06	1.17E-05	8.36E-06	1.15E-05	9.15E-06	1.04E-05
41	8.42E-06	1.18E-05	8.48E-06	1.16E-05	9.30E-06	1.05E-05
42	8.54E-06	1.18E-05	8.60E-06	1.18E-05	9.44E-06	1.06E-05
43	8.66E-06	1.19E-05	8.73E-06	1.19E-05	9.58E-06	1.08E-05
44	8.78E-06	1.19E-05	8.85E-06	1.20E-05	9.73E-06	1.09E-05
45	8.91E-06	1.20E-05	8.98E-06	1.22E-05	9.88E-06	1.10E-05
46	9.03E-06	1.20E-05	9.11E-06	1.23E-05	1.00E-05	1.11E-05
47	9.16E-06	1.21E-05	9.24E-06	1.25E-05	1.02E-05	1.13E-05
48	9.29E-06	1.21E-05	9.38E-06	1.26E-05	1.03E-05	1.14E-05
49	9.43E-06	1.22E-05	9.51E-06	1.27E-05	1.05E-05	1.15E-05
50	9.56E-06	1.22E-05	9.65E-06	1.29E-05	1.07E-05	1.17E-05
51	9.70E-06	1.23E-05	9.79E-06	1.30E-05	1.08E-05	1.18E-05
52	9.84E-06	1.24E-05	9.94E-06	1.32E-05	1.10E-05	1.19E-05
53	9.98E-06	1.24E-05	1.01E-05	1.34E-05	1.12E-05	1.21E-05

