

Supplementary Material: Autofluorescence Imaging of Treatment Response in Neuroendocrine Tumor Organoids

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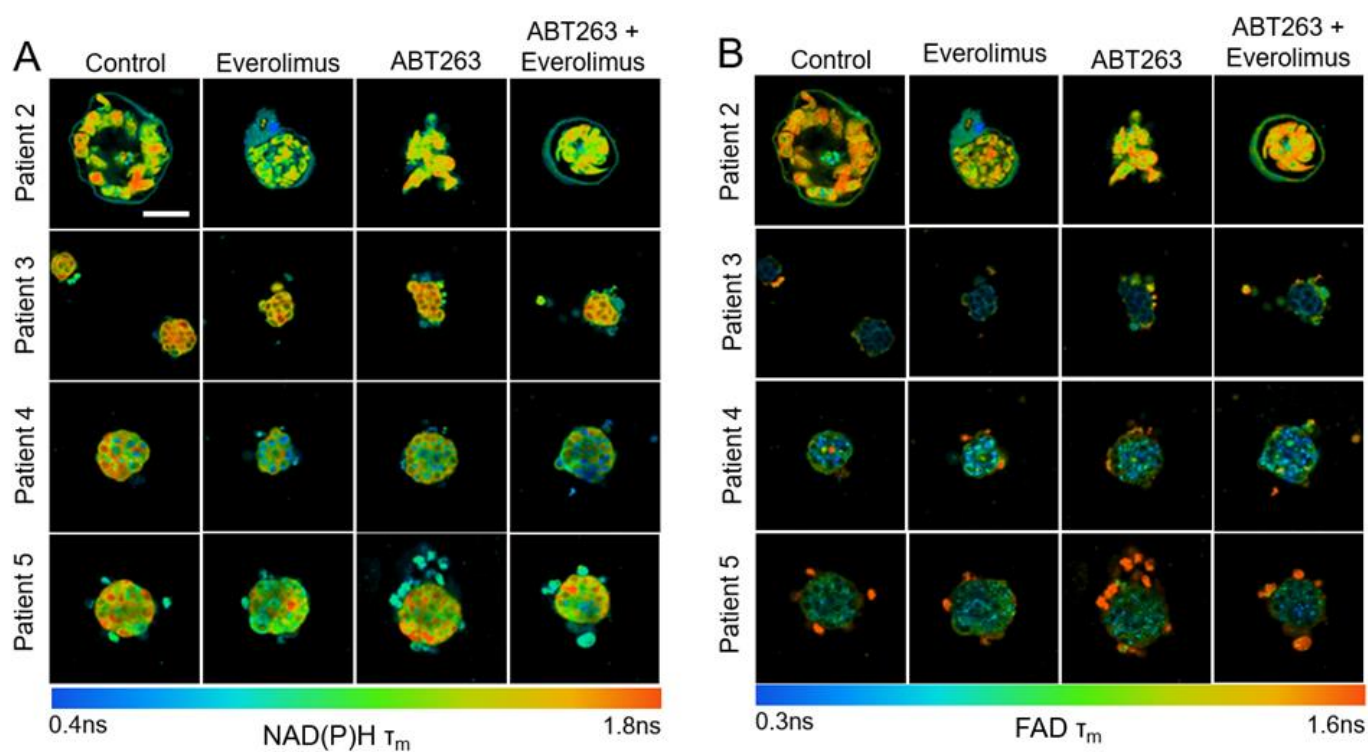


Figure S1. Representative images of NAD(P)H and FAD mean lifetime (τ_m) images for PDCOs from Patients 2-5; scale bar 50 μ m. ns indicates “nanoseconds”.

