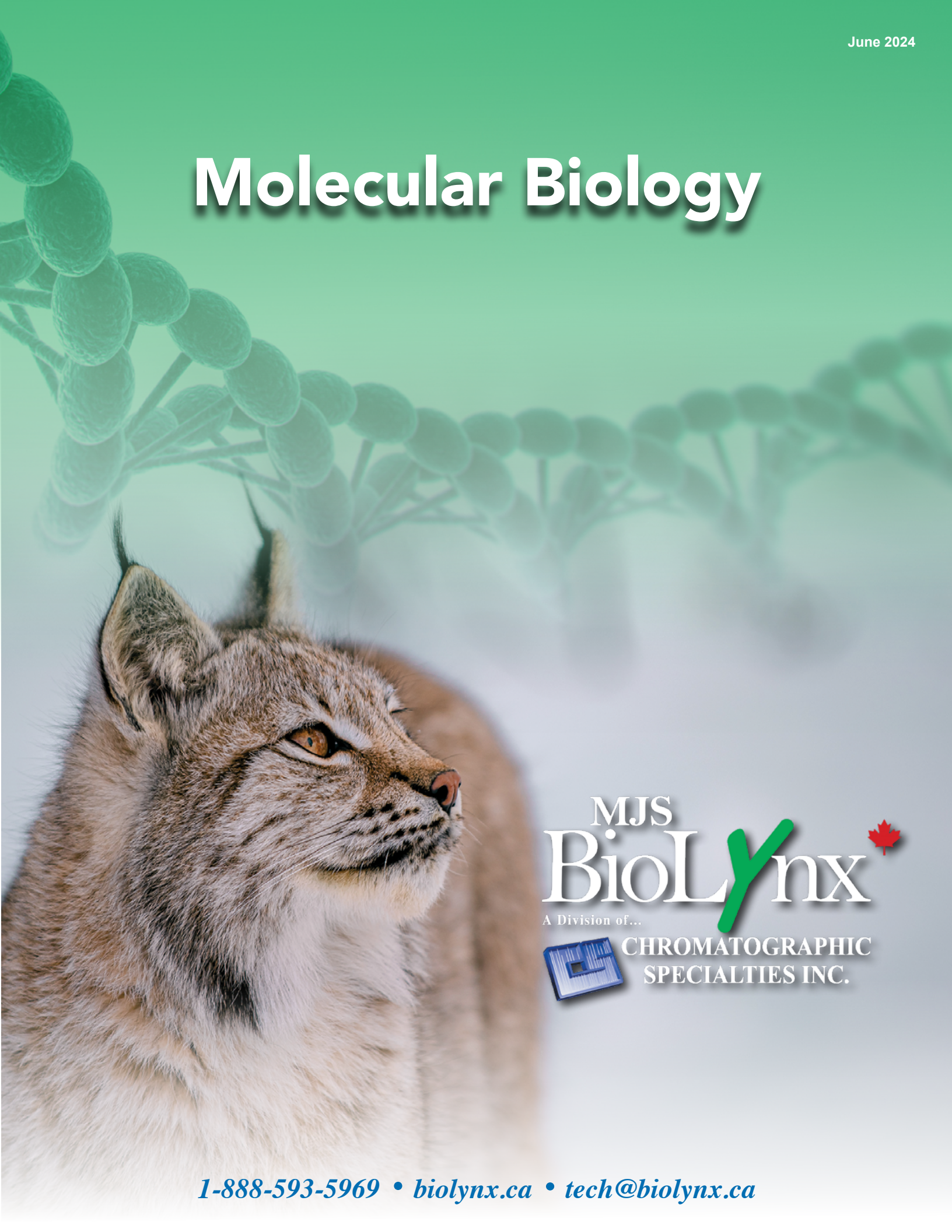
June 2024

Molecular Biology



MJS BioLynx

A Division of...

CHROMATOGRAPHIC SPECIALTIES INC.

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Table of Contents

EpiCypher
Bringing Epigenetics to Life

Featured Technologies

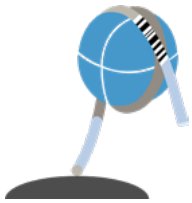
Chromatin structure provides a foundational roadmap for gene expression, cellular identity, and disease development. To fully realize the potential of chromatin research for human health, scientists need dynamic technologies that can adapt to their needs and enable new paths of discovery.

CUTANA™ ChIC / CUT&RUN Assays

Versatile chromatin mapping assays with improved sensitivity, throughput, and costs.

CUTANA™ CUT&Tag Assays

Sister technology to CUT&RUN, developed for specialized epigenomic applications.



SNAP Spike-in Controls

Control for all aspects of your chromatin mapping experiment using their unique spike-in technology.

CUTANA™ ChIC/CUT&RUN Kit

CUTANA™ CUT&RUN kits, reagents, and assay services map histone PTMs and chromatin-interacting proteins with high resolution, at a fraction of the time and cost of standard ChIP-seq experiments.

CUTANA™ CUT&RUN assays offer clear advantages over ChIP-seq:
- Reduced cell input: Compatible with as few as 5,000 cells.
- Diverse target profiling: Histone PTMs and chromatin-interacting proteins (including remodelers).
- Low background: Fewer required sequencing reads per sample (3-5 million).
- Reduced cost: Save 10X in sequencing costs.
- Fast and user-friendly: From cells to sequencing data in less than four days .

CUTANA™ CUT&RUN Library Prep Kit

The CUTANA™ CUT&RUN Library Prep Kit offers high-fidelity library generation for Illumina® sequencing by harnessing the power of New England Biolabs® best-in-class NEBNext® reagents. The kit offers a streamlined protocol specifically optimized for high-sensitivity CUT&RUN applications, including those with low cell inputs.

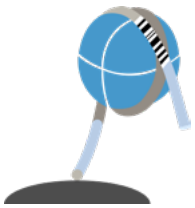
CUTANA™ CUT&Tag Kit

CUTANA™ CUT&Tag kits, reagents, and protocols enable chromatin profiling from low cell numbers with improved throughput, high sensitivity, and reduced sequencing costs compared to traditional ChIP-seq assays.

CUT&Tag – Powerful assays for next-generation epigenomic profiling:
- Fast: Cells to sequencing in 2 days.
- Streamlined: Exclusive single-tube protocol, no library prep.
- High Sensitivity: Reliable data down to 10,000 cells.
- Dramatic cost savings: Only requires 5-8 million sequencing reads.

SNAP-CUTANA™ Spike-in Controls

SNAP-CUTANA™ Spike-ins are quantitative controls that support robust CUT&RUN and CUT&Tag experiments, so you can trust your results. These panels are made up of DNA-barcoded Designer Nucleosomes (dNucs™) and offered in sets of histone post-translational modifications (PTMs) as well as common epitope tags.



SNAP-CUTANA™ Spike-in Controls offer:
- Direct readout of assay success.
- *In situ* validation of antibody specificity.
- Quantitative sample normalization.
- Compatibility with CUTANA™ CUT&RUN and/or CUT&Tag.

The best histone PTM antibodies. Period.

EpiCypher takes a unique approach to validating histone post-translational modification (PTM) antibodies. Their exclusive SNAP Spike-in technology is the only method that uses physiological nucleosome controls to directly quantify antibody performance in ChIP, CUT&RUN, and CUT&Tag workflows. The resulting SNAP-Certified™ Antibodies have multiple advantages:

- Superior target specificity and affinity.
- Robust performance in CUT&RUN and CUT&Tag.
- Improved PTM profiling from low cell numbers.
- Increased reliability through lot-specific testing.