54	1.01E-05	1.25E-05	1.02E-05	1.35E-05	1.13E-05	1.22E-05
55	1.03E-05	1.25E-05	1.04E-05	1.37E-05	1.15E-05	1.24E-05
56	1.04E-05	1.26E-05	1.05E-05	1.38E-05	1.17E-05	1.25E-05
57	1.06E-05	1.26E-05	1.07E-05	1.40E-05	1.19E-05	1.27E-05
58	1.07E-05	1.27E-05	1.08E-05	1.42E-05	1.21E-05	1.28E-05
59	1.09E-05	1.28E-05	1.10E-05	1.43E-05	1.23E-05	1.30E-05
60	1.10E-05	1.28E-05	1.12E-05	1.45E-05	1.25E-05	1.31E-05
61	1.12E-05	1.29E-05	1.13E-05	1.47E-05	1.26E-05	1.33E-05
62	1.14E-05	1.29E-05	1.15E-05	1.48E-05	1.28E-05	1.34E-05
63	1.15E-05	1.30E-05	1.17E-05	1.50E-05	1.30E-05	1.36E-05
64	1.17E-05	1.31E-05	1.18E-05	1.52E-05	1.33E-05	1.38E-05
65	1.19E-05	1.31E-05	1.20E-05	1.54E-05	1.35E-05	1.39E-05
66	1.20E-05	1.32E-05	1.22E-05	1.56E-05	1.37E-05	1.41E-05
67	1.22E-05	1.32E-05	1.24E-05	1.58E-05	1.39E-05	1.43E-05
68	1.24E-05	1.33E-05	1.26E-05	1.60E-05	1.41E-05	1.44E-05
69	1.26E-05	1.34E-05	1.28E-05	1.61E-05	1.43E-05	1.46E-05
70	1.28E-05	1.34E-05	1.29E-05	1.63E-05	1.46E-05	1.48E-05
71	1.29E-05	1.35E-05	1.31E-05	1.65E-05	1.48E-05	1.50E-05
72	1.31E-05	1.36E-05	1.33E-05	1.67E-05	1.50E-05	1.51E-05
73	1.33E-05	1.36E-05	1.35E-05	1.70E-05	1.53E-05	1.53E-05
74	1.35E-05	1.37E-05	1.38E-05	1.72E-05	1.55E-05	1.55E-05
75	1.37E-05	1.38E-05	1.40E-05	1.74E-05	1.57E-05	1.57E-05
76	1.39E-05	1.38E-05	1.42E-05	1.76E-05	1.60E-05	1.59E-05
77	1.41E-05	1.39E-05	1.44E-05	1.78E-05	1.62E-05	1.61E-05
78	1.43E-05	1.40E-05	1.46E-05	1.80E-05	1.65E-05	1.63E-05
79	1.46E-05	1.40E-05	1.48E-05	1.83E-05	1.68E-05	1.65E-05
80	1.48E-05	1.41E-05	1.51E-05	1.85E-05	1.70E-05	1.67E-05
81	1.50E-05	1.42E-05	1.53E-05	1.87E-05	1.73E-05	1.69E-05
82	1.52E-05	1.42E-05	1.55E-05	1.90E-05	1.76E-05	1.71E-05
83	1.54E-05	1.43E-05	1.58E-05	1.92E-05	1.79E-05	1.73E-05
84	1.57E-05	1.44E-05	1.60E-05	1.94E-05	1.82E-05	1.75E-05
85	1.59E-05	1.44E-05	1.63E-05	1.97E-05	1.84E-05	1.78E-05
86	1.62E-05	1.45E-05	1.65E-05	1.99E-05	1.87E-05	1.80E-05
87	1.64E-05	1.46E-05	1.68E-05	2.02E-05	1.90E-05	1.82E-05
88	1.66E-05	1.46E-05	1.70E-05	2.05E-05	1.94E-05	1.84E-05
89	1.69E-05	1.47E-05	1.73E-05	2.07E-05	1.97E-05	1.87E-05
90	1.72E-05	1.48E-05	1.76E-05	2.10E-05	2.00E-05	1.89E-05
91	1.74E-05	1.49E-05	1.78E-05	2.13E-05	2.03E-05	1.91E-05
92	1.77E-05	1.49E-05	1.81E-05	2.15E-05	2.06E-05	1.94E-05
93	1.79E-05	1.50E-05	1.84E-05	2.18E-05	2.10E-05	1.96E-05
94	1.82E-05	1.51E-05	1.87E-05	2.21E-05	2.13E-05	1.99E-05
95	1.85E-05	1.52E-05	1.90E-05	2.24E-05	2.16E-05	2.01E-05
96	1.88E-05	1.52E-05	1.93E-05	2.27E-05	2.20E-05	2.04E-05
97	1.91E-05	1.53E-05	1.96E-05	2.30E-05	2.24E-05	2.07E-05
98	1.94E-05	1.54E-05	1.99E-05	2.33E-05	2.27E-05	2.09E-05
99	1.97E-05	1.55E-05	2.02E-05	2.36E-05	2.31E-05	2.12E-05
100	2.00E-05	1.55E-05	2.05E-05	2.39E-05	2.35E-05	2.15E-05
101	2.03E-05	1.56E-05	2.09E-05	2.42E-05	2.38E-05	2.17E-05
102	2.06E-05	1.57E-05	2.12E-05	2.45E-05	2.42E-05	2.20E-05
103	2.09E-05	1.58E-05	2.15E-05	2.49E-05	2.46E-05	2.23E-05

