

UnipicK[™]

Most Versatile and Cost-efficient Cell Collection and Tissue Microdissection System



Get a Hold of Your Cell

- O Single Cell Collection
- O Tissue microdissection
- O Transformant Selection
- O Clonal Expansion
- NGS and -Omics applications

INTRODUCTION

Collecting individual cells directly from cell cultures for downstream single cell analysis, such as transcriptome sequencing or recultivation purposes, has remained challenging. Similarly, tissue heterogeneity poses a significant obstacle for the retrieval of cell and region specific information. Existing approaches such as flow sorting and laser assisted acquisition are costly, sophisticated and often methodologically limited.

UnipicK[™], compatible with most inverted microscopes, is a unique vacuum assisted cell and tissue acquisition system that allows cutting edge cell specific research at low cost. Our patented vacuum impulse assisted collection permits rapid acquisition of single cells from any untreated cell cultures without affecting their viability, providing reliable and affordable means to perform various downstream experimentation.

Moreover, the instruments are suitable for individual cell collection and region specific acquisition of subanatomical areas from complex heterogeneous tissues, such as the brain. Operation of both systems is intuitive and requires minimal training. Cell cultures require neither special treatment nor specific peripherals, thus enabling unmatched flexibility in experimental design and sample collection.

Perhaps one of the most distinct features is the ability of **UnipicK™** to collect live cells for further reculturing and a plethora of downstream functional studies. Both individual fluorescently labeled and morphologically distinct cells can be acquired from any cell cultures or tissue sections. Single cell in as little as 15 nl volume may be collected for further whole genome analysis or clonal expansion. Ready-to-use sterile Disposable Capillary Units (DCUs) with variable tip diameters ensure precise collection process and minimize contamination.

The instrument's low cost, ease of use, single cell resolution, and minimal impact on cell viability, make it a unique and vital research tool. **UnipicK™** is available as a microscope integrated cell and tissue acquisition system, or as a free standing instrument that can be mounted over a wide range of inverted microscope models, providing additional flexibility in the laboratory.

Notable Features of UnipicK[™] include:

- Simple operation with minimal training
- Single cell collection from untreated cultures and tissue sections
- Efficient tissue microdissection
- High viability of collected cells
- High quality RNA and protein for downstream –omics studies
- Flexibility and versatility works with most inverted microscopes
- Fraction of the cost of any laser assisted microdissection instrument



UnipicK[™]

Integrated Cell and Tissue Acquisition System

UnipicK[™] integrated with a fluorescence compatible inverted microscope (Olympus CKX41) provides a wide range of cell and tissue acquisition parameters.

Our sample acquisition process does not involve chemical treatment, laser irradiation, or excessive heat, thus preserving the viability of the collected cells and the integrity of macromolecules isolated from the acquired samples.

This integrated system is an essential tool for any research laboratory involved in single cell transcriptome sequencing, cell culturing, tissue region specific research, or any type of single cell studies.

There are countless applications for **UnipicK**[™]. Here are just a few of its **capabilities**:



Fluorescence-based cell collection:

- Collect cells based on fluorescence or in bright field
- · Collect low-abundance labeled cells
- Enrich cell lines with low transfection rates
 using GFP

Transformant enrichment:

- Selectively subculture transfected cells
- Maintain high cell viability
- Maximize efficiency for difficult to transfect cells
- Isolate subpopulations from complex mixtures
- Achieve high quality separation

Tissue microdissection:

- \bullet Microdissect sections from 5 to 300 μm thick
- · Provide minimally invasive environment
- Require no pretreatments
- Microdissect fresh frozen, sucrose treated
 and live tissue
- · Isolate high quality RNA, DNA and protein
- Collect individual cells



UnipicK[™]

Universal Cell and Tissue Acquisition System

UnipicK[™] in combination with a Universal Straddle can be paired with nearly **any inverted microscope**. It may be used with a simple cell culture microscope or more sophisticated inverted microscope systems.