Ordering Info

Epigenetics

Development of a high-throughput CUT&RUN platform for epigenomic mapping of rare primary immune cells

Epigenetic regulation is central to cell and gene therapy, but has been challenging to study

- Many genomic strategies for cell & gene therapy focus on transcription; however, RNA-seq reveals the outcomes – not driving mechanisms.
- Epigenomics is the solution: Mapping the location of histone post-translational modifications (PTMs) and chromatin-associated proteins, such as transcription factors, provides molecular insights that are central to cell fate and function.
- However, existing epigenomic technologies, such as ChIP-seq, are limited by high costs, poor sensitivity & reliability, and complicated sample prep.
- These challenges have precluded epigenomic analysis for cell & gene therapy.

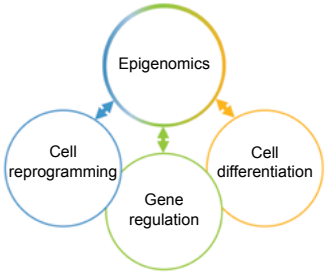


Figure 1.
Understanding epigenetic regulation is critical to successful cell and gene therapy applications:

- iPSCs
- CAR T-cells
- T cell exhaustion
- dCas9/Cas9 targeting

CUTANA™ CUT&RUN is a novel workflow that enables streamlined epigenomic mapping

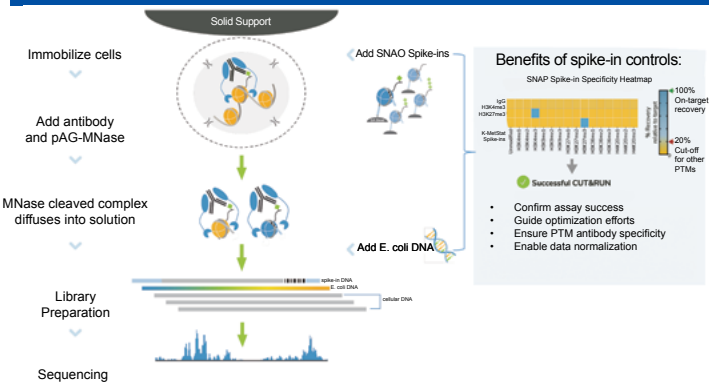


Figure 2.
CUT&RUN uses a streamlined workflow to release antibody-bound chromatin into solution, leaving background in bead-immobilized cells. Compared to historical ChIP-seq assays, CUT&RUN generates higher resolution data with >100-fold reduced cell inputs and >10-fold reduced sequencing depth. Defined nucleosome controls (SNAP-CUTANA™ Spike-ins) enable assay standardization.

Defined nucleosome controls identify specific and efficient antibodies needed for reliable epigenomics

A. >70% of histone PTM antibodies are unfit for genomic mapping…but good ones do exist!

SNAP-ChIP field survey of PTM antibodies:- PASS = <20% cross-reactivity; >5% recovery		
Total	Antibodies tested	392
	Failure rate	71%
Most cited antibodies (top 10 studied PTMs)	Antibodies tested	24
	# Citations	4,751
	Failure rate	79%

ChromatinAntibodies.com

Search your PTM or antibody

B. SNAP-CUTANA™ spike-ins identify best-in-class CUT&RUN antibodies

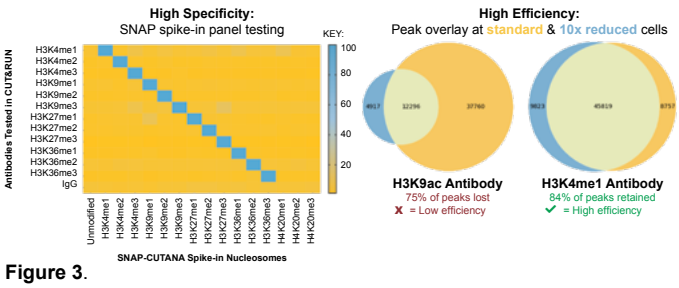


Figure 3.
A field survey of histone PTM antibodies shows that the vast majority lack the specificity and efficiency required for reliable genomic mapping (A). As the field transitions to CUT&RUN, identifying reliable reagents is key to enable new insights (B).

autoCUT&RUN defines immune cell differentiation

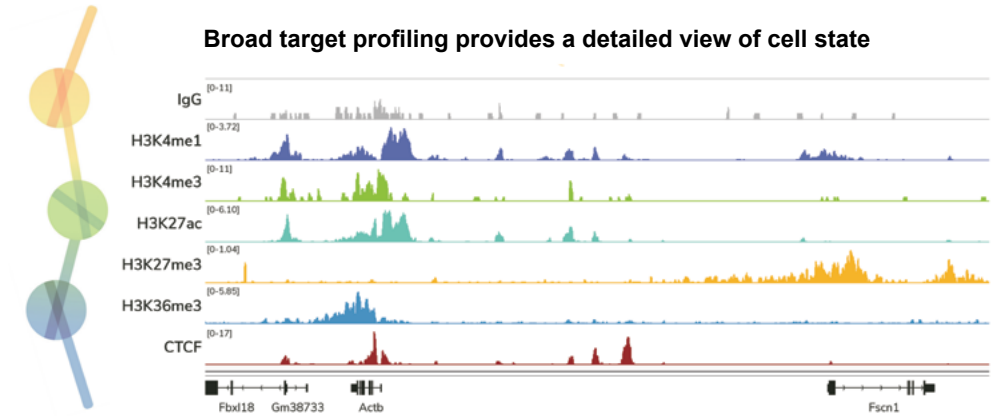


Figure 5.
autoCUT&RUN profiling of FACS-sorted type 3 ILCs (10k cells/reaction) identifies unique chromatin features, including poised/active enhancers (H3K4me1/H3K27ac), active promoters (H3K4me3), gene bodies (H3K36me3), repressed genes (H3K27me3), and transcription factor binding (CTCF).

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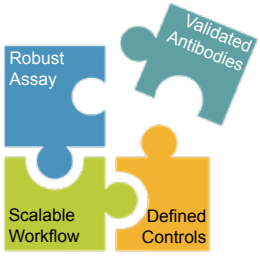
Development of a high-throughput CUT&RUN platform for epigenomic mapping of rare primary immune cells

Assembling the pieces for automation: Deploying epigenomics at unprecedented scale & sensitivity

Platform comparison	ChIP-seq	CUTANA™ CUT&RUN	Implications for automation
Sample input	Fragmented chromatin	Intact cells or nuclei	Streamlined workflow
Required cells	>1 million	500k - 5k	Take precious samples further
Defined controls	Uncommon	SNAP Spike-ins	Standardized protocols
Seq depth (reads)	>30 million	3-5 million	Greater multiplexing
Assay cost (per reaction)	~$225	~$72	70% cost savings
Signal-to-noise	Low	High	Better data quality
Experimental throughput	Low	High	Compatible with 96-well plates



ChIP-seq proved difficult to automate - CUT&RUN empowers epigenomics at scale.

autoCUT&RUN enables robust mapping of chromatin-associated proteins at low cell inputs

A. Automation halves hands-on time and increases throughput >8X

- End-to-end optimization for sample prep to library QC.
- Reduced variance and reaction volumes with 96-well liquid handling.
- Standardized workflow for native and cross-linked cells and nuclei.
- Buffer optimization for improved sample handling.