104	2.12E-05	1.58E-05	2.19E-05	2.52E-05	2.50E-05	2.26E-05
105	2.15E-05	1.59E-05	2.22E-05	2.55E-05	2.54E-05	2.29E-05
106	2.19E-05	1.60E-05	2.26E-05	2.59E-05	2.59E-05	2.32E-05
107	2.22E-05	1.61E-05	2.30E-05	2.62E-05	2.63E-05	2.35E-05
108	2.26E-05	1.62E-05	2.33E-05	2.66E-05	2.67E-05	2.38E-05
109	2.29E-05	1.62E-05	2.37E-05	2.69E-05	2.72E-05	2.41E-05
110	2.33E-05	1.63E-05	2.41E-05	2.73E-05	2.76E-05	2.44E-05
111	2.36E-05	1.64E-05	2.45E-05	2.77E-05	2.81E-05	2.47E-05
112	2.40E-05	1.65E-05	2.49E-05	2.80E-05	2.85E-05	2.50E-05
113	2.44E-05	1.66E-05	2.53E-05	2.84E-05	2.90E-05	2.54E-05
114	2.48E-05	1.67E-05	2.57E-05	2.88E-05	2.95E-05	2.57E-05
115	2.52E-05	1.67E-05	2.62E-05	2.92E-05	3.00E-05	2.60E-05
116	2.56E-05	1.68E-05	2.66E-05	2.96E-05	3.04E-05	2.64E-05
117	2.60E-05	1.69E-05	2.70E-05	3.00E-05	3.10E-05	2.67E-05
118	2.64E-05	1.70E-05	2.75E-05	3.04E-05	3.15E-05	2.71E-05
119	2.68E-05	1.71E-05	2.79E-05	3.08E-05	3.20E-05	2.74E-05
120	2.72E-05	1.72E-05	2.84E-05	3.13E-05	3.25E-05	2.78E-05
121	2.76E-05	1.73E-05	2.89E-05	3.17E-05	3.31E-05	2.82E-05
122	2.81E-05	1.74E-05	2.94E-05	3.21E-05	3.36E-05	2.85E-05
123	2.85E-05	1.74E-05	2.99E-05	3.26E-05	3.42E-05	2.89E-05
124	2.90E-05	1.75E-05	3.04E-05	3.30E-05	3.47E-05	2.93E-05
125	2.94E-05	1.76E-05	3.09E-05	3.35E-05	3.53E-05	2.97E-05
126	2.99E-05	1.77E-05	3.14E-05	3.40E-05	3.59E-05	3.01E-05
127	3.04E-05	1.78E-05	3.19E-05	3.44E-05	3.65E-05	3.05E-05
128	3.09E-05	1.79E-05	3.25E-05	3.49E-05	3.71E-05	3.09E-05
129	3.14E-05	1.80E-05	3.30E-05	3.54E-05	3.77E-05	3.13E-05
130	3.19E-05	1.81E-05	3.36E-05	3.59E-05	3.84E-05	3.17E-05
131	3.24E-05	1.82E-05	3.42E-05	3.64E-05	3.90E-05	3.22E-05
132	3.29E-05	1.83E-05	3.48E-05	3.69E-05	3.97E-05	3.26E-05
133	3.34E-05	1.84E-05	3.54E-05	3.75E-05	4.03E-05	3.30E-05
134	3.40E-05	1.85E-05	3.60E-05	3.80E-05	4.10E-05	3.35E-05
135	3.45E-05	1.86E-05	3.66E-05	3.85E-05	4.17E-05	3.39E-05
136	3.51E-05	1.87E-05	3.73E-05	3.91E-05	4.24E-05	3.44E-05
137	3.57E-05	1.88E-05	3.79E-05	3.96E-05	4.31E-05	3.49E-05
138	3.62E-05	1.89E-05	3.86E-05	4.02E-05	4.39E-05	3.53E-05
139	3.68E-05	1.90E-05	3.92E-05	4.08E-05	4.46E-05	3.58E-05
140	3.74E-05	1.91E-05	3.99E-05	4.14E-05	4.54E-05	3.63E-05
141	3.80E-05	1.92E-05	4.06E-05	4.20E-05	4.61E-05	3.68E-05
142	3.87E-05	1.93E-05	4.14E-05	4.26E-05	4.69E-05	3.73E-05
143	3.93E-05	1.94E-05	4.21E-05	4.32E-05	4.77E-05	3.78E-05
144	3.99E-05	1.95E-05	4.28E-05	4.38E-05	4.85E-05	3.83E-05
145	4.06E-05	1.96E-05	4.36E-05	4.45E-05	4.94E-05	3.89E-05
146	4.13E-05	1.97E-05	4.44E-05	4.51E-05	5.02E-05	3.94E-05
147	4.19E-05	1.98E-05	4.52E-05	4.58E-05	5.11E-05	3.99E-05
148	4.26E-05	1.99E-05	4.60E-05	4.64E-05	5.19E-05	4.05E-05
149	4.33E-05	2.00E-05	4.68E-05	4.71E-05	5.28E-05	4.10E-05