The greater travel distance of the DCUs provides vertical clearance to work with virtually any cell culture plates, including 96-well plates.

Its notable features include:

- Versatility collect from cell cultures or tissue slices
- Flexibility able to fit to any inverted microscope
- Cost-efficiency no purchase of additional microscope
- Retract Function easier to work with multiwell plates
- Recalibration Function no recalibration between samples
- Side Swivel Head ergonomic design for handling DCUs



Applications

Collection of Single Cells from Adherent Cultures

Most methods for single cell analysis require large numbers of cells, use workflows that are time consuming and costly, and often generate highly variable or unreliable data.

UnipicK[™] permits rapid collection of individual cells from various cell cultures for a wide range of downstream applications, including single cell analyses.

Because small sample volume is incremental for single cell research, **UnipicK**TMenables the collection of a single cell in as small as 15 nl volume.

Profile or subculture cells by quickly and gently collecting up to 25 individual cells per minute from any cell culture dish with no pretreatment. Cells may be collected based on their morphology or fluorescent label.

Adherent cells can be selectively collected from a standard cell culture dish without the use of Trypsin or other enzymes. Virtually any cell line and cell type can be collected to start selective subcultures. Unaffected viability rates of collected cells find numerous applications in stem cell research, single cell research and many other fields of *in vitro* cell based studies.





GFP positive individual CHO cells are collected from a standard cell culture dish. The collected cells may be used for clonal expansion, single cell analysis, enrichment of transfected cells or any other type of research.



Representative clonal expansion of a single collected CHO cell within 1 and 16 days, respectively.



Representative collection of a single sperm cells from fixed specimen



Applications

Microdissection and Collection of Single Cells from Brain Tissues

Neuroscience investigators will find both systems irreplaceable for collecting brain region specific tissue samples and even individual cells, which can be used for downstream genomics or proteomics studies.

The instrument can microdissect tissue sections with thickness from 5 to 300 μ m. Native (live), fresh frozen, and sucrose treated tissues can be used.

The high quality of nucleic acids and proteins isolated from UnipicK collected samples ensures flawless integration with any –omics workflow, including transcriptome sequencing (NGS) and proteomics studies.



Ready to use Disposable-Capillary Units (DCUs) have internal diameter that ranges between 10 to $100 \mu m$ to maximize cellular resolution and capture control.





Representative collection of single motor neurons and Purkinje cells from the anterior horn of rat spinal cord and cerebellum, respectively.



Representative mouse brain microdissections (Left), high quality total RNA isolated from microdissected brain tissue samples (RIN >8.5; Middle) and 2D gel (Right) with protein extracts isolated from the dentate gyrus of adult mouse brain show no signs of degradation.



Technical Specifications

Description		KuiqpicK-TCM400	KuiqpicK-CKX31/41	UnipicK-CKX31/41	UnipicK Universal		
Resolution		Single Cell					
Multiwell Compatibility		6-, 12-, 24-		6-, 12-, 24-, 48-, 96-			
Recalibration Function		No	No	Yes	Yes		
Power Supply	Input	100-240 V, 50-60 Hz, 1.5 A					
	Output	+ 24 V, 2.7 A					
Illumination	Light	144 LEDs ring light					
	Input	24V DC					
Vacuum	Range	up to 22"Hg					
	Input	24V DC					
DCU Travel	Travel Step	1.5 μm					
	Input	5 VDC					
	Max. Travel	12.0 mm		23.3 mm	23.3 mm		
Microscope		TCM400 (Labo America)	CKX31/41 (Olympus)	CKX31/41 (Olympus)	-		
Stage	Size	240 x 160 mm	250 x 160 mm	250 x 160 mm			
	Movement Range	114 x 41.3 mm	120 x 78 mm	120 x 78 mm	-		
	Specimen Holder	25 mm slides, 35 mm Petri dish and multiwell plates					
Epi-fluorescence		Lumen 300-LED (Prior Scientific) -					
Maximum Dimensions		508 mm (L) x 327.5 mm (W) x 406.5 mm (H)	546 mm (L) x 441 mm (W) x 420 mm (H)	546 mm (L) x 362 mm (W) x 420 mm (H)	523 mm (L) x 456 mm (W) x 507 mm (H)		
Weight approx.		14.6 kg	13.9 kg 16.0 kg		11.8 kg		
Operating Environment		Indoor use. Altitude: max. 2000m; Ambient temperature: 5°C to 40°C (41° to 104°F); Maximum relative humidity: 80% for temperature up to 31°C (88°F)					