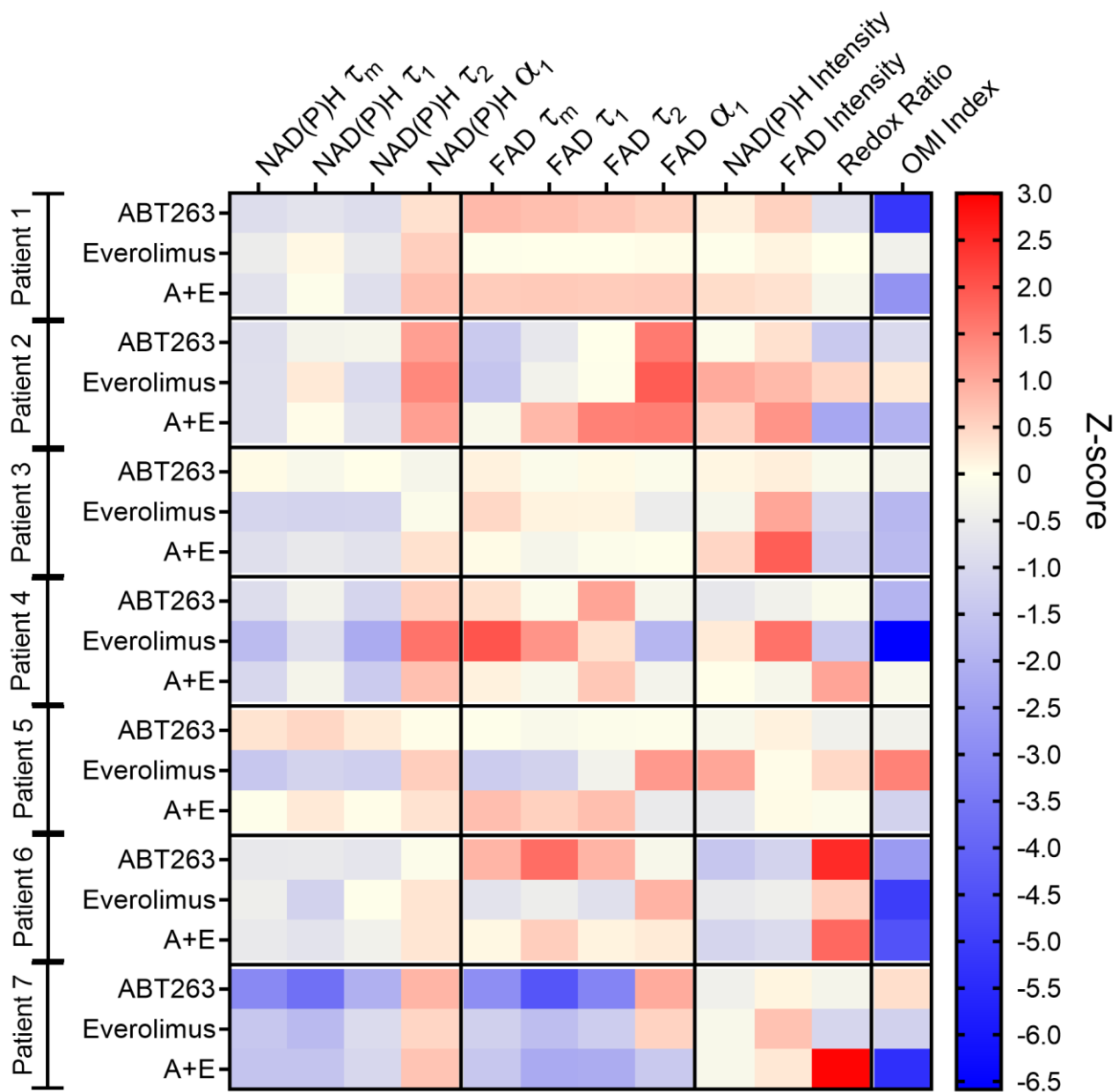


Figure S2. Heatmap of z-scores $[(\text{treatment}_{\text{mean}} - \text{control}_{\text{mean}}) / \text{control}_{\text{standard deviation}}]$ for all optical metabolic imaging variables in PDCOs from patients 1-7. These z-scores reflect changes in the treatment condition (row labels, left) compared to control PDCOs from the same patient (patient number, left categories). Heterogeneity in treatment response can be seen in optical metabolic imaging variables (column labels, top) across PDCO lines. "A+E" indicates ABT263 plus everolimus.

