

**Supplementary Table 3. Tukey range analysis of substrate-dependent oxygen consumption and enzymatic assays in Figure 2-4**

GDH - deamination					Q (critical) = Q (0.05) * SQRT( SUM VARIANCE/ Q(s)											significant x vs y?										
	Mean	Std error	variance	Sum variance	0	1	2	4	8	12	13	14	16	20	0	1	2	4	8	12	13	14	16			
0	541.5863	42.39512	5392.038	40722.64	130.7814										0											
1	540.4073	2.853918	24.43454			1.2									1	FALSE										
2	490.4609	34.90898	3655.911			51.1	49.9								2	FALSE	FALSE									
4	475.6699	55.6587	9293.673			65.9	64.7	14.8							4	FALSE	FALSE	FALSE								
8	526.1522	9.526468	272.2608			15.4	14.3	35.7	50.5						8	FALSE	FALSE	FALSE	FALSE							
12	352.1222	25.11775	1892.705			189.5	188.3	138.3	123.5	174.0					12	TRUE	TRUE	TRUE	FALSE	TRUE						
13	408.4673	55.65344	9291.915			133.1	131.9	82.0	67.2	117.7	56.3				13	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE					
14	460.8789	55.22887	9150.684			80.7	79.5	29.6	14.8	65.3	108.8	52.4			14	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE				
16	472.8832	17.49418	918.1391			68.7	67.5	17.6	2.8	53.3	120.8	64.4	12.0		16	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE		
20	509.7535	16.64209	830.8778			31.8	30.7	19.3	34.1	16.4	157.6	101.3	48.9	36.9	20	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	
OGDH					0	1	2	4	8	12	13	14	16	20	0	1	2	4	8	12	13	14	16			
0	118.8532	15.96327	764.4776	2730.855	33.86705										0											
1	119.8821	8.260377	204.7015			1.0									1	FALSE										
2	133.1297	6.536441	128.1752			14.3	13.2								2	FALSE	FALSE									
4	153.5584	4.981375	74.4423			34.7	33.7	20.4							4	TRUE	FALSE	FALSE								
8	142.283	5.587181	93.64978			23.4	22.4	9.2	11.3						8	FALSE	FALSE	FALSE	FALSE							
12	144.298	4.563966	62.48936			25.4	24.4	11.2	9.3	2.0					12	FALSE	FALSE	FALSE	FALSE	FALSE						
13	160.2251	17.77988	948.3721			41.4	40.3	27.1	6.7	17.9	15.9				13	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE					
14	137.5241	11.56847	401.4888			18.7	17.6	4.4	16.0	4.8	6.8	22.7			14	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE				
16	131.8971	2.540261	19.35877			13.0	12.0	1.2	21.7	10.4	12.4	28.3	5.6		16	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE		
20	100.9218	3.351583	33.69933			17.9	19.0	32.2	52.6	41.4	43.4	59.3	36.6	31.0	20	FALSE	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE		
Fumarase					0	1	2	4	8	12	13	14	16	20	0	1	2	4	8	12	13	14	16			
0	662.5185	25.36343	1929.911	27199.04	106.8821										0											
1	496.2963	25.23653	1910.648			166.2									1	TRUE										
2	552.7111	37.48481	4215.332			109.8	56.4								2	TRUE	FALSE									
4	633.0074	15.21536	694.5212			29.5	136.7	80.3							4	FALSE	TRUE	FALSE								
8	614.3407	13.6527	559.1888			48.2	118.0	61.6	18.7						8	FALSE	TRUE	FALSE	FALSE							
12	554.6963	52.19489	8172.921			107.8	58.4	2.0	78.3	59.6					12	TRUE	FALSE	FALSE	FALSE	FALSE						
13	591.1407	23.51109	1658.314			71.4	94.8	38.4	41.9	23.2	36.4				13	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE					
14	579.358	33.22897	3312.494			83.2	83.1	26.6	53.6	35.0	24.7	11.8			14	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE				
16	561.2741	35.15217	3707.025			101.2	65.0	8.6	71.7	53.1	6.6	29.9	18.1		16	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE		
20	561.5704	18.6072	1038.683			100.9	65.3	8.9	71.4	52.8	6.9	29.6	17.8	0.3	20	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE		
NAD-ME					0	1	2	4	8	12	13	14	16	20	0	1	2	4	8	12	13	14	16			
0	180.4394	4.291263	55.24481	3885.943	40.39953										0											
1	202.3044	15.77048	746.1237			21.9									1	FALSE										
2	232.1543	3.859637	44.6904			51.7	29.8								2	TRUE	FALSE									
4	235.3698	2.342711	16.46488			54.9	33.1	3.2							4	TRUE	FALSE	FALSE								
8	199.5713	3.195724	30.63795			19.1	2.7	32.6	35.8						8	FALSE	FALSE	FALSE	FALSE							
12	175.0697	10.73558	345.7577			5.4	27.2	57.1	60.3	24.5					12	FALSE	FALSE	TRUE	TRUE	FALSE						
13	156.3666	10.0476	302.8629			24.1	45.9	75.8	79.0	43.2	18.7				13	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE					
14	175.5573	23.96484	1722.94			4.9	26.7	56.6	59.8	24.0	0.5	19.2			14	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE	FALSE				
16	202.6259	5.60963	94.40384			22.2	0.3	29.5	32.7	3.1	27.6	46.3	27.1		16	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE			
20	183.5959	13.25163	526.8169			3.2	18.7	48.6	51.8	16.0	8.5	27.2	8.0	19.0	20	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE		