System Performance

Ordering Information

Description	Specifications	Description	
Vacuum duration (Ts), seconds	0.1 to 1.0 s	KuiqpicK 1.1	
Vacuum strength, -mm Hg	111.8 to 558.8 Hg	KuiqpicK 1.2	
Available DCU IDs, µm	From 10 to100 µm	UnipicK with	
Acquisition speed (-mm Hg/T	UnipicK Univ		
Minimum settings (111.8/0.1 sec)	1.3 s	DCUs (ID=20	
Maximum settings (558.8/1.0 sec)	2.2 s	DCUs (ID=30	
Acquisition sample volume (from Lowest t	DCUs (ID=50		
DCU20 (µm)	10 nl to 2.5 µl	DCUs (ID=70	
DCU30 (µm)	35 nl to 3.0 µl	* Contact Neuro	
DCU40 (µm)	70 nl to 5.0 µl		
Cell collection speed (cells/minute) from			
Rat Purkinje cells (cerebellum)	12.0 ± 1.5 c/min	Vo	
Mouse anterior horn motor neurons	12.0 ± 1.5 c/min	12.0 ± 1.5 c/min	
Cell collection speed (cells/minute) from a	140		
SH-SY5Y human neuroblastoma cell line	Up to 25 c/min	YK	
Chinese hamster ovary cells (CHO)	Up to 25 c/min		

escription	Units	Catalog Number				
CuiqpicK 1.1 with TCM400	1	NDX-SYST-K101				
uiqpicK 1.2 with CKX41	1	NDX-SYST-K102				
InipicK with CKX41	1	NDX-SYST-U100				
InipicK Universal System	1	NDX-SYST-U101				
O <mark>CUs (ID=</mark> 20 µm; 6 units/box) *	1	NDX-DCU-20				
OCUs (ID=30 µm; 6 units/box) *	1	NDX-DCU-30				
OCUs (ID=50 µm; 6 units/box) *	1	NDX-DCU-50				
OCUs (ID=70 µm; 6 units/box) *	1	NDX-DCU-70				
* Contact NeuroInDv for different DCLLIDe JDe from 10 to 100 um are quailable						

oInDx for different DCU IDs. IDs from 10 to 100 μm are available



www.neuroindx.com

www.youtube.com/NDXInc

i.youku.com/NDXInc ŭ



* - calculated for standard DMEM medium; acquisition volume depends on the DCU ID and sample viscosity ** - estimated times are given as a reference and may be user/application-dependent





20725 S WESTERN AVE STE 100 Torrance, CA 90501-1885

SAFETY INFORMATION Please read the instruction manual carefully in order to safely operate any NeuroInDx product

Copyright (c) 2016 NeuroInDx, Inc. All rights reserved. NeuroInDx, the NeuroInDx logo, KuiqpicK and UnipicK are trademarks of NeuroInDx, Inc. in the U.S. and/or other countries. Trademarks belonging to the third parties are the properties of their respective owners. The manufacture, use and/or sale of NeuroInDx, Inc. product(s) may be subject to one or more patents or pending patent applications owned by NeuroInDx, Inc. or licensed to NeuroInDx, Inc. from the third parties. Printed in the USA.

For Research Use Only. Not for use in diagnostic procedures.

www.neuroindx.com