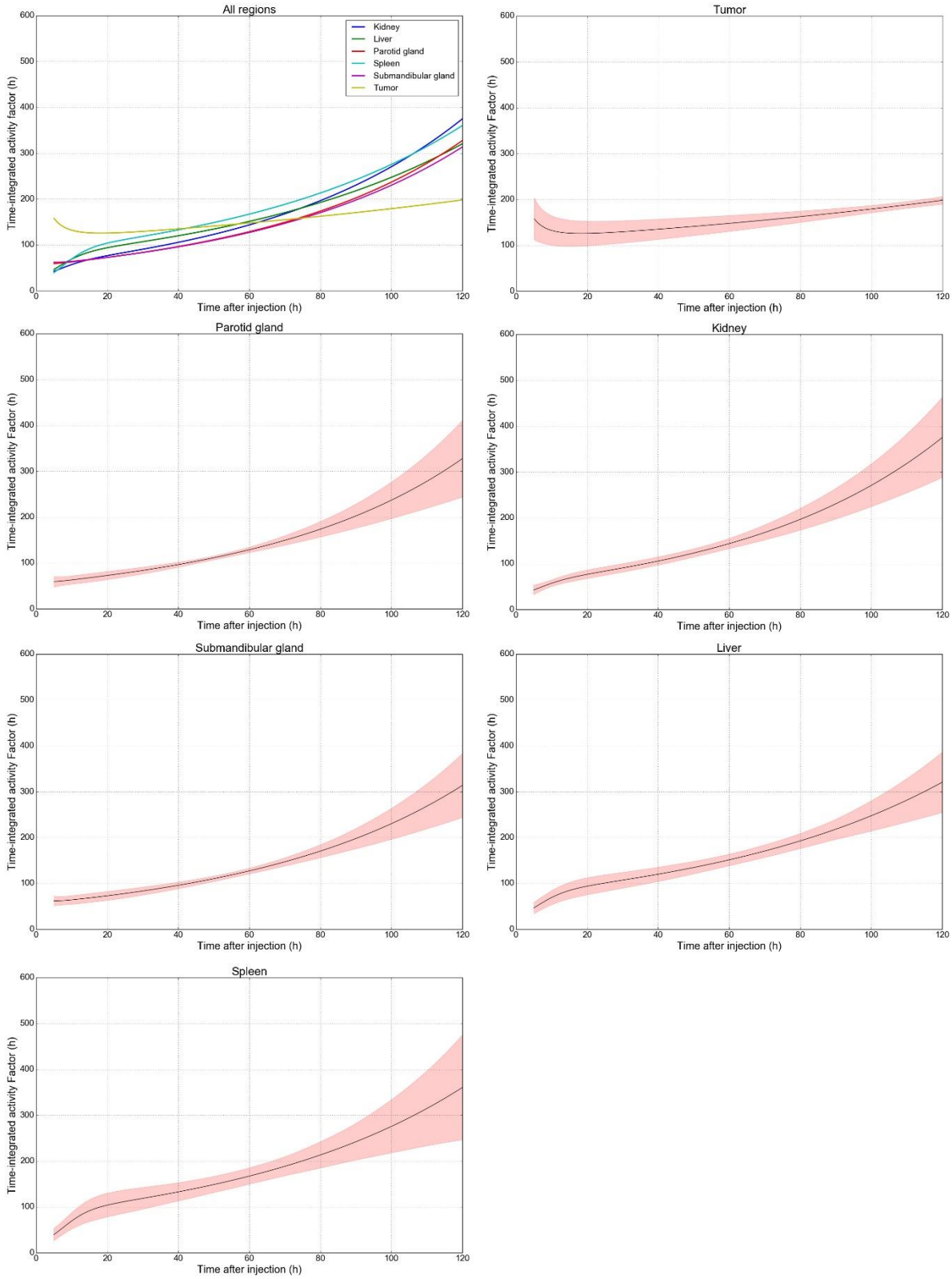
Supplemental Table 2 - Dose factors to convert single time point measurement of Activity Concentration (Bq/mL) into radiation absorbed dose (Gy) assuming a nominal tissue density of one gram per milliliter (*23*)