B. High signal-to-noise down to 5k cells

C. Reliable signal across inputs

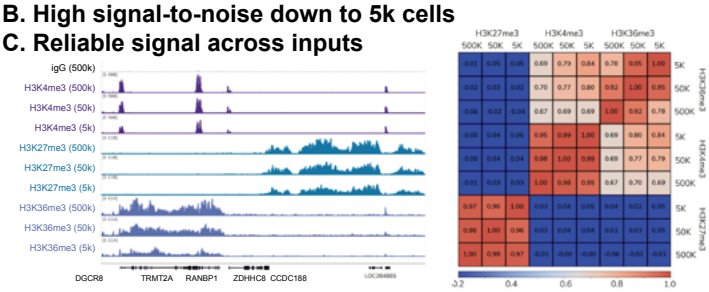
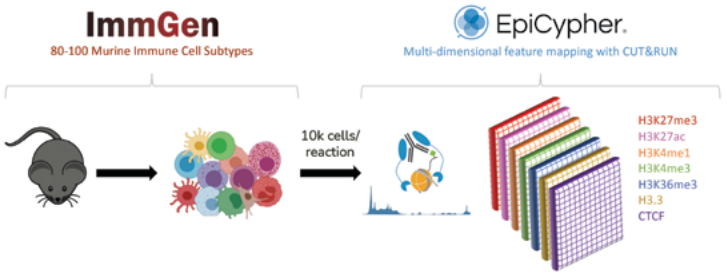


Figure 4.
The optimized automated CUTANA™ CUT&RUN (auto -CUT&RUN) protocol (A) generates comparable maps for various histone PTMs using decreasing amounts of K562 cells (B). A Pearson correlation matrix (C) shows high concordance across cell numbers for each target.

Application of autoCUT&RUN to generate reference epigenomic maps of the mouse immune system

- Robust, cost-effective autoCUT&RUN assays were used to map 7 distinct chromatin proteins in >100 unique cell types.
- Specific and efficient SNAP-Certified™ Antibodies enabled profiling from 10k FACS-sorted mouse primary immune cells per reaction.
- SNAP Spike-in Controls were used to monitor sample integrity and confirm reaction success in 96-well plates.
- Generated >2,200 CUT&RUN profiles in this multi-site collaboration.



pathways for advanced cell & gene therapy research

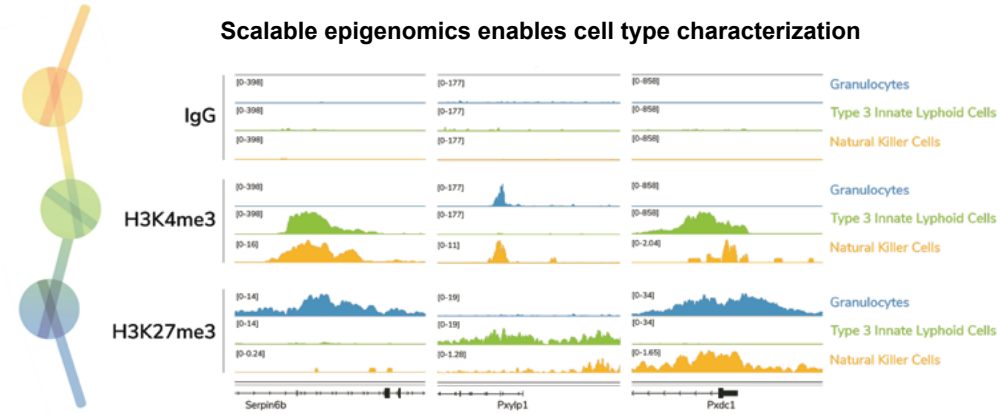


Figure 6.
autoCUT&RUN reveals distinct H3K4me3 (active promoters) and H3K27me3 (repressed genes) profiles across FACS-sorted primary mouse granulocytes, type 3 ILCs, and NK cells (Ly49H+), provided by ImmGen consortium. 10k cells were used per autoCUT&RUN reaction.

EpiCypher®
Bringing Epigenetics to Life

RNA/DNA Extraction

BioEcho is a specialized solution provider for the extraction and analysis of nucleic acids using spin column technology. They create disruptive technologies, products, and workflows that make downstream processing of nucleic acids easier and faster.

BioEcho's EchoLUTION™ Technology

Fast and Convenient – DNA and RNA extraction in just one single step, 50-70% faster than established methods.

High Sensitivity – Highly pure DNA/RNA free of contaminants and inhibitors.

Reliable Results – Lysis under physiological conditions results in long and intact DNA/RNA perfectly suited for downstream applications such as PCR, NGS, RT-PCR, RNAseq, and more.

Sustainable – Reduces plastic consumption by up to 70% and minimizes use of hazardous reagents.

Available EchoLUTION™ Products:

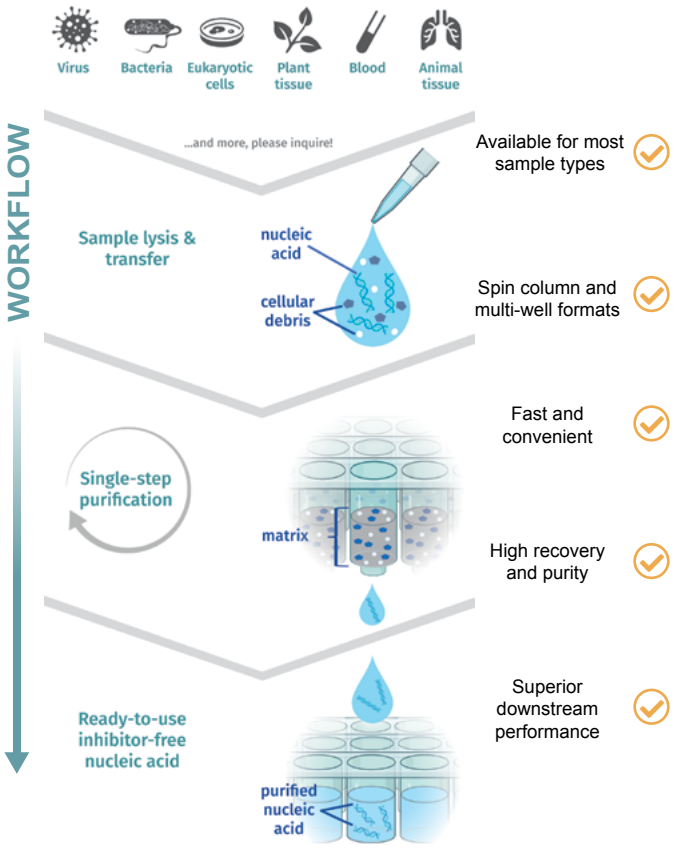
RNA Extraction: Cell Culture, Viral, FFPE, Tissue

