



**Gly/TCA/nucleotide (Central Metabolism Profile)**

**Service Code: GTN**

**Summary:** Profile of Central Metabolism, including glycolysis, pentose-phosphate shunt, TCA cycle and nucleotide pools. LCMS detection includes a one step liquid-liquid organic solvent extraction of cultured cells, tissues or plasma, and separation on a 1mm x150mm HILIC specific column in a 35 min cycle. All analytes are measured by ESI<sup>-</sup> ionization on a LC-QTOF mass spectrometer and normalized to tissue weight, volume or cell proteins. CV's are generally 15%.

**Container:** 1.5mL Micro Tube or equivalent

**Normal Volume:** Plasma (100 µL) Tissue (50-100 mg); Cell (1.5E7).

**Minimal Volume:** Plasma (50 µL) Tissue (30 mg); Cells (~2.5E6)

**Sample Collection:** Please see our detailed sample collection protocol on the Michigan Regional Comprehensive Metabolomics Resource Core (MRC<sup>2</sup>) website before preparing samples for analysis or contact the core director at the number below for details.

**Reference:** [Matthew A. Lorenz](#), [Charles F. Burant](#), and [Robert T. Kennedy](#) (2011) "Reducing Time and Increasing Sensitivity in Sample Preparation for Adherent Mammalian Cell Metabolomics", *Anal. Chem.* 83(9): 3406–3414.

**Table I: Analytes reported with quantitative measurement** (Additional Gly-TCA metabolites (Lactate, Fumarate, Alpha ketoglutarate) may be obtained for an additional cost by selecting TCA-Supplement in MiCores.)

Analyte	Abbr.	Mol Formula	LOQ(µM)
Acetyl-CoA	aCoA	C <sub>23</sub> H <sub>38</sub> N <sub>7</sub> O <sub>17</sub> P <sub>3</sub> S	1
Citrate/Isocitrate combined	Cit/i-Cit	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	1
Succinate	Suc	C <sub>4</sub> H <sub>6</sub> O <sub>4</sub>	1
Malate	Mal	C <sub>4</sub> H <sub>6</sub> O <sub>5</sub>	1
2-Phosphoglycerate/3-Phosphoglycerate combined	2PG/3PG	C <sub>3</sub> H <sub>7</sub> O <sub>7</sub> P	1
Phosphoenolpyruvate	PEP	C <sub>3</sub> H <sub>5</sub> O <sub>6</sub> P	1
Adenosine monophosphate	AMP	C <sub>10</sub> H <sub>14</sub> N <sub>5</sub> O <sub>7</sub> P	1
Adenosine diphosphate	ADP	C <sub>15</sub> H <sub>23</sub> N <sub>5</sub> O <sub>14</sub> P <sub>2</sub>	1
Adenosine triphosphate	ATP	C <sub>10</sub> H <sub>16</sub> N <sub>5</sub> O <sub>13</sub> P <sub>3</sub>	1
Flavin adenine dinucleotide	FAD	C <sub>27</sub> H <sub>33</sub> N <sub>9</sub> O <sub>15</sub> P <sub>2</sub>	1



Table I, continued

Nicotinamide adenine dinucleotide	NAD	$C_{21}H_{28}N_7O_{14}P_2$	1
Nicotinamide adenine dinucleotide, reduced	NADH	$C_{21}H_{29}N_7O_{14}P_2$	1
Nicotinamide adenine dinucleotide phosphate	NADP	$C_{21}H_{29}N_7O_{17}P_3$	1
Nicotinamide adenine dinucleotide phosphate, reduced	NADPH	$C_{21}H_{30}N_7O_{17}P_3$	1
Erythrose 4-phosphate	E4P	$C_4H_9O_7P$	1
Ribulose 5-phosphate/Xylulose 5-phosphate/ribose-5-phosphate combined	R5P/X5P/Ru5P	$C_5H_{11}O_8P$	1
6-phosphogluconate	6PG	$C_6H_{13}O_{10}P$	1
Sedoheptulose 7-phosphate	S7P	$C_7H_{15}O_{10}P$	1
Fructose-6-phosphate + glucose-6-phosphate	F6P/G6P	$C_6H_{13}O_9P$	1
Fructose-bisphosphate	FBP	$C_6H_{14}O_{12}P_2$	1

NOTE: Metabolites in this assay may be below the detection limit in some samples, especially plasma and samples with less than 3 million cells.