Table S1. Mean and 95% confidence interval for all variables collected with optical metabolic imaging. ps, picoseconds; c.u., calibrated units

Sample	Treatment	NAD(P)H τ_m		NAD(P)H τ_1		NAD(P)H τ_2		NAD(P)H α_1		FAD τ_m		FAD τ_1		FAD τ_2		FAD α_1		NAD(P)H Intensity		FAD Intensity		Normalized Redox Ratio (c.u.)	
		Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Patient 1	Control	1238.06	15.29	626.77	11.15	2499.87	24.86	66.09	0.50	867.85	46.01	364.21	17.76	1923.26	95.38	51.41	2.43	1273.33	70.13	407.83	37.86	1.00	0.05
	ABT263	1154.42	11.28	576.65	8.32	2364.09	18.94	67.15	0.38	1099.04	28.95	446.36	9.22	2306.32	47.78	59.49	1.21	1344.60	59.83	531.38	36.00	0.75	0.04
	Everolimus	1191.58	12.91	631.88	11.70	2405.33	23.90	67.84	0.40	856.97	55.24	363.04	22.24	1913.80	119.51	51.87	3.28	1257.10	61.62	436.89	44.86	1.00	0.07
	ABT263 + Everolimus	1167.21	9.63	622.18	9.33	2371.34	15.74	68.39	0.36	1037.82	24.18	431.90	8.83	2270.72	43.32	60.57	1.18	1445.48	46.06	485.28	31.68	0.93	0.04
Patient 2	Control	1281.81	24.51	650.68	32.81	2139.38	28.27	57.48	0.70	1528.35	15.40	615.81	11.42	2728.54	13.86	56.64	0.52	2772.48	103.90	2480.23	98.75	1.00	0.01
	ABT263	1223.33	37.33	622.55	41.13	2118.29	35.47	59.63	1.37	1469.66	23.99	596.03	22.12	2728.12	26.99	58.87	1.45	2747.50	173.92	2573.23	196.15	0.95	0.04
	Everolimus	1225.44	17.35	672.16	26.74	2065.46	20.69	60.17	0.84	1464.63	12.98	604.97	13.33	2727.28	17.30	59.38	0.75	3056.82	95.25	2699.85	113.35	1.02	0.04
	ABT263 + Everolimus	1225.44	19.74	652.87	29.71	2079.62	23.81	59.64	1.01	1520.94	17.07	641.78	15.45	2784.97	16.75	58.81	0.94	2920.82	155.54	2819.20	136.35	0.91	0.05
Patient 3	Control	1668.27	21.98	836.20	18.79	2811.29	26.56	57.64	0.51	984.75	20.83	390.25	7.67	2415.09	27.66	70.11	0.60	2247.20	66.06	615.81	25.73	1.00	0.04
	ABT263	1671.19	23.95	824.57	29.17	2812.06	35.02	57.19	0.65	995.14	18.27	387.54	7.64	2420.20	25.09	69.89	0.61	2268.42	64.24	631.45	34.88	0.98	0.04
	Everolimus	1588.36	22.35	764.28	21.92	2712.22	24.50	57.44	0.56	1015.72	21.06	393.53	7.66	2426.58	24.81	69.12	0.68	2195.82	70.03	704.33	33.78	0.86	0.04
	ABT263 + Everolimus	1607.34	26.79	798.41	21.85	2745.44	31.89	58.21	0.68	987.49	18.81	383.68	6.69	2406.53	23.56	70.01	0.65	2350.59	70.76	776.77	45.14	0.84	0.04
Patient 4	Control	1139.64	25.54	403.01	9.87	2435.45	25.05	63.45	0.64	414.19	16.93	164.96	14.49	1393.99	22.63	77.87	1.09	1998.95	54.73	1550.77	54.48	1.00	0.03