DNA Extraction: Blood, Buccal Swab, Cell Culture, FFPE, Plant, Tissue, Viral

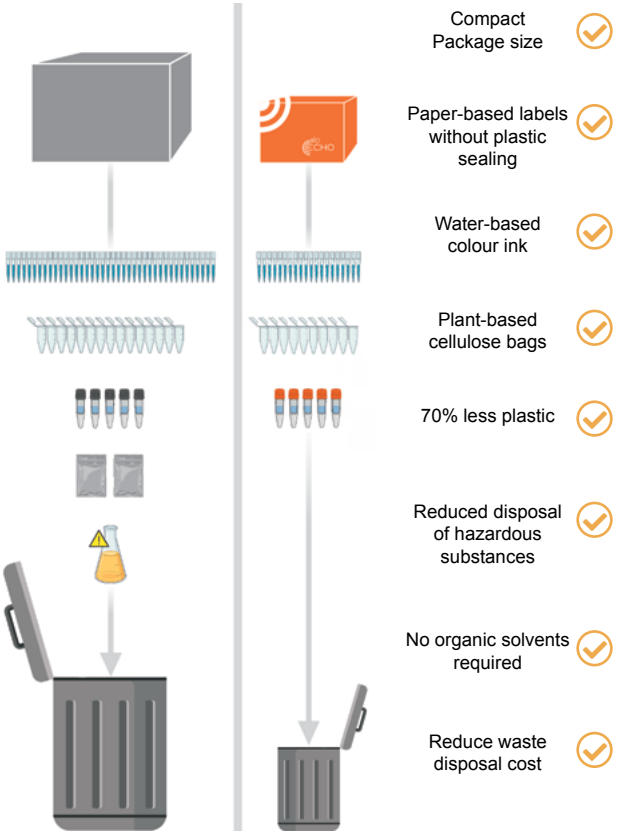
Nucleic Acid Cleanup: DNA Cleanup, DNA Organic Solvent Cleanup, RNA Cleanup Enzymes, Reagents and Accessories

Ordering Info

The EchoLUTION™ DNA and RNA extraction technology



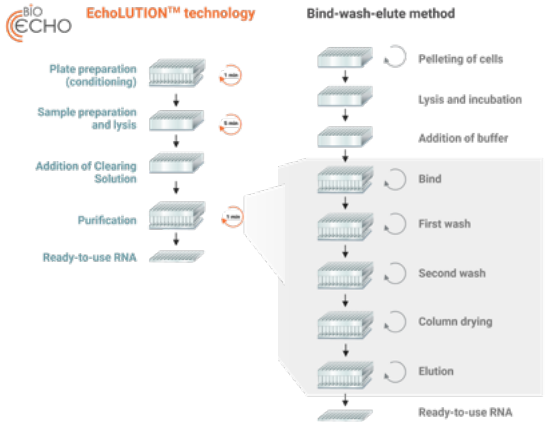
Sustainability is in their DNA
with BioEcho you can save on storage space and waste disposal



RNA/DNA Extraction

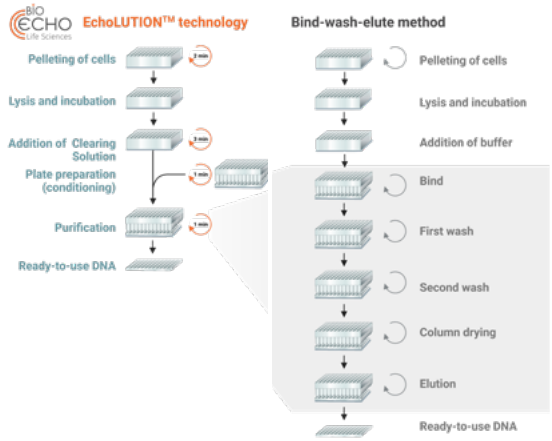
EchoLUTION™ Cell Culture RNA Kit

- Optimized to eliminate most gDNA. The gDNA Removal Mix can be used to remove residual DNA (ordered separately).
- Workflow for 4 manual samples in 12 minutes and a complete 96-well plate in only 20 minutes.
- Highly pure RNA free of contaminants and inhibitors.
- Purification 50 - 70% faster than established kits on the market.
- Avoids inhibitory reagents (e.g., EtOH) in the final product, which provides an RNA sample perfectly suited for downstream applications.
- Up to 60% less plastic consumption compared to other extraction methods and no usage of hazardous reagents.
- Ultra-fast non-enzymatic lysis, Inactivates nucleases and stabilizes nucleic acids.



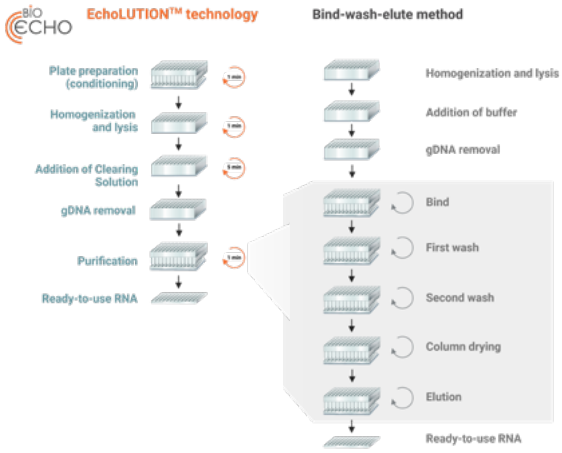
EchoLUTION™ Cell Culture DNA Kit

- Workflow complete in just 30 minutes and 5 steps.
- Highly pure DNA free of contaminants and inhibitors.
- Lysis under physiological conditions results in long and intact DNA perfectly suited for downstream applications such as PCR and NGS.
- Up to 70% less plastic consumption compared to other extraction methods and no usage of hazardous reagents.



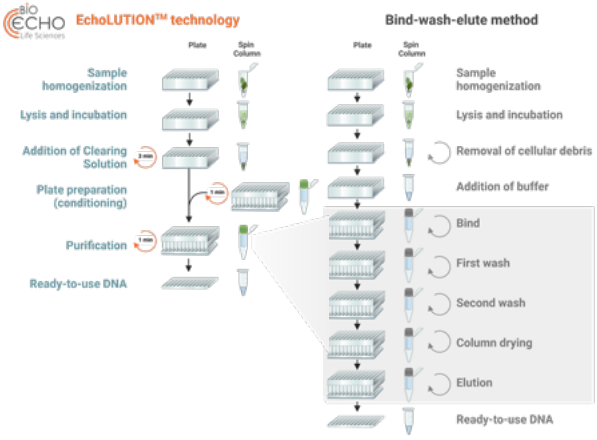
EchoLUTION™ Tissue RNA Kit

- Single-step purification, saving up to 60 % of processing time.
- Suitable for extraction of total RNA from fresh frozen or stabilized mammalian tissues, including challenging tissues such as muscle.
- Highly pure RNA free of contaminants and inhibitors.
- High purity and competitive RNA integrity perfectly suited for downstream applications such as RT-qPCR and RNA-seq.
- Less hazardous reagents - quality RNA without TRIzol/chloroform.



EchoLUTION™ Plant DNA Kit

- Workflow completed in less than 1.5 hours for 96 samples.
- Suitable for a wide range of plant species such as strawberry, parsley, tomato, potato, wheat, barley, and many others.
- Highly pure DNA free of contaminants and inhibitors.
- Lysis under aqueous conditions results in long and intact DNA perfectly suited for downstream applications such as PCR and NGS.
- Up to 56 % less plastic consumption compared to other extraction methods and no usage of hazardous reagents.



Magnetic Bead RNA/DNA Extraction

For Viral DNA/RNA Extractions

ProtonDx was established in 2020 to commercialise multi-disciplinary research, developed at Imperial College London to deliver rapid, accurate, portable, and low cost diagnostics available worldwide. They have now developed a line of products for scientific research, and we are pleased to be able to bring those products to Canadian Life Science Researchers.