Image Time (hours)	Submandibular	Tumor	Parotid	Spleen	Kidney	Liver
5	16.4	25.7	18.2	32.1	22.8	28.5
6	14.9	24.6	16.2	29.7	19.5	27.4
7	14.0	23.9	14.8	27.8	16.9	26.3
8	13.8	23.3	13.8	26.7	14.8	25.5
9	13.7	22.9	13.3	26.1	13.1	25.1
10	13.8	22.6	13.0	25.5	12.4	24.6
11	13.9	22.3	12.8	25.2	12.2	24.1
12	13.9	22.0	12.7	25.0	12.2	23.6
13	13.9	21.7	12.5	24.7	12.2	23.1
14	13.9	21.5	12.3	24.6	12.2	22.9
15	13.8	21.3	12.1	24.5	12.3	22.6
16	13.7	21.1	11.9	24.3	12.3	22.3
17	13.6	20.8	11.6	24.1	12.3	22.0
18	13.5	20.6	11.4	23.8	12.2	21.7
19	13.3	20.4	11.2	23.5	12.1	21.4
20	13.2	20.2	11.0	23.1	11.9	21.0
21	13.0	20.0	10.7	22.7	11.8	20.6
22	12.7	19.8	10.5	22.3	11.6	20.3
23	12.5	19.6	10.2	21.9	11.4	19.9
24	12.3	19.4	10.0	21.4	11.2	19.5
25	12.0	19.2	9.7	21.0	11.0	19.1
26	11.8	18.9	9.4	20.5	10.9	18.7
27	11.5	18.7	9.1	20.0	10.7	18.3
28	11.2	18.5	8.8	19.5	10.5	17.9
29	10.9	18.3	8.6	19.1	10.3	17.5
30	10.6	18.1	8.3	18.6	10.1	17.1
31	10.4	17.9	8.0	18.1	10.0	16.7
32	10.1	17.7	7.7	17.6	9.8	16.3
33	9.8	17.5	7.5	17.1	9.6	16.0
34	9.5	17.3	7.2	16.6	9.4	15.7
35	9.2	17.0	6.9	16.1	9.2	15.3
36	8.9	16.8	6.7	15.6	9.0	15.0
37	8.6	16.6	6.4	15.1	8.9	14.7
38	8.4	16.4	6.1	14.7	8.7	14.3
39	8.1	16.2	5.8	14.3	8.5	14.0
40	7.8	16.0	5.6	14.0	8.4	13.7
41	7.5	15.8	5.3	13.6	8.3	13.4
42	7.3	15.6	5.0	13.3	8.2	13.1
43	7.0	15.4	4.8	13.0	8.1	12.7
44	6.8	15.2	4.5	12.7	7.9	12.4
45	6.6	14.9	4.3	12.4	7.8	12.1
46	6.4	14.7	4.2	12.1	7.7	11.8
47	6.2	14.5	4.0	11.8	7.6	11.5
48	6.0	14.3	3.9	11.6	7.5	11.2
49	5.8	14.1	3.9	11.3	7.4	10.9

