

CanPath Biosamples Reference Guide

This reference guide summarizes available CanPath biosamples, common analysis methods, biomarkers, and sample requirements for researchers.

For full details, visit the [CanPath Portal](https://canpath.ca) or contact the CanPath Access Office at apply@canpath.ca.

Available Biosamples

Sample Type	Possible Analysis Method	# of Markers per Test	Possible Biomarkers	Sample Amount Required
Plasma & Serum	Luminex®	40 – 500	Cytokines, chemokines, growth factors, MMP, disease specific panels, and more	25µL-125 µL
	Blood Chemistry Sample study – Weaver et al. (2023) (used biosample derived data)	7	CRP, creatinine, ALT, albumin, lipids (Total Cholesterol, HDL, LDL)	500 µL
	Chemiluminescent immunoassays on the Liaison analyzer (DiaSorin Inc., Stillwater MN, USA) Sample study – Hundemer et al. (2024)	2	(clinical) Aldosterone, renin	500 µL
	NMR Sample study: Gu et al. (2018)	220+	Metabolomics	350 µL
	OLink	48-5400	Panels for cardiovascular, oncology, inflammation, biological process, neurology.	20 µL
	ELISA / Electrochemiluminescence Immunoassay (ECLIA)	1	Wide variety of cytokines, inflammation markers, lipid markers (e.g. apo-B),	20 µL - 500 µL

Sample Type	Possible Analysis Method	# of Markers per Test	Possible Biomarkers	Sample Amount Required
	<i>Sample study: Bernatsky et al. (2017)</i>		ANA & anti-citrullinated antibodies (ACPA), Bone sialoproteins, apoB, serology, melatonin	
	<i>Sample study – Kelemen et al. (2014)</i>			
	Liquid Chromatography- (LC) Multiplex Reaction Monitoring (MRM) Mass Spectrometry (MS)	100's	Proteomics including analysis of post-translational modifications	5 µL
	LC-MS / High Performance Liquid Chromatography (HPLC) / Ultra-High Performance Liquid Chromatography (UHPLC)	100's	Pesticide Exposure, proteomics, metabolomics, lipidomics,	30 µL - 250 µL
	<i>Sample study: Crystal et al. (2022)</i>			
	TLC	1+	Lipids	250 µL
Urine	<i>Sample study: Newell et al. (2021)</i>			
	LC-MS/ UPLC	100's	Metabolomics,	200 µL
	UPLC-MS-MS	1+	toxicology	200 µL - 500 µL
	<i>Sample study: Crystal et al. (2022)</i>			
	ELISA*	1	Melatonin, SPARC, Survivin, SLIT-2, Uromodulin	10 µL – 100 µL
	<i>Sample study: Troyanov et al. (2016)</i>			
DNA	(clinical) urine chemistry panel	4	Creatinine, sodium, potassium, microalbumin	1 mL
	qPCR	1+	gDNA levels, copy DNA, epigenetics, telomere length	5ng - 30 ng
	Whole Genome Sequencing	~3 billion		1 ug
	Axiom Genotype Platform (e.g. UK Biobank Genechip from Affymetrix)	820K	Variety of disease markers, rare coding variants, and genome-wide coverage for common variants and low frequency variants	400 ng

Sample Type	Possible Analysis Method	# of Markers per Test	Possible Biomarkers	Sample Amount Required
	Affymetrix Human SNP 6.0 array <i>Sample study: Sapkota et al. (2012)</i>	906K	Variety of SNPs and detection of copy number variation (CNV). Includes SNPs on chromosomes X and Y, mitochondrial SNPs, SNPs in recombination hotspots.	500 ng
	Infinium HTS (e.g. Illumina Global Screening Array)	654K	Genome-wide backbone, clinical research markers, QC markers, and both low and rare frequency SNPs.	200 ng
	Illumina Infinium MethylationEPIC BeadChip	783K	DNA methylation	250 ng – 1000 ng
Red Blood Cells	Immunoassay	1	HbA1c, proteomics	20 µL - 250 µL
	MS	1+	proteomics	≤50 µL
Preserved whole blood and PBMC	Flow cytometry	1+	CD biomarkers, HLA	<i>To keep preserved cells, an entire unfrozen aliquot is required.</i>

Sample Type	Possible Analysis Method	# of Markers per Test	Possible Biomarkers	Sample Amount Required
Dried Blood Spots	ELISA	1	COVID Antibodies	Two 3mm punches
	<i>Sample study: Murphy et al. (2023)</i>			

Notes

- *Accuracy and reproducibility of some commercially available ELISA kits may vary ([Chatziharalambous et al.](#)). Investigate test findings before selecting assays.
- *Version 1.1 – Last updated October 2025*