Twelve viral DNA/ RNA extractions in less than ten minutes!

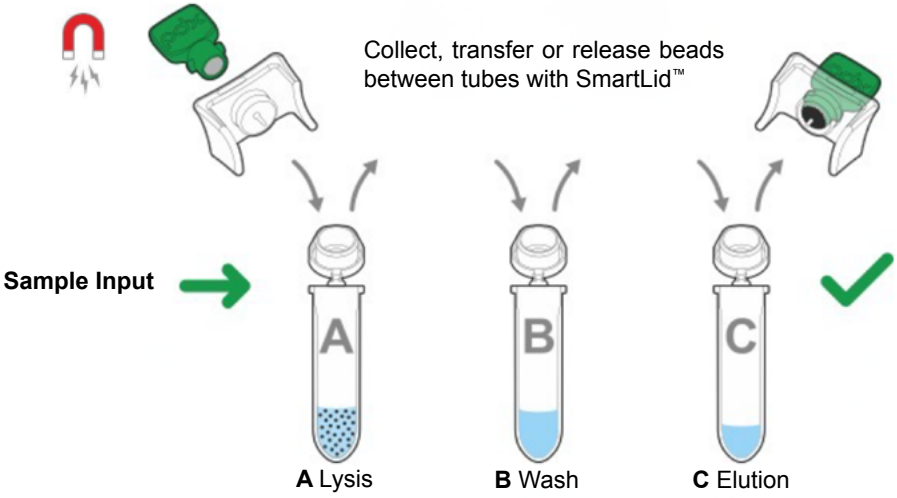
SmartLid™ is based on a proprietary magnetic key and lid, designed to quickly and easily transfer magnetic beads and attached nucleic acids through a series of three simple sample extraction steps: Lysis, Wash, and Elution. The process is power-free, reduces pipetting, and can extract twelve samples in under ten minutes. Using this technology, they created the Viral DNA/RNA Extraction Kit, bulk packaged for 50 extractions.

The visible speed and efficiency of SmartLid™ is due to superparamagnetic beads, delivering ultra-fast extractions.

Capture: Magnetic beads capture DNA/RNA for transfer between tubes.

Collect: Inverting the tube with the Magnetic Key collects the magnetic beads onto the SmartLid™.

Transfer: Within seconds the liquid is clear, and collection is complete and ready to transfer.



SmartLid™ Rack and SmartLid™ Shaker provide simultaneous processing of twelve samples.

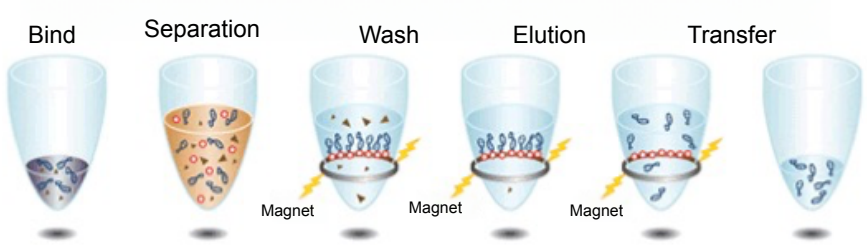
Ordering Info

Magnetic Bead RNA/DNA Extraction

MagBio offers targeted and cost-effective magnetic bead-based products for medium and high-throughput NGS library prep cleanup, PCR products cleanup, Sanger sequencing reaction cleanup as well as genomic DNA and RNA purification kits.

MagBio Genomics kits are fully adaptable with robotic liquid handling platforms currently available in the market – ensuring efficient cleanup for PCR and sequencing products, DNA normalization, and NGS library prep cleanup for both Illumina® and Ion Torrent™/PGM platforms.

Magnetic Bead Technology OR
SPRI (Solid Phase Reversible Immobilization)



Science Behind the Beads

Positively charged magnetic beads attract nucleic acids which have a negative charge due to their phosphate backbone. Numerous binding options available with salts, alcohol group and detergents.

MAGBIO
ACCELERATING genomic research

Advantages

- High binding capacity and excellent sensitivity
- Reduce contamination, achieve better yields and better purity compared to column-based methods
- More suitable for automation, high throughput processing – no centrifugation
- Can be used for NA Library Clean up, Fragment Selection, NA Purification, NA Extraction, and NA Normalization
- Best suited for downstream NGS applications

HighPrep Blood & Tissue DNA Kit

Blood and tissue DNA kit, a magnetic bead-based kit for high-quality genomic DNA extraction from 50-250 µL of fresh or frozen whole blood, buffy coat, lysate of tissues, mouse tails, cultured cells, saliva, buccal swabs.

Applications

Blood and tissue gDNA extraction for:
- PCR, Real-time PCR
- Southern Blotting
- Cloning, Genotyping
- Sequencing

Benefits

- High-quality and high yield gDNA from blood and tissue samples.
- No organic extraction or alcohol precipitation.
- Complete removal of contaminants and inhibitors.
- Adaptable to various automated workstations.

HighPrep PCR

Paramagnetic bead-based post PCR clean-up reagent designed for efficient DNA purification and consistent DNA fragment size selection for NGS. HighPrep PCR is adaptable to most liquid handling stations and used for applications such as sequencing, NGS, microarrays, PCR, and enzymatic reactions.

Applications

Post-PCR and post-enzymatic reaction clean-up used for/during:
- NGS library preparation
- DNA size selection for NGS
- Microarrays
- PCR
- Restriction enzyme digestions, adapter ligations
- Cloning

Benefits

- Rapid and reliable post-PCR and DNA clean-up reagent.
- Achieve uniform and consistent DNA fragments.
- High recovery of amplicons >100bp.
- Uniform fragments size distribution.
- Adaptable to high throughput liquid handling workstations.

Ordering Info

Endpoint PCR

Solis BioDyne has been developing and producing life science reagents since 1995. High standards for production and service have made Solis BioDyne a trusted trademark worldwide. Their DNA polymerases, PCR Master Mixes, qPCR Mixes, reverse transcription and isothermal amplification reagents are used by top research institutes and biotech-companies. Their fast mixes are highly sensitive, stable at room temperature, and offer exceptional performance across a wide range of templates.

Their full range of endpoint PCR reagents includes:

- Hot-start and standard DNA polymerases with buffers
- Convenient Master Mixes for GC-rich and multiplex reactions
- Master Mixes with Ready-to-Load feature enable direct loading to gel

Endpoint PCR Enzymes and Master Mixes

Product	Hot Start	Ready to Load	dUTP+ UNG	Fidelity vs. Taq	Amplification Range[a]	Resulting Ends	Speed	GC-rich Performance	Multiplex PCR
FIREPol® DNA Polymerase Kit				1x	5 kb	3'A	*	**	**
FIREPol® Master Mix				1x	5 kb	3'A	*	*	*
FIREPol® Master Mix Ready to Load		●		1x	5 kb	3'A	*	*	*
HOT FIREPol® DNA Polymerase Kit	●			1x	5 kb	3'A	*	**	**
HOT FIREPol® GC Master Mix Kit	●			1x	5 kb	3'A	*	***	*
HOT FIREPol® MultiPlex Mix	●			1x	5 kb	3'A	*	*	***
HOT FIREPol® MultiPlex Mix Ready To Load	●	●		1x	5 kb	3'A	*	*	***
HOT FIREPol® Blend Master Mix	●			5x	5 kb	3'A/Blunt	*	*	*
HOT FIREPol® Blend Master Mix Ready to Load	●	●		5x	5 kb	3'A/Blunt	*	*	*
NEW! SolisFAST® Master Mix	●			1x	5 kb	3'A	***	*	***
NEW! SolisFAST® Master Mix, Ready to Load	●	●		1x	5 kb	3'A	***	*	***
NEW! SolisFAST® Master Mix with UNG	●		●	1x	5 kb	3'A	***	*	***
NEW! SolisFAST® Master Mix with UNG, Ready to Load	●	●	●	1x	5 kb	3'A	***	*	***

[a] Enables amplification of up to 5 kb fragments from low complexity DNA templates (e.g. cDNA, lambda, plasmid DNA), and up to 3 kb from genomic DNA (human, animal, plant).
Legend: *Good ** Better *** Best

FIREPol® DNA Polymerase Kit
A highly processive, thermostable Taq DNA polymerase with unique 30-day stability at room temperature.