50	5.6	13.9	3.9	11.1	7.4	10.6
51	5.4	13.7	3.9	10.9	7.3	10.3
52	5.3	13.5	3.9	10.8	7.3	10.1
53	5.2	13.3	4.0	10.7	7.2	9.8
54	5.1	13.1	4.0	10.6	7.2	9.6
55	5.0	12.8	4.1	10.5	7.2	9.4
56	4.9	12.6	4.2	10.4	7.3	9.2
57	4.9	12.4	4.3	10.3	7.3	9.1
58	4.9	12.2	4.4	10.2	7.4	8.9
59	5.0	12.0	4.5	10.2	7.5	8.7
60	5.0	11.8	4.7	10.2	7.7	8.6
61	5.1	11.6	4.9	10.1	7.8	8.5
62	5.1	11.4	5.1	10.2	8.0	8.4
63	5.2	11.2	5.3	10.2	8.2	8.3
64	5.3	11.0	5.6	10.2	8.5	8.2
65	5.3	10.8	5.8	10.3	8.7	8.2
66	5.4	10.5	6.1	10.4	8.9	8.1
67	5.5	10.3	6.3	10.5	9.1	8.1
68	5.7	10.1	6.6	10.5	9.3	8.1
69	5.8	9.9	6.9	10.7	9.5	8.1
70	6.0	9.7	7.2	10.8	9.7	8.1
71	6.2	9.5	7.5	11.0	10.0	8.1
72	6.4	9.3	7.8	11.2	10.2	8.1
73	6.6	9.1	8.1	11.5	10.4	8.1
74	6.9	8.9	8.4	11.8	10.6	8.1
75	7.1	8.7	8.7	12.0	10.8	8.1
76	7.3	8.5	9.0	12.3	11.1	8.2
77	7.6	8.3	9.4	12.6	11.3	8.2
78	7.8	8.1	9.7	12.8	11.5	8.3
79	8.1	7.9	10.0	13.1	11.7	8.4
80	8.4	7.7	10.3	13.4	12.0	8.5
81	8.6	7.5	10.7	13.6	12.2	8.6
82	8.9	7.3	11.0	13.9	12.4	8.8
83	9.1	7.1	11.4	14.2	12.6	8.9
84	9.4	7.0	11.8	14.5	12.9	9.0
85	9.7	6.8	12.2	14.7	13.1	9.1
86	10.1	6.6	12.5	15.0	13.3	9.3
87	10.4	6.4	12.9	15.3	13.6	9.4
88	10.8	6.3	13.3	15.6	13.8	9.7
89	11.1	6.1	13.7	16.0	14.1	9.9
90	11.5	5.9	14.1	16.3	14.3	10.1
91	11.8	5.8	14.6	16.7	14.5	10.5
92	12.2	5.6	15.0	17.0	14.8	10.8
93	12.5	5.5	15.4	17.4	15.0	11.1
94	12.9	5.3	15.8	17.8	15.3	11.4
95	13.3	5.2	16.3	18.2	15.5	11.7
96	13.6	5.1	16.7	18.6	15.8	12.1
97	14.0	4.9	17.1	19.0	16.1	12.4
98	14.3	4.8	17.6	19.4	16.3	12.7
99	14.7	4.7	18.0	19.8	16.6	13.0

100	15.1	4.6	18.5	20.1	16.8	13.4
101	15.4	4.5	18.9	20.5	17.1	13.7
102	15.8	4.4	19.4	20.9	17.3	14.0
103	16.2	4.4	19.8	21.3	17.6	14.3
104	16.5	4.3	20.3	21.7	17.8	14.6
105	16.9	4.2	20.7	22.1	18.1	15.0
106	17.3	4.2	21.2	22.4	18.4	15.3
107	17.7	4.1	21.6	22.8	18.6	15.6
108	18.0	4.1	22.1	23.2	18.9	15.9
109	18.4	4.0	22.6	23.6	19.2	16.2
110	18.8	4.0	23.0	24.0	19.4	16.6
111	19.2	4.0	23.5	24.3	19.7	16.9
112	19.5	4.0	24.0	24.8	20.0	17.2
113	19.9	4.0	24.5	25.2	20.3	17.5
114	20.3	4.1	24.9	25.6	20.5	17.8
115	20.7	4.1	25.4	26.0	20.8	18.2
116	21.0	4.1	25.9	26.4	21.1	18.5
117	21.4	4.2	26.4	26.9	21.3	18.8
118	21.8	4.3	26.9	27.3	21.6	19.1
119	22.2	4.3	27.4	27.7	21.9	19.4
120	22.6	4.4	27.9	28.1	22.2	19.7
121	22.9	4.5	28.4	28.6	22.4	20.0
122	23.3	4.6	28.9	29.0	22.7	20.4
123	23.7	4.7	29.4	29.4	23.0	20.7
124	24.1	4.8	29.9	29.8	23.3	21.0
125	24.5	4.9	30.4	30.2	23.5	21.3
126	24.9	5.1	30.9	30.7	23.8	21.6
127	25.3	5.2	31.4	31.1	24.1	22.0
128	25.6	5.3	31.9	31.5	24.4	22.3
129	26.0	5.5	32.4	31.9	24.6	22.6
130	26.4	5.6	33.0	32.3	24.9	22.9
131	26.8	5.8	33.5	32.7	25.2	23.3
132	27.2	6.0	34.0	33.2	25.5	23.6
133	27.6	6.2	34.5	33.6	25.8	23.9
134	28.0	6.4	35.1	34.0	26.0	24.2
135	28.4	6.6	35.6	34.4	26.3	24.6
136	28.7	6.8	36.1	34.8	26.6	24.9
137	29.1	7.0	36.7	35.2	26.9	25.2
138	29.5	7.2	37.2	35.6	27.2	25.5
139	29.9	7.4	37.7	36.0	27.5	25.9
140	30.3	7.7	38.3	36.5	27.8	26.2
141	30.7	7.9	38.8	36.9	28.1	26.5
142	31.1	8.1	39.4	37.3	28.4	26.8
143	31.5	8.3	39.9	37.7	28.7	27.1
144	31.9	8.5	40.5	38.1	29.0	27.5
145	32.3	8.8	41.0	38.5	29.3	27.8
146	32.7	9.0	41.6	38.9	29.5	28.1
147	33.1	9.2	42.2	39.3	29.8	28.4
148	33.5	9.4	42.7	39.7	30.1	28.7
149	33.8	9.7	43.3	40.1	30.4	29.0