	ABT263	1005.85	27.08	382.46	13.10	2275.34	32.63	65.43	1.27	449.10	17.46	154.89	5.23	1535.70	50.89	76.35	1.09	1799.18	82.14	1433.61	88.62	0.98	0.06
	Everolimus	872.22	64.48	353.36	21.99	2114.63	67.23	69.59	2.76	613.90	90.74	271.43	85.84	1440.32	70.36	65.72	5.11	2073.10	169.78	2078.93	280.46	0.76	0.09
	ABT263 + Everolimus	982.11	40.02	385.23	16.28	2236.96	45.53	66.20	1.47	428.27	16.10	149.16	6.75	1480.09	48.07	75.80	1.49	2000.14	91.24	1473.20	128.45	1.18	0.18
Patient 5	Control	1411.11	23.76	641.71	19.78	2694.89	31.09	60.82	0.60	712.63	23.71	296.24	15.14	1807.60	25.06	70.64	0.81	1896.37	48.78	931.95	37.42	1.00	0.04
	ABT263	1471.25	35.37	716.11	32.72	2753.49	48.32	60.90	0.72	705.03	27.77	275.45	14.84	1787.94	30.52	70.25	1.07	1820.98	78.99	977.60	43.04	0.88	0.03
	Everolimus	1132.41	38.06	456.41	19.94	2378.85	39.13	63.56	1.51	459.33	15.74	153.93	4.13	1737.24	39.66	78.44	1.73	2309.18	122.85	939.53	61.60	1.14	0.06
	ABT263 + Everolimus	1402.25	36.29	679.93	26.61	2699.55	45.21	62.36	0.78	857.20	35.26	362.33	22.24	1959.30	62.40	67.08	1.05	1656.18	82.86	945.76	87.01	0.97	0.06
Patient 6	Control	1147.63	10.60	444.54	4.37	2419.76	16.74	63.34	0.49	301.43	13.09	109.90	5.21	1632.83	26.08	88.15	0.39	1941.77	44.04	528.68	27.42	1.00	0.04
	ABT263	1094.02	14.69	423.57	6.55	2323.20	23.65	62.95	0.83	396.05	25.08	184.50	15.96	1824.26	53.00	87.44	0.58	1396.95	128.67	267.47	36.99	1.73	0.10
	Everolimus	1108.49	11.51	402.09	5.61	2412.86	10.04	64.59	0.37	222.07	11.10	89.66	4.47	1457.96	23.63	91.09	0.37	1726.16	44.06	426.04	23.26	1.16	0.07
	ABT263 + Everolimus	1097.15	8.14	418.12	3.44	2367.90	9.72	64.50	0.38	310.01	11.76	134.62	6.60	1662.41	24.84	88.93	0.32	1541.87	59.14	310.36	18.68	1.52	0.06
Patient 7	Control	1324.99	14.34	540.34	6.94	2617.39	20.51	59.70	0.60	730.50	11.95	301.56	3.82	2078.79	18.66	73.77	0.63	1031.76	24.99	579.68	22.09	1.00	0.03
	ABT263	996.77	17.09	348.65	6.37	2302.28	33.04	63.58	1.04	468.09	13.30	175.72	3.07	1633.81	24.75	78.33	0.89	954.84	35.44	598.73	32.03	0.94	0.04
	Everolimus	1168.22	23.97	447.85	11.39	2472.24	31.76	61.82	0.63	621.11	17.63	253.58	7.19	1896.86	31.44	76.16	0.59	995.70	32.26	696.21	26.32	0.80	0.02
	ABT263 + Everolimus	1160.68	22.58	460.30	13.01	2456.02	30.68	62.80	0.59	600.15	34.74	238.70	14.01	1777.86	89.61	67.26	3.24	995.49	30.04	623.84	39.96	1.56	0.26