FIREPol® Master Mix
Convenient Master Mix for standard PCR applications, based on FIREPol® DNA Polymerase. Also comes in a "Ready to Load" version which includes two tracking dyes for direct loading on gel.

HOT FIREPol® DNA Polymerase Kit
30-day room temperature stability for everyday PCR needs.

HOT FIREPol® GC Master Mix Kit
Designed to provide highly specific high-yield amplification of GC-rich templates.

Ordering Info

HOT FIREPol® MultiPlex Mix
High performance hot-start Master Mix for efficient multiplex reaction - analyze up to 18 targets in one reaction. Also comes in a "Ready to Load" version.

HOT FIREPol® Blend Master Mix
Robust and reliable hot-start Master Mix with higher fidelity and longer amplification range for more demanding reactions. Also comes in a "Ready to Load" version which includes two tracking dyes.

SolisFAST® Master Mix
Ultra fast endpoint PCR Master Mix that includes novel *in-silico* designed SolisFAST® DNA Polymerase for robust and accurate target detection. Also comes in a "Ready to Load" version which includes two tracking dyes.

SolisFAST® Master Mix with UNG
Ultra fast endpoint PCR Master Mix that includes novel *in-silico* designed SolisFAST® DNA Polymerase for robust and accurate target detection. Suitable for UNG treatment to prevent carryover contamination. Also comes in a "Ready to Load" version which includes two tracking dyes.

qPCR and RT-qPCR

Solis BioDyne's qPCR and one-step RT-qPCR kits are optimized, and ready-to-use solutions for real-time qPCR assays with all the components necessary to perform qPCR. Solis BioDyne has mixes for both probe-based approaches and intercalating dye-based approaches.

Solis BioDyne's probe-based qPCR mixes are optimized for real-time quantitative PCR assays and contain all the components necessary (except primers and probes) to perform qPCR. Probe-based qPCR is based on 5' flap endonuclease activity and their mixes are optimized for DNA/LNA hydrolysis probes (i.e. TaqMan probes)

To find a suitable mix for your qPCR cycler, please check the qPCR Cycler Compatibility tool in the QR code.

Mixes for Dye-based qPCR Assays

Product	Speed	Sensitivity	GC-rich Performance	dUTP	UNG
NEW! SolisFAST® SolisGreen® qPCR Mix	***	**	*		
HOT FIREPol® SolisGreen® qPCR Mix 2.0	*	***	*		
HOT FIREPol® EvaGreen® qPCR Supermix	*	**	***	●	
HOT FIREPol® EvaGreen® qPCR Mix Plus	*	*	*		
HOT FIREPol® EvaGreen® HRM Mix	*	***			

Mixes for Probe-based qPCR Assays

Product	Speed	GC-rich Performance	Multiplex qPCR	dUTP	UNG
NEW! SolisFAST® Probe qPCR Mix	***	*	up to 5 targets		
NEW! SolisFAST® Lyo-Ready qPCR Kit with UNG	***	*	up to 5 targets		
NEW! SolisFAST® Probe qPCR Mix with UNG	***	*	up to 5 targets	●	●
HOT FIREPol® Multiplex qPCR Mix	*	***	up to 4 targets	●	
HOT FIREPol® Probe Universal qPCR Kit	*	***	up to 2 targets	●	
HOT FIREPol® Probe qPCR Mix Plus	*	*	up to 2 targets		

One-step RT-(q)PCR

	Product	No. of targets per reactions	GC-rich Performance	dUTP	UNG	Passive reference dye	Compatible cyclers	Incompatible probe reporter dyes
Dye-based detection	SOLIScript® 1-step SolisGreen® Kit 2.0	1	*	●		ROX	Most cyclers, except ABI StepOne and StepOnePlus, 7300, 7900HT	n/a
Probe-based detection	SOLIScript® 1-step Probe Kit	1-2	*			ROX	All Cyclers	ROX, JUN, Texas Red
	SOLIScript® 1-step Multiplex Probe Kit without ROX	1-4	***	●		None	Most cyclers, except ABI and Stratagene	
	SOLIScript® 1-step Multiplex Probe Kit with ROX	1-4	***	●		ROX	All cyclers. Recommended with ABI and Stratagene	ROX, JUN, Texas Red
	SOLIScript® 1-step Multiplex Probe Kit Purple	1-4	***	●		Purple	ABI cyclers with Mustang Purple® detection channel	Cy5
	SOLIScript® 1-step CoV Kit	1-4	*	●		None	Most Cyclers	
	NEW! SOLIScript® Fast 1-step RT-qPCR Mix with UNG	1-5	**	●	●	None	Most Cyclers	

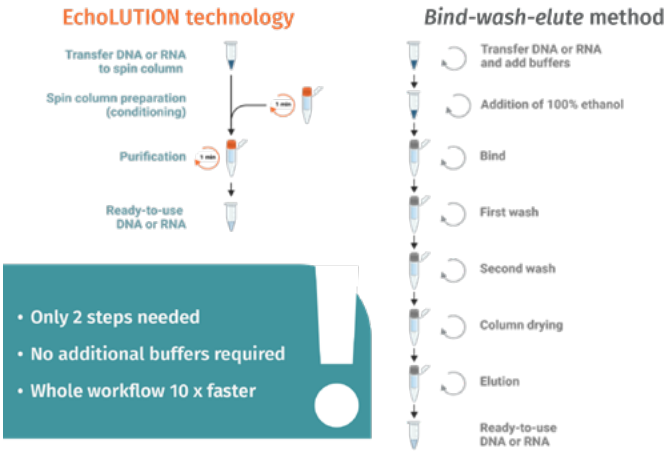
Legend: *Good ** Better *** Best

Nucleic Acid Clean Up

BIO ECHO Life Sciences

Get rid of impurities in RNA & DNA samples with a single-step centrifugation.

EchoCLEAN Clean up Kits



	Impurities to be removed											
	Organic Solvents				Salts				Dyes		Others	
Kit	Phenol	Trizol	Chloroform	Ethanol	Chaotrophs	Salts	SDS	Sodium azide	Indigo	Gel loading	Primers	dNTPs	Precipitates
EchoCLEAN DNA Cleanup Kit (for DNA >50 bp)				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EchoCLEAN Organic Solvent DNA Cleanup Kit	✓	✓	✓	✓	✓	✓							✓
EchoCLEAN RNA Cleanup Kit	✓	✓	✓	✓	✓	✓							✓

	Application					
Kit	Phenol-based extraction	Desalting of nucleic acids	Post silica-based extraction	PCR clean up	Enzymatic reaction clean up	Buffer exchange
EchoCLEAN DNA Cleanup Kit (for DNA >50 bp)		✓	✓	✓	✓	✓
EchoCLEAN Organic Solvent DNA Cleanup Kit	✓	✓	✓			✓
EchoCLEAN RNA Cleanup Kit	✓	✓	✓			✓

The **EchoCLEAN** Clean up Kits remove inhibitors and impurities from DNA and RNA samples to improve the results of your downstream applications such as PCR or (NGS). Thanks to their single-step centrifugation technology, you can clean your DNA and RNA products in less than 10 minutes.

The EchoCLEAN Kits efficiently remove: salts such as guanidinium thiocyanate (GTC), detergents, nucleotides, primers, enzymes, and organic solvents (e.g., phenol, chloroform, and ethanol).

10 x Faster and ~70% fewer handling steps – With EchoCLEAN, you will forget about bind-wash-elute.

Reduce environmental footprint – 70% less plastic consumption, plastic-free packaging, and less transportation weight.

Available EchoCLEAN Products:

- EchoCLEAN DNA CleanUp Kit (for DNA >50 bp)
- EchoCLEAN RNA CleanUp Kit
- EchoCLEAN Organic Solvent DNA CleanUp Kit

Ordering Info

Jena Bioscience

SAP-Exo Kit is a quick, easy and reliable enzymatic cleanup reagent for PCR product cleanup.

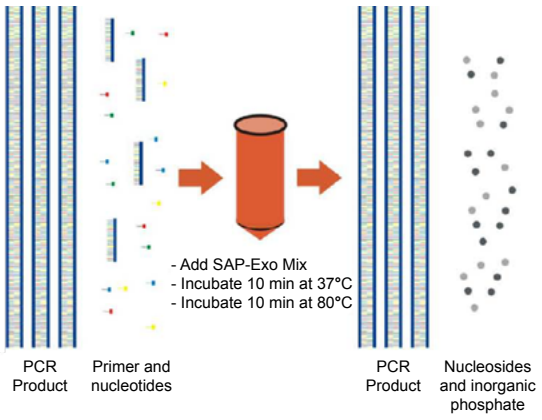
SAP-Exo Kit for PCR Product Clean-up

SAP-Exo Kit removes excess primers and dNTPs within 15 minutes. The kit is specially recommended to clean-up PCR products for subsequent applications like sequencing, genotyping, cloning, or SNP analysis.

- Removes excess primers and dNTPs
- Fast 20-minute protocol
- Add directly to PCR product
- 100 % Sample Recovery
- Scalable for different reaction sizes
- No interference on downstream applications
- Easy to automate

Description:

The Kit contains two hydrolytic enzymes, recombinant Shrimp Alkaline Phosphatase (rSAP) and Exonuclease I (Exo I). The combination of these enzymes ensures complete dephosphorylation of dNTPs and degradation of residual primers. The reagents are active in commonly used PCR buffers and eliminates the need for additional buffer exchange.



Jena Bioscience

…Because nucleotides don't get better than this.

• Ultrapure • Exceptional performance • Stable for 2 years at -20°C • Custom Formulations

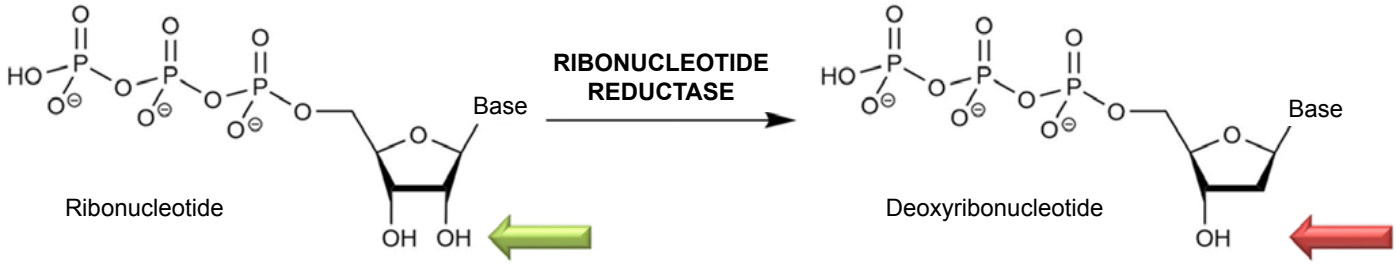
• Free from: Bacterial and Human DNA, Potential Inhibitors, DNases, RNases, Nicking enzymes, Proteases

dNTP Solutions

	dATP sodium salt 100 mM solution	dCTP sodium salt 100 mM solution	dGTP sodium salt 100 mM solution	dTTP sodium salt 100 mM solution	dUTP sodium salt 100 mM solution
Nomenclature	2'-Deoxyadenosine 5'-triphosphate	2'-Deoxycytidine 5'-triphosphate	2'-Deoxyguanosine 5'-triphosphate	2'-Deoxythymidine 5'-triphosphate	2'-Deoxyuridine 5'-triphosphate
CAS No.	1927-31-7	102783-51-7	93919-41-6	18423-43-3	102814-08-4
Formula (anion)	$C_{10}H_{13}N_5O_{12}P_3$	$C_9H_{13}N_3O_{13}P_3$	$C_{10}H_{13}N_5O_{13}P_3$	$C_{10}H_{14}N_2O_{14}P_3$	$C_9H_{12}N_2O_{14}P_3$
Formula weight (g x mol^{-1})	488.16	464.13	504.16	479.14	465.12
Molar Extinction Coefficient[1]	ε = 15.1l x mmol^{-1} x cm^{-1}; 259 nm	ε = 8.9 l x mmol^{-1} x cm^{-1}; 271 nm	ε = 14.2 l x mmol^{-1} x cm^{-1}; 252 nm	ε = 9.5 l x mmol^{-1} x cm^{-1}; 267 nm	ε = 9.8 l x mmol^{-1} x cm^{-1}; 262 nm

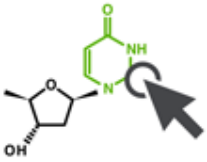
Production Technology

Jena Bioscience is one of only a few primary manufacturers of dNTPs for PCR. Their high quality starts with their production technology. Many problematic impurities, such as pyrophosphate and modified nucleotides, are by-products from chemical synthesis. These impurities can severely impact PCR performance. That's why they synthesize all of their dNTPs enzymatically, meaning many common impurities are never even present in their solutions. Any remaining impurities are removed with several state-of-the art purification procedures. For dATP, dCTP, dGTP, and dUTP, they start with the respective ribonucleotide, and use the highly specific Ribonucleotide Reductase enzyme (Scheme 1). While for dTTP, they use enzymes to sequentially phosphorylate thymidine.



Scheme 1. The bacterial enzyme ribonucleotide reductase selectively reduces the 2' -OH-group of selected ribonucleotide (NTP) to give the corresponding Deoxyribonucleotide (dNTP). Our enzymatic sythesis is performed in this manner on a kilogram scale.

Nucleotides & Nucleosides Selection Tools



Scan QR Code to search by application or by structure

Ordering Info

Synthetic High Purity Oligonucleotides

OROCHEM
Molecular Purification by Design

Orochem ZARA

Step into the precision-driven world of genetic research with Orochem Technologies Inc.'s ZARA Synthetic High Purity Oligonucleotides. Their extensive portfolio is meticulously designed to meet the nuanced needs of researchers and scientists in the realm of genetic engineering. From foundational DNA oligos to intricate RNA structures and specialized modified oligos, their expertise is matched by their capabilities to deliver solutions that are nothing short of exact. With the ZARA line's guaranteed HPLC purity, your research is poised for unparalleled accuracy and groundbreaking discoveries.

Technical Specifications:

- **Amount:** 16, 32, and 96 µg per tube.
- **Purification:** HPLC purity, 90% full-length.
- **Sequence Lengths:** Ranging from 6 to 45 nucleotides.
- **Quality Control:** Each product comes with COA including LC-UV and LC-MS data.
- **Format:** Delivered lyophilized in tubes.

For research application only, not for diagnostic procedures.

DNA Hybridization Probes: The Cornerstone of Genetic Analysis

DNA probes are renowned for their specificity in detecting and differentiating particular nucleic acid sequences. Orochem's ZARA line offers a comprehensive catalog of DNA hybridization probes and sequencing primers, meticulously crafted to support precise genetic analysis.

Product Number	Synthetic Oligo Name	Sequence	Length (mer)	Primer
C61ZD20001A	Sequencing Primer, pBR322 Bam HI Clockwise	5'-d-CAC TAT CGA CTA CGC GAT CA- 3'	20	Unlabeled
C61ZD16001A	Sequencing Primer, pBR322 Bam HI Counterclockwise	5'-d-ATG CGT CCG GCG TAG A-3'	16	Unlabeled
C61ZD15001A	Sequencing Primer, pBR322 EcoRI Clockwise	5'-d-GTA TCA CGA GGC CCC-3'	15	Unlabeled
C61ZD15002A	Sequencing Primer, pBR322 EcoRI Counterclockwise	5'-d-GAT AAG CTG TCA AAC -3'	15	Unlabeled
C61ZD16004A	M13 Hybr ProbPrim	d-CAC AAT TCC ACA CAA C	16	M13 Sequencing
C61ZD16005A	pUC/M13Rev(-24)	d-AAC AGC TAT GAC CAT G	16	M13 Reverse Sequencing

Custom Oligo Synthesis Services:

- DNA and RNA
- DNA-RNA Hybrid
- HPLC Quality
- Confirmation of Oligo Structure by MS
- Purity by HPLC and IE
- Nano Moles to Micro Moles Scale

Options for Oligo Modifications:

- Backbone modification
- Chimeric molecules – combination of DNA, RNA, LNA, 2'-OMe, and 2'Fluoro
- Amino, Thio and Biotin spacers
- Labeled probes (FAM, HEX, TET, ROX, Cy-3, Cy-5, etc.)

Ordering Info

Oro-Flex Special Plate for Synthesis Macromolecule (96 Well Plate, 0.7 mL)

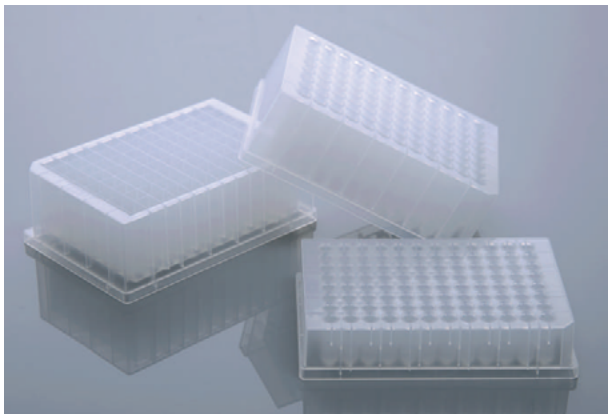
This product is designed for synthesis and purification of large molecules; for purification of combinatorial libraries; for screening pharmaceuticals in biological fluids; for filtration and clean up of RNA or DNA samples prior to PCR sequencing. It provides excellent flow rate and low sample volume retained.

Three different pore sizes are available: 7, 10 and 20 micron.

Deep Well Plates

Features

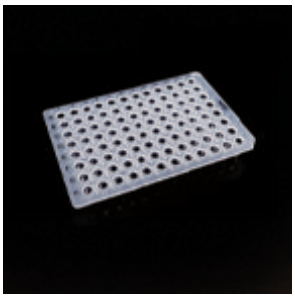
- High quality imported PP material employed for high stability and no chemical reactions with test reagents.
- Compatible with DMSO and inert to water.
- Can be stored under subzero temperature from -40 to -80°C.
- Maximum sustainable centrifuge force 4000g.
- Autoclavable at 20psi, 121°C for 20 minutes, great heating uniformity.
- Minimum residual liquid, low heavy metal content.
- Certified DNase/RNase and Pyrogen Free.
- Conformed to international SBS standards.
- 48 & 96 Round Well and 24, 48 & 96 Square Well, U and V bottom are available.
- Alphabetical sorting and corner cut marking for convenient tracking of samples.
- Each package has a separate article number/batch number identification, facilitating the quality tracking.

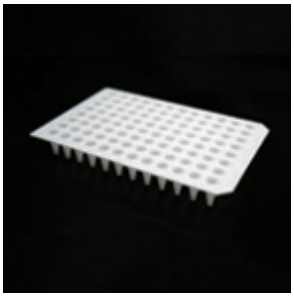


PCR 96 Well Plates

Features

- Made of high-quality polypropylene to ensure minimal loss of reaction solution.
- Flat surface, thick and solid, not easy to deform.
- The black ink-printing marks on the surface are easy to read and identify.
- Elevated edge of the hole can better prevent cross contamination.
- Compatible with NEST pressure sensitive film, self-adhesive film and hot sealing film.
- Autoclavable.
- The tube wall of transparent 96-well PCR Plate is thin, allowing for good light transmission.
- White PCR 96-well plate is better for qPCR experiments.
- The maximum capacity of the 0.1mL tube is 150 µL, and that of a 0.2 mL tube is 250 µL.
- Certified DNase/RNase and Pyrogen Free.

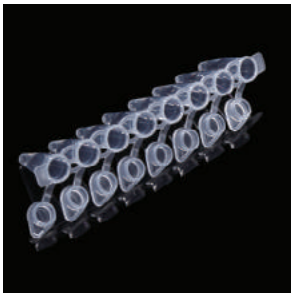




PCR Tubes

Features:

- High quality polypropylene.
- Compatible with all major PCR and real-time PCR instruments on the market. Thin-wall design produces high thermal conductivity, allowing the reaction solution inside to reach the target temperature as quickly as possible.
- The cap has excellent sealing performance and is easy to open; the loss of reaction volume can be controlled within 5% when a PCR heated lid is applied.
- A maximum capacity of 250 µL.
- No human DNA, no DNase/RNase, no PCR inhibitors.



PCR 8-strip Tubes with Individual Cap Attached

Features:

- No human DNA, no DNase/RNase, no PCR inhibitors.
- White PCR 8-strip tubes can effectively prevent signal interference, increase signal strength, and improve experimental efficiency.

NEST®

Ordering Info

MJS BioLynx is proud to represent the following companies in Canada ...

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- Immunohistochemistry
- Immunofluorescence
- Glycobiology
- Transfection & Electroporation
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