Supplemental Table 3 - Mean absolute error of population predictions for each organ and time point expressed as a percentage out of 100%


All regions
Kidney
Liver
Parotid gland
Spleen
Submandibular gland
Tumor
Time-integrated activity factor (h)
Time after injection (h)
Tumor
Time-integrated activity Factor (h)
Time after injection (h)
Parotid gland
Time-integrated activity Factor (h)
Time after injection (h)
Kidney
Time-integrated activity Factor (h)
Time after injection (h)
Submandibular gland
Time-integrated activity Factor (h)
Time after injection (h)
Liver
Time-integrated activity Factor (h)
Time after injection (h)
Spleen
Time-integrated activity Factor (h)
Time after injection (h)

Supplemental Figure 2 - Tissue-specific time integrated activity factors for all considered organs. Average deviation from the mean of normalized population values is given in shaded region for each post-treatment image time

$$A(t) = -A_1 * e^{-k_1 * t} + A_2 * e^{-k_2 * t} + A_3 * e^{-k_3 * t}$$

$$-A_1 = A_2 + A_3$$

Generic tri-exponential equation used to define organ and tumor time-activity curves. Note negative parameter A_1 denotes uptake phase and the sum of $A_2 + A_3$ equal to $-A_1$ which results in curves that pass through zero at $t=0$ and approaches zero as $t=\infty$.

$$Act(t) = S_p(t_N) * \left(-A_{p,1} * e^{-k_{p,1} * t} + A_{p,2} * e^{-k_{p,2} * t} + A_{p,3} * e^{-k_{p,3} * t}\right)$$

$$S_p(t_N) = \frac{Act(t)}{\left(-A_{p,1} * e^{-k_{p,1} * t} + A_{p,2} * e^{-k_{p,2} * t} + A_{p,3} * e^{-k_{p,3} * t}\right)}$$

The time-dependent scaling factor $S_p(t_N)$ is determined for each time-activity curve to normalize the amplitude to match the single time point measurement $Act(t)$.

$$\tilde{A}_p = \int_0^{\infty} S_p(t_N) * \left(-A_{p,1} * e^{-k_{p,1} * t} + A_{p,2} * e^{-k_{p,2} * t} + A_{p,3} * e^{-k_{p,3} * t}\right) * dt$$

Time-integrated activity is taken as the area under the curve from $t=0$ to $t=\infty$ for the normalized curve for each region in the population model.

$$\tilde{A}_p = S_p(t_N) * \left(\frac{-A_{p,1}}{k_{p,1}} + \frac{A_{p,2}}{k_{p,2}} + \frac{A_{p,3}}{k_{p,3}}\right)$$

For equations of exponential decay, the integral may be solved as the ratio of the amplitude parameter, A, over the rate parameter, k. In this case the time-integral of a single region, $\tilde{A}_p$, is taken as the sum of the three exponential phases is taken and multiplied by the time-dependent scaling factor, $S_p(t_N)$.

$$\overline{\tilde{A}_p} = \frac{\sum_{p=1}^{n} S_p(t_N) * \left(\frac{-A_{p,1}}{k_{p,1}} + \frac{A_{p,2}}{k_{p,2}} + \frac{A_{p,3}}{k_{p,3}}\right)}{n}$$

To assess as a population model, the normalized area under each time-activity curve, $\tilde{A}_p$, is assessed for mean across the cohort of n cases.