Aconitase						0 1 2 4 8 12 13 14 16 20						0 1 2 4 8 12 13 14 16															
0	350.7074	19.36995	1125.585	24651.2	101.753	0											0										
1	376.1093	36.9336	4092.273			1	25.4											1	FALSE								
2	427.7599	15.91162	759.5386			2	77.1	51.7										2	FALSE	FALSE							
4	371.8864	30.78682	2843.484			4	21.2	4.2	55.9								4	FALSE	FALSE	FALSE							
8	368.8103	20.60472	1273.663			8	18.1	7.3	58.9	3.1						8	FALSE	FALSE	FALSE	FALSE							
12	322.5509	49.91781	7475.362			12	28.2	53.6	105.2	49.3	46.3				12	FALSE	FALSE	TRUE	FALSE	FALSE							
13	263.5584	35.64812	3812.366			13	87.1	112.6	164.2	108.3	105.3	59.0		13	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE							
14	254.6088	25.51913	1953.678			14	96.1	121.5	173.2	117.3	114.2	67.9	8.9		14	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE					
16	392.8189	15.22878	695.7469			16	42.1	16.7	34.9	20.9	24.0	70.3	129.3	138.2		16	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE	TRUE			
20	310.0857	14.3701	619.4997			20	40.6	66.0	117.7	61.8	58.7	12.5	46.5	55.5	82.7		20	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	

CysS						0 1 2 4 8 12 13 14 16 20						0 1 2 4 8 12 13 14 16																
0	683.7597	40.11746	4828.231	215484	300.84	0											0											
1	710.7611	7.291484	159.4972			1	27.0										1	FALSE										
2	828.7936	94.11657	26573.79			2	145.0	118.0								2	FALSE	FALSE										
4	718.7747	74.09742	16471.29			4	35.0	8.0	110.0						4	FALSE	FALSE	FALSE										
8	599.5579	26.62397	2126.507			8	84.2	111.2	229.2	119.2					8	FALSE	FALSE	FALSE	FALSE									
12	848.7684	96.44606	27905.53			12	165.0	138.0	20.0	130.0	249.2				12	FALSE	FALSE	FALSE	FALSE	FALSE								
13	976.2751	182.6344	100066			13	292.5	265.5	147.5	257.5	376.7	127.5			13	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE							
14	811.7006	1.918132	11.03769			14	127.9	100.9	17.1	92.9	212.1	37.1	164.6		14	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE					
16	825.8329	70.43588	14883.64			16	142.1	115.1	3.0	107.1	226.3	22.9	150.4	14.1		16	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE			
20	1082.07	86.52265	22458.51			20	398.3	371.3	253.3	363.3	482.5	233.3	105.8	270.4	256.2		20	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	

Glycine-dependent O2 consumption						0 1 2 4 8 12 13 14 16 20						0 1 2 4 8 12 13 14 16																
0	37.71667	5.292464	84.03053	227.3415	9.771639	0											0											
1	27.27	0.639557	1.2271			1	10.4										1	TRUE										
2	24.84333	1.578452	7.474533			2	12.9	2.4								2	TRUE	FALSE										
4	19.30667	0.749363	1.684633			4	18.4	8.0	5.5						4	TRUE	FALSE	FALSE										
8	14.75	0.672111	1.3552			8	23.0	12.5	10.1	4.6					8	TRUE	TRUE	TRUE	FALSE									
12	4.943333	0.776431	1.808533			12	32.8	22.3	19.9	14.4	9.8				12	TRUE	TRUE	TRUE	TRUE	TRUE								
13	11.38667	2.36856	16.83023			13	26.3	15.9	13.5	7.9	3.4	6.4			13	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE							
14	17.52333	4.38271	57.62443			14	20.2	9.7	7.3	1.8	2.8	12.6	6.1		14	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE						
16	31.26333	3.478766	36.30543			16	6.5	4.0	6.4	12.0	16.5	26.3	19.9	13.7		16	FALSE	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE			
20	36.15333	2.516667	19.00083			20	1.6	8.9	11.3	16.8	21.4	31.2	24.8	18.6	4.9		20	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	

NADH-dependent O2 consumption						0 1 2 4 8 12 13 14 16 20						0 1 2 4 8 12 13 14 16															
0	85.00667	8.152761	199.4025	505.69	14.57372	0											0										
1	76.52	1.700157	8.6716			1	8.5										1	FALSE									
2	71.97333	3.278548	32.24663			2	13.0	4.5								2	FALSE	FALSE									
4	73.72	1.805187	9.7761			4	11.3	2.8	1.7						4	FALSE	FALSE	FALSE									
8	67.78667	3.878446	45.12703			8	17.2	8.7	4.2	5.9					8	TRUE	FALSE	FALSE	FALSE								
12	60.17667	2.181546	14.27743			12	24.8	16.3	11.8	13.5	7.6				12	TRUE	TRUE	FALSE	FALSE	FALSE							
13	56.13	4.736342	67.2988			13	28.9	20.4	15.8	17.6	11.7	4.0			13	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE						
14	60.37333	2.860264	24.54333			14	24.6	16.1	11.6	13.3	7.4	0.2	4.2		14	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE				
16	62.57333	3.718083	41.47243			16	22.4	13.9	9.4	11.1	5.2	2.4	6.4	2.2		16	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE		
20	80.48	4.577994	62.8741			20	4.5	4.0	8.5	6.8	12.7	20.3	24.4	20.1	17.9		